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TURKEY POINT PLANT  
UNITS 3 AND 4  
SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT  
JANUARY 1986 - JUNE 1986

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FLORIDA POWER AND LIGHT COMPANY  
TURKEY POINT UNITS 3 AND 4  
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT  
SUPPLEMENTAL INFORMATION  
JANUARY 1986 THROUGH JUNE 1986

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 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  $2\pi$  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  $2\pi$  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.

At least one representative batch of liquid effluent from the waste disposal system was analyzed monthly for dissolved fission and activation gases by use of gamma spectrum analysis. The resulting isotope concentrations were multiplied by the total volume released for the month in order to estimate the total dissolved gases released. If more than one batch of effluent was analyzed, the concentrations were weighted in an appropriate manner.

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.

However, during the second quarter of 1986, all short lived gaseous effluents were allocated to Unit 3 alone. This is due to Unit 4 being shut down for the entire quarter, and thus not contributing short lived isotopes.

#### 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	$\pm 7\%$	$\pm 23\%$
Gaseous	$\pm 11\%$	$\pm 33\%$

#### 5.0

#### BATCH RELEASES

##### 5.1 Liquid

	<u>Unit 3</u>	<u>Unit 4</u>	
a) Number of batch releases	$2.12 \text{ E}+02$	$2.12 \text{ E}+02$	
b) Total time period of batch releases	$1.96 \text{ E}+04$	$1.96 \text{ E}+04$	Minutes
c) Maximum time period for a batch release	$1.80 \text{ E}+02$	$1.80 \text{ E}+02$	Minutes
d) Average time period for a batch release	$9.25 \text{ E}+01$	$9.25 \text{ E}+01$	Minutes
e) Minimum time period for a batch release	$5.00 \text{ E}+01$	$5.00 \text{ E}+01$	Minutes
f) Average stream flow during periods of release of effluent into a flowing stream	$1.12 \text{ E}+06$	$1.12 \text{ E}+06$	GPM

##### 5.2 Gaseous

a) Number of batch releases	$4.50 \text{ E}+00$	$3.50 \text{ E}+00$	
b) Total time period of batch releases	$9.75 \text{ E}+02$	$7.35 \text{ E}+02$	Minutes
c) Maximum time period for a batch release	$2.40 \text{ E}+02$	$2.40 \text{ E}+02$	Minutes
d) Average time period for a batch release	$2.17 \text{ E}+02$	$2.10 \text{ E}+02$	Minutes
e) Minimum time period for a batch release	$3.00 \text{ E}+01$	$3.00 \text{ E}+01$	Minutes

**6.0 UNPLANNED RELEASES****6.1 Liquid**

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** 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:**

A change was made to the ODCM which allows the use of an alternate particulate and radioiodine sampling station should the site designated T-57 become unavailable. Site T-57 was chosen to satisfy the criterion of a sample in the vicinity of a community having the highest annual average ground level D/Q. Site T-52 was chosen as the alternate because its proximity to a community is comparable to T-57, both approximately two miles, and because the D/Q values for the two sites are within 5% of each other. Due to the location and D/Q value of the alternate site T-52, it is reasonable to assume that this change to the ODCM will not reduce the accuracy or reliability of the environmental sampling. In addition, this change will not reduce the accuracy or reliability of any dose calculations or setpoint determinations.

The change was reviewed and approved by the Plant Nuclear Safety Committee (PNSC) on May 13, 1986. The affected pages are included as Attachment A at the end of this report. The date of the PNSC review and approval is indicated in the lower right corner of the affected pages and the location of the change in the text is indicated by a vertical bar in the right margin.





