

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8909050240 DOC. DATE: 89/06/30 NOTARIZED: NO DOCKET #  
 FACIL: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250  
 50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251  
 AUTH. NAME AUTHOR AFFILIATION  
 CROSS, J.E. Florida Power & Light Co.  
 STEINKE, R.N. Florida Power & Light Co.  
 PEARCE, L.W. Florida Power & Light Co.  
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: "Semiannual Radioactive Effluent Release Rept Jan-June 1989." W/890830 ltr.

DISTRIBUTION CODE: IE48D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 25  
 TITLE: 50.36a(a)(2) Semiannual Effluent Release Reports

### NOTES:

	RECIPIENT		COPIES			RECIPIENT		COPIES		
	ID CODE/NAME		LTR	ENCL		ID CODE/NAME		LTR	ENCL	
	PD2-2 LA		3	3		PD2-2 PD		1	1	
	EDISON, G		1	1						
INTERNAL:	AEOD/DSP/TPAB		1	1		IRM TECH ADV		1	1	
	NRR/DREP/RPB 10		2	2		NUDOCS-ABSTRACT		1	1	
	<del>REG FILE</del> 01		1	1		RGN2 DRSS/RPB		2	2	
	RGN2 FILE 02		1	1						
EXTERNAL:	BNL TICHLER, J03		1	1		EG&G SIMPSON, F		2	2	
	LPDR		1	1		NRC PDR		1	1	

TOTAL NUMBER OF COPIES REQUIRED: LTR 19 ENCL 19

*Handwritten signature/initials*



P.O. Box 14000, Juno Beach, FL 33408-0420

AUGUST 30 1989

L-89-315

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D. C. 20555

Gentlemen:

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

Attached is the Radioactive Effluent Release Report for the period of January 1989 through June 1989 for Turkey Point Units 3 and 4, as required by Technical Specification 6.9.4.

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

Very truly yours,

C. O. Woody  
Acting Senior Vice President - Nuclear

COW/TCG/gp

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC  
Senior Resident Inspector, USNRC, Turkey Point Plant

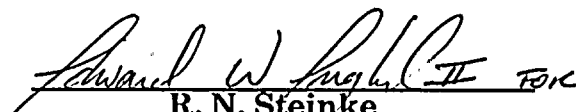
8909050240 890630  
PDR ADOCK 05000250  
R PDC

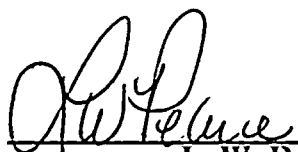
1648  
11

**TURKEY POINT PLANT**  
**UNITS 3 AND 4**  
**SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT**  
**JANUARY THROUGH JUNE 1989**

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

  
\_\_\_\_\_  
**J. E. Cross**  
**Plant Manager-Nuclear**

  
\_\_\_\_\_  
**R. N. Steinke**  
**Chemistry Supervisor**

  
\_\_\_\_\_  
**L. W. Pearce**  
**Operations Superintendent**

  
\_\_\_\_\_  
**S. Quinn**  
**Radiochemist**

## INDEX

	Page
1.0 Regulatory Limits	
1.1 Liquid Effluents	1
1.2 Gaseous Effluents	1
2.0 Maximum Permissible Concentrations	2
3.0 Average Energy	2
4.0 Measurements and Approximation of Total Radioactivity	
4.1 Liquid Effluents - discussion	2
a. Unit 3 Liquid Effluents Summation	7
b. Unit 4 Liquid Effluents Summation	13
4.2 Gaseous Effluents - discussion	3
a. Unit 3 Gaseous Effluent Summation	9
b. Unit 4 Gaseous Effluent Summation	15
5.0 Batch Releases	
5.1 Liquid	4
5.2 Gaseous	4
6.0 Unplanned Releases	5
7.0 Reactor Coolant Activity	5
8.0 Site Radiation Dose	5
9.0 Offsite Dose Calculation Manual Revisions	5
10.0 Solid Waste and Irradiated Fuel Shipments	5
11.0 Process Control Program Revisions	5

