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SUBJECT: Revised "Semiannual Radiactive Effluent Release Rept,
Jan-June 1988." W/881118 Ltr.

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U. S. Nuclear Regulatory Commission
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Gentlemen:


Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Semi-Annual Radioactive Effluent Release Report

Pursuant to the requirements of Technical Specification 6.9.4, the Radioactive Effluent Release Report for the period of January 1, 1988 through June 30, 1988 for Turkey Point Units 3 and 4 was provided in Florida Power & Light Company letter L-88-367, dated August 29, 1988. As stated in that letter, Sr-89/90 and Fe-55 results were not available at that time.

Attached is a resubmittal of the completed Radioactive Effluent Release Report for the period of January 1, 1988 through June 30, 1988.

Should there be any questions regarding this information, please contact us.

Very truly yours,


W. F. Conway
Senior Vice President - Nuclear

WFC/SDF/gp

Attachment

cc: Malcolm L. Ernst, Acting Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

IE48

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1951

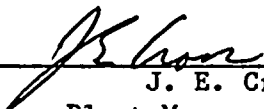
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TURKEY POINT PLANT
UNITS 3 AND 4
REVISED SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY THROUGH JUNE 1988

SUBMITTED BY
NUCLEAR CHEMISTRY DEPARTMENT
TURKEY POINT PLANT
FLORIDA POWER AND LIGHT COMPANY


R. N. Steinke - Chemistry


J. E. Cross
Plant Manager-Nuclear

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TURKEY POINT UNITS 3 AND 4
EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT
SUPPLEMENTAL INFORMATION
JANUARY 1988 THROUGH JUNE 1988

1.0 Regulatory Limits

1.1 Liquid Effluents

- a) The concentration of radioactive material released in liquid effluents to unrestricted areas shall not exceed the concentrations specified in 10CFR20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall not exceed $2 \times 10^{-4} \mu\text{Ci/ml}$.
- b) The dose or dose commitment per reactor to a member of the public from any radioactive materials in liquid effluent released to unrestricted areas shall be limited, during any calendar quarter, to ≤ 1.5 mrem to the total body and to ≤ 5 mrem to any organ, and, during any calendar year, to ≤ 3 mrem to the total body and ≤ 10 mrem to any organ.

1.2 Gaseous Effluents

- a) The dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the site boundary shall be limited to the following:

Less than or equal to 500 mrem/yr to the total body and less than or equal to 3000 mrem/yr to the skin due to noble gases and less than or equal to 1500 mrem/yr to any organ due to I-131, I-133, tritium and for all radioactive materials in particulate form with half lives greater than 8 days.
- b) The air dose per reactor to areas at and beyond the site boundary due to noble gases released in gaseous effluents shall be limited, during any calendar quarter, to ≤ 5 mrad for gamma radiation and ≤ 10 mrad for beta radiation and, during any calendar year, to ≤ 10 mrad for gamma radiation and ≤ 20 mrad for beta radiation.
- c) The dose per reactor to a member of the public, due to I-131, I-133, tritium and to particulates with half-lives greater than 8 days in airborne effluents released to areas at and beyond the site boundary shall not exceed 7.5 mrem to any organ during any calendar quarter and shall not exceed 15 mrem to any organ during any calendar year.

2.0 Maximum Permissible Concentrations

The maximum permissible concentrations for liquid and airborne releases are described in Sections 1.1-a and 1.2-a of this report.

3.0 Average Energy

The average energy of fission and activation gases in gaseous effluents is not applicable.

4.0 Measurements and Approximations of Total Radioactivity

All liquid and airborne discharges to the environment during this reporting period were analyzed in accordance with Technical Specification requirements. The minimum frequency of analysis as required by Regulatory Guide 1.21 was met or exceeded.

4.1 Liquid Effluents

Aliquots of representative pre-release samples were either isotopically analyzed for gamma emitting isotopes on a multichannel analyzer, or evaporated and analyzed for gross beta-gamma activity in a 2π gas flow proportional counter. The efficiency of the gas flow proportional counter is adjusted so that the activity determined by gross beta-gamma analysis approximates the isotopic activities determined by gamma spectrum analysis and selected beta determinations, exclusive of tritium and dissolved gases.

The above procedure was followed for all releases from the waste disposal system and for secondary system batch releases. Frequent periodic sampling and analysis were used to conservatively determine if any radioactivity was being released via the steam generator blowdown system.

