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April 25, 2004

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Peach Bottom Atomic Power Station Unit Nos. 2 and 3
& Independent Spent Fuel Storage Installation (ISFSI)
Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278 & ISFSI Docket 72-29

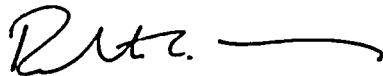
SUBJECT: Radioactive Effluent Release Report No. 46
January 1, 2003 through December 31, 2003

Enclosed are two copies of the Radioactive Effluent Release Report No. 46,
January 1, 2003 through December 31, 2003 for Peach Bottom Atomic Power
Station Unit Nos. 2 and 3.

This report is being submitted in compliance with 10CFR 50.36a (2) and the
Technical Specifications of Operating Licenses DPR-44 and DPR-56, and to
fulfill the requirements of Regulatory Guide 10.1. Additionally, this report
is submitted to satisfy annual effluent reporting requirements of
10CFR72.44(d)(3).

No Revisions were made to the Offsite Dose Calculation Manual (ODCM) or
Station Process Control Program (PCP) during this report period.

Sincerely,



Robert C. Braun
Site Vice President,
Peach Bottom Atomic Power Station

RCB/JAS/FLJ/dlo

Enclosure

Cc: H. J. Miller, Administrator, Region I, USNRC
J. Jang, Region I, USNRC
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ccn 04-14042

IE48

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

**PBAPS Independent Spent Fuel Storage Installation
Docket Number 72-29**

RADIOACTIVE EFFLUENT RELEASE REPORT

NO. 46

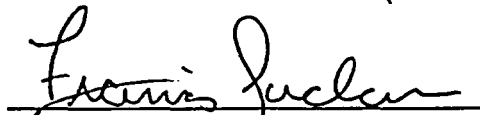
JANUARY 1, 2003 THROUGH DECEMBER 31, 2003

**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)


Chemistry / Radwaste Manager

INTRODUCTION

In accordance with the Reporting Requirements of Technical Specification 5.6.3 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, 2003 through December 31, 2003. 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 Offsite Dose Calculation Manual Specification limits.

There were three unplanned releases of liquid radioactive material.

There were no gaseous or liquid radioactive releases from the Independent Spent Fuel Storage Installation, NRC Docket No. 72-29 (ISFSI).

There were no changes to the station Process Control Program.

There were no changes to the ODCM during this reporting period. However, several procedures have been introduced which either relate to the ODCM or relate to this report.

The following common procedures provide consistent expectations and standards for Radioactive Effluents Controls Program.

- CY-AA-170-2100, Estimated Errors of Effluent Measurement
- CY-AA-170-000, Radioactive Effluent and Environmental Monitoring Program
- CY-AA-170-100, Radiological Environmental Monitoring Program
- CY-AA-170-200, Radioactive Effluent Controls Program
- CY-AA-170-300, Offsite Dose Calculation Manual Administration
- CY-AA-170-2100, Estimated Errors of Effluent Measurement
- CY-AA-170-3100, Offsite Dose Calculation Manual Revisions

1. Regulatory Limits

A. Noble Gases:

- | | | | | |
|----|---------------------|--------------|---|---------------------------|
| 1. | ≤ 500 mRem/Yr | - total body | - | ODCMS 3.8.C.1.a |
| | ≤ 3000 mRem/Yr | - skin | | |
| 2. | ≤ 10 mRad | - air gamma | - | quarterly air dose limits |
| | ≤ 20 mRad | - air beta | | ODCMS 3.8.C.2.a and b |
| 3. | ≤ 20 mRad | - air gamma | - | yearly air dose limits |
| | ≤ 40 mRad | - air beta | | ODCMS 3.8.C.2.c and d |

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

- | | | | | |
|----|---------------------|-------------|---|--|
| 1. | ≤ 1500 mRem/Yr | - any organ | - | ODCMS 3.8.C.1.b |
| 2. | ≤ 15 mRem | - any organ | - | quarterly dose limits
ODCMS 3.8.C.3.a |
| 3. | ≤ 30 mRem | - any organ | - | yearly dose limits
ODCMS 3.8.C.3.b |