**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 1986 THROUGH JUNE 1986

UNIT 3 TABLE I  
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

Units	Quarter 1	Quarter 2
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A. Fission and Activation Products

1. Total Release (not including tritium, gases, alpha)	Ci	1.20 E-01	5.15 E-02
2. Average diluted concentration during period	$\mu$ Ci/ml	2.19 E-10	9.15 E-11

B. Tritium

1. Total Release	Ci	9.25 E+01	6.10 E+01
2. Average diluted concentration during period	$\mu$ Ci/ml	5.35 E-06 <sup>Δ</sup>	6.51 E-06 <sup>Δ</sup>

C. Dissolved and Entrained Gases

1. Total Release	Ci	1.40 E-01	1.50 E-02
2. Average diluted concentration during period	$\mu$ Ci/ml	2.56 E-10	2.67 E-11

D. Gross Alpha Radioactivity

1. Total Release	Ci	< 1.01 E-08 <sup>*</sup>	< 6.03 E-08 <sup>*</sup>
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E. Volume of Waste Released (prior to dilution)	Liters	3.66 E+06	1.58 E+06
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F. Volume of Dilution Water Used During Period	Liters	5.48 E+11	5.63 E+11
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Δ Based on Cooling Canal Tritium Concentration

\* MDA value in  $\mu$  Ci/ml



FLORIDA POWER AND LIGHT COMPANY  
TURKEY POINT PLANT  
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UNIT 3 TABLE 2  
LIQUID EFFLUENTS

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
Ag-110m	Gi			1.23 E-03	1.34 E-03
Co-57	Gi			1.0 E-05	1.25 E-05
Co-58	Gi			2.26 E-02	1.28 E-02
Co-60	Gi			1.74 E-02	1.16 E-02
Cr-51	Gi			2.12 E-02	3.51 E-03
Cs-134	Gi			4.53 E-03	3.83 E-03
Cs-137	Gi			1.04 E-02	9.00 E-03
Fe-55	Gi			8.60 E-03	3.95 E-03
Fe-59	Gi			4.62 E-04	3.5 E-06
I-131	Gi			2.63 E-03	7.05 E-04
I-133	Gi			1.52 E-04	3.3 E-05
La-140	Gi			2.00 E-03	3.5 E-06
Mn-54	Gi			5.70 E-04	9.55 E-04
Mo 99/Tc-99m	Gi			3.26 E-04	3.4 E-05
Na-24	Gi			5 E-06	--
Nb-95	Gi			1.42 E-03	9.60 E-04
Ru-103	Gi			5.65 E-04	9.95 E-05
Sb-124	Gi			8.25 E-05	2.5 E-05
Sb-125	Gi			2.55 E-02	2.38 E-03
Sr-89	Gi			< 1 E-08	< 2 E-08
Sr-90	Gi			< 3 E-09	< 3 E-09
Zn-65	Gi			1.7 E-05	3.7 E-05
Zr-95	Gi			4.95 E-04	2.16 E-04
Zr-97	Gi			--	9.5 E-06
	Gi				
Unidentified	Gi				
Total for Period Above	Gi			1.20 E-01	5.15 E-02

NOTE (--) Indicates Less Than Detectable Activity



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UNIT 3 TABLE 3  
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

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

A. Fission and Activation Gases

1. Total Release	Ci	8.80 E+02	1.17 E+03
2. Average Release Rate for Period	$\mu$ Ci/sec	1.12 E+02	1.49 E+02

B. Iodines

1. Total Iodine-131	Ci	1.13 E-03	5.76 E-04
2. Average Release Rate for Period	$\mu$ Ci/sec	1.44 E-04	7.33 E-05

C. Particulates

1. Particulates T - $1/2 > 8$ Days	Ci	5.27 E-05	2.13 E-05
2. Average Release Rate for Period	$\mu$ Ci/sec	6.70 E-06	2.71 E-06
3. Gross Alpha Radioactivity	Ci	7.12 E-08	4.36 E-08

D. Tritium

1. Total Release	Ci	2.58 E+01	5.68 E+01
2. Average Release Rate for Period	$\mu$ Ci/sec	3.28 E+00	7.22 E+00

FLORIDA POWER AND LIGHT COMPANY  
TURKEY POINT PLANT  
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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-133	Gi			1.29 E-01	1.50 E-02
Xe-135	Gi			1.10 E-02	--
	Gi				
	Gi				
	Gi				
	Gi				
	Gi				
	Gi				
Total for Period Above	Ci			1.40 E-01	1.50 E-02

