

PEACH BOTTOM ATOMIC POWER STATION
Unit Nos. 2 and 3
Docket Nos. 50-277 & 50-278

SEMI-ANNUAL EFFLUENT RELEASES REPORT

NO. 19

REVISION NO. 2

JANUARY 1, 1985 THROUGH JUNE 30, 1985

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

I.

INTRODUCTION

In accordance with the Unique Reporting Requirements of Technical Specification 6.9.2.h(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 January 1, 1985 through June 30, 1985. The notations P and N 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 to the Off-site Dose Calculation Manual (ODCM) during the reporting period. During the report preparation period, there was an unplanned release which will be discussed in the next Semi-Annual Effluent Release Report.

Semi-Annual Effluent Release Report No. 19, Revision 0, submitted August 30, 1985, has been revised as follows:

The "INTRODUCTION" on page i of the Semi-Annual Effluent Release Report No. 19, Revision 0, was revised to correct an error in the Technical Specification designation for the requirements under which the Semi-Annual Effluent Release Report is submitted. The Technical Specification designation was changed from 6.9.3 to 6.9.2.h(2) as a result of the issuance of Amendment Nos. 102 and 104 for Peach Bottom Atomic Power Station Unit Nos. 2 and 3, respectively.

Table E on page 7 of the Semi-Annual Effluent Release Report No. 19, Revision 0, was revised to correct an error in the total activity (in curies) for the solid radioactive waste shipments for the month of May, 1985. The correct activity for that month is 8.75 P1 instead of 8.75 P2. This correction also resulted in a correction to the total activity for the entire six month period. Therefore, the "TOTAL" activity was changed from 1.19 P4 to 1.11 P4.

An attachment (2 pages) has been incorporated into the report to provide information required by Technical Specification 6.9.2.h(2) for each class of solid radioactive waste shipped offsite during the report period.

I. INTRODUCTION (Continued)

Semi-Annual Release Report No. 19, Revision 1, submitted October 8, 1985 has been revised to reflect changes in Table B, Isotopic Analysis of Liquid Radioactive Releases (two pages). The changes incorporated into this revision included:

1. Activity information for Phosphorus-32 and Iron-55, which were omitted from previous submittals.
2. The correction of Activity Totals as a result of including the activities for Phosphorus-32 and Iron-55.
3. The correction of Body Dose, Bone Dose, Total Body Dose, and Total Bone Dose information as previously reported.

TABLE OF CONTENTS

	<u>Page No.</u>
I. Introduction	
II. Tables	
A - Liquid Radioactive Release Data	1
B - Isotopic Analysis of Liquid Radioactive Releases	2
C - Gaseous Radioactive Release Data	4
D - Isotopic Analysis of Gaseous Radioactive Releases	5
E - Solid Radioactive Waste Shipment	7
III. Attachment - Classes of Solid Radioactive Waste Shipments	

TABLE A

PEACH BOTTOM UNITS 2 & 3 - 1985 LIQUID RADIOACTIVE RELEASE DATA

	JAN.	FEB.	MAR.	APR.	MAY.	JUNE	TOTAL
Gross Activity ()							
Total Curies Except Tritium	1.15N1	6.70N1	1.05N1	8.74N2	3.25N1	3.08N1	1.61
Average uCi/ml Gross Activity (except Tritium) at Point of Release	1.06N8	5.88N8	1.92N8	7.60N9	9.05N9	9.57N9	(1) 1.50N8
Total Curies of Tritium	10.9	12.0	1.97	2.01	4.02	5.01	3.59P1
Average uCi/ml Tritium at Point of Release	1.01N6	1.05N6	3.61N7	1.75N7	1.12N7	1.56N7	(1) 3.36N7
Total Curies, Alpha	5.03N5	1.14N5	3.28N4	1.59N4	1.96N4	2.41N5	7.69N4
Average uCi/ml Alpha at Point of Release	4.66N12	1.00N12	6.01N11	1.38N11	5.47N12	7.49N13	(1) 7.19N12
Total Curies of Dissolved Noble Gases	7.44N2	5.76N1	5.34N2	7.74N2	9.04N2	8.78N2	9.59N1
Average uCi/ml of Noble Gases at Point of Release	6.89N9	5.05N8	9.78N9	6.73N9	2.52N9	2.73N9	(1) 8.96N9
Maximum uCi/ml Released (except Tritium) - at Point of Release	1.78N8	2.64N8	7.07N9	3.69N9	1.74N8	1.61N8	NA
Total Volume of Waste	Gallons: 2.52P5	1.11P6 4.21P6	2.89P5 1.09P6	3.82P5 1.45P6	8.65P5 3.27P6	7.40P5 2.80P6	4.05P6 1.53P7
Total Volume of Dilution	Gallons: 1.08P10	2.99P9 1.14P10	1.44P9 5.46P9	3.05P9 1.15P10	9.47P9 3.59P10	8.50P9 3.22P10	2.83P10 1.07P11
(1) Average for 6 month period							