Monthly and quarterly composite samples for the waste disposal system were prepared to give proportional weight to each liquid release made during the designated period of accumulation. The monthly composite was analyzed for tritium and gross alpha activity. Tritium was determined by use of liquid scintillation techniques and gross alpha radioactivity was determined by use of a 2π gas flow proportional counter. The quarterly composite was analyzed for Sr-89/90 and Fe-55 by chemical separation.

All radioactivity concentrations determined from analysis of a pre-release composite were multiplied by the total represented volume of the liquid waste released to determine the total quantity of each isotope and of gross alpha activity released during the compositing period.

Aliquots of representative pre-release samples from the waste disposal system were analyzed on a per release basis for dissolved fission and activation gases by use of gamma spectrum analysis. The resulting isotope concentrations were multiplied by the total volume released in order to estimate the total dissolved gases released.

The liquid waste treatment system is shared by both units at the site and generally all liquid releases are allocated on a 50/50 basis to each unit.

4.2 Gaseous Effluents

Airborne releases to the atmosphere occurred from: release of gas decay tanks, the instrument bleedline, containment purges, and sporadic releases incidental to operation of the plant. The techniques employed in determining the radioactivity in airborne releases are:

- a) Gamma spectrum analysis for fission and activation gases,
- b) Removal of particulate material by filtration and subsequent gamma-spectrum analysis, Sr-89/90 determination and gross alpha analysis,
- c) Absorption of halogen radionuclides on a charcoal filter and subsequent gamma-spectrum analysis, and
- d) Analysis of water vapor in a gas sample for tritium using liquid scintillation techniques.

All sporadic gas releases from the plant which were not accounted for by the above methods were conservatively estimated as curies of Xe-133 by use of the plant vent process monitor recorder chart and the current calibration curve for the monitor.

Portions of the gas waste treatment system are shared by both units and generally all gas releases from the shared system are allocated on a 50/50 basis to each unit.

4.3 Estimate of Errors

a) Sampling Error

The error associated with volume measurement devices, flow measuring devices, etc., based on calibration data and design tolerances has been conservatively estimated to be collectively less than $\pm 10\%$.

b) Analytical Error

Our quarterly Q.C. cross-check program involves counting unknown samples provided by an independent external lab. The errors associated with our analysis of these unknown samples, and reported to us by the independent lab, were used as the basis for deriving the following analytical error terms.

<u>Nuclide Type</u>	<u>Average Error</u>	<u>Maximum Error</u>
Liquid	$\pm 5\%$	$\pm 7\%$
Gaseous	$\pm 6\%$	$\pm 8\%$

5.0 BATCH RELEASES

5.1 Liquid

	<u>Unit 3</u>	<u>Unit 4</u>	
a) Number of batch releases	<u>1.14 E+02</u>	<u>1.14 E+02</u>	
b) Total time period of batch releases	<u>1.09 E+04</u>	<u>1.09 E+04</u>	Minutes
c) Maximum time period for a batch releases	<u>2.25 E+02</u>	<u>2.25 E+02</u>	Minutes
d) Average time period for a batch release	<u>9.56 E+01</u>	<u>9.56 E+01</u>	Minutes
e) Minimum time period for a batch release	<u>5.70 E+01</u>	<u>5.70 E+01</u>	Minutes
f) Average stream flow during period of release of effluent into a flowing stream	<u>2.84 E+06</u>	<u>2.84 E+06</u>	GPM

5.2 Gaseous

a) Number of batch releases	<u>1.95 E+01</u>	<u>1.85 E+01</u>	
b) Total time period of batch releases	<u>1.10 E+03</u>	<u>8.63 E+02</u>	Minutes
c) Maximum time period for a batch release	<u>2.40 E+02</u>	<u>2.40 E+02</u>	Minutes
d) Average time period for a batch release	<u>5.66 E+01</u>	<u>4.66 E+01</u>	Minutes
e) Minimum time period for a batch release	<u>2.00 E+01</u>	<u>2.00 E+01</u>	Minutes

6.0 UNPLANNED RELEASES

6.1 Liquid

	<u>UNIT 3</u>	<u>UNIT 4</u>	
a) Number of releases	<u>0</u>	<u>0</u>	
b) Total activity releases	<u>0</u>	<u>0</u>	Curies

6.2 Gaseous

a) Number of releases	<u>0</u>	<u>0</u>	
b) Total activity releases	<u>0</u>	<u>0</u>	Curies

6.3 See attachments (if applicable) for:

- a) A description of the event and equipment involved.
- b) Cause(s) for the unplanned release.