NOTE: (--) indicates less than detectable activity



FLORIDA POWER AND LIGHT COMPANY  
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JANUARY 1986 THROUGH JUNE 1986

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	Gi	7.22 E-02	2.96 E-01	7.01 E-02	--
Kr-85m	Ci	2.09 E-02	7.67 E-02	5.30 E-02	--
Kr-87	Ci	--	1.48 E-03	--	--
Kr-88	Ci	6.97 E-03	6.36 E-02	--	--
Xe-131m	Ci	6.37 E-01	1.38 E+00	2.30 E+00	--
Xe-133	Ci	6.67 E+02	1.17 E+03	2.06 E+02	--
Xe-133m	Ci	5.32 E-01	1.53 E+00	1.69 E+00	--
Xe-135	Ci	3.74 E-01	1.35 E+00	1.16 E+00	--
	Ci				
	Ci				
	Gi				
	Gi				
	Ci				
Unidentified	Ci				
Total for Period Above	Ci	6.69 E+02	1.17 E+03	2.11 E+02	0.00 E+00

2. Iodines

I-131	Ci	1.13 E-03	5.76 E-04
I-133	Ci	3.77 E-04	3.87 E-04
I-135	Ci	1.08 E-04	--
Total for Period Above	Ci	1.62 E-03	9.63 E-04

NOTE: (--) Indicates less than detectable activity

FLORIDA POWER AND LIGHT COMPANY  
 TURKEY POINT PLANT  
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 JANUARY 1986 THROUGH JUNE 1986  
 UNIT 3 TABLE 4 (Continued)  
 GASEOUS EFFLUENTS

Nuclides Released	Units	Continuous Mode	
		Quarter 1	Quarter 2

3. Particulates

Co-58	Gi	1.99 E-05	1.22 E-06
Co-60	Gi	1.78 E-05	4.04 E-06
Cs-134	Gi	1.98 E-06	5.05 E-07
Cs-137	Gi	1.15 E-05	1.41 E-05
I-131	Ci	1.51 E-06	1.34 E-06
Sr-89	Gi	< 3.85 E-16	1.39 E-07
Sr-90	Ci	8.30 E-09	< 2.56 E-16
	Ci		
	Gi		
	Gi		
	Gi		
	Gi		
	Gi		
	Ci		
	Gi		
	Gi		
	Gi		
	Gi		
	Gi		
Unidentified	Gi		
Total for Period Above	Ci	5.27 E-05	2.13 E-05

NOTE: (--) indicates less than detectable activity

FLORIDA POWER AND LIGHT COMPANY  
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JANUARY 1986 THROUGH JUNE 1986

UNIT 4 TABLE I  
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

Units	Quarter 1	Quarter 2
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A. Fission and Activation Products

1. Total Release (not including tritium, gases, alpha)	Ci	1.20 E-01	5.15 E-02
2. Average diluted concentration during period	μ Ci/ml	2.19 E-10	9.15 E-11

B. Tritium

1. Total Release	Ci	9.25 E+01	6.10 E+01
2. Average diluted concentration during period	μ Ci/ml	5.35 E-06 <sup>Δ</sup>	6.51 E-06 <sup>Δ</sup>

C. Dissolved and Entrained Gases

1. Total Release	Ci	1.40 E-01	1.50 E-02
2. Average diluted concentration during period	μ Ci/ml	2.56 E-10	2.67 E-11

D. Gross Alpha Radioactivity

1. Total Release	Ci	< 1.01 E-08*	< 6.03 E-08*
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E. Volume of Waste Released (prior to dilution)	Liters	3.66 E+06	1.58 E+06
---	--------	-----------	-----------

F. Volume of Dilution Water Used During Period	Liters	5.48 E+11	5.63 E+11
--	--------	-----------	-----------

Δ Based on Cooling Canal Tritium Concentration  
\* MDA value in μ Ci/ml

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UNIT 4 TABLE 2  
LIQUID EFFLUENTS