TABLE B
PEACH BOTTOM UNITS 2 & 3 - 1985 ISOTOPIC ANALYSIS OF LIQUID
RADIOACTIVE RELEASES (In Curies)

ISOTOPE	JAN.	FEB.	MAR.	APR.	MAY	JUNE	CI TOTAL
Strontium-89	5.79N5	1.18N4	5.25N5	4.63N5	9.49N5	7.89N4	1.16N3
Strontium-90	3.27N5	1.99N4	2.19N5	2.03N5	9.16N5	1.26N4	4.91N4
Cesium-134	3.34N3	1.23N2	7.09N3	8.11N4	5.28N2	3.21N2	1.08N1
Cesium-137	4.21N3	1.09N2	8.36N3	1.19N3	5.81N2	3.66N2	1.19N1
Iodine-131	1.88N2	3.82N2	2.38N3	1.28N3	1.59N2	9.49N3	8.61N2
Cobalt-58	8.20N5	2.11N4	1.98N4	*	1.20N4	1.72N4	7.83N4
Cobalt-60	4.53N3	6.46N3	2.30N2	1.15N3	2.54N2	2.85N2	8.90N2
Zinc-65	6.01N3	2.17N2	1.04N2	1.74N3	2.45N2	3.63N2	1.01N1
Manganese-54	*	8.06N5	1.33N4	*	2.45N4	3.28N4	7.87N4
Chromium-51	*	8.18N4	*	*	6.37N4	1.36N3	2.82N3
Xenon-133M	1.43N4	1.15N2	*	1.25N3	4.00N4	*	1.33N2
Technetium 99M	*	1.15N3	*	*	1.11N4	2.45N3	3.71N3
Lanthanum-140	1.39N4	*	7.44N5	1.68N3	1.92N3	5.85N3	9.66N3
Niobium-95	*	2.23N4	*	*	*	*	2.23N4
Sodium-24	3.19N5	*	*	2.69N4	1.01N2	1.21N2	2.25N2
Yttrium-91M	*	*	*	2.72N4	2.11N4	8.63N4	1.35N3
Xenon-135M	*	*	4.85N4	9.12N4	6.92N3	2.90N3	1.12N2
Iodine-133	3.48N3	1.43N4	3.45N4	6.98N4	1.45N2	9.41N3	2.86N2
Iodine-125	*	*	*	2.74N4	6.10N3	3.50N3	9.87N3
Strontium-92	1.30N5	1.60N4	*	*	4.92N5	8.82N5	3.10N4
Phosphorus-32	6.29N4	2.02N3	1.31N4	1.01N2	2.16N3	6.16N4	1.57N2
Iron-55	2.42N4	1.43N3	9.30N3	2.17N4	7.00N3	4.20N4	1.86N2

TABLE B (Continued)
PEACH BOTTOM UNITS 2 & 3 - 1985 ISOTOPIC ANALYSIS OF LIQUID
RADIOACTIVE RELEASES (in Curies)

ISOTOPE	JAN.	FEB.	MAR.	APR.	MAY	JUNE	CI TOTAL
Xenon-133	4.08N2	5.40N1	1.80N2	4.43N2	3.46N2	3.84N2	7.16N1
Xenon-135	2.97N2	2.44N3	3.49N2	3.09N2	4.85N2	4.38N2	1.90N1
Cesium-136	*	6.13N4	*	*	*	*	6.13N4
Silver-110M	*	1.72N4	*	*	*	*	1.72N4
Barium-140	*	*	*	6.42N4	2.83N4	1.49N3	2.42N3
Neptunium-239	*	*	*	*	1.65N2	2.01N2	3.66N2
Iodine-132	*	*	*	*	9.54N4	3.77N4	1.33N3
Tellurium-132	*	*	*	*	6.56N3	1.77N2	2.43N2
Xenon-131M	3.48N3	2.24N2	*	*	*	2.73N3	2.86N2
Krypton-85M	*	*	*	*	*	*	*
Iodine-134	*	*	*	*	*	*	*
Copper-64	*	*	*	*	*	*	*
Strontium-91	*	*	*	*	*	2.14N4	2.14N4
Ruthenium-103	*	*	*	*	*	*	*
Molybdenum-99	*	1.02N3	*	*	9.91N5	1.23N3	2.35N3
TOTALS	1.16N1	6.74N1	1.15N1	9.78N2	3.35N1	3.10N1	1.65
Body Dose (Millirem)	8.19N2	2.94N1	1.22N1	9.74N3	3.53N1	2.18N1	TOTAL BODY DOSE 1.079 (MILLIREM)
Bone Dose (Millirem)	6.44N2	2.23N1	9.31N2	2.44N2	2.69N1	1.66N1	TOTAL BONE DOSE 8.399N1 (MILLIREM)