NOTE: No unplanned releases during this period.

7.0 The assessment of radiation dose from radioactive effluents to the general public due to their activities inside the site boundary is part of the Year Ending Semiannual Report.

8.0 Offsite Dose Calculation Manual Revisions

There were no ODCM revisions during this reporting period.

9.0 Solid Waste and Irradiated Fuel Shipments

No irradiated fuel shipments were made from the site. Common solid waste from Turkey Point Units 3 and 4 were shipped jointly. A summation of these shipments is given in Table 5 of this report.

10.0 Process Control Program Revisions

There were no changes to the process control program during this reporting period.

**FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT PLANT
SEMIANNUAL REPORT
JANUARY 1988 THROUGH JUNE 1988**

**UNIT 3 TABLE 1
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES**

Units	Quarter 1	Quarter 2
-------	-----------	-----------

A. Fission and Activation Products

1. Total Release (not including tritium, gases, alpha)	Ci	4.23 E-02	4.37 E-02
2. Average diluted concentration during period	μCi/ml	6.94 E-10	7.78 E-10

B. Tritium

1. Total Release	Ci	5.45 E + 01	5.15 E + 01
2. Average diluted concentration during period	μCi/ml	8.95 E-07	9.15 E-07

C. Dissolved and Entrained Gases

1. Total Release	Ci	9.45 E-02	4.00 E-02
2. Average diluted concentration during period	μCi/ml	1.55 E-09	7.12 E-10

D. Gross Alpha Radioactivity

1. Total Release	Ci	<7.12 E-09*	<7.12 E-09*
------------------	----	-------------	-------------

E. Volume of Batch Waste Released (prior to dilution)	Liters	1.47 E + 06	1.02 E + 06
---	--------	-------------	-------------

F. Volume of Continuous Waste Released (prior to dilution)	Liters	6.85 E + 06	1.47 E + 07
--	--------	-------------	-------------

G. Volume of Dilution Water Used During Period	Liters	6.09 E + 10	5.62 E + 10
--	--------	-------------	-------------

*MDA Value in μCi/ml

FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT PLANT
SEMIANNUAL REPORT
JANUARY 1988 THROUGH JUNE 1988

UNIT 3 TABLE 2
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
Ag-110m	Ci	-----	-----	1.15 E-03	6.48 E-04
Ba-139	Ci	-----	-----	-----	2.41 E-05
Co-57	Ci	-----	-----	1.59 E-06	-----
Co-58	Ci	-----	-----	5.81 E-03	7.69 E-03
Co-60	Ci	-----	-----	1.74 E-02	1.18 E-02
Cr-51	Ci	-----	-----	3.94 E-04	4.51 E-03
Cs-134	Ci	-----	-----	1.15 E-03	1.98 E-03
Cs-136	Ci	-----	-----	-----	7.45 E-06
Cs-137	Ci	-----	-----	3.60 E-03	6.04 E-03
I-131	Ci	3.56 E-05	8.14 E-04	3.75 E-04	1.86 E-04
I-133	Ci	1.50 E-05	1.77 E-04	-----	-----
Fe-59	Ci	-----	-----	-----	1.94 E-04
La-140	Ci	-----	-----	1.34 E-03	7.31 E-04
Mn-54	Ci	-----	-----	1.80 E-03	-----
Mo-99/Tc-99m	Ci	-----	-----	1.92 E-04	1.04 E-04
Nb-95	Ci	-----	-----	4.58 E-06	1.48 E-04
Nb-97	Ci	-----	-----	-----	3.34 E-06
Na-24	Ci	-----	-----	4.31 E-06	4.11 E-06
Sb-124	Ci	-----	-----	5.73 E-05	2.23 E-04
Sb-125	Ci	-----	-----	3.27 E-03	5.39 E-03
Ru-103	Ci	-----	-----	-----	4.00 E-05
Sn-117m	Ci	-----	-----	-----	1.63 E-05
Zr-95	Ci	-----	-----	-----	2.01 E-05
Fe-55	Ci	-----	-----	5.69 E-03	2.96 E-03
Unidentified	Ci				
Total for Period Above	Ci	5.06 E-05	9.91 E-04	4.22 E-02	4.27 E-02