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
Ag-110m	Gi			1.23 E-03	1.34 E-03
Co-57	Gi			1.0 E-05	1.25 E-05
Co-58	Gi			2.26 E-02	1.28 E-02
Co-60	Gi			1.74 E-02	1.16 E-02
Cr-51	Gi			2.12 E-02	3.51 E-03
Cs-134	Gi			4.53 E-03	3.83 E-03
Cs-137	Gi			1.04 E-02	9.00 E-03
Fe-55	Gi			8.60 E-03	3.95 E-03
Fe-59	Gi			4.62 E-04	3.5 E-06
I-131	Gi			2.63 E-03	7.05 E-04
I-133	Gi			1.52 E-04	3.3 E-05
La-140	Gi			2.00 E-03	3.5 E-06
Mn-54	Gi			5.70 E-04	9.55 E-04
Mo 99/Tc-99m	Gi			3.26 E-04	3.4 E-05
Na-24	Gi			5 E-06	--
Nb-95	Gi			1.42 E-03	9.60 E-04
Ru-103	Gi			5.65 E-04	9.95 E-05
Sb-124	Gi			8.25 E-05	2.5 E-05
Sb-125	Gi			2.55 E-02	2.38 E-03
Sr-89	Gi			< 1 E-08	< 2 E-08
Sr-90	Gi			< 3 E-09	< 3 E-09
Zn-65	Gi			1.7 E-05	3.7 E-05
Zr-95	Gi			4.95 E-04	2.16 E-04
Zr-97	Gi				9.5 E-06
	Gi				
Unidentified	Gi				
Total for Period Above	Gi			1.20 E-01	5.15 E-02

NOTE (--) Indicates Less Than Detectable Activity

FLORIDA POWER AND LIGHT COMPANY  
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 SEMIANNUAL REPORT  
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 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-133	Gi			1.29 E-01	1.50 E-02
Xe-135	Gi			1.10 E-02	--
	Gi				
	Gi				
	Gi				
	Gi				
	Gi				
	Gi				
Total for Period Above	Ci			1.40 E-01	1.50 E-02

NOTE: (--) indicates less than detectable activity



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UNIT 4 TABLE 3  
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

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

A. Fission and Activation Gases

1. Total Release	Ci	6.82 E+02	4.08 E-02
2. Average Release Rate for Period	$\mu$ Ci/sec	8.68 E+01	5.19 E-03

B. Iodines

1. Total Iodine-131	Ci	1.13 E-03	0.00 E+00
2. Average Release Rate for Period	$\mu$ Ci/sec	1.44 E-04	0.00 E+00

C. Particulates

1. Particulates T - 1/2 > 8 Days	Ci	5.27 E-05	2.00 E-05
2. Average Release Rate for Period	$\mu$ Ci/sec	6.70 E-06	2.54 E-06
3. Gross Alpha Radioactivity	Ci	7.12 E-08	4.36 E-08

D. Tritium

1. Total Release	Ci	2.58 E+01	5.68 E+01
2. Average Release Rate for Period	$\mu$ Ci/sec	3.28 E+00	7.22 E+00

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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	2.72 E-02	--	9.14 E-01	--
Kr-85m	Ci	2.82 E-03	--	1.69 E-02	--
Xe-131m	Ci	1.24 E-01	--	7.46 E-01	--
Xe-133	Ci	6.18 E+02	--	6.10 E+01	4.08 E-02
Xe-133m	Ci	8.60 E-02	--	5.21 E-01	--
Xe-135	Ci	6.68 E-02	--	4.04 E-01	--
	Ci				
	Ci				
	Ci				
	Ci				
	Ci				
Unidentified	Ci				
Total for Period Above	Ci	6.18 E+02	0.00 E+00	6.36 E+01	4.08 E-02

2. Iodines

I-131	Ci	1.13 E-03	--
I-133	Ci	3.77 E-04	--
I-135	Ci	1.08 E-04	--
Total for Period Above	Ci	1.62 E-03	0.00 E+00

NOTE: (--) Indicates less than detectable activity



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 UNIT 4 TABLE 4 (Continued)  
 GASEOUS EFFLUENTS

Nuclides Released	Units	Continuous Mode	
		Quarter 1	Quarter 2

3. Particulates

Co-58	Ci	1.99 E-05	1.22 E-06
Co-60	Ci	1.78 E-05	4.04 E-06
Cs-134	Gi	1.98 E-06	5.05 E-07
Cs-137	Gi	1.15 E-05	1.41 E-05
I-131	Gi	1.51 E-06	--
Sr-89	Gi	< 3.85 E-16	1.39 E-07
Sr-90	Gi	8.30 E-09	< 2.56 E-16
	Gi		
	Gi		
	Gi		
	Gi		
	Gi		
	Gi		
	Gi		
	Gi		
	Gi		
	Gi		
	Gi		
	Gi		
Unidentified	Gi		
Total for Period Above	Ci	5.27 E-05	2.00 E-05