C. Liquid Effluents

- | | | | | |
|----|--|--------------|---|-----------------------|
| 1. | Concentration ≤ 10 times 10 CFR 20, Appendix B, Table 2, Col. 2 | | - | ODCMS 3.8.B.1.a |
| 2. | ≤ 3.0 mRem | - total body | - | quarterly dose limits |
| | ≤ 10 mRem | - any organ | | ODCMS 3.8.B.2.a |
| 3. | ≤ 6.0 mRem | - total body | - | yearly dose limits |
| | ≤ 20 mRem | - any organ | | ODCMS 3.8.B.2.b |

D. 40 CFR 190 and 10 CFR 72.104

- | | | | |
|-----------------|------------------------------------|---|-----------------|
| ≤ 25 mRem | - total body | - | ODCMS 3.8.D.1.a |
| ≤ 75 mRem | - thyroid | | ODCMS 3.8.D.1.b |
| ≤ 25 mRem | - any other organ | | ODCMS 3.8.D.1.c |
| ≤ 3.0 mRem | - from liquid and gaseous effluent | | ODCMS 3.8.D.1.d |
| ≤ 55 mRem | - thyroid from gases | | ODCMS 3.8.D.1.e |

2. Maximum Permissible Concentrations:

Gaseous dose rates rather than effluent concentrations are used to calculate permissible release rates for gaseous releases. The maximum permissible dose rates for gaseous releases are defined in ODCMS 3.8.C.1a. and 3.8.C.1.b.

The Effluent Concentrations Limits (ECL) specified in 10 CFR 20, Appendix B, Table 2, Column 2 times 10, for identified nuclides, are used to calculate permissible release rates and concentrations for liquid release per Peach Bottom Offsite Dose Calculation Manual Specification 3.8.B.1.

The total activity concentration for all dissolved or entrained gases is limited to $\leq 2\text{E-}04 \mu\text{Ci/ml}$.

3. Average Energy:

The Peach Bottom ODCM limits the dose equivalent rates due to the release of noble gases to less than or equal to 500 mRem/year to the total body and less than or equal to 3000 mRem/year to the skin. Therefore, the average beta and gamma energies of the radionuclide mixture in releases of fission and activation gases as described in Regulatory Guide 1.21, "Measuring, Evaluation, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," are not applicable to Peach Bottom.

4. Measurements and Approximations of Total Radioactivity:

A. Fission and Activation Gases:

The method used for Gamma Isotopic Analysis is the Canberra Genie System with a gas Marinelli beaker. Grab samples are taken and analyzed at least monthly to determine the isotopic mixture of noble gas activity released for the month. Airborne effluent gaseous activity was continuously monitored and recorded in accordance with ODCMS Table 4.8.C.1. The data from the noble gas radiation monitor was analyzed to report noble gas effluent activities. When no activity was found in the grab isotopic analysis, the isotopic mixture was assumed to be that specified in ODCM IV.B. If activity was found in the grab isotopic analysis, the isotopic mixture for the Noble Gas Monitor was determined from that isotopic mixture.

B. Iodines:

The method used is the Canberra Genie System with a charcoal cartridge. Iodine activity was continuously sampled and analyzed in accordance with ODCMS Table 4.8.C.1.

C. Particulates:

The method used is the Canberra Genie System with a particulate filter (47 mm). Particulate activity was continuously sampled and analyzed in accordance with ODCM Table 4.8.C.1.

Composite particulate air samples and gross alpha were submitted to an offsite vendor laboratory for analysis of Sr-89, Sr-90 and gross alpha.

D. Liquid Effluents:

Gamma isotopic activity concentrations are determined on each batch of liquid effluent prior to release using the Canberra Genie System in accordance with ODCMS Table 4.8.B.1. The total activity of a released batch is determined by multiplying each nuclide's concentration by the total volume discharged.