TURKEY POINT PLANT
SEMIANNUAL REPORT
JANUARY 1988 THROUGH JUNE 1988
UNIT 3 TABLE 2 (Continued)
LIQUID EFFLUENTS

Liquid Dissolved Gas

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
Kr-85m	Ci	-----	-----	-----	1.53 E-06
Xe-131m	Ci	-----	-----	1.67 E-04	4.34 E-04
Xe-133	Ci	-----	-----	9.17 E-02	3.94 E-02
Xe-133m	Ci	-----	-----	2.40 E-03	1.20 E-04
Xe-135	Ci	-----	-----	2.33 E-04	1.40 E-05
Total for Period Above	Ci	-----	-----	9.45 E-02	4.00 E-02

LIQUID EFFLUENTS -DOSE SUMMATION
JANUARY 1988 THROUGH JUNE 1988

UNIT 3

Age Group: Teenager

Location: Cooling Canal

Shoreline Deposition

Dose (mRem)

% of Annual Limit

Total Body

3.48 E-03

1.16 E-01

FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT PLANT
SEMIANNUAL REPORT
JANUARY 1988 THROUGH JUNE 1988
UNIT 3 TABLE 3
GAS EFFLUENTS - SUMMATION OF ALL RELEASES

Units	Quarter 1	Quarter 2
-------	-----------	-----------

A. Fission and Activation Products

1. Total Release	Ci	2.02 E + 02	2.31 E + 02
2. Average Release Rate for Period	µCi/sec	2.57 E + 01	2.93 E + 01

B. Iodines

1. Total Iodine-131	Ci	1.70 E - 03	1.17 E - 03
2. Average Release Rate for Period	µCi/sec	2.16 E - 04	1.49 E - 04

C. Particulates

1. Particulates T - 1/2 > 8 Days	Ci	6.19 E - 05	2.66 E - 05
2. Average Release Rate for Period	µCi/sec	7.88 E - 06	3.38 E - 06
3. Gross Alpha Radioactivity	Ci	1.62 E - 07	2.06 E - 07

D. Tritium

1. Total Release	Ci	5.15 E + 01	3.60 E + 01
2. Average Release Rate for Period	µCi/sec	6.55 E - 00	4.58 E - 00

TURKEY POINT PLANT
SEMIANNUAL REPORT
JANUARY 1988 THROUGH JUNE 1988
UNIT 3 TABLE 4
GASEOUS EFFLUENTS

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2

1. Fission Gases

Ar-41	Ci	1.11 E-01	2.11 E-01	-----	1.45 E-01
Kr-85	Ci	-----	-----	4.04 E-01	-----
Kr-85m	Ci	-----	7.86 E-03	2.48 E-02	1.44 E-02
Kr-87	Ci	-----	9.65 E-04	-----	4.49 E-05
Kr-88	Ci	-----	3.15 E-03	6.05 E-03	5.90 E-03
Xe-131m	Ci	8.96 E-03	2.49 E+00	1.28 E+00	1.94 E-01
Xe-133	Ci	1.27 E+02	2.06 E+02	7.06 E+01	1.55 E+01
Xe-133m	Ci	2.20 E-02	8.74 E-02	1.50 E+00	3.67 E+00
Xe-135	Ci	1.41 E-02	1.33 E-01	9.72 E-01	1.93 E+00
Unidentified	Ci				
Total for Period Above	Ci	1.27 E+02	2.09 E+02	7.48 E+01	2.15 E+01

2. Iodines

Br-82	Ci	1.08 E-04	2.28 E-04
I-131	Ci	1.70 E-03	1.17 E-03
I-133	Ci	2.74 E-03	1.03 E-03
I-135	Ci	7.00 E-04	1.27 E-03
Total for Period Above	Ci	5.25 E-03	3.70 E-03

FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT PLANT
SEMIANNUAL REPORT
JANUARY 1988 THROUGH JUNE 1988
UNIT 3 TABLE 4 (Continued)
GASEOUS EFFLUENTS

Nuclides Released	Units	Continuous Mode	
		Quarter 1	Quarter 2

3. Particulates

Ba-140	Ci	7.70 E-06	8.60 E-06
Ce-144	Ci	1.20 E-05	-----
Co-58	Ci	-----	1.01 E-06
Co-60	Ci	2.25 E-06	1.91 E-06
Cs-134	Ci	1.17 E-05	8.45 E-07
Cs-136	Ci	2.58 E-06	-----
Cs-137	Ci	1.64 E-05	1.18 E-05
I-131	Ci	6.52 E-06	1.19 E-06
La-140	Ci	1.90 E-06	-----
Sr-89	Ci	8.90 E-07	1.24 E-06
Unidentified	Ci		
Total for Period Above	Ci	6.19 E-05	2.66 E-05

**FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT PLANT
SEMIANNUAL REPORT
JANUARY 1988 THROUGH JUNE 1988
UNIT 4 TABLE 1
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES**

Units	Quarter 1	Quarter 2
-------	-----------	-----------

- A. Fission and Activation Products

1. Total Release (not including tritium, gases, alpha)	Ci	4.22 E-02	4.27 E-02
2. Average diluted concentration during period	µCi/ml	6.93 E-10	7.59 E-10

B. Tritium

1. Total Release	Ci	5.45 E+01	5.14 E+01
2. Average diluted concentration during period	µCi/ml	8.95 E-07	9.15 E-07

C. Dissolved and Entrained Gases

1. Total Release	Ci	9.45 E-02	4.00 E-02
2. Average diluted concentration during period	µCi/ml	1.55 E-09	7.12 E-10

D. Gross Alpha Radioactivity

1. Total Release	Ci	<7.12 E-09*	<7.12 E-09*
------------------	----	-------------	-------------

E. Volume of Batch Waste Released (prior to dilution)

Liters	1.47 E+06	1.02 E+06
--------	-----------	-----------

F. Volume of Continuous Waste Released (prior to dilution)

Liters	0	0
--------	---	---

G. Volume of Dilution Water Used During Period

Liters	6.09 E+10	5.62 E+10
--------	-----------	-----------

*MDA Value in µCi/ml

FLORIDA POWER AND LIGHT COMPANY
 TURKEY POINT PLANT
 SEMIANNUAL REPORT
 JANUARY 1988 THROUGH JUNE 1988
 UNIT 4 TABLE 2
 LIQUID EFFLUENTS

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
Ag-110m	Ci	-----	-----	1.15 E-03	6.48 E-04
Ba-139	Ci	-----	-----	-----	2.41 E-05
Co-57	Ci	-----	-----	1.59 E-06	-----
Co-58	Ci	-----	-----	5.81 E-03	7.69 E-03
Co-60	Ci	-----	-----	1.74 E-02	1.18 E-02
Cr-51	Ci	-----	-----	3.94 E-04	4.51 E-03
Cs-134	Ci	-----	-----	1.15 E-03	1.98 E-03
Cs-136	Ci	-----	-----	-----	7.45 E-06
Cs-137	Ci	-----	-----	3.60 E-03	6.04 E-03
I-131	Ci	-----	-----	3.75 E-04	1.86 E-04
Fe-59	Ci	-----	-----	-----	1.94 E-04
La-140	Ci	-----	-----	1.34 E-03	7.31 E-04
Mn-54	Ci	-----	-----	1.80 E-03	-----
Mo-99/Tc-99m	Ci	-----	-----	1.92 E-04	1.04 E-04
Nb-95	Ci	-----	-----	4.58 E-06	1.48 E-04
Nb-97	Ci	-----	-----	-----	3.34 E-06
Na-24	Ci	-----	-----	4.31 E-06	4.11 E-06
Sb-124	Ci	-----	-----	5.73 E-05	2.23 E-04
Sb-125	Ci	-----	-----	3.27 E-03	5.39 E-03
Ru-103	Ci	-----	-----	-----	4.00 E-05
Sn-117m	Ci	-----	-----	-----	1.63 E-05
Zr-95	Ci	-----	-----	-----	2.01 E-05
Fe-55	Ci	-----	-----	5.69 E-03	2.96 E-03
Unidentified	Ci				
Total for Period Above	Ci	-----	-----	4.22 E-02	4.27 E-02

TURKEY POINT PLANT
 SEMIANNUAL REPORT
 JANUARY 1988 THROUGH JUNE 1988
 UNIT 4 TABLE 2 (Continued)
 LIQUID EFFLUENTS

Liquid Dissolved Gas

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
Kr-85m	Ci	-----	-----	-----	1.53 E-06
Xe-131m	Ci	-----	-----	1.67 E-04	4.34 E-04
Xe-133	Ci	-----	-----	9.17 E-02	3.94 E-02
Xe-133m	Ci	-----	-----	2.40 E-03	1.20 E-04
Xe-135	Ci	-----	-----	2.33 E-04	1.40 E-05
Total for Period Above	Ci	-----	-----	9.45 E-02	4.00 E-02

