

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8809070238 DOC.DATE: 88/08/29 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
 STEINKE,R.N. Florida Power & Light Co.
 CROSS,J.E. Florida Power & Light Co.
 CONWAY,W.F. Florida Power & Light Co.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: "Semiannual Radioactive Effluent Release Rept for Jan-June 1988." W/880829 ltr.

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

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD2-2 LA	1 0	PD2-2 PD	5 5
	EDISON,G	1 1		
INTERNAL:	AEOD/DOA	1 1	AEOD/DSP/TPAB	1 1
	ARM TECH ADV	1 1	NRR/DEST/PSB 8D	1 1
	NRR/DREP/RPB 10	4 4	NUDOCS-ABSTRACT	1 1
	<u>REG FILE</u> 01	1 1	RGN2 FILE 02	1 1
	RGN2/DRSS/EPRPB	1 1		
EXTERNAL:	BNL TICHLER,J03	1 1	LPDR	1 1
	NRC PDR	1 1		

TOTAL NUMBER OF COPIES REQUIRED: LTTR 22 ENCL 21

R
I
D
S
/
A
D
D
S
/
A
D
D
S
/
A
D
D
S



AUGUST 29 1988

L-88-367

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

Pursuant to the requirements of Technical Specification 6.9.4, attached is the Radioactive Effluent Release Report for the period of January 1, 1988 through June 30, 1988 for Turkey Point Units 3 and 4. Sr-89/90 and Fe-55 results are not available at this time. A follow-up report will be provided upon completion of analyses.

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: Dr. J. Nelson Grace, Regional Administrator,
Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

SDF/026.RER

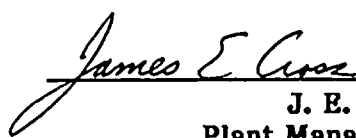
IE48
11

**TURKEY POINT PLANT
UNITS 3 AND 4
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
Radiochemist**



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

RNS/md★C1:1

8809070238 880630
PDR ADCK 05000250
R PDC

JEH8
9/1

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 Site-Radiation Dose	5
8.0 Offsite Dose Calculation Manual Revisions	5
9.0 Solid Waste and Irradiated Fuel Shipments	5
10.0 Process Control Program Revisions	5

FLORIDA POWER AND LIGHT COMPANY
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 2×10^{-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 2 π 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 2 π 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.



10-10-10

1

2

3

4

5

6

7

8

9

10

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



10/10/10

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 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	4.07 E-02
2. Average diluted concentration during period	μCi/ml	6.94 E-10	7.24 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	*
Unidentified	Ci				
Total for Period Above	Ci	5.06 E-05	9.91 E-04	4.22 E-02	3.97 E-02

*Sr-89/90 and Fe-55 analyses unavailable at present time

FLORIDA POWER AND LIGHT COMPANY
 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

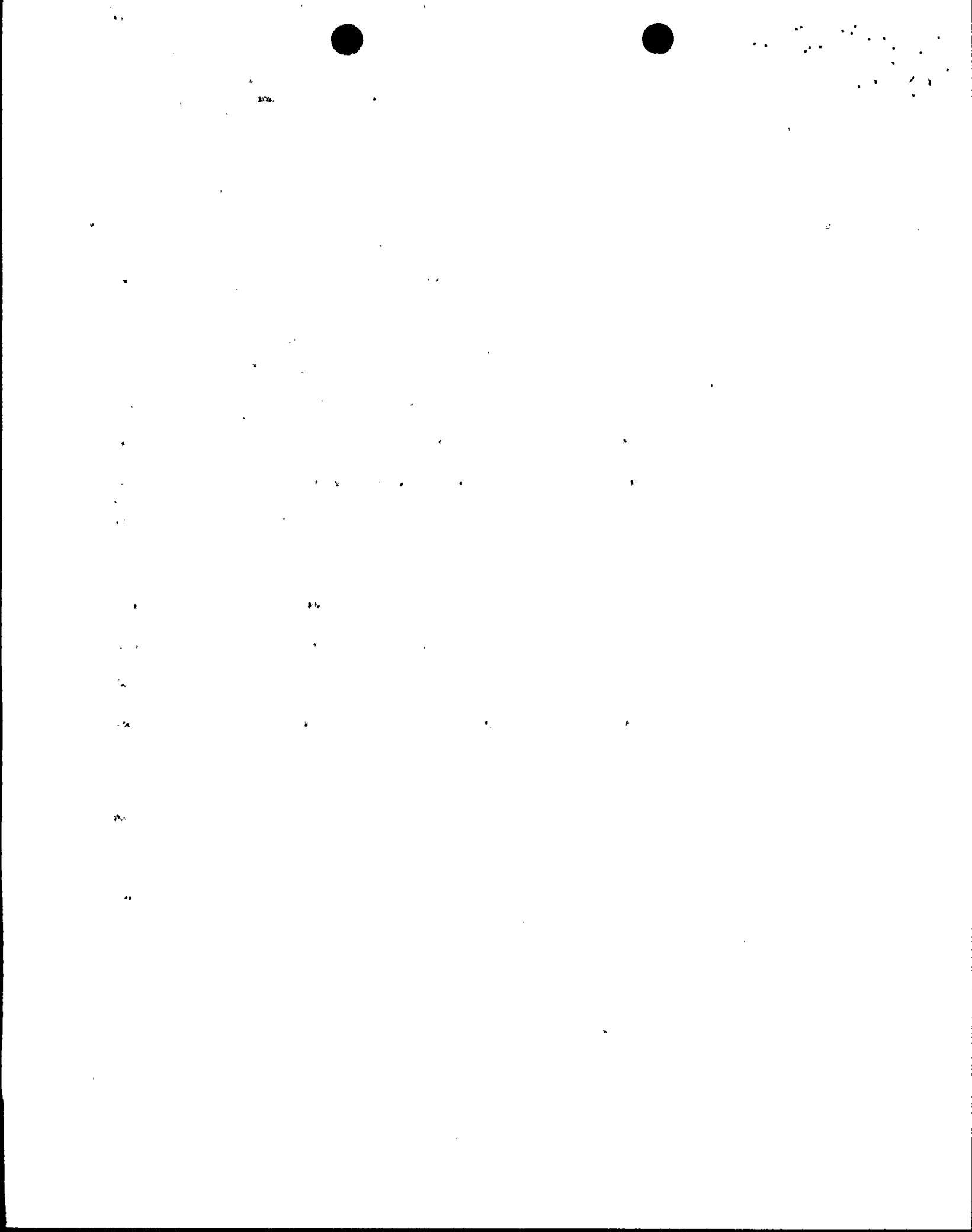
Dose (mRem)

% 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	2.54 E-05
2. Average Release Rate for Period	μCi/sec	7.88 E-06	3.23 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



2000

FLORIDA POWER AND LIGHT COMPANY
 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	*
Unidentified	Ci		
Total for Period Above	Ci	6.19 E-05	2.54 E-05

* Sr-89/90 and Fe-55 analyses unavailable at present



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	3.97 E-02
2. Average diluted concentration during period	μCi/ml	6.93 E-10	7.06 E-07

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
--	--------	---	---

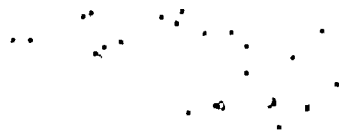
G. Volume of Dilution Water Used During Period	Liters	6.09 E + 10	5.62 E + 10
--	--------	-------------	-------------

*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	*
Unidentified	Ci				
Total for Period Above	Ci	-----	-----	4.22 E-02	3.97 E-02

*Sr-89/90 and Fe-55 analyses unavailable at present time



FLORIDA POWER AND LIGHT COMPANY
 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	2.49 E-05
2. Average Release Rate for Period	μCi/sec	7.89 E-06	3.17 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

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



11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

200

201

202

203

204

205

206

207

208

209

210

211

212

213

214

215

216

217

218

219

220

221

222

223

224

225

226

227

228

229

230

231

232

233

234

235

236

237

238

239

240

241

242

243

244

245

246

247

248

249

250

251

252

253

254

255

256

257

258

259

260

261

262

263

264

265

266

267

268

269

270

271

272

273

274

275

276

277

278

279

280

281

282

283

284

285

286

287

288

289

290

291

292

293

294

295

296

297

298

299

300

301

302

303

304

305

306

307

308

309

310

311

312

313

314

315

316

317

318

319

320

321

322

323

324

325

326

327

328

329

330

331

332

333

334

335

336

337

338

339

340

341

342

343

344

345

346

347

348

349

350

351

352

353

354

355

356

357

358

359

360

361

362

363

364

365

366

367

368

369

370

371

372

373

374

375

376

377

378

379

380

381

382

383

384

385

386

387

388

389

390

391

392

393

394

395

396

397

398

399

400

401

402

403

404

405

406

407

408

409

410

411

412

413

414

415

416

417

418

419

420

421

422

423

424

425

426

427

428

429

430

431

432

433

434

435

436

437

438

439

440

441

442

443

444

445

446

447

448

449

450

451

452

453

454

455

456

457

458

459

460

461

462

463

464

465

466

467

468

469

470

471

472

473

474

475

476

477

478

479

480

481

482

483

484

485

486

487

488

489

490

491

492

493

494

495

496

497

498

499

500

501

502

503

504

505

506

507

508

509

510

511

512

513

514

515

516

517

518

519

520

521

522

523

524

525

526

527

528

529

530

531

532

533

534

535

536

537

538

539

540

541

542

543

544

545

546

547

548

549

550

551

552

553

554

555

556

557

558

559

560

561

562

563

564

565

566

567

568

569

570

571

572

573

574

575

576

577

578

579

580

581

582

583

584

585

586

587

588

589

590

591

592

593

594

595

596

597

598

599

600

601

602

603

604

605

606

607

608

609

610

611

612

613

614

615

616

617

618

619

620

621

622

623

624

625

626

627

628

629

630

631

632

633

634

635

636

637

638

639

640

641

642

643

644

645

646

647

648

649

650

651

652

653

654

655

656

657

658

659

660

661

662

663

664

665

666

667

668

669

670

671

672

673

674

675

676

677

678

679

680

681

682

683

684

685

686

687

688

689

690

691

692

693

694

695

696

697

698

699

700

701

702

703

704

705

706

707

708

709

710

711

712

713

714

715

716

717

718

719

720

721

722

723

724

725

726

727

728

729

730

731

732

733

734

735

736

737

738

739

740

741

742

743

744

745

746

747

748

749

750

751

752

753

754

755

756

757

758

759

760

761

762

763

764

765

766

767

768

769

770

771

772

773

774

775

776

777

778

779

780

781

782

783

784

785

786

787

788

789

790

791

792

793

794

795

796

797

798

799

800

801

802

803

804

805

806

807

808

809

810

811

812

813

814

815

816

817

818

819

820

821

822

823

824

825

826

827

828

829

830

831

832

833

834

835

836

837

838

839

840

841

842

843

844

845

846

847

848

849

850

851

852

853

854

855

856

857

858

859

860

861

862

863

864

865

866

867

868

869

870

871

872

873

874

875

876

877

878

879

880

881

882

883

884

885

886

887

888

889

890

891

892

893

894

895

896

897

898

899

900

901

902

903

904

905

906

907

908

909

910

911

912

913

914

915

916

917

918

919

920

921

922

923

924

925

926

927

928

929

930

931

932

933

934

935

936

937

938

939

940

941

942

943

944

945

946

947

948

949

950

951

952

953

954

955

956

957

958

959

960

961

962

963

964

965

966

967

968

969

970

971

972

973

974

975

976

977

978

979

980

981

982

983

984

985

986

987

988

989

990

991

992

993

994

995

996

997

998

999

1000

FLORIDA POWER AND LIGHT COMPANY
 TURKEY POINT PLANT
 SEMIANNUAL REPORT
 JANUARY 1988 THROUGH JUNE 1988
 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	*
Unidentified	Ci		
Total for Period Above	Ci	6.20 E-05	2.49 E-05

* Sr-89/90 and Fe-55 not available at present time

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



11-11-11

FLORIDA POWER & LIGHT COMPANY
 TURKEY POINT PLANT
 SEMIANNUAL REPORT
 JANUARY 1988 THROUGH JUNE 1988
 UNITS 3 AND 4 TABLE
 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	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 T1/2 < 5 yr.	PWR Ion Exchange Resins	1.a	NRC Certified LSA > Type A	N/A

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