**FLORIDA POWER AND LIGHT COMPANY  
TURKEY POINT UNITS 3 AND 4  
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT  
SUPPLEMENTAL INFORMATION  
JANUARY 1989 THROUGH JUNE 1989**

**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  $\leq 1.5$  mrem to the total body and to  $\leq 5$  mrem to any organ, and, during any calendar year, to  $\leq 3$  mrem to the total body and  $\leq 10$  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  $\leq 5$  mrad for gamma radiation and  $\leq 10$  mrad for beta radiation and, during any calendar year, to  $\leq 10$  mrad for gamma radiation and  $\leq 20$  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 releases are described in Section 1.1-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 isotopically analyzed for gamma emitting isotopes on a multichannel analyzer.

The above procedure was followed for all releases from the waste disposal system. 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  $2\pi$  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 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 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	$\pm 2 \%$	$\pm 3 \%$
Gaseous	$\pm 10 \%$	$\pm 11 \%$

## 5.0 BATCH RELEASES

### 5.1 Liquid

	<u>Unit 3</u>	<u>Unit 4</u>	
a) Number of batch releases	<u>1.76 E+02</u>	<u>1.76 E+02</u>	
b) Total time period of batch releases	<u>1.59 E+04</u>	<u>1.59 E+04</u>	Minutes
c) Maximum time period for a batch releases	<u>2.00 E+02</u>	<u>2.00 E+02</u>	Minutes
d) Average time period for a batch release	<u>9.03 E+01</u>	<u>9.03 E+01</u>	Minutes
e) Minimum time period for a batch release	<u>5.50 E+01</u>	<u>5.50 E+01</u>	Minutes
f) Average stream flow during period of release of effluent into a flowing stream	<u>1.04 E+06</u>	<u>1.04 E+06</u>	GPM

### 5.2 Gaseous

a) Number of batch releases	<u>1.75 E+01</u>	<u>1.85 E+01</u>	
b) Total time period of batch releases	<u>2.10 E+03</u>	<u>2.24 E+03</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>1.14 E+02</u>	<u>1.21 E+02</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 released	<u>0</u>	<u>0</u>	Curies

**6.2 Gaseous**

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

**7.0 Reactor Coolant Activity**

Reactor Coolant activity limits of  $100/\bar{E}$  and  $1.0 \mu\text{Ci/gm}$  Dose Equivalent I-131 were not exceeded.

8.0 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.

**9.0 Offsite Dose Calculation Manual Revisions**

There were no ODCM revisions during this reporting period.

10.0 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.

**11.0 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 1989 THROUGH JUNE 1989**  
**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	4.29 E-02	3.20 E-02
2. Average diluted concentration during period	μCi/ml	5.80 E-10	6.18 E-10

**B. Tritium**

1. Total Release	Ci	1.81 E + 01	1.33 E + 01
2. Average diluted concentration during period	μCi/ml	2.45 E-07	2.57 E-07

**C. Dissolved and Entrained Gases**

1. Total Release	Ci	5.04 E-02	6.80 E-03
2. Average diluted concentration during period	μCi/ml	6.81 E-10	1.31 E-10

**D. Gross Alpha Radioactivity**

1. Total Release	Ci	<1.49 E-08*	<1.00 E-07*
------------------	----	-------------	-------------

<b>E. Volume of Batch Waste Released (prior to dilution)</b>	Liters	2.34 E + 06	1.68 E + 06
--	--------	-------------	-------------

<b>F. Volume of Continuous Waste Released (prior to dilution)</b>	Liters	5.94 E + 06	-----
---	--------	-------------	-------

<b>G. Volume of Dilution Water Used During Period</b>	Liters	7.40 E + 10	5.18 E + 10
---	--------	-------------	-------------

