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U. S. Nuclear Regulatory Commission
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Washington, D. C. 20555


Gentlemen:

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
1988 Annual Radiological
Environmental Operating Report

This letter transmits the subject report in accordance with
Technical Specification 6.9.4.b for Turkey Point Units 3 and 4.

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

Very truly yours,


W. F. Conway
Senior Vice President - Nuclear

WFC/TCG/cm

Attachment

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

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ANNUAL

RADIOLOGICAL ENVIRONMENTAL

OPERATING REPORT

TURKEY POINT PLANT

UNIT NOS. 3 AND 4

License Nos. DPR-31, DPR-41

Docket Nos. 50-250, 50-251

Data Submitted By: Florida DHRS

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TURKEY POINT PLANT - UNITS NOS. 3 AND 4

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TURKEY POINT PLANT - UNITS NOS. 3 AND 4

I. INTRODUCTION

This report is submitted pursuant to Specification 6.9 of Turkey Point Units 3 & 4 Technical Specifications. The Annual Radiological Environmental Operating Report provides information, summaries and analytical results pertaining to the Radiological Environmental Monitoring Program for the calendar year indicated. This report covers surveillance activities meeting the requirements of Unit No. 3 and Unit No. 4. Technical Specifications.

II. RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

A. Purpose: The purpose of the radiological environmental monitoring program is to provide representative measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides which lead to the highest potential radiation exposures to members of the public resulting from station operation. The radiological environmental monitoring program also supplements the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and the modeling of the environmental exposure pathways.

B. Program Description: The Radiological Environmental Monitoring Program for the Turkey Point Plant is conducted pursuant to Technical Specifications 4.12 of Turkey Point Units 3 & 4 Technical Specifications.

1. Sample Locations, Types and Frequencies:

- a. Direct radiation gamma exposure rate is monitored continuously at 21 locations by thermoluminescent dosimeters (TLDs). TLDs are collected and analyzed quarterly.
- b. Airborne radioiodine and particulate samplers are operated continuously at five locations. Samples are collected and analyzed weekly. Analyses include Iodine-131, gross beta, and gamma isotopic measurements.
- c. Surface water samples are collected from three locations. Samples are collected and analyzed monthly. Analyses include gamma isotopic and tritium measurements.



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- d. Shoreline sediment samples are collected from three locations coinciding with the locations for surface water samples. Samples are collected and analyzed semi-annually. Sediment samples are analyzed by gamma isotopic measurements.
- e. Fish and invertebrate samples are each collected from the two locations coinciding with two of the locations for surface water samples. Samples are collected and analyzed semi-annually. Fish and invertebrate samples are analyzed by gamma isotopic measurements.
- f. Broad leaf vegetation samples are collected from three locations. Samples are collected and analyzed monthly. Broad leaf vegetation samples are analyzed by gamma isotopic measurements.

Attachment A provides specific information pertaining to sample locations, types and frequencies.

2. Analytical Responsibility:

Radiological environmental monitoring for the Turkey Point Plant is conducted by the State of Florida, Department of Health and Rehabilitative Services (HRS). Samples are collected and analyzed by HRS personnel. Samples are analyzed at the HRS Environmental Radiation Control Laboratory in Orlando, Florida.

- C. Analytical Results: Table 1, Environmental Radiological Monitoring Program Annual Summary provides a summary for all specified samples collected during the referenced surveillance period. Deviations from the sample schedule, missing data and/or samples not meeting the specified "A PRIORI" LLD, if any, are noted and explained in Tables 1A and 1B respectively. Analysis data for all specified samples analyzed during the surveillance period is provided in Attachment B.
- D. Land Use Census: A land use census out to a distance of 5 miles radius from the Turkey Point Plant is conducted annually to determine the location of the nearest milk animal, residence, and garden producing broad leaf vegetation in each of the sixteen meteorological sectors. A summary of the land use census for the surveillance year is provided in Table 2, Land Use Census Summary.

No locations yielding a calculated dose or dose commitment greater than the values currently being calculated were identified by the land use census.



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No locations yielding a calculated dose or dose commitment (via the same exposure pathway) 20 % greater than locations currently being sampled in the radiological environmental monitoring program were identified by the land use census.

- E. Interlaboratory Comparison Program: The State of Florida HRS Environmental Radiation Control Laboratory participates in the Environmental Radioactivity Laboratory Intercomparison Studies Program conducted by the Environmental Protection Agency. Results from the Interlaboratory Comparison Program are provided in Attachment C.

III. DISCUSSION AND INTERPRETATION OF RESULTS

- A. Reporting of Results: The Annual Radiological Environmental Operating Report contains the summaries, interpretations and information required by the Turkey Point Units 3 & 4 Technical Specifications. Table 1 provides a summary of the measurements made for the nuclides required by Technical Specifications, Table 4.12-2, for all samples specified by Table 4.12-1. In addition, summaries are provided for other nuclides identified in the specified samples, including those not related to station operation. These include nuclides such as K-40, Th-232, Ra-226, Ra-228, Be-7, U-235, U-238, and Pb-210 which are common in the Florida environment.
- B. Interpretation of Results
1. Direct Radiation: The results for direct radiation monitoring are consistent with past measurements for the specified locations. The exposure rate data shows no indication of any trends attributed to effluents from the plant. The measured exposure rates are consistent with exposure rates that were observed during the preoperational surveillance program. Direct radiation monitoring results are summarized in Table 1.
 2. Air Particulates/Radioiodine: Results of gross beta measurement are consistent with past measurements. No radioiodine was detected. The only identified isotope is cosmic-ray produced Be-7 and was only at levels consistent with past measurements.



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3. Surface Water: The results for radioactivity measurements in surface water samples are consistent with past measurements. Tritium was reported as present in 9 of 14 of the surface water samples collected from Site T-81. Additionally, one other location identified Tritium in 1 of 12 samples at a level approximately LLD. These results are consistent with the known subsurface interchange that occurs between the closed cooling canal and its surrounding waters, and the pressure gradients caused by the flow of aquifer subsurface waters in South Florida. The highest reported tritium is less than 3% of the concentration of tritium that is permitted in community drinking water systems and less than 2% of the reporting value specified by Technical Specifications Table 4.12-2.
4. Waterborne Sediment and Food Products: The results for radioactivity measurements in waterborne sediment and fish samples are consistent with past measurements and (except for Cs-137) with measurements made during the preoperational surveillance program. The sediment samples collected at the control locations had a positive Cs-137 value reported. The maximum value is 19% of the Table 4.12-3 LLD and is about 1.8% of the table 4.12-2 reporting levels. There were no positive results of reactor produced isotopes occurring in fish or invertebrates. Results for the waterborne sediment, fish and crustacea samples are summarized in Table 1.
5. Broad Leaf Vegetation: The results for radioactivity measurements are consistent with past measurements.

C. Conclusions

The data obtained through the Turkey Point Plant Radiological Environmental Monitoring Program verifies that the levels of radiation and concentrations of radioactive materials in environmental samples, representing the highest potential exposure pathways to members of the public, are not being increased. The measurements verify that the dose or dose commitment to members of the public, due to operation of Turkey Point Units Nos. 3 & 4, during the surveillance year, are well within "as low as reasonably achievable (ALARA)" criteria established by 10 CFR 50, Appendix I.