LIQUID EFFLUENTS -DOSE SUMMATION
 JANUARY 1988 THROUGH JUNE 1988

UNIT 4

Age Group: Teenager

Location: Cooling Canal

Shoreline Deposition

Dose (mRem)

% of Annual Limit

Total Body

1.67 E-03

5.56 E-02

FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT PLANT
SEMIANNUAL REPORT
JANUARY 1988 THROUGH JUNE 1988
UNIT 4 TABLE 3
GAS EFFLUENTS - SUMMATION OF ALL RELEASES

Units	Quarter 1	Quarter 2
-------	-----------	-----------

A. Fission and Activation Products

1. Total Release	Ci	2.12 E + 02	2.36 E + 02
2. Average Release Rate for Period	μCi/sec	2.69 E + 01	3.00 E + 01

B. Iodines

1. Total Iodine-131	Ci	1.70 E-03	1.12 E-03
2. Average Release Rate for Period	μCi/sec	2.16 E-04	1.42 E-04

C. Particulates

1. Particulates T - 1/2 > 8 Days	Ci	6.20 E-05	2.61 E-05
2. Average Release Rate for Period	μCi/sec	7.89 E-06	3.32 E-06
3. Gross Alpha Radioactivity	Ci	1.62 E-07	2.06 E-07

D. Tritium

1. Total Release	Ci	5.15 E + 01	3.60 E + 01
2. Average Release Rate for Period	μCi/sec	6.56 E + 00	4.58 E + 00

POINT PLEASANT PLANT
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 UNIT 4 TABLE 4
 GASEOUS EFFLUENTS

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2

1. Fission Gases

Ar-41	Ci	2.47 E-01	2.81 E+01	-----	-----
Kr-85	Ci	1.43 E-01	-----	4.04 E-01	-----
Kr-85m	Ci	1.18 E-03	7.28 E-03	2.16 E-02	1.44 E-02
Kr-87	Ci	-----	-----	-----	4.49 E-05
Kr-88	Ci	-----	4.59 E-03	6.05 E-03	5.90 E-03
Xe-131m	Ci	1.76 E-02	1.39 E-01	1.28 E+00	1.94 E-01
Xe-133	Ci	1.32 E+02	1.86 E+02	7.45 E+01	1.55 E+01
Xe-133m	Ci	5.83 E-02	1.12 E-01	1.53 E+00	3.67 E+00
Xe-135	Ci	6.78 E-02	1.47 E-01	9.35 E-01	1.81 E+00
Unidentified	Ci				
Total for Period Above	Ci	1.33 E+02	2.15 E+02	7.87 E+01	2.12 E+01

2. Iodines

Br-82	Ci	1.08 E-04	2.28 E-04
I-131	Ci	1.70 E-03	1.12 E-03
I-133	Ci	2.74 E-03	1.02 E-03
I-135	Ci	7.00 E-04	1.27 E-03
Total for Period Above	Ci	5.25 E-03	3.64 E-03

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UNIT 4 TABLE 4 (Continued)
GASEOUS EFFLUENTS

Nuclides Released	Units	Continuous Mode	
		Quarter 1	Quarter 2

3. Particulates

Ba-140	Ci	7.70 E-06	8.60 E-06
Ce-144	Ci	1.20 E-05	-----
Co-58	Ci	-----	1.01 E-06
Co-60	Ci	2.25 E-06	1.69 E-06
Cs-134	Ci	1.17 E-05	8.45 E-07
Cs-136	Ci	2.58 E-06	-----
Cs-137	Ci	1.64 E-05	1.16 E-05
I-131	Ci	6.52 E-06	1.19 E-06
La-140	Ci	1.90 E-06	-----
Sr-89	Ci	8.90 E-07	1.24 E-06
Unidentified	Ci		
Total for Period Above	Ci	6.20 E-05	2.61 E-05

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UNITS 3 AND 4 TABLE

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSIDE FOR BURIAL OR DISPOSAL

1.	<u>TYPE OF WASTE</u>	<u>UNIT</u>	<u>6 MO PERIOD</u>	<u>%ERR</u>
a.	Spent resin, filter, sludge evaporator bottoms, etc.	m ³ Ci	3.13 E1 4.23 E2	20
b.	Dry compressable waste (NOTE 1)	m ³ Ci	1.59 E1 2.67 E-2	20
c.	Irradiated components, control rods, etc.	m ³ Ci	0.00 E0 0.00 E0	20
d.	Other non-compressable metal waste (NOTE 2)	m ³ Ci	1.80 E0 2.34 E-2	20