\*MDA Value in μCi/ml

**FLORIDA POWER AND LIGHT COMPANY**  
**TURKEY POINT PLANT**  
**SEMIANNUAL REPORT**  
**JANUARY 1989 THROUGH JUNE 1989**  
**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-110	Ci	-----	-----	1.48 E-04	5.56 E-04
Ce-144	Ci	-----	-----	4.56 E-06	-----
Co-57	Ci	-----	-----	5.30 E-07	-----
Co-58	Ci	-----	-----	5.23 E-03	1.67 E-03
Co-60	Ci	-----	-----	7.35 E-03	5.92 E-03
Cr-51	Ci	-----	-----	-----	2.81 E-04
Cs-134	Ci	-----	-----	2.41 E-03	1.24 E-03
Cs-137	Ci	-----	-----	6.84 E-03	3.83 E-03
Fe-55	Ci	-----	-----	5.15 E-03	1.38 E-03
I-131	Ci	1.55 E-04	-----	3.22 E-06	4.88 E-05
I-133	Ci	6.56 E-05	-----	1.54 E-06	-----
Mn-54	Ci	-----	-----	1.35 E-02	2.72 E-03
Nb-95	Ci	-----	-----	2.15 E-05	4.12 E-05
Sb-124	Ci	-----	-----	8.60 E-05	3.46 E-04
Sb-125	Ci	-----	-----	1.94 E-03	1.35 E-02
Sr-89	Ci	-----	-----	-----	-----
Sr-90	Ci	-----	-----	2.34 E-05	3.96 E-04
W-187	Ci	-----	-----	-----	2.87 E-06
Zn-65	Ci	-----	-----	2.07 E-05	5.25 E-06
Unidentified	Ci				
Total for Period Above	Ci	2.21 E-04	-----	4.27 E-02	3.20 E-02



**FLORIDA POWER AND LIGHT COMPANY**  
**TURKEY POINT PLANT**  
**SEMIANNUAL REPORT**  
**JANUARY 1989 THROUGH JUNE 1989**  
**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
Xe-131m	Ci	-----	-----	-----	1.41 E-04
Xe-133	Ci	1.61 E-02	-----	3.39 E-02	6.46 E-03
Xe-133m	Ci	-----	-----	3.97 E-05	-----
Xe-135	Ci	3.59 E-04	-----	1.66 E-05	2.02 E-04
Xe-135m	Ci	1.44 E-06	-----	1.43 E-06	-----
<b>Total for Period Above</b>	Ci	1.64 E-02	-----	3.40 E-02	6.80 E-03

**FLORIDA POWER AND LIGHT COMPANY**  
**TURKEY POINT PLANT**  
**SEMIANNUAL REPORT**  
**JANUARY 1989 THROUGH JUNE 1989**  
**UNIT 3 TABLE 3**  
**GAS EFFLUENTS - SUMMATION OF ALL RELEASES**

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

**A. Fission and Activation Products**

1. Total Release	Ci	1.98 E + 02	3.80 E + 02
2. Average Release Rate for Period	μCi/sec	2.55 E + 01	4.83 E + 01

**B. Iodines**

1. Total Iodine-131	Ci	3.60 E-05	1.46 E-04
2. Average Release Rate for Period	μCi/sec	4.63 E-06	1.86 E-05

**C. Particulates**

1. Particulates T - 1/2 > 8 Days	Ci	2.45 E-05	7.15 E-07
2. Average Release Rate for Period	μCi/sec	3.15 E-06	9.09 E-08
3. Gross Alpha Radioactivity	Ci	<6.91 E-16*	<6.91 E-16*

**D. Tritium**

1. Total Release	Ci	1.09 E-02	5.37 E-01
2. Average Release Rate for Period	μCi/sec	1.40 E-03	6.83 E-02

\* <MDA Values Expressed in μCi/ml



FLORIDA POWER AND LIGHT COMPANY  
TURKEY POINT PLANT  
SEMIANNUAL REPORT  
JANUARY 1989 THROUGH JUNE 1989  
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	2.30 E-01	1.06 E-02	-----	-----
Kr-85	Ci	-----	-----	2.65 E-01	8.90 E-01
Kr-85m	Ci	2.53 E-02	7.42 E-04	5.12 E-03	-----
Xe-131m	Ci	-----	6.90 E-01	-----	8.38 E-01
Xe-133	Ci	1.85 E+02	3.05 E+02	1.14 E+01	7.14 E+01
Xe-133m	Ci	4.16 E-02	-----	2.60 E-01	6.40 E-01
Xe-135	Ci	7.92 E-01	7.77 E-03	2.97 E-01	2.11 E-02
Xe-135m	Ci	4.55 E-03	-----	-----	-----
	Ci				
Unidentified	Ci				
Total for Period Above	Ci	1.86 E+02	3.06 E+02	1.22 E+01	7.38 E+01