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Unit Nos. 3 and 4 Docket No.(s) 50-250 and 50-251
Location of Facility Dade, Florida Reporting Period January 1 - December 31, 1988
(County, State)

PATHWAY: DIRECT RADIATION

SAMPLES COLLECTED: TLD

UNITS: MICRO - R/hr

Type and Total Number of Analyses Performed	Lower Limit of a Detection (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c Distance & Direction	Mean (f) ^b Range	
Exposure Rate, 84 ^d	---	5.5 (84/84) 4.5 - 7.8	NW-10 10 miles, NW	7.6 (4/4) 7.3 - 7.8	---

Number of Nonroutine Reported Measurements = 0

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Unit Nos. 3 and 4 Docket No.(s) 50-250 and 50-251
 Location of Facility Dade, Florida Reporting Period January 1 - December 31, 1988
 (County, State)

PATHWAY: AIRBORNE

SAMPLES COLLECTED: RADIOIODINE AND PARTICULATES

UNITS: PICO - Ci/M³

Type and Total Number of Analyses Performed	Lower Limit of a Detection (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c Distance & Direction	Mean (f) ^b Range	
¹³¹ I, 260	0.024	< MDA	---	---	< MDA
Gross Beta, 260	0.0025	0.011 (260/260) 0.003 - 0.022	T-58 1 mile, NW	0.011 (52/52) 0.005 - 0.022	0.010 (52/52) 0.003 - 0.018
Composite Gamma Isotopic, 20					
⁷ Be	0.0052	0.132 (20/20) 0.084 - 0.191	T-72 < 1 mile, WSW	0.143 (4/4) 0.101 - 0.191	0.123 (4/4) 0.084 - 0.170
⁴⁰ K	0.012	< MDA	---	---	< MDA
¹³⁴ Cs	0.00069	< MDA	---	---	< MDA
¹³⁷ Cs	0.00066	< MDA	---	---	< MDA

Number of Nonroutine Reported Measurements = 0

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Unit Nos. 3 and 4 Docket No.(s) 50-250 and 50-251
 Location of Facility Dade, Florida Reporting Period January 1 - December 31, 1988
 (County, State)

PATHWAY: WATERBORNE

SAMPLES COLLECTED: SURFACE WATER

UNITS: PICO - Ci/LITER

Type and Total Number of Analyses Performed	Lower Limit of a Detection (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c Distance & Direction	Mean (f) ^b Range	
Tritium, 40	230	282 (10/40) 110-500	T-81 6 miles, S	301 (9/14) 190 - 500	< MDA
Gamma Isotopic, 40					
⁴⁰ K	60	216 (40/40) 80 - 400	T-81 6 miles, S	239 (14/14) 110 - 400	205 (12/12) 90 - 340
⁵⁴ Mn	4	< MDA	---	---	< MDA
⁵⁹ Fe	8	< MDA	---	---	< MDA
⁵⁸ Co	4	< MDA	---	---	< MDA
⁶⁰ Co	4	< MDA	---	---	< MDA
⁶⁵ Zn	8	< MDA	---	---	< MDA
⁹⁵ Zr-Nb	7	< MDA	---	---	< MDA
¹³¹ I	5	< MDA	---	---	< MDA
¹³⁴ Cs	5	< MDA	---	---	< MDA
¹³⁷ Cs	4	< MDA	---	---	< MDA
¹⁴⁰ Ba-La	11	< MDA	---	---	< MDA

Number of Nonroutine Reported Measurements = 0



ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Unit Nos. 3 and 4 Docket No.(s) 50-250 and 50-251
 Location of Facility Dade, Florida Reporting Period January 1 - December 31, 1988
 (County, State)

PATHWAY: WATERBORNE

SAMPLES COLLECTED: SHORELINE SEDIMENT

UNITS: PICO - Ci/Kg, DRY

Type and Total Number of Analyses Performed	Lower Limit of a Detection (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c Distance & Direction	Mean (f) ^b Range	
Gamma Isotopic, 6					
⁷ Be	100	310 (4/6) 180 - 470	T-81 6 miles, S	340 (2/2) 210 - 470	380 (1/2)
⁴⁰ K	140	696 (5/6) 360 - 1110	T-67 13-18 mi, N/NNE	1020 (2/2) 930 - 1110	1020 (2/2) 930 - 1110
¹³⁷ Cs	12	35 (2/6) 35 - 35	T-67 13-18 mi, N/NNE	35 (2/2) 35 - 35	35 (2/2) 35 - 35
²³² Th	52	63 (1/6)	T-81 6 miles, S	63 (1/2)	< MDA
²³⁵ U	--	135 (2/6) 120 - 150	T-42 < 1 mi, ENE	150 (1/2)	120 (1/2)
²³⁸ U	--	1340 (3/6) 560 - 2800	T-67 13-18 mi, N/NNE	1730 (2/2) 660 - 2800	1730 (2/2) 660 - 2800
⁵⁸ Co	9	< MDA	---	---	< MDA
⁶⁰ Co	12	< MDA	---	---	< MDA
¹³⁴ Cs	14	< MDA	---	---	< MDA

Number of Nonroutine Reported Measurements = 0



ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Unit Nos. 3 and 4 Docket No.(s) 50-250 and 50-251
 Location of Facility Dade, Florida Reporting Period January 1 - December 31, 1988
 (County, State)

PATHWAY: INGESTION

SAMPLES COLLECTED: CRUSTACEA

UNITS: PICO - Ci/Kg, WET

Type and Total Number of Analyses Performed	Lower Limit of a Detection (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c Distance & Direction	Mean (f) ^b Range	
Gamma Isotopic, 5					
⁴⁰ K	130	1640 (5/5) 1100 - 2000	T-81 6 miles, S	1650 (2/2) 1600 - 1700	1630 (3/3) 1100 - 1800
²²⁶ Ra	20	273 (5/5) 120 - 500	T-81 6 miles, S	488 (2/2) 476 - 500	130 (3/3) 120 - 150
⁵⁴ Mn	9	< MDA	---	---	< MDA
⁵⁹ Fe	16	< MDA	---	---	< MDA
⁵⁸ Co	9	< MDA	---	---	< MDA
⁶⁰ Co	19	< MDA	---	---	< MDA
⁶⁵ Zn	17	< MDA	---	---	< MDA
¹³⁴ Cs	9	< MDA	---	---	< MDA
¹³⁷ Cs	9	< MDA	---	---	< MDA

Number of Nonroutine Reported Measurements = 0

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Unit Nos. 3 and 4 Docket No.(s) 50-250 and 50-251
 Location of Facility Dade, Florida Reporting Period January 1 - December 31, 1988
 (County, State)

PATHWAY: INGESTION

SAMPLES COLLECTED: FISH

UNITS: PICO - Ci/Kg, WET

Type and Total Number of Analyses Performed	Lower Limit of a Detection (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c Distance & Direction	Mean (f) ^b Range	
Gamma Isotopic, 4					
⁴⁰ K	130	2500 (4/4) 2400 - 2600	T-81 6 miles, S	2500 (2/2) 2400 - 2600	2500 (2/2) 2500 - 2500
²²⁶ Ra	18	72 (3/4) 40 - 105	T-81 6 miles, S	88 (2/2) 70 - 105	40 (1/2)
⁵⁴ Mn	9	< MDA	---	---	< MDA
⁵⁹ Fe	16	< MDA	---	---	< MDA
⁵⁸ Co	9	< MDA	---	---	< MDA
⁶⁰ Co	10	< MDA	---	---	< MDA
⁶⁵ Zn	17	< MDA	---	---	< MDA
¹³⁴ Cs	9	< MDA	---	---	< MDA
¹³⁷ Cs	9	< MDA	---	---	< MDA

Number of Nonroutine Reported Measurements = 0

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Unit Nos. 3 and 4 Docket No.(s) 50-250 and 50-251
 Location of Facility Dade, Florida Reporting Period January 1 - December 31, 1988
 (County, State)