2. ESTIMATE OF MAJOR NUCLIDE COMPOSITION BY TYPE OF WASTE

a.	Co-60	%	54
	Fe-55	%	17
	Ni-63	%	9
	Cs-137	%	9
	Cs-134	%	3
	I-131	%	3
	Co-58	%	2
	Sb-125	%	1
	Mn-54	%	1
b.	Fe-55	%	41
	Co-60	%	38
	Co-58	%	7
	Ni-63	%	7
	Mn-54	%	2
	TRU	%	1
	Sb-125	%	1
	Nb-95	%	1
c.	-----	-	--
d.	Cs-137	%	100

3. SOLID WASTE DISPOSITION

No. of Shipments	Mode of Transportation	Destination
9	Sole use truck	Barnwell, SC
2 (NOTE 3)	Sole use truck	Oak Ridge, TN

B. IRRADIATED FUEL SHIPMENTS NONE

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 SOLID WASTE SUPPLEMENT

Waste Classification	Total Volume Ft ³	(NOTE 5) Total Curie Quantity	(NOTE 6) Principal Radionuclides	(NOTE 7) Type of Waste	R.G. 1.21 Category	(NOTE 8) Type of Container	Solidification or Absorbent Agent
Class A	2896.3 (Note 4)	38.78	Ni-63, Cs-137 Sr-90	PWR Ion Exchange Resins and PWR Compactable and Non- Compactable Trash	1.a,b	NRC Certified LSA, > Type A, and Non-Spec Strong, Tight Package (Note 9)	N/A
Class B	500.4	384.0	Sr-90, Ni-63 Co-60, Cs-137 T _{1/2} < 5 yr.	PWR Ion Exchange Resins	1.a	NRC Certified LSA > Type A	N/A

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UNITS 3 AND 4 TABLE

- Note 1: Dry Compressable Waste Volume indicates volume shipped to burial site following reduction by a waste processing facility. Volume shipped to the waste processing facility was 2.86 E1 m³.
- Note 2: Other Noncompressable Metal Waste indicates volume shipped to burial site following decontamination and volume reduction by a waste processing facility. Volume shipped to the waste processing facility was 3.62 E1 m³.
- Note 3: Material transported to Oak Ridge, Tennessee, was consigned to licensed processing facilities for volume reduction and decontamination activities. The material remaining after processing was transported by the processor to Barnwell, South Carolina, for burial.
- Note 4: Volume listed is composed of waste shipped to burial site by contracted waste processing and volume reduction facilities and dewatered ion exchange resins shipped from Turkey Point Plant.
- Note 5: The total curie quantity and radionuclide composition of solid waste shipped from the Turkey Point Plant Units 3 & 4 are determined using a combination of qualitative and quantitative techniques. The Turkey Point Plant follows the guidelines in the Low Level Waste Licensing Branch Technical Position on Radioactive Waste Classification (5/11/83) for these determinations.

The most frequently used techniques for determining the total activity in a package are the dose to curie method and inference from specific activity and mass or activity concentration and volume. Activation analysis may be applied when it is appropriate. The total activity determination by any of these methods is considered to be an estimate.

The composition of radionuclides in the waste is determined by both on-site analyses for principle gamma emitters and periodic off-site analyses for difficult to measure isotopes. The on-site analyses are performed either on a batch basis or on a routine basis using representative samples appropriate for the waste type. Off-site analyses are used to establish scaling factors or other estimates for difficult to measure isotopes.



10/10/10

Note 6: Principal radionuclides refers to those radionuclides contained in the waste in concentrations greater than 0.01 times the concentration of the nuclide listed in Table 1 or 0.01 times the smallest concentration of the nuclide listed in Table 2 of 10 CFR 61.

Note 7: Type of waste is specified as described in NUREG 0782, Draft Environment Impact Statement on 10 CFR 61 "Licensing Requirements for Land Disposal of Radioactive Waste".

Note 8: Type of container refers to the transport package.

Note 9: PWR secondary resins shipped in casks. DAW shipped in non-specification, strong, tight containers.