2. Iodines

Br-82	Ci	4.03 E-05	-----
I-131	Ci	2.78 E-05	1.46 E-04
I-133	Ci	2.56 E-05	4.73 E-06
Total for Period Above	Ci	9.37 E-05	1.51 E-04

**FLORIDA POWER AND LIGHT COMPANY**  
**TURKEY POINT PLANT**  
**SEMIANNUAL REPORT**  
**JANUARY 1989 THROUGH JUNE 1989**  
**UNIT 3 TABLE 4 (Continued)**  
**GASEOUS EFFLUENTS**

Nuclides Released	Units	Continuous Mode	
		Quarter 1	Quarter 2

**3. Particulates**

Co-58	Ci	3.70 E-06	-----
Co-60	Ci	9.06 E-06	-----
Cs-137	Ci	8.71 E-07	7.15 E-07
I-131	Ci	8.18 E-06	
I-133	Ci	2.69 E-06	
	Ci		
	Ci		
Unidentified	Ci		
Total for Period Above	Ci	2.45 E-05	7.15 E-07

75  
4

**FLORIDA POWER AND LIGHT COMPANY**  
**TURKEY POINT PLANT**  
**SEMIANNUAL REPORT**  
**JANUARY 1989 THROUGH JUNE 1989**  
**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	4.27 E-02	3.20 E-02
2. Average diluted concentration during period	µCi/ml	5.77 E-10	6.18 E-10

**B. Tritium**

1. Total Release	Ci	1.81 E + 01	1.33 E + 01
2. Average diluted concentration during period	µCi/ml	2.45 E-07	2.57 E-07

**C. Dissolved and Entrained Gases**

1. Total Release	Ci	3.40 E-02	6.80 E-3
2. Average diluted concentration during period	µCi/ml	4.59 E-10	1.31 E-10

**D. Gross Alpha Radioactivity**

1. Total Release	Ci	<1.49 E-08*	<1.00 E-07*
------------------	----	-------------	-------------

<b>E. Volume of Batch Waste Released (prior to dilution)</b>	Liters	2.34 E + 06	1.68 E + 06
--	--------	-------------	-------------

<b>F. Volume of Continuous Waste Released (prior to dilution)</b>	Liters	N/A	N/A
---	--------	-----	-----

<b>G. Volume of Dilution Water Used During Period</b>	Liters	7.40 E + 10	5.18 E + 10
---	--------	-------------	-------------

\*MDA Value in µCi/ml

1304

FLORIDA POWER AND LIGHT COMPANY  
 TURKEY POINT PLANT  
 SEMIANNUAL REPORT  
 JANUARY 1989 THROUGH JUNE 1989  
 UNIT 4 TABLE 2  
 LIQUID EFFLUENTS