PATHWAY: INGESTION

SAMPLES COLLECTED: BROAD LEAF VEGETATION

UNITS: PICO - Ci/Kg, WET

Type and Total Number of Analyses Performed	Lower Limit of a Detection (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c Distance & Direction	Mean (f) ^b Range	
Gamma Isotopic, 36					
⁷ Be	71	1250 (36/36) 340 - 2060	T-40 3 miles, W	1510 (12/12) 780 - 2010	800 (12/12) 340 - 1300
⁴⁰ K	100	4100 (36/36) 2200 - 5500	T-40 3 miles, W	4490 (12/12) 3500 - 5500	4200 (12/12) 3300 - 5000
¹³⁷ Cs	8	113 (30/36) 8 - 278	T-40 3 miles, W	172 (11/12) 42 - 278	22 (7/12) 8 - 57
¹³¹ I	9	< MDA	---	---	< MDA
¹³⁴ Cs	8	< MDA	---	---	< MDA

Number of Nonroutine Reported Measurements = 0

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Unit Nos. 3 and 4Docket No.(s) 50-250 and 50-251Location of Facility Dade, Florida
(County, State)Reporting Period January 1 - December 31, 1988NOTES

- a. The LLD is an "a priori" lower limit of detection which establishes the smallest concentration of radioactive material in a sample that will yield a net count above system background that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a real signal.

LLD's in this column are at time of measurement. The MDAs reported in Attachment B for the individual samples have been corrected to the time of sample collection.

- b. Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (f).
- c. Specific identifying information for each sample location is provided in Attachment - A.
- d. Results are based upon the average net response of two TLDs. (Thermoluminescent dosimeters).

MDA refers to minimum detectable activity.

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TABLE 1A

DEVIATIONS/MISSING DATA

<u>Date</u>	<u>Location</u>	<u>Description of Problems</u>	<u>Deviation(s)</u>	<u>Corrective Action</u>
-------------	-----------------	--------------------------------	---------------------	--------------------------

There were no deviations and/or occurrences of missing data for
the reporting period of January 1 - December 31, 1988



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TABLE 1B

ANALYSES WITH LLDs ABOVE TABLE 4.12-3 DETECTION CAPABILITIES
1/1/88 - 12/31/88

The values specified in Table 4.12-3, Detection Capabilities,
were achieved for all samples.



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TABLE 2

LAND USE CENSUS

DISTANCE TO NEAREST (a, b)

Sector	5/88 Milk (c) Animal	5/88 Residence	5/88 Garden (d)
N	L (e)	2.1/350 (g)	L
NNE	0 (f)	0	0
NE	0	0	0
ENE	0	0	0
E	0	0	0
ESE	0	0	0
SE	0	0	0
S	L	L (g)	0
SSW	L	L	L
SW	L	L	L
WSW	L	L	L
W	L	L	L
WNW	L	L	4.6/302
NW	L	3.7/319	3.7/311
NNW	L	L (g)	4.5/328



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TABLE 2 NOTES

LAND USE CENSUS

(a) All categories surveyed out to 5 miles radius from the Turkey Point Plant

(b) The following format is used to denote the location:

distance (miles)/bearing (degrees)

For example, a residence located in the north sector at a distance of 2.1 miles bearing 350 degrees is recorded as 2.1/350.

(c) Potential milk animal locations.

(d) Gardens with an estimated growing area of 500 square feet or more.

(e) L denotes that the sector area is predominantly a land area unoccupied by the category type.

(f) O denotes that the sector area is predominantly an ocean area.

(g) Non-residential occupied buildings in this sector include the following:

<u>Sector</u>	<u>Distance</u>	<u>Description</u>
N	1.8/349	24-hour Security Staffing Building
S	4.9/171	Small building/boat dock-not considered a residence
NNW	4.5/327	2 mobile homes used for field offices
NNW	1.8/345	Security booth at park entrance

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ATTACHMENT A

KEY TO SAMPLE LOCATIONS



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Key to Sample Locations

PATHWAY: DIRECT RADIATION

SAMPLES COLLECTED: TLD

SAMPLE COLLECTION FREQUENCY: QUARTERLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
N-1	N	1	Convoy Point
N-5	N	6	North of Moody Drive
N-10	N	12	Old Cutler Rd. at S.W. 87 Avenue
NNW-1	NNW	<1	Turkey Point Entrance Rd.
NNW-10	NNW	9	Burr Rd. at Hainlin Mill Dr.
NW/WWN-1	WNW	1	Turkey Point Entrance Rd.
NW-5	NNW	4	Dolan's Farm on Kings Hwy.
NW-10	NW	10	Intersec Farm Lite & Coconut Palm
W/WWN-5	W	5	Palm Dr. at Tallahassee Rd.
WNW-10	WNW	9	Homestead near Vehicle Inspect. Station
W-1	W	1	On Site near Cooling Tower
W-10	W	10	Florida City near Fire Tower
WSW-10	WSW	12	Old Hawk Missile Site, South of Florida City
SW/SSW-1	SSW	1	On-Site near Land Utilization Offices
SW-10	SW	10	U.S. 1 South of Florida City
SSW/SW-5	SSW	5	On-Site, Southeast Corner of Cooling Canals
SSW-10	SSW	10	At Card Sound Bridge
S-5	S	5	On-Site, South End of Cooling Canals
S-10	S	10	Card Sound Road at Steamboat Creek
SSE/S-1	SSE	1	Turtle Point
SSE-10	SSE	8	Ocean Reef

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Key to Sample Locations

PATHWAY: AIRBORNE

SAMPLES COLLECTED: RADIOIODINE AND PARTICULATES

SAMPLE COLLECTION FREQUENCY: WEEKLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-51	NNW	2	Homestead Bayfront Park
T-57	NW	4	Tree Nursery on 316th Street
T-58	NW	1	Turkey Point Entrance Road
T-72	WSW	<1	Turkey Point Boy Scout Camp
Control:			
T-64	NNE	22	Natoma Substation

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ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT, UNITS NOS. 3 & 4

Key to Sample Locations

PATHWAY: WATERBORNE

SAMPLES COLLECTED: SURFACE WATER
SAMPLE COLLECTION FREQUENCY: MONTHLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-42	ENE	<1	Biscayne Bay at Turkey Point
T-81	S	6	Card Sound, near Mouth of Old Discharge Canal
Control: T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park

SAMPLES COLLECTED: SHORELINE SEDIMENT
SAMPLE COLLECTION FREQUENCY: SEMI-ANNUALLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-42	ENE	<1	Biscayne Bay at Turkey Point
T-81	S	6	Card Sound, near Mouth of Old Discharge Canal
Control: T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park