Composite liquid radwaste samples counted for tritium and submitted to an offsite vendor laboratory for analysis of Fe-55, Sr-89, Sr-90 and gross alpha.

E. Estimated Total Error Present

CY-AA-170-2100, *Estimated Errors of Effluent Measurements*, provides the methodology to obtain an overall estimate of the error associated with radioactive effluents.

Facility: Peach Bottom Units 2 & 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLC

5. Batch Releases:

A. Liquid:

	QTR 1	QTR 2	QTR 3	QTR 4
Number of batch releases:	12	7	5	12
Total Time for batch releases (minutes)	2854	1791	1143	2744
Maximum time period for batch release (minutes):	282	307	275	290
Average time period for batch release (minutes):	238	256	229	229
Minimum time period for batch release (minutes):	140	155	80	80
Dilution volume (liters):	7.29E9	8.67E9	5.84E9	1.25E10

B. Gaseous:

	QTR 1	QTR 2	QTR 3	QTR 4
Number of batch releases:	0	0	0	0
Total Time for batch releases (minutes)	0	0	0	0
Maximum time period for batch release (minutes):	0	0	0	0
Average time period for batch release (minutes):	0	0	0	0
Minimum time period for batch release (minutes):	0	0	0	0

6. Abnormal Releases:

A. Liquid:

1. Event description – 2C Residual Heat Removal (RHR) to High Pressure Service Water (HPSW) leak

On 5/16/01, routine sampling of the HPSW effluent to the discharge canal detected low-level radioactive contamination. Subsequent investigation determined that a trace amount (0.060 gpm) of condensate stay-full or primary coolant water was leaking through the Unit 2C RHR heat exchanger into the 2A loop of the HPSW system. Multiple attempts to locate and repair this leak have been partially successful. However, the 2C RHR continued to be a source of contamination through all of 2003

Analysis of Releases

It was estimated that the contaminated water released to the discharge canal for all of 2003 was responsible for $7.25\text{E-}4$ mRem total body dose, and $4.28\text{E-}3$ mRem Critical Organ dose. This dose contribution was well below the limits specified in the ODCM.

Representative samples were analyzed for all the parameters of radioactive effluent releases. The dose contributions and isotope quantities from the releases were added to this Radioactive Effluent Release Report for the applicable reporting periods.

2. Event description – 3A Residual Heat Removal (RHR) to High Pressure Service Water (HPSW) leak

On 09/30/02, routine sampling of the 3A HPSW effluent radiation monitor to the discharge canal detected low-level radioactive contamination. Subsequent investigation determined that a trace amount (0.012 gpm) of condensate stay-full or primary coolant water was leaking through the Unit 3A RHR heat exchanger into the 3A loop of the HPSW system. Attempts to locate and repair this leak have been partially successful. However, the 3A RHR continued to be a source of contamination through all of 2003

Analysis of Releases

It was estimated that the contaminated water released to the discharge canal for all of 2003 was responsible for $8.94\text{E-}4$ mRem total body dose, and $2.29\text{E-}3$ mRem Critical Organ dose. This dose contribution was well below the limits specified in the ODCM.

Representative samples were analyzed for all the parameters of radioactive effluent releases. The dose contributions and isotope quantities from the releases were added to this Radioactive Effluent Release Report for the applicable reporting periods.

3. Event description – 3D Residual Heat Removal (RHR) to High Pressure Service Water (HPSW) leak

On 07/11/02, sampling of the 3B HPSW effluent radiation monitor, in response to the HPSW radiation alarm during pump run, detected low-level radioactive contamination. Subsequent investigation determined that a trace amount (0.071 gpm) of condensate stay-full or primary coolant water was leaking through the Unit 3D RHR heat exchanger into the 3B loop of the HPSW system. The leak was repaired on 07/09/03.