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
Ag-110	Ci	-----	-----	1.48 E-04	5.56 E-04
Ce-144	Ci	-----	-----	4.56 E-06	-----
Co-57	Ci	-----	-----	5.30 E-07	-----
Co-58	Ci	-----	-----	5.23 E-03	1.67 E-03
Co-60	Ci	-----	-----	7.35 E-03	5.92 E-03
Cr-51	Ci	-----	-----	-----	2.81 E-04
Cs-134	Ci	-----	-----	2.41 E-03	1.24 E-03
Cs-137	Ci	-----	-----	6.84 E-03	3.83 E-03
Fe-55	Ci	-----	-----	5.15 E-03	1.38 E-03
I-131	Ci	-----	-----	3.22 E-06	4.88 E-05
I-133	Ci	-----	-----	1.54 E-06	-----
Mn-54	Ci	-----	-----	1.35 E-02	2.72 E-03
Nb-95	Ci	-----	-----	2.15 E-05	4.12 E-05
Sb-124	Ci	-----	-----	8.60 E-05	3.46 E-04
Sb-125	Ci	-----	-----	1.94 E-03	1.35 E-02
Sr-89	Ci	-----	-----	-----	-----
Sr-90	Ci	-----	-----	2.34 E-05	3.96 E-04
W-187	Ci	-----	-----	-----	2.87 E-06
Zn-65	Ci	-----	-----	2.07 E-05	5.25 E-06
Unidentified	Ci				
Total for Period Above	Ci	-----	-----	4.27 E-02	3.20 E-02



10-10-10

10-10-10

10-10-10

10-10-10

10-10-10

10-10-10

10-10-10

10-10-10

10-10-10

10-10-10

FLORIDA POWER AND LIGHT COMPANY  
 TURKEY POINT PLANT  
 SEMIANNUAL REPORT  
 JANUARY 1989 THROUGH JUNE 1989  
 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
Xe-131m	Ci	-----	-----	-----	1.41 E-04
Xe-133	Ci	-----	-----	3.39 E-02	6.46 E-03
Xe-133m	Ci	-----	-----	3.97 E-05	-----
Xe-135	Ci	-----	-----	1.66 E-05	2.02 E-04
Xe-135m	Ci	-----	-----	1.43 E-06	-----
Total for Period Above	Ci	-----	-----	3.40 E-02	6.80 E-03



**FLORIDA POWER AND LIGHT COMPANY**  
**TURKEY POINT PLANT**  
**SEMIANNUAL REPORT**  
**JANUARY 1989 THROUGH JUNE 1989**  
**UNIT 4 TABLE 3**  
**GAS EFFLUENTS - SUMMATION OF ALL RELEASES**

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

**A. Fission and Activation Products**

1. Total Release	Ci	1.90 E + 02	3.78 E + 02
2. Average Release Rate for Period	μCi/sec	2.42 E + 01	4.81 E + 01

**B. Iodines**

1. Total Iodine-131	Ci	2.76 E-05	1.46 E-04
2. Average Release Rate for Period	μCi/sec	3.55 E-06	1.86 E-05

**C. Particulates**

1. Particulates T - 1/2 > 8 Days	Ci	1.36 E-05	7.15 E-07
2. Average Release Rate for Period	μCi/sec	1.75 E-06	9.09 E-08
3. Gross Alpha Radioactivity	Ci	<6.91 E-16*	<6.91 E-16*

**D. Tritium**

1. Total Release	Ci	2.19 E-03	5.20 E-01
2. Average Release Rate for Period	μCi/sec	2.82 E-04	6.61 E-02

\*MDA Values Expressed in μCi/ml

FLORIDA POWER AND LIGHT COMPANY  
 TURKEY POINT PLANT  
 SEMIANNUAL REPORT  
 JANUARY 1989 THROUGH JUNE 1989  
 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	-----	1.81 E-02	-----	-----
Kr-85	Ci	-----	-----	2.65 E-01	8.90 E-01
Kr-85m	Ci	1.40 E-04	-----	6.06 E-03	-----
Xe-131m	Ci	-----	6.90 E-01	-----	8.38 E-01
Xe-133	Ci	1.81 E + 02	3.05 E + 02	7.89 E + 00	6.94 E + 01
Xe-133m	Ci	1.22 E-02	-----	2.03 E-01	6.40 E-01
Xe-135	Ci	4.03 E-03	1.57 E-03	3.10 E-01	1.08 E-02
Xe-135m	Ci	-----	-----	-----	-----
	Ci				
Unidentified	Ci				
Total for Period Above	Ci	1.81 E + 02	3.06 E + 02	8.67 E + 00	7.18 E + 01