1988
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT, UNITS NOS. 3 & 4

Key to Sample Locations

PATHWAY: INGESTION

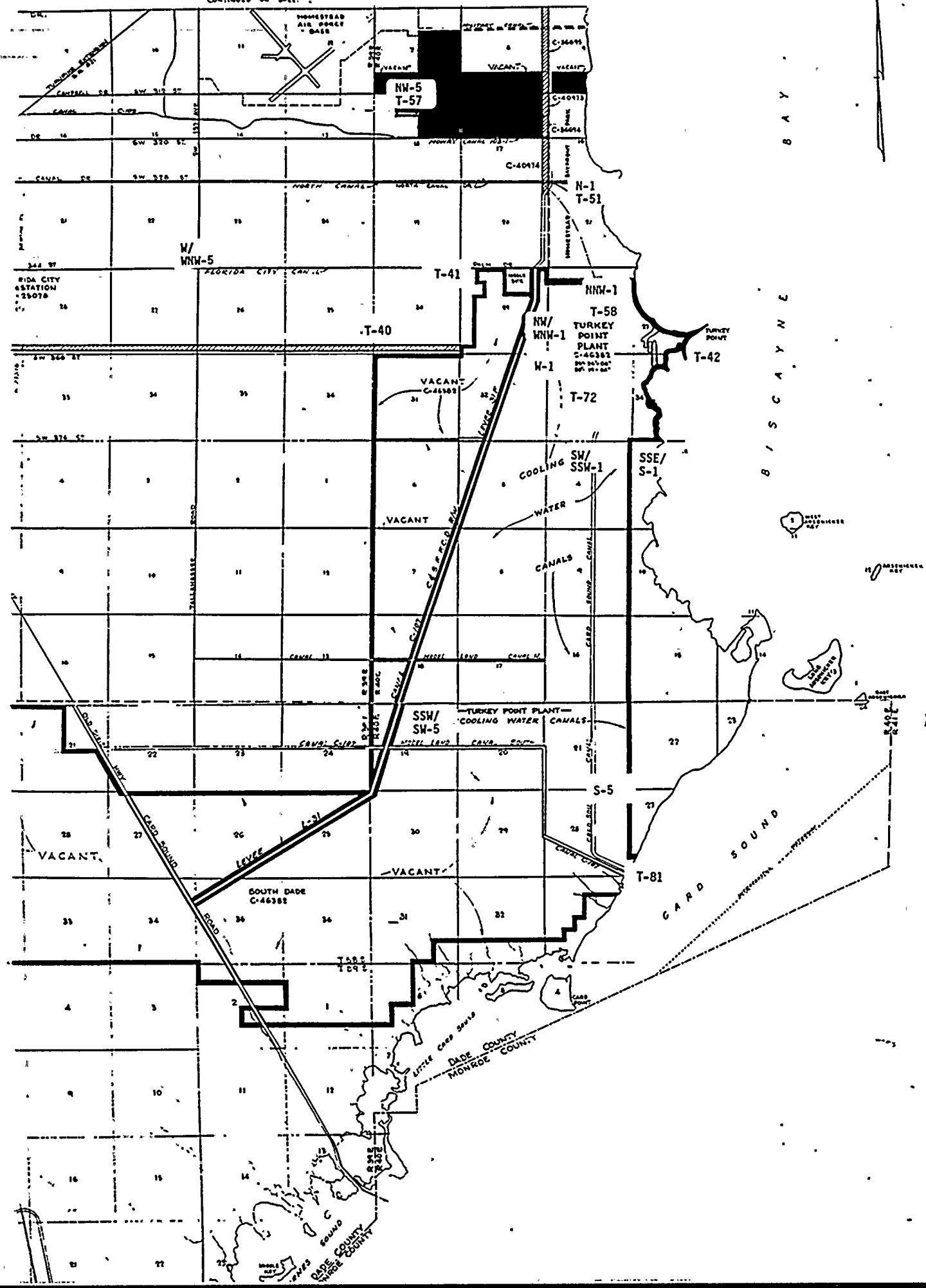
SAMPLES COLLECTED: CRUSTACEA AND FISH
SAMPLE COLLECTION FREQUENCY: SEMI-ANNUALLY

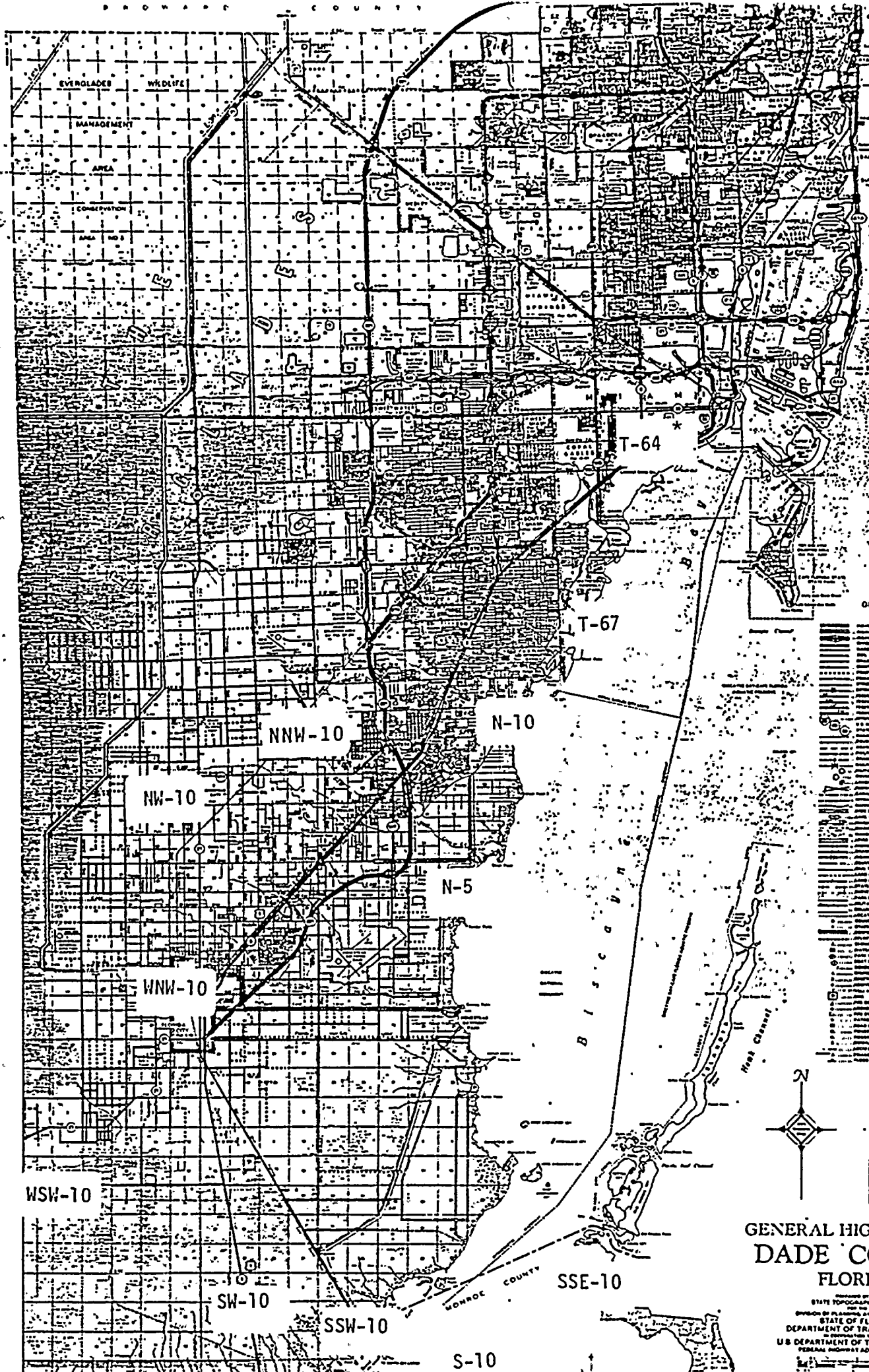
<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-81	S	6	Card Sound, Vicinity of Turkey Point Facility
Control:			
T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park

SAMPLES COLLECTED: BROAD LEAF VEGETATION
SAMPLE COLLECTION FREQUENCY: MONTHLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-40	W	3	South of Palm Dr. on S.W. 117th Street Extension
T-41	WNW	2	Palm Dr., West of Old Missile Site near Plant Site Boundary
Control:			
T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park