* Less than minimum detectable

TABLE C

PEACH BOTTOM UNITS 2 & 3 - 1985 GASEOUS RADIOACTIVE RELEASE DATA

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	TOTAL	
Mixed Noble Gases (Ci)	2.15P4	1.80P3	1.29P4	2.39P4	1.77P4	3.10P4	1.09P5	
% of Tech. Spec. for Gamma Air Dose (2)	0.21	0.13	0.13	0.14	0.15	0.29	1.05	
% of Tech. Spec. for Beta Air Dose (2)	0.21	0.08	0.15	0.23	0.18	0.35	1.20	
Iodine-131 (Ci)	8.47N3	4.34N3	6.49N3	9.56N3	6.05N3	4.67N3	3.96N2	
% of Tech. Spec. for Critical Organ (3)	0.12	0.10	0.09	0.13	0.09	0.08	0.61	
Particulates >8 Day Half Life (Ci)	1.19N3	3.97N3	5.52N4	1.08N3	9.64N4	1.82N3	9.58N3	
Particulate Alpha (Ci)	6.48N6	1.53N6	2.03N6	1.66N6	8.33N6	8.58N5	1.06N4	
Tritium (Ci) (4)	9.91	7.92	7.92	2.10	1.68	1.68	31.21	
Max. Noble Gas Release Rate (uCi/sec)	1.75P5	2.48P4	2.44P4	2.51P4	2.66P4	3.20P5	NA	
Date:	2-1	3-1	3-12	4-17	5-28	6-20	NA	
Maximum % of Tech. Spec. Limit for Noble Gases	TOTAL BODY (1)	16.95	3.49	3.82	3.41	17.10	55.7	NA
	SKIN (1)	9.49	1.52	1.42	1.39	3.44	17.2	NA

(1) Basis Tech. Spec. 3.3.C.1 (applicable during reporting period)

(2) Basis Tech. Spec. 3.3.C.2 (applicable during reporting period)

(3) Basis Tech. Spec. 3.3.C.3 (applicable during reporting period)

(4) Quarterly analysis used for monthly estimate

TABLE D

PEACH BOTTOM UNITS 2 & 3 - 1985 ISOTOPIC ANALYSIS OF GASEOUS
RADIOACTIVE RELEASES (In Curies)

ISOTOPE	JAN.	FEB.	MAR.	APR.	MAY	JUNE	Ci TOTAL
Krypton-87	4.94P1	2.08P2	1.10P2	6.62P1	6.30P1	1.29P2	6.26P2
Krypton-88	6.81P1	1.81P2	9.01P1	5.12P1	4.38P1	1.26P2	5.60P2
Xenon-133	1.96P4	7.32P2	1.08P4	2.21P4	1.63P4	2.69P4	9.64P4
Xenon-133M	5.46P2	1.03P1	2.68P2	5.01P2	4.27P2	7.86P2	2.54P3
Xenon-135	1.00P3	2.03P2	1.23P3	7.98P2	5.64P2	2.48P3	6.28P3
Xenon-135M	9.27P1	*	1.57P2	1.09P2	1.07P2	2.25P2	6.91P2
Xenon-138	7.14P1	*	2.54P2	1.03P2	1.24P2	2.96P2	8.48P2
Total	2.15P4	1.80P3	1.30P4	2.38P4	1.77P4	3.10P4	1.09P5
Iodine-131	8.47N3	7.38N3	6.49N3	9.56N3	6.05N3	4.67N3	4.26N2
Strontium-89	3.98N4	9.74N5	4.40N4	8.33N4	7.45N4	1.11N3	3.62N3
Strontium-90	8.02N6	7.79N6	1.08N5	5.44N6	1.46N5	6.78N6	5.34N5
Iodine-133	3.39N4	4.03N5	2.30N4	2.28N4	1.86N4	1.28N4	1.15N3
Cesium-134	*	1.60N3	*	*	*	1.70N5	1.62N3
Cesium-137	*	1.36N3	1.80N6	2.30N6	2.40N5	4.30N5	1.43N3
Lanthanum-140	4.37N5	*	8.94N5	1.01N4	8.33N5	1.83N4	5.00N4
Cobalt-58	*	1.02N5	*	*	*	*	1.02N5
Cobalt-60	2.57N4	4.40N5	*	*	*	9.76N6	3.11N4