2. Iodines

Br-82	Ci	4.03 E-05	-----
I-131	Ci	2.76 E-05	1.46 E-04
I-133	Ci	2.48 E-05	4.73 E-06
Total for Period Above	Ci	9.27 E-05	1.51 E-04

**FLORIDA POWER AND LIGHT COMPANY**  
**TURKEY POINT PLANT**  
**SEMIANNUAL REPORT**  
**JANUARY 1989 THROUGH JUNE 1989**  
**UNIT 4 TABLE 4 (Continued)**  
**GASEOUS EFFLUENTS**

Nuclides Released	Units	Continuous Mode	
		Quarter 1	Quarter 2

**3. Particulates**

Co-58	Ci	3.70 E-06	-----
Co-60	Ci	9.06 E-06	-----
Cs-137	Ci	8.71 E-07	7.15 E-07
	Ci		
	Ci		
	Ci		
Unidentified	Ci		
Total for Period Above	Ci	1.36 E-05	7.15 E-07



FLORIDA POWER AND LIGHT COMPANY  
TURKEY POINT PLANT  
SEMIANNUAL REPORT  
JANUARY 1989 THROUGH JUNE 1989  
UNITS 3 AND 4 TABLE 5

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL

1.	TYPE OF WASTE	UNIT	6 MO PERIOD	%ERR
a.	Spent resin, filters, sludge evaporator (Note 1)	m <sup>3</sup> Ci	0.00 E0 0.00 E0	
b.	Dry compressible waste (Note 2)	m <sup>3</sup> Ci	1.63 E2 7.39 E-1	20
c.	Irradiated components Control rods, etc.	m <sup>3</sup> Ci	0.00 E0 0.00 E0	
d.	Other non-compressible Waste (Note 3)	m <sup>3</sup> Ci	7.04 E1 9.76 E-1	20

2. ESTIMATE OF MAJOR NUCLIDE COMPOSITION BY TYPE OF WASTE

a.	-----	-----	-----
b.	Co-60	%	40
	Fe-55	%	17
	Co-58	%	14
	C-14	%	10
	Ni-63	%	7
	Cs-137	%	5
	Sb-125	%	2
	Cs-134	%	2
	Mn-54	%	1
	Nb-95	%	1
c.	-----	-----	-----
d.	Co-60	%	54
	Cs-137	%	22
	Ni-63	%	16
	Fe-55	%	3
	C-14	%	3
	Ag-110m	%	1

3. SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORT	DESTINATION
19 (Note 4)	Sole use truck	Oak Ridge, TN

B. IRRADIATED FUEL SHIPMENTS

None

RKR/eb/004

FLORIDA POWER & LIGHT COMPANY  
 TURKEY POINT PLANT  
 SEMIANNUAL REPORT  
 JANUARY 1989 THROUGH JUNE 1989  
 UNITS 3 AND 4 TABLE 5  
 SOLID WASTE SUPPLEMENT

Waste Classification	Total Volume Ft3	(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	8242.3	1.72	None	Compactable and Non-Compactable Trash	1.b,d	Strong, Tight Package	N/A

RKR/044/1

12

12



FLORIDA POWER AND LIGHT COMPANY  
TURKEY POINT PLANT  
SEMIANNUAL REPORT  
JANUARY 1989 THROUGH JUNE 1989  
UNITS 3 AND 4 TABLE 5

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL

- Note 1: Spent resins waste volume indicates volume shipped to a burial site directly from Turkey Point Plant or following volume reduction by a waste processing facility. Volume shipped to the waste processing facility was 60.7 m<sup>3</sup>
- Note 2: Dry compressible waste volume indicates volume shipped to burial site following reduction by a waste processing facility. Volume shipped to the waste processing facility was 148.3 m<sup>3</sup>.
- Note 3: Other noncompressible 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 2.77 E2 m<sup>3</sup>
- Note 4: 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 5: The total curie quantity and radionuclide composition of solid waste shipped from the Turkey Point Plant Units 3 and 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.



4

The composition of radionuclides in the waste is determined by both on-site analysis 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.

Note 6: Principle 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.