Analysis of Releases

It was estimated that the contaminated water released to the discharge canal for all of 2003 was responsible for $1.41\text{E-}3$ mRem total body dose, and $2.37\text{E-}3$ mRem Critical Organ dose. This dose contribution was well below the limits specified in the ODCM.

Representative samples were analyzed for all the parameters of radioactive effluent releases. The dose contributions and isotope quantities from the releases were added to this Radioactive Effluent Release Report for the applicable reporting periods.

B. Gaseous:

No abnormal releases.

7. Minimum Detectable Concentrations:

A. Liquid:

If a radionuclide was not detected, < LLD was reported for that isotope. Samples were analyzed with techniques that achieved the required Lower Limits of Detection (LLD) as specified in Offsite Dose Calculation Manual Specification Table 4.8.B.1, Radioactive Liquid Waste Sampling and Analysis. In all cases, the LLD requirements were satisfied.

B. Gaseous:

If a radionuclide was not detected, < LLD was reported for that isotope. Samples were analyzed with techniques which achieved the required Lower Limits of Detection (LLD) as specified in Offsite Dose Calculation Manual Specification Table 4.8.C.1, Radioactive Gaseous Waste Sampling and Analysis from Main Stack and Vent Stack. In all cases, the LLD requirements were satisfied.

8. Meteorological Data

The meteorological data can be found in the Annual Radiation Dose Assessment Report for January 1, 2003 through December 31, 2003.

Gaseous Effluents - Summation Of All Releases

Period: 2003

A. Fission & Activation Gases	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est. Total Error %
1. Total Release	Ci	8.24E+01	9.51E+01	2.98E+02	3.09E+02	3.51E+01
2. Average release rate for the period	μCi/sec	1.05E+01	1.21E+01	3.78E+01	3.93E+01	
3. Percent of ODCM limit - Gamma	%	1.68E-01	1.94E-01	3.21E-01	2.61E-01	
- Beta		5.90E-02	6.75E-02	1.12E-01	1.01E-01	

B. Iodines

1. Total iodine - 131	Ci	8.44E-05	1.20E-04	5.59E-04	3.11E-04	1.76E+01
2. Average release rate for period	μCi/sec	1.07E-05	1.52E-05	7.11E-05	3.96E-05	
3. Percent of ODCM Limit	%	*	*	*	*	

C. Particulates

1. Particulates with half-lives > 8 days	Ci	1.27E-04	7.15E-05	7.91E-05	1.62E-04	1.94E+01
2. Average release rate for the period	μCi/sec	1.61E-05	9.10E-06	1.01E-05	2.06E-05	
3. Percent of ODCM Limit	%	*	*	*	*	
4. Gross alpha radioactivity	Ci	5.37E-06	<LLD	<LLD	<LLD	

D. Tritium

1. Total release	Ci	<LLD	<LLD	1.89E+01	<LLD	1.11E+01
2. Average release rate for the period	μCi/sec	<LLD	<LLD	2.40E+00	<LLD	
3. Percent of ODCM Limit	%	*	*	*	*	

E. Iodine 131 & 133, Tritium & Particulate

1. Percent of ODCM limit	%	3.86E-03	5.37E-03	2.33E-02	1.34E-02	
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* ODCM limit is for combined iodine, tritium and particulate dose, which is shown in Item E.

Gaseous Effluents Release Point - Main Stack

Period: 2003

NUCLIDES RELEASED		CONTINUOUS MODE				BATCH MODE			
1. Fission gases	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Kr-85	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-85m	Ci	<LLD	1.53E+00	1.82E+00	6.74E+00	<LLD	<LLD	<LLD	<LLD
Kr-87	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-88	Ci	<LLD	<LLD	6.16E-01	3.63E-01	<LLD	<LLD	<LLD	<LLD
Xe-133	Ci	<LLD	6.95E+00	1.18E+02	3.94E+01	<LLD	<LLD	<LLD	<LLD
Xe-135	Ci	<LLD	2.13E+00	3.99E+01	7.18E-01	<LLD	<LLD	<LLD	<LLD
Xe-135m	Ci	<LLD	<LLD	1.07E+01	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-138	Ci	<LLD	<LLD	8.68E-01	<LLD	<LLD	<LLD	<LLD	<LLD
Ar-41	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-133m	Ci	<LLD	<LLD	1.71E+00	<LLD	<LLD	<LLD	<LLD	<LLD
Unidentified	Ci	1.78E+01	9.65E+00	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	1.78E+01	2.03E+01	1.74E+02	4.72E+01	<LLD	<LLD	<LLD	<LLD
2. Iodines	Unit								
I-131	Ci	2.30E-05	3.72E-05	2.55E-04	1.26E-04	<LLD	<LLD	<LLD	<LLD
I-133	Ci	2.59E-05	7.26E-05	1.92E-04	2.17E-05	<LLD	<LLD	<LLD	<LLD
I-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	4.89E-05	1.10E-04	4.47E-04	1.48E-04	<LLD	<LLD	<LLD	<LLD
3. Particulates	Unit								
Sr-89	Ci	3.21E-05	3.39E-05	3.01E-05	7.90E-05	<LLD	<LLD	<LLD	<LLD
Sr-90	Ci	<LLD	4.00E-08	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-134	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-137	Ci	<LLD	<LLD	<LLD	4.40E-07	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	2.26E-05	1.77E-05	5.35E-06	5.26E-05	<LLD	<LLD	<LLD	<LLD
La-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cr-51	Ci	<LLD	<LLD	3.06E-06	<LLD	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	<LLD	3.00E-07	1.06E-06	<LLD	<LLD	<LLD	<LLD	<LLD
Mo-99	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ag-110m	Ci	<LLD	<LLD	<LLD	7.60E-07	<LLD	<LLD	<LLD	<LLD
Ce-141	Ci	<LLD	<LLD	1.30E-07	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-144	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
	Ci								
	Ci								
	Ci								
	Ci								
Total for Period	Ci	5.47E-05	5.19E-05	3.97E-05	1.33E-04	<LLD	<LLD	<LLD	<LLD

Gaseous Effluents Release Point - Unit 2 & Unit 3 Roof Vents & Aux Boiler Stacks

Nuclides Released		Continuous Mode				Batch Mode			
1. Fission gases	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Kr-85m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-85m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-87	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-88	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-133	Ci	<LLD	<LLD	<LLD	1.64E+02	<LLD	<LLD	<LLD	<LLD
Xe-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-135m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-138	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ar-41	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-133m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Unidentified	Ci	6.46E+01	7.48E+01	1.24E+02	9.80E+01	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	6.46E+01	7.48E+01	1.24E+02	2.62E+02	<LLD	<LLD	<LLD	<LLD
2. Iodines	Unit								
I-131	Ci	6.14E-05	8.26E-05	3.04E-04	1.85E-04	<LLD	<LLD	<LLD	<LLD
I-133	Ci	7.63E-05	1.08E-04	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
I-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	1.38E-04	1.90E-04	3.04E-04	1.85E-04	<LLD	<LLD	<LLD	<LLD
3. Particulates	Unit								
Sr-89	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Sr-90	Ci	9.80E-07	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-134	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-137	Ci	2.19E-05	1.96E-05	3.08E-05	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
La-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cr-51	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	2.14E-05	<LLD	8.56E-06	<LLD	<LLD	<LLD	<LLD	<LLD
Mo-99	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ag-110m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-141	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-144	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Zn-65	Ci	2.78E-05	<LLD	<LLD	2.95E-05	<LLD	<LLD	<LLD	<LLD
	Ci								
	Ci								
	Ci								
Total for Period	Ci	7.20E-05	1.96E-05	3.94E-05	2.95E-05	<LLD	<LLD	<LLD	<LLD

Liquid Effluents - Summation Of All Releases

Period: 2003

A. FISSION & ACTIVATION PRODUCTS	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est. Total Error %
1. Total Release (not including tritium, gases & alpha)	Ci	2.72E-02	2.73E-02	1.62E-02	3.49E-02	2.11E+01
2. Average diluted concentration during batch discharges for the period	µCi/mL	3.73E-09	3.75E-09	2.22E-09	4.78E-09	
3. Percent of ODCM limit - Whole Body - Organ	%	5.15E-02	2.88E-02	1.01E-02	2.56E-02	
		3.47E-02	2.08E-02	1.21E-02	2.90E-02	

B. TRITIUM

1. Total Release	Ci	7.03E+00	3.44E+00	2.43E+00	3.56E+00	6.40E+00
2. Average diluted concentration during batch discharges for the period	µCi/mL	9.64E-07	3.96E-07	4.15E-07	2.84E-07	
3. Percent of ODCM limit	%	*	*	*	*	

C. DISSOLVED & ENTRAINED GASES

1. Total Release	Ci	3.66E-06	3.66E-06	3.66E-06	3.66E-06	2.11E+01
2. Average diluted concentration during batch discharges for the period	µCi/mL	5.02E-13	4.22E-13	6.27E-13	2.93E-13	
3. Percent of ODCM limit	%	*	*	*	*	

D. GROSS ALPHA ACTIVITY

1. Total release	Ci	<LLD	<LLD	<LLD	5.28E-05	2.30E+01
2. Average diluted concentration during batch discharges for the period	µCi/mL	<LLD	<LLD	<LLD	4.22E-12	

E. VOLUME OF WASTE RELEASED (prior to dilution)	Liters	6.61E+05	4.13E+05	3.05E+05	6.59E+05	5.00E+00
F. VOLUME OF DILUTION WATER USED DURING BATCH DISCHARGES	Liters	7.29E+09	8.67E+09	5.84E+09	1.25E+10	2.22E+01
G. TOTAL VOLUME OF DILUTION WATER USED DURING PERIOD	Liters	3.98E+11	5.9E+11	5.59E+11	4.73E+11	2.22E+01

* ODCM limit is combined for fission, activation products and tritium, which is shown in item A.

Liquid Effluents Release Point - Liquid Radwaste & RHR Leaks

Period: 2003

NUCLIDES RELEASED		CONTINUOUS MODE				BATCH MODE			
1. Fission gases	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Sr-89	Ci	1.86E-06	1.88E-06	6.90E-07	6.73E-06	<LLD	<LLD	<LLD	<LLD
Sr-90	Ci	6.90E-07	6.98E-07	1.79E-07	1.29E-07	<LLD	<LLD	<LLD	<LLD
Cs-134	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-137	Ci	3.73E-04	3.77E-04	9.47E-05	6.74E-05	1.18E-04	1.26E-05	<LLD	2.26E-06
I-131	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	2.88E-04	2.92E-04	2.95E-04	8.44E-04	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	1.64E-02	1.66E-02	8.32E-03	1.25E-02	3.45E-05	3.64E-05	1.12E-04	2.02E-04
Fe-59	Ci	3.47E-04	3.51E-04	3.55E-04	1.42E-03	<LLD	<LLD	<LLD	<LLD
Zn-65	Ci	1.30E-03	1.31E-03	8.25E-04	2.94E-03	6.52E-05	4.92E-05	2.41E-04	1.48E-04
Mn-54	Ci	7.15E-03	7.23E-03	4.80E-03	7.15E-03	<LLD	<LLD	3.38E-05	3.51E-05
Cr-51	Ci	7.73E-04	7.81E-04	7.90E-04	8.06E-03	<LLD	<LLD	<LLD	3.08E-04
Zr-95	Ci	1.21E-04	1.22E-04	5.43E-05	4.77E-05	<LLD	<LLD	<LLD	<LLD
Nb-95	Ci	5.15E-05	5.21E-05	5.27E-05	1.27E-04	<LLD	<LLD	<LLD	<LLD
Mo-99	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Tc-99m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
La-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-141	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ag-110m	Ci	7.25E-05	7.33E-05	2.51E-05	1.27E-04	<LLD	<LLD	5.53E-05	3.12E-04
Fe-55	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	1.01E-04	4.55E-04
P-32	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Sb-124	Ci	3.08E-05	3.11E-05	3.14E-05	9.76E-05	<LLD	<LLD	<LLD	<LLD
Hf-181	Ci	<LLD	<LLD	<LLD	2.98E-05	<LLD	<LLD	<LLD	<LLD
	Ci								
	Ci								
	Ci								
	Ci								
	Ci								
	Ci								
	Ci								
	Ci								
	Ci								
	Ci								
Total for Period	Ci	2.70E-02	2.73E-02	1.56E-02	3.34E-02	2.18E-04	9.82E-05	5.43E-04	1.46E-03
Xe-133	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	2.09E-06	<LLD
Xe-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	1.57E-06	<LLD	<LLD

Facility: Peach Bottom Units 2 & 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLCEFFLUENT & WASTE DISPOSAL ANNUAL REPORT (01/01/03-12/31/03)
PEACH BOTTOM UNITS 2 & 3

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 Curies	Principal Radionuclides
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CLASS A

17	Dewatered Resin	HIC/Type A Cask	195.7	3326.9	1.38E+02	Co-60, Zn-65, Fe-55, Cs-137, Mn-54
1	DAW (Metal)	HIC/Type A Cask	95.9	95.9	7.66E+00	Co-60, Mn-54, Fe-55, Zn-65, Ag-110m, Ni-63
X	DAW (1)	Metal Box/STC	variable	1391.0	7.31E-02	Co-60, Mn-54, Cs-137, Zn-65, Fe-55
53	DAW (2)	Metal Box/STC	variable	830.7	9.67E-02	Co-60, Mn-54, Cs-137, Zn-65, Fe-55
(*)	Dewatered Filters (2)	Metal Box/STC	variable	165.5	1.16E+00	Co-60, Cs-137, Mn-54, Zn-65, Fe-55
(*)	Incinerator Ash (2)	Metal Box/STC	variable	21.1	7.53E-02	Co-60, Fe-55, Mn-54, Cs-137, Zn-65
13	DAW (3)	Metal Box/STC	variable	3283.7	2.41E-01	Co-60, Mn-54, Cs-137, Zn-65, Fe-55

CLASS B

2	Dewatered Resin	HIC/Type A Cask	195.7	391.4	2.14E+02	Co-60, Fe-55, Zn-65, Cs-137, Mn-54
1	Dewatered Resin	HIC/Type B Cask	135.8	135.8	6.25E+02	Co-60, Fe-55, Mn-54, Ni-63, Zn-65
1	Dewatered Filters	HIC/Type B Cask	120.3	120.3	5.90E+01	Co-60, Mn-54, Zn-65, Fe-55, Fe-59
1	Dewtrd Filters & DAW	HIC/Type B Cask	120.3	120.3	1.30E+02	Co-60, Mn-54, Fe-55, Cr-51, Zn-65

CLASS C

4	Irradiated Hardware	Liner/Type B Cask	57.4	229.6	5.81E+04	Co-60, Fe-55, Ni-63, Mn-54, Ta-182
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TOTALS 93				10112.2	5.93E+04	
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NOTES:

- (1) - Indicates actual total PBAPS waste shipped from Radiological Assistance, Consulting & Engineering (RACE) to burial after processing.
 (2) - Indicates actual total PBAPS waste shipped from Duratek to burial after processing.
 (3) - Indicates actual total PBAPS waste shipped from Alaron to burial after processing.
 (*) - Shipment total included with DAW from Duratek as these shipments contained comingled waste streams.