TABLE D (Continued)

PEACH BOTTOM UNITS 2 & 3 - 1985 ISOTOPIC ANALYSIS OF GASEOUS
RADIOACTIVE RELEASES (In Curies)

ISOTOPE	JAN.	FEB.	MAR.	APR.	MAY	JUNE	Ci TOTAL
Zinc-65	8.12N5	2.48N4	*	*	*	*	3.30N4
Manganese-54	2.26N4	*	*	*	*	*	2.26N4
Strontium-91	2.11N5	*	1.16N4	2.61N4	1.27N4	6.99N4	1.22N3
Cadmium-109	*	1.44N4	*	*	*	*	1.44N4
Copper-64	*	*	*	*	*	2.99N3	2.99N3
Rubidium-89	*	6.33N4	*	*	*	*	6.33N4
Cesium-138	1.71N2	9.86N3	2.23N2	4.08N2	4.93N2	5.21N2	1.92N1
Barium-140	6.15N5	*	1.07N4	2.35N4	1.72N4	3.97N4	9.73N4
Yttrium-91m	4.49N4	2.32N4	1.26N3	1.47N3	5.32N3	1.16N2	2.03N2
Rubidium-88	*	2.33N3	*	*	2.11N3	*	4.44N3
Barium-139	9.64N4	1.56N3	2.51N3	2.06N3	9.36N4	5.88N3	1.39N2
Cesium-135	*	8.59N5	*	*	*	*	8.59N5
TOTALS	2.00N2	1.83N2	2.71N2	4.60N2	5.90N2	7.52N2	2.46N1

*Less than minimum detectable

TABLE E

PEACH BOTTOM UNITS 2 & 3 - 1985 SOLID RADIOACTIVE WASTE SHIPMENTS

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	TOTAL
Number of shipments	17	21	26	24	25	22	135
Volume of waste (ft)	6657	8040	8690.5	7984.5	9420.5	3865.7	44,640.2
Activity, Curies	5.29P1	3.21P2	8.46P2	6.51P2	8.75P1	9.18P3	1.11P4
Shipping dates (# of shipments)	A 1/2 (1) A 1/3 (1)	A 1/31 (1) A 2/4 (1)	A 3/1 (1) A 3/4 (1)	A 3/29 (1) A 4/1 (1)	B 5/2 (2) A 5/3 (1)	A 5/31 (1) A 6/3 (1)	
A. Disposition - All waste shipped by Hittman Nuclear and Development Corporation in trucks to the Chem Nuclear Corporation, Barnwell, South Carolina.	A 1/4 (1) A 1/7 (1) B 1/11 (2) A 1/14 (1) A 1/16 (1) A 1/22 (1) A 1/23 (1) A 1/24 (1)	A 2/5 (1) A 2/6 (1) A 2/8 (2) B 2/8 (1) A 2/11 (1) A 2/13 (1) A 2/14 (2) A 2/19 (1)	A 3/5 (1) A 3/6 (1) A 3/7 (1) B 3/8 (1) A 3/11 (3) A 3/12 (1) A 3/13 (1) A 3/14 (1)	A 4/2 (1) A 4/3 (1) A 4/4 (1) A 4/8 (1) A 4/9 (1) B 4/9 (1) A 4/10 (1) B 4/11 (1)	A 5/6 (1) A 5/7 (1) A 5/8 (1) A 5/9 (2) A 5/10 (1) A 5/13 (1) A 5/14 (1) A 5/15 (1)	A 6/4 (1) A 6/5 (1) A 6/6 (1) A 6/7 (1) A 6/10 (1) A 6/11 (1) A 6/12 (1) A 6/13 (1)	
B. Disposition - All waste shipped by Hittman Nuclear and Development Corporation on trucks to U.S. Ecology, Inc., Richland, Washington.	B 1/24 (1) A 1/25 (1) A 1/28 (1) A 1/29 (1) A 1/30 (2)	A 2/20 (1) A 2/21 (1) A 2/22 (2) A 2/26 (1) A 2/27 (3)	A 3/15 (1) A 3/18 (1) A 3/19 (1) A 3/20 (2) A 3/21 (1) A 3/22 (2) A 3/25 (1)	A 4/15 (1) A 4/16 (1) A 4/18 (1) B 4/18 (1) A 4/19 (1) A 4/22 (2) B 4/22 (1)	A 5/16 (1) A 5/17 (1) A 5/20 (1) B 5/20 (1) A 5/21 (1) A 5/22 (1) A 5/23 (3)	A 6/17 (1) A 6/18 (1) A 6/19 (1) A 6/20 (1) A 6/21 (1) A 6/24 (1) A 6/25 (2)	
Shipments are logged according to the month received at destination, which sometimes differs from the month in which it was shipped.			A 3/26 (1) B 3/26 (1) A 3/27 (3)	A 4/23 (1) A 4/24 (1) A 4/26 (2) A 4/29 (1)	A 5/24 (1) A 5/28 (1) A 5/29 (1) A 5/30 (1)	A 6/26 (1) A 6/27 (2) B 6/28 (1)	

ATTACHMENT
PEACH BOTTOM UNITS 2 & 3
January 1 to June 30, 1985 CLASSES OF SOLID RADIOACTIVE WASTE SHIPMENTS

Total # of Shipments	Waste Description (Source of Waste)	Container/Type	Individual Container Volume	Total (Waste & Container) Volume	Total Curie	Principal Radionuclides
<u>Class A</u>						
75	Dewatered Resin	HIC/LSA Type A Cask	7.5 Ft. ³	7875 Ft. ³	403.207	Zn-65, Cs-134 Co-60, Cs-137
3	Dewatered Resin	HIC Liner/LSA Type A Cask	195. Ft. ³	585 Ft. ³	95.642	Zn-65, Cs-134 Co-60, Cs-137
1	Solidified Resin	HIC Liner/LSA Type A Cask	85. Ft. ³	85 Ft. ³	40.779	Zn-65, Co-134 Co-60, Cs-137
5	Solidified Liquid	55 Gal. Drum/ LSA Type A Cask	7.5 Ft. ³	1472.5 Ft. ³	1.267	Zn-65, Co-60 Cs-137, H-3 C-14
11	Compacted Trash	Strong Tight Container/LSA Type A Flatbed	98. Ft. ³	13622 Ft. ³	1.834	Co-60, Cs-137 C-14, H-3
4	Non Compacted Trash	55 Gal. Drum/ LSA Type A Cask	7.5 Ft. ³	397.5 Ft. ³	22.456	Co-60, Cs-134 Cs-137, C-14 H-3
13	Compacted & Non Compacted Trash Mixed Shipments	Strong Tight Container/LSA Type A Flatbed	98. Ft. ³	18522 Ft. ³	5.088	Co-60, Cs-134 C-14, H-3 Zn-65
1	Non-Compacted & Solidified Trash & Liquid	55 Gal. Drum/ LSA Type A Cask	7.5 Ft. ³	105 Ft. ³	9.979	Zn-65, Co-60 C-14, Cs-134 Cs-137, H-3

ATTACHMENT
PEACH BOTTOM UNITS 2 & 3
January 1 to June 30, 1985 CLASSES OF SOLID RADIOACTIVE WASTE SHIPMENTS

Total # of Shipments	Waste Description (Source of Waste)	Container/Type	Individual Container Volume	Total (Waste & Container) Volume	Total Curie	Principal Radionuclides
<u>Class B</u>						
15	Dewatered Resin	HIC/LSA Type A Cask	7.5 Ft. ³	1575 Ft. ³	316.3	Zn-65, Cs-134 Co-60, Cs-137
<u>Class A & B</u>						
2	Dewatered Resin	HIC/LSA Type A Cask	7.5 Ft. ³	210 Ft. ³	16.741	Zn-65, Cs-134 Co-60, Cs-137
<u>Class C</u>						
4	Dewatered Resin	HIC/Type B	7.5 Ft. ³	165 Ft. ³	1111.6	CR-51, Mn-54 Co-58, Zn-65 Cs-134, Cs-137 Co-60
1	Control Rod Blades	HIC/Highway Route Controlled (Large Quantity)	26.2 Ft. ³	26.2 Ft. ³	9110.8	Co-60, Fe-55 Mn-54, Ni-63