NOTE: (--) indicates less than detectable activity

FLORIDA POWER AND LIGHT COMPANY  
 TURKEY POINT PLANT  
 SEMIANNUAL REPORT  
 JANUARY 1986 THROUGH JUNE 1986  
 UNITS 3 AND 4 TABLE 5A

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL

1. Type of Waste	UNIT	6 MONTH PERIOD	ERROR%
a. Spent Resins, Filter sludges	m <sup>3</sup>	5.97 E+1	
evaporator bottoms, etc.	Ci	8.37 E+1	2.0 E+1
b. Dry Compressible Waste	m <sup>3</sup>	9.99 E+1	
	Ci	3.25 E0	2.0 E+1
c. Irradiated Components	m <sup>3</sup>	0.00 E0	
Control rods, etc.	Ci	0.00 E0	
d. Other	m <sup>3</sup>	0.00 E0	
	Ci	0.00 E0	

2. Estimate of Major Nuclide Composition (by type of waste)

a.	Cs <sup>137</sup>	%	35
	Co <sup>60</sup>	%	17
	Cs <sup>134</sup>	%	16
	Co <sup>58</sup>	%	12
	Fe <sup>55</sup>	%	10
	Ni <sup>63</sup>	%	3
	H <sup>3</sup>	%	3
	Cr <sup>51</sup>	%	2
b.	Fe <sup>55</sup>	%	31
	Co <sup>58</sup>	%	28
	Co <sup>60</sup>	%	17
	Cr <sup>51</sup>	%	5
	Cs <sup>137</sup>	%	5
	Ni <sup>63</sup>	%	3
	Cs <sup>134</sup>	%	2
	Mn <sup>54</sup>	%	2
	Ba <sup>140</sup>	%	1
	La <sup>140</sup>	%	1
c.	-----	-	--
d.	-----	-	--

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
15	Sole Use Truck	Barnwell, S.C.

B. IRRADIATED FUEL SHIPMENTS

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	N/A	N/A

N/A - Not applicable

FLORIDA POWER & LIGHT COMPANY  
TURKEY POINT PLANT  
SEMIANNUAL REPORT  
JANUARY 1986 THROUGH JUNE 1986  
UNITS 3 AND 4 TABLE 5B  
SOLID WASTE SUPPLEMENT

Waste Classification	Total Volume Ft3	(Note 1) Total Curie Quantity	(Notes 1,2) Principal Radionuclides	(Note 3) Type of Waste	R.G. 1.21 Category	(Note 4) Type of Container	Solidification or Absorbent . . . t
Class A	3150	.38	None	PWR Trash	1.b	Non-Spec Strong, Tight Package	N/A
Class A	376	2.86	None	PWR Trash	1.b	NRC Certified LSA > Type A	N/A
Class A	193	7.51	None	PWR Filters	1.a	NRC Certified LSA > Type A	N/A
Class A	1312	8.07	Sr <sup>90</sup> , Ni <sup>63</sup> Cs <sup>137</sup>	PWR Ion Exchange Resins	1.a	NRC Certified LSA > Type A	N/A
Class B	404	34.49	Sr <sup>90</sup> , Ni <sup>63</sup> I <sup>129</sup> , Cs <sup>137</sup>	PWR Ion Exchange Resins	1.a	NRC Certified LSA > Type A	N/A
Class C	202	33.66	Sr <sup>90</sup> , Ni <sup>63</sup> Cs <sup>137</sup> , I <sup>129</sup>	PWR Ion Exchange Resins	1.a	NRC Certified LSA > Type A	N/A

FLORIDA POWER & LIGHT COMPANY  
TURKEY POINT UNIT NOS. 3 & 4  
SEMI-ANNUAL REPORT  
JANUARY 1986 THROUGH JUNE 1986  
TABLE 5B(CONTINUED)  
SOLID WASTE SUPPLEMENT

NOTE 1: The total curie quantity and radionuclide composition of solid waste shipped from the Turkey Point Units 3 & 4 are determined using a combination of qualitative and quantitative techniques. In general, the Turkey Point Plant follows the guidelines outlined in the Low Level Waste Licensing Branch Technical Position (BTP) on Radioactive Waste Classification (5/11/83) for these determinations.