GENERAL LEGEND

- Interstate Highway
- State Highway
- County Road
- Local Road
- Unimproved Road
- Gravel Road
- Asphalt Road
- Concrete Road
- Waterway
- Canal
- Bay
- Lake
- Swamp
- Marsh
- Forest
- Field
- Woods
- Shrubland
- Savanna
- Grassland
- Desert
- Mountain
- Hill
- Valley
- Plateau
- Coastline
- Beach
- Dune
- Island
- Peninsula
- Bayou
- Delta
- Estuary
- Wetland
- Woodsed Land
- Barren Land
- Water
- Land
- Waterway
- Canal
- Bay
- Lake
- Swamp
- Marsh
- Forest
- Field
- Woods
- Shrubland
- Savanna
- Grassland
- Desert
- Mountain
- Hill
- Valley
- Plateau
- Coastline
- Beach
- Dune
- Island
- Peninsula
- Bayou
- Delta
- Estuary
- Wetland
- Woodsed Land
- Barren Land
- Water
- Land



GENERAL HIGHWAY MAP
DADE COUNTY
FLORIDA

Prepared by the
STATE TOPOGRAPHIC OFFICE
for the
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
in cooperation with the
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

W-10

WSW-10

SW-10

SSW-10

S-10

SSE-10

WNW-10

NW-10

NNW-10

N-10

N-5

T-64

T-67



1988
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS NOS. 3 AND 4

ATTACHMENT B

RADIOLOGICAL SURVEILLANCE OF
FLORIDA POWER AND LIGHT COMPANY'S

TURKEY POINT SITE

1988

First Quarter, 1988
Second Quarter, 1988
Third Quarter, 1988
Fourth Quarter, 1988

RADIOLOGICAL SURVEILLANCE OF
FLORIDA POWER AND LIGHT COMPANY'S
TURKEY POINT SITE

First Quarter, 1988

Office of Radiation Control
Florida Department of Health
and Rehabilitative Services



TURKEY POINT SITE

Technical Specifications Sampling

First Quarter, 1988

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	21	42
2. Airborne			
2.a Air Iodines	Weekly	5	65
2.b Air Particulates	Weekly	5	69*
3. Waterborne			
3.a Surface Water	Monthly	3	9
3.b Shoreline Sediment	Semiannually	3	3
4. Ingestion			
4.a Fish and Invertebrates			
4.a.1 Crustacea	Semiannually	2	2
4.a.2 Fish	Semiannually	2	1
4.b Food Products			
4.b.1 Broadleaf Vegetation	Monthly	3	9
			<hr/> Total: 200

* - Includes DOE split samples.

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term.

Measurement results that are not significantly above background are reported as "non-detectable" (ND) or as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.



✱



TURKEY POINT TECHNICAL SPECIFICATIONS SAMPLING

First Quarter, 1988

1. DIRECT RADIATION - TLDs - (micro-R/hour)

Each result is the average net response of two dosimeters.

<u>Sample Site</u>	<u>Deployment Collection</u>	<u>12-09-87</u> <u>03-22-88</u>
N-1	5.0	± 0.3
N-5	5.7	± 0.3
N-10	5.4	± 0.3
NNW-1	6.0	± 0.3
NNW-10	6.2	± 0.3
NW/WNW-1	5.3	± 0.3
NW-5	5.3	± 0.3
NW-10	7.8	± 0.4
W/WNW-5	5.2	± 0.3
WNW-10	6.6	± 0.3
W-1	5.5	± 0.3
W-10	6.9	± 0.4
WSW-10	4.8	± 0.3
SW/SSW-1	4.7	± 0.2
SW-10	4.9	± 0.3
SSW/SW-5	5.2	± 0.3
SSW-10	5.7	± 0.3
S-5	4.9	± 0.3
S-10	5.2	± 0.3
SSE/S-1	4.9	± 0.3
SSE-10	5.0	± 0.3

Notes:

- (A) These results have been determined with the assumption that fading is negligible, although detailed testing to confirm this has not been completed.
- (B) Testing to confirm compliance with NRC Reg. Guide 4.13 and ANSI N545-1975 performance standards has not been completed.

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2.a IODINE-131 IN WEEKLY AIR FILTERS - (pCi/m³)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
01-06-88	<0.03	<0.03	<0.03	<0.03	<0.03
01-14-88	<0.03	<0.03	<0.03	<0.04	<0.03
01-20-88	<0.03	<0.04	<0.03	<0.03	<0.03
01-27-88	<0.03	<0.02	<0.03	<0.02	<0.03
02-02-88	<0.04	<0.04	<0.04	<0.04	<0.04
02-09-88	<0.04	<0.04	<0.04	<0.04	<0.04
02-16-88	<0.02	<0.02	<0.02	<0.02	<0.03
02-23-88	<0.02	<0.02	<0.02	<0.02	<0.02
03-01-88	<0.03	<0.03	<0.03	<0.02	<0.02
03-08-88	<0.02	<0.02	<0.02	<0.02	<0.02
03-15-88	<0.02	<0.02	<0.02	<0.02	<0.02
03-22-88	<0.03	<0.03	<0.03	<0.03	<0.03
03-29-88	<0.02	<0.02	<0.02	<0.02	<0.03

2.b

AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
01-06-88	0.007 ± 0.002	0.009 ± 0.002	0.010 ± 0.002	0.006 ± 0.001	0.009 ± 0.002
01-14-88	0.012 ± 0.002	0.011 ± 0.002	0.011 ± 0.002	0.009 ± 0.002	0.011 ± 0.002
01-20-88	0.008 ± 0.002	0.008 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.011 ± 0.002
01-27-88	0.012 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.013 ± 0.002	0.009 ± 0.002
02-02-88	0.009 ± 0.002	0.005 ± 0.002	*0.010 ± 0.002	0.007 ± 0.002	0.008 ± 0.002
02-09-88	0.005 ± 0.001	0.004 ± 0.001	*0.007 ± 0.002	0.003 ± 0.001	0.004 ± 0.001
02-16-88	0.015 ± 0.002	0.012 ± 0.002	*0.016 ± 0.002	0.012 ± 0.002	0.009 ± 0.002
02-23-88	0.009 ± 0.002	0.011 ± 0.002	*0.011 ± 0.002	0.011 ± 0.002	0.012 ± 0.002
03-01-88	0.020 ± 0.002	0.015 ± 0.002	0.021 ± 0.002	0.016 ± 0.002	0.018 ± 0.002
03-08-88	0.010 ± 0.002	0.007 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.014 ± 0.002
03-15-88	0.013 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.015 ± 0.002
03-22-88	0.011 ± 0.002	0.016 ± 0.002	0.016 ± 0.002	0.015 ± 0.002	0.010 ± 0.002
03-29-88	0.010 ± 0.002	0.010 ± 0.002	0.013 ± 0.002	0.010 ± 0.002	0.013 ± 0.002
Means:	0.011 ± 0.001	0.010 ± 0.001	0.012 ± 0.001	0.010 ± 0.001	0.011 ± 0.001

* - DOE split samples.

2.b

AIR PARTICULATES - GAMMA SCANS OF QUARTERLY COMPOSITES - (pCi/m³)

First Quarter, 1988				
Sample Site	Be-7	K-40	Cs-134	Cs-137
T51	0.166 ± 0.010	<0.016	<0.0011	<0.0009
T57	0.157 ± 0.011	<0.024	<0.0010	<0.0006
T58	0.174 ± 0.010	<0.027	<0.0007	<0.0007
T64	0.170 ± 0.010	<0.026	<0.0011	<0.0007
T72	0.191 ± 0.011	<0.016	<0.0011	<0.0008

3.a

SURFACE WATER - (pCi/l)

Sample Site	Collection Date	H-3	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Zr-95 Nb-95	I-131	Cs-134	Cs-137	Ba-140 La-140
									(A)				(B)
T42	01-11-88	<190	170 + 50	<4	<10	<4	<5	<10	<6	<7	<3	<4	<8
	02-15-88	<180	230 + 50	<5	<12	<4	<4	<9	<8	<7	<5	<4	<5
	03-15-88	<180	310 + 50	<5	<9	<4	<5	<11	<7	<8	<5	<4	<5
T67	01-11-88	<190	240 + 50	<4	<9	<3	<5	<10	<7	<6	<4	<5	<7
	02-15-88	<180	210 + 40	<5	<12	<4	<5	<11	<8	<8	<5	<4	<6
	03-15-88	<180	250 + 40	<4	<12	<4	<5	<10	<10	<7	<5	<5	<7
T81	01-11-88	230 + 60	270 + 50	<5	<9	<5	<4	<10	<8	<7	<5	<5	<4
	02-16-88	190 + 60	280 + 50	<4	<8	<4	<5	<9	<8	<8	<5	<5	<7
	03-15-88	500 + 60	320 + 50	<4	<9	<3	<6	<8	<8	<7	<5	<5	<4

(A) These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLDs.

(B) These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

3.b SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Ra-226	Th-232	U-238
T42	02-12-88	<130	540 \pm 80	<12	<11	<13	<11	630 \pm 20	<28	<430
T67	02-12-88	<160	1110 \pm 100	<14	<12	<16	35 \pm 7	320 \pm 10	<36	660 \pm 90
T81	02-12-88	470 \pm 90	540 \pm 120	<24	<21	<23	<17	900 \pm 20	<53	560 \pm 130

4.a.1 CRUSTACEA - Blue Crab - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Cs-134	Cs-137	Ra-226
T67	02-16-88	1100 \pm 100	<10	<23	<11	<11	<19	<13	<10	120 \pm 9
T81	03-04-88	1600 \pm 100	<14	<38	<15	<12	<31	<15	<12	476 \pm 30

4.a.2 FISH - (T81: Mixed Species) - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Cs-134	Cs-137	Ra-226
T67	This sample was not collected despite several attempts.. Attempts will continue.									
T81	02-18-88	2600 \pm 100	<13	<43	<16	<16	<31	<11	<12	105 \pm 9



4.b.1 BROADLEAF VEGETATION - Brazilian Pepper - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>
T40	01-11-88	1810 \pm 90	4400 \pm 200	<30	<12	204 \pm 10
	02-15-88	1420 \pm 80	5300 \pm 200	<26	<14	95 \pm 10
	03-15-88	1360 \pm 80	4300 \pm 200	<26	<13	183 \pm 11
T41	01-11-88	1820 \pm 100	4500 \pm 200	<30	<14	104 \pm 9
	02-15-88	1360 \pm 80	4000 \pm 200	<22	<11	51 \pm 6
	03-15-88	1000 \pm 70	4200 \pm 200	<28	<15	63 \pm 8
T67	01-11-88	1300 \pm 70	3800 \pm 200	<29	<13	57 \pm 6
	02-15-88	1180 \pm 80	3300 \pm 200	<24	<11	21 \pm 5
	03-15-88	710 \pm 80	4700 \pm 200	<25	<15	<12

RADIOLOGICAL SURVEILLANCE OF
FLORIDA POWER AND LIGHT COMPANY'S
TURKEY POINT SITE

Second Quarter, 1988

Office of Radiation Control
Florida Department of Health
and Rehabilitative Services



TURKEY POINT SITE

Technical Specifications Sampling

Second Quarter, 1988

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	21	42
2. Airborne			
2.a Air Iodines	Weekly	5	65
2.b Air Particulates	Weekly	5	69*
3. Waterborne			
3.a Surface Water	Monthly	3	9
3.b Shoreline Sediment	Semiannually	0	0
4. Ingestion			
4.a Fish and Invertebrates			
4.a.1 Crustacea	Semiannually	0	0
4.a.2 Fish	Semiannually	1	1
4.b Food Products			
4.b.1 Broadleaf Vegetation	Monthly	3	9
			<hr/> Total: 195

* - Includes DOE split samples.

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term.

Measurement results that are not significantly above background are reported as "non-detectable" (ND) or as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

TURKEY POINT TECHNICAL SPECIFICATIONS SAMPLING

Second Quarter, 1988

1. DIRECT RADIATION - TLDs - (micro-R/hour)

Each result is the average net response of two dosimeters.

<u>Sample Site</u>	<u>Deployment Collection</u>	<u>03-22-88</u> <u>06-21-88</u>
N-1	5.0	± 0.3
N-5	5.8	± 0.3
N-10	5.2	± 0.3
NNW-1	6.2	± 0.3
NNW-10	6.3	± 0.3
NW/WNW-1	5.1	± 0.3
NW-5	5.6	± 0.3
NW-10	7.7	± 0.4
W/WNW-5	5.0	± 0.3
WNW-10	6.4	± 0.3
W-1	5.4	± 0.3
W-10	6.4	± 0.3
WSW-10	4.7	± 0.2
SW/SSW-1	4.8	± 0.3
SW-10	4.9	± 0.3
SSW/SW-5	5.4	± 0.3
SSW-10	5.8	± 0.3
S-5	4.9	± 0.3
S-10	5.2	± 0.3
SSE/S-1	4.9	± 0.3
SSE-10	5.1	± 0.3

Notes:

- (A) These results have been determined with the assumption that fading is negligible, although detailed testing to confirm this has not been completed.
- (B) Testing to confirm compliance with NRC Reg. Guide 4.13 and ANSI N545-1975 performance standards has not been completed.

2.a IODINE-131 IN WEEKLY AIR FILTERS - (pCi/m³)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
04-05-88	<0.02	<0.02	<0.02	<0.02	<0.02
04-12-88	<0.03	<0.03	<0.03	<0.02	<0.02
04-19-88	<0.02	<0.02	<0.02	<0.02	<0.02
04-26-88	<0.02	<0.02	<0.02	<0.02	<0.02
05-03-88	<0.03	<0.03	<0.03	<0.02	<0.02
05-10-88	<0.03	<0.03	<0.03	<0.03	<0.03
05-17-88	<0.02	<0.02	<0.02	<0.02	<0.02
05-24-88	<0.03	<0.02	<0.02	<0.02	<0.02
05-31-88	<0.04	<0.04	<0.04	<0.03	<0.03
06-07-88	<0.03	<0.03	<0.03	<0.03	<0.03
06-14-88	<0.03	<0.03	<0.03	<0.03	<0.03
06-21-88	<0.02	<0.02	<0.02	<0.02	<0.02
06-28-88	<0.03	<0.03	<0.03	<0.03	<0.03

2.b

AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
04-05-88	0.012 ± 0.002	0.014 ± 0.002	0.011 ± 0.002	0.011 ± 0.002	0.014 ± 0.002
04-12-88	0.012 ± 0.002	0.010 ± 0.002	0.012 ± 0.002	0.011 ± 0.002	0.013 ± 0.002
04-19-88	0.011 ± 0.002	0.017 ± 0.002	0.014 ± 0.002	0.010 ± 0.002	0.013 ± 0.002
04-26-88	0.016 ± 0.002	0.015 ± 0.002	0.015 ± 0.002	0.010 ± 0.002	0.015 ± 0.002
05-03-88	0.011 ± 0.002	0.017 ± 0.002	*0.012 ± 0.002	0.011 ± 0.002	0.015 ± 0.002
05-10-88	0.014 ± 0.002	0.015 ± 0.002	*0.014 ± 0.002	0.014 ± 0.002	0.015 ± 0.002
05-17-88	0.012 ± 0.002	0.016 ± 0.002	*0.015 ± 0.002	0.016 ± 0.002	0.014 ± 0.002
05-24-88	0.009 ± 0.002	0.010 ± 0.002	*0.011 ± 0.002	0.011 ± 0.002	0.011 ± 0.002
05-31-88	0.007 ± 0.002	0.008 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.007 ± 0.002
06-07-88	0.006 ± 0.002	0.004 ± 0.001	0.006 ± 0.001	0.003 ± 0.001	0.005 ± 0.001
06-14-88	0.014 ± 0.002	0.006 ± 0.002	0.012 ± 0.002	0.008 ± 0.002	0.010 ± 0.002
06-21-88	0.008 ± 0.002	0.008 ± 0.002	0.007 ± 0.002	0.005 ± 0.001	0.007 ± 0.002
06-28-88	0.005 ± 0.001	0.008 ± 0.002	0.009 ± 0.002	0.004 ± 0.001	0.007 ± 0.002
Means:	0.011 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.010 ± 0.001	0.011 ± 0.001

* - DOE split samples.

2.b

AIR PARTICULATES - GAMMA SCANS OF QUARTERLY COMPOSITES - (pCi/m³)

Second Quarter, 1988				
Sample Site	Be-7	K-40	Cs-134	Cs-137
T51	0.138 ± 0.010	<0.025	<0.0006	<0.0008
T57	0.140 ± 0.010	<0.016	<0.0010	<0.0007
T58	0.143 ± 0.011	<0.024	<0.0010	<0.0008
T64	0.125 ± 0.009	<0.024	<0.0009	<0.0007
T72	0.135 ± 0.010	<0.018	<0.0010	<0.0008



3.a

SURFACE WATER - (pCi/l)

Sample Site	Collection Date	H-3	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T42	04-11-88	<180	340 \pm 50	<3	<9	<4	<5	<8	<6	<5	<5	<4	<8
	05-17-88	<180	340 \pm 40	<5	<12	<5	<4	<10	<8	<8	<5	<4	<8
	06-13-88	110 \pm 60	110 \pm 40	<5	<9	<5	<4	<9	<6	<8	<5	<4	<6
T67	04-11-88	<180	340 \pm 50	<4	<10	<5	<4	<8	<10	<6	<6	<4	<7
	05-17-88	<180	260 \pm 40	<5	<12	<4	<3	<11	<7	<7	<5	<4	<7
	06-13-88	<190	190 \pm 40	<5	<9	<5	<5	<10	<7	<8	<5	<4	<7
T81	04-11-88	210 \pm 60	400 \pm 50	<4	<11	<4	<5	<8	<7	<7	<5	<5	<6
	05-17-88	600 \pm 60	320 \pm 50	<5	<11	<5	<5	<10	<8	<10	<5	<4	<6
	06-13-88	270 \pm 60	240 \pm 50	<4	<9	<6	<5	<10	<6	<9	<5	<4	<6

(A) These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLDs.

(B) These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

4.a.2

FISH - Mixed Species - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Cs-134	Cs-137	Ra-226
T67	04-28-88	2500 \pm 100	<10	<30	<10	<12	<28	<15	<12	<36



4.b.1 BROADLEAF VEGETATION - Brazilian Pepper - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>
T40	04-11-88	780 \pm 70	4400 \pm 200	<13	<13	120 \pm 8
	05-17-88	800 \pm 70	3500 \pm 200	<19	<12	147 \pm 10
	06-13-88	1860 \pm 90	5500 \pm 200	<29	<14	234 \pm 11
T41	04-11-88	450 \pm 60	3200 \pm 200	<15	<11	150 \pm 10
	05-17-88	880 \pm 60	2200 \pm 100	<21	<9	128 \pm 8
	06-13-88	1680 \pm 80	3300 \pm 200	<21	<12	104 \pm 7
T67	04-11-88	600 \pm 70	4600 \pm 200	<16	<14	<12
	05-17-88	340 \pm 50	4700 \pm 200	<17	<12	<14
	06-13-88	850 \pm 70	3900 \pm 200	<22	<12	8 \pm 4



RADIOLOGICAL SURVEILLANCE OF
FLORIDA POWER AND LIGHT COMPANY'S
TURKEY POINT SITE

Third Quarter, 1988

Office of Radiation Control

Florida Department of Health
and Rehabilitative Services

TURKEY POINT SITE

Technical Specifications Sampling

Third Quarter, 1988

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	21	42
2. Airborne			
2.a Air Iodines	Weekly	5	65
2.b Air Particulates	Weekly	5	69*
3. Waterborne			
3.a Surface Water	Monthly	3	13
3.b Shoreline Sediment	Semiannually	3	3
4. Ingestion			
4.a Fish and Invertebrates			
4.a.1 Crustacea	Semiannually	2	3
4.a.2 Fish	Semiannually	2	2
4.b Food Products			
4.b.1 Broadleaf Vegetation	Monthly	3	9
			<hr/> Total: 206

* - Includes DOE split samples.

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term.

Measurement results that are not significantly above background are reported as "non-detectable" (ND) or as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

TURKEY POINT TECHNICAL SPECIFICATIONS SAMPLING

Third Quarter, 1988

1. DIRECT RADIATION - TLDs - (micro-R/hour)

Each result is the average net response of two dosimeters.

<u>Sample Site</u>	<u>Deployment Collection</u>	<u>06-21-88</u> <u>09-19-88</u>
N-1	5.1	± 0.3
N-5	5.8	± 0.3
N-10	5.4	± 0.3
NNW-1	6.2	± 0.3
NNW-10	6.2	± 0.3
NW/WNW-1	5.2	± 0.3
NW-5	5.3	± 0.3
NW-10	7.6	± 0.4
W/WNW-5	5.0	± 0.3
WNW-10	6.3	± 0.3
W-1	5.1	± 0.3
W-10	7.0	± 0.4
WSW-10	4.5	± 0.2
SW/SSW-1	4.6	± 0.2
SW-10	4.7	± 0.2
SSW/SW-5	5.9	± 0.3
SSW-10	5.6	± 0.3
S-5	4.8	± 0.3
S-10	5.1	± 0.3
SSE/S-1	4.9	± 0.3
SSE-10	4.8	± 0.3

Notes:

- (A) These results have been determined with the assumption that fading is negligible, although detailed testing to confirm this has not been completed.
- (B) Testing to confirm compliance with NRC Reg. Guide 4.13 and ANSI N545-1975 performance standards has not been completed.

2.a

IODINE-131 IN WEEKLY AIR FILTERS - (pCi/m³)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
07-05-88	<0.03	<0.03	<0.03	<0.02	<0.03
07-12-88	<0.02	<0.02	<0.02	<0.02	<0.02
07-19-88	<0.02	<0.02	<0.02	<0.02	<0.02
07-26-88	<0.03	<0.03	<0.03	<0.03	<0.03
08-02-88	<0.03	<0.03	<0.03	<0.03	<0.03
08-08-88	<0.03	<0.03	<0.03	<0.03	<0.03
08-16-88	<0.02	<0.02	<0.02	<0.02	<0.02
08-23-88	<0.03	<0.03	<0.02	<0.03	<0.03
08-30-88	<0.02	<0.02	<0.02	<0.02	<0.02
09-06-88	<0.02	<0.02	<0.02	<0.02	<0.02
09-13-88	<0.02	<0.02	<0.02	<0.02	<0.02
09-20-88	<0.02	<0.03	<0.02	<0.03	<0.03
09-27-88	<0.02	<0.03	<0.02	<0.02	<0.02



2.b

AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
07-05-88	0.008 ± 0.002	0.004 ± 0.001	0.012 ± 0.002	0.009 ± 0.002	0.010 ± 0.002
07-12-88	0.005 ± 0.002	0.005 ± 0.001	0.007 ± 0.002	0.003 ± 0.001	0.006 ± 0.002
07-19-88	0.007 ± 0.002	0.006 ± 0.002	0.009 ± 0.002	0.004 ± 0.001	0.007 ± 0.002
07-26-88	0.008 ± 0.002	0.007 ± 0.001	0.008 ± 0.001	0.005 ± 0.001	0.009 ± 0.002
08-02-88	0.011 ± 0.002	0.012 ± 0.002	*0.010 ± 0.002	0.012 ± 0.002	0.012 ± 0.002
08-08-88	0.011 ± 0.002	0.010 ± 0.002	*0.010 ± 0.002	0.012 ± 0.002	0.010 ± 0.002
08-16-88	0.005 ± 0.001	0.006 ± 0.001	*0.006 ± 0.001	0.008 ± 0.001	0.004 ± 0.001
08-23-88	0.011 ± 0.002	0.012 ± 0.002	*0.010 ± 0.002	0.008 ± 0.002	0.015 ± 0.002
08-30-88	0.008 ± 0.002	0.012 ± 0.002	0.006 ± 0.002	0.008 ± 0.002	0.004 ± 0.002
09-06-88	0.009 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.005 ± 0.002	0.007 ± 0.002
09-13-88	0.012 ± 0.002	0.010 ± 0.002	0.012 ± 0.002	0.011 ± 0.002	0.009 ± 0.002
09-20-88	0.005 ± 0.001	0.009 ± 0.002	0.005 ± 0.001	0.007 ± 0.002	0.007 ± 0.002
09-27-88	0.007 ± 0.002	0.006 ± 0.002	0.009 ± 0.002	0.010 ± 0.002	0.011 ± 0.002
Means:	0.008 ± 0.001	0.008 ± 0.001	0.009 ± 0.001	0.008 ± 0.001	0.009 ± 0.001

* - DOE split samples.

2.b

AIR PARTICULATES - GAMMA SCANS OF QUARTERLY COMPOSITES - (pCi/m³)

Third Quarter, 1988					
Sample Site	Be-7	K-40	Cs-134	Cs-137	
T51	0.086 ± 0.007	<0.013	<0.0008	<0.0006	
T57	0.101 ± 0.009	<0.014	<0.0009	<0.0007	
T58	0.092 ± 0.008	<0.012	<0.0009	<0.0008	
T64	0.084 ± 0.009	<0.012	<0.0007	<0.0005	
T72	0.101 ± 0.008	<0.012	<0.0008	<0.0006	

3.a

SURFACE WATER - (pCi/l)

Sample Site	Collection Date	H-3	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T42	07-19-88	<190	230 + 40	<4	<10	<5	<4	<10	<9	<8	<5	<5	<7
	08-16-88	<170	80 + 40	<3	<9	<4	<4	<8	<8	<5	<5	<4	<6
	08-19-88	<180	150 + 40	<5	<9	<5	<5	<9	<8	<7	<5	<4	<6
	08-23-88	<170	140 + 40	<5	<9	<5	<5	<8	<8	<5	<4	<4	<7
	09-12-88	<170	210 + 40	<4	<9	<5	<5	<8	<6	<6	<4	<4	<7
T67	07-19-88	<180	160 + 40	<4	<9	<5	<5	<10	<8	<8	<6	<4	<8
	08-15-88	<170	90 + 40	<4	<11	<4	<5	<7	<8	<8	<4	<4	<6
	09-12-88	<170	100 + 40	<4	<8	<4	<5	<11	<6	<5	<5	<4	<7
T81	07-18-88	250 + 60	220 + 50	<4	<11	<5	<4	<8	<6	<8	<5	<5	<7
	08-16-88	<190	210 + 40	<4	<8	<3	<5	<11	<7	<6	<5	<5	<6
	08-19-88	<200	110 + 40	<4	<10	<5	<4	<10	<7	<7	<5	<4	<4
	08-23-88	<170	150 + 40	<4	<9	<4	<4	<7	<6	<6	<5	<5	<6
	09-12-88	<170	180 + 40	<4	<7	<3	<4	<8	<8	<6	<5	<5	<7

(A) These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLDs.

(B) These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

Note that follow-up samples were collected at T42 and T81 after an unplanned release of contaminated water from a spent fuel pit into the cooling canal system on 8-16-88.

3.b

SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Others	
T42	07-12-88	180 \pm 50	360 \pm 90	<14	<10	<13	<11	Ra-226:	720 \pm 40
								U-235:	150 \pm 40
T67	07-15-88	380 \pm 80	930 \pm 100	<15	<11	<12	35 \pm 8	Ra-226:	330 \pm 20
								U-235:	120 \pm 40
								U-238:	2800 \pm 1300
T81	07-12-88	210 \pm 40	<200	<10	<8	<10	<10	Ra-226:	370 \pm 10
								Th-232:	63 \pm 17

4.a.1

CRUSTACEA - Blue Crab - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Cs-134	Cs-137	Ra-226
T67	08-07-88	2000 \pm 200	<15	<32	<14	<17	<36	<18	<14	120 \pm 10
T67 (A)	08-11-88	1800 \pm 200	<25	<45	<24	<21	<41	<26	<20	150 \pm 20
T81	07-26-88	1700 \pm 100	<12	<37	<16	<11	<30	<16	<12	500 \pm 40

(A) - Two crustacea samples were collected for site T-67 because it was not certain that the first sample would be of sufficient quantity to achieve the required analytical sensitivities. Both samples were analyzed, and both sets of results are reported here.

4.a.2

FISH - Mixed Species - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Cs-134	Cs-137	Ra-226
T67	08-07-88	2500 \pm 100	<10	<28	<10	<13	<27	<13	<11	40 \pm 10
T81	07-21-88	2400 \pm 100	<15	<43	<16	<16	<32	<14	<15	70 \pm 10

4.b.1 BROADLEAF VEGETATION - Brazilian Pepper - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>
T40	07-19-88	1850 \pm 90	5500 \pm 200	<15	<16	<14
	08-15-88	2000 \pm 100	4300 \pm 200	<22	<15	255 \pm 12
	09-12-88	2010 \pm 100	3700 \pm 200	<20	<11	42 \pm 7
T41	07-19-88	2060 \pm 90	3700 \pm 200	<20	<11	166 \pm 10
	08-16-88	1970 \pm 100	4000 \pm 200	<20	<11	92 \pm 9
	09-12-88	1990 \pm 100	3900 \pm 200	<23	<12	70 \pm 7
T67	07-19-88	660 \pm 50	4000 \pm 100	<11	<10	<9
	08-15-88	510 \pm 50	3500 \pm 100	<15	<9	14 \pm 5
	09-12-88	810 \pm 60	5000 \pm 200	<17	<11	18 \pm 5

RADIOLOGICAL SURVEILLANCE OF
FLORIDA POWER AND LIGHT COMPANY'S
TURKEY POINT SITE

Fourth Quarter, 1988

Office of Radiation Control

Florida Department of Health
and Rehabilitative Services



TURKEY POINT SITE

Technical Specifications Sampling

Fourth Quarter, 1988

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	21	42
2. Airborne			
2.a Air Iodines	Weekly	5	65
2.b Air Particulates	Weekly	5	69*
3. Waterborne			
3.a Surface Water	Monthly	3	9
3.b Shoreline Sediment	Semiannually	0	0
4. Ingestion			
4.a Fish and Invertebrates			
4.a.1 Crustacea	Semiannually	0	0
4.a.2 Fish	Semiannually	0	0
4.b Food Products			
4.b.1 Broadleaf Vegetation	Monthly	3	10*
			<hr/> Total: 195

* - Includes DOE split samples.

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term.

Measurement results that are not significantly above background