The most frequently used techniques for determining the total curie quantity in a package are the dose to curie methods and the (concentration) x (Volume or Mass) calculations. Where appropriate, engineering type activation analyses may be applied. Since each of the above methodologies involves to some extent qualitative parameters, the total curie quantity is considered to be an estimate.

The composition of radionuclides in the waste is determined by both on-site analyses for principal gamma emitters and periodic off-site analyses for other radionuclides. The on-site analyses are performed either on a batch basis or on a routine basis using reasonably representative samples as appropriate for the waste type. Offsite analyses are used to establish scaling factors or other estimates for radionuclides such as  $^3\text{H}$ ,  $^{14}\text{C}$ ,  $^{99}\text{Tc}$ ,  $^{129}\text{I}$ , TRU,  $^{241}\text{Pu}$ ,  $^{242}\text{Cm}$ ,  $^{63}\text{Ni}$ , and  $^{55}\text{Fe}$ .

NOTE 2: "Principal Radionuclides" refer to those radionuclides contained in the waste in concentrations greater than .01 times the concentration of the nuclide listed in Table 1 or .01 times the smallest concentration of that nuclide listed in Table 2 of 10CFR61.

NOTE 3: "Type of Waste" is generally specified as described in NUREG 0782, Draft Environment Impact Statement on 10CFR61 "Licensing Requirements for Land Disposal of Radioactive Waste".

NOTE 4: "Type of Container" refers to the transport package.

**TURKEY POINT PLANT  
UNITS 3 AND 4  
SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT  
JANUARY 1986 - JUNE 1986**

**ATTACHMENT A  
ODCM CHANGE**

LIST OF EFFECTIVE PAGES

<u>Title</u>	<u>Page</u>	<u>Date</u>
Appendix D	D-1	07/20/84
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	T-8	07/20/84

## ODCM

**RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE  
TURKEY POINT PLANT  
Key To Sample Locations**

Pathway	Location	Description	Samples Collected	Sample Collection Frequency	Approximate Distance (miles)	Direction Sector
DIRECT RADIATION	SSW-10	At Card Sound Bridge	TLD	Quarterly	10	SSW
DIRECT RADIATION	S-5	On site, south end of cooling canals	TLD	Quarterly	5	S
DIRECT RADIATION	S-10	Card Sound Road at Steamboat Creek	TLD	Quarterly	10	S
DIRECT RADIATION	SSE/S-1	Turtle Point	TLD	Quarterly	1	SSE
DIRECT RADIATION	SSE-10	Ocean Reef	TLD	Quarterly	8	SSE
AIRBORNE	T51	Homestead Bayfront Park	Radioiodine and particulates	Weekly	2	NNW
AIRBORNE	T57	Tree Nursery 316th Street	Radioiodine and particulates	Weekly	4	NW
AIRBORNE (Alternate)*	T52	Florida City Substation	Radioiodine and particulates	Weekly	7	W
AIRBORNE	T58	Turkey Point Entrance Road	Radioiodine and particulates	Weekly	1	NW

\*NOTE: Samples collected at T52 may be used if samples from T57 are not available.

SEP 3 9:14



AUG 29 1986

L-86-350

Dr. J. Nelson Grace  
Regional Administrator, Region II  
U. S. Nuclear Regulatory Commission  
101 Marietta Street, N.W., Suite 2900  
Atlanta, Georgia 30323

Dear Dr. Grace:

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

Attached is the Radioactive Effluent Release Report for the period of January 1, 1986 through June 30, 1986 for Turkey Point Units 3 and 4, as required by Technical Specification 6.9.4.

Should you or your staff have any questions on this information, please contact us.

Very truly yours,

*H. M. Peden*  
C. O. Woody  
Group Vice President  
Nuclear Energy

COW/SAV/aa

Attachment

cc: Director, Office of Inspection and Enforcement, USNRC  
Document Control Desk, USNRC  
Harold F. Reis, Esquire  
PNS 302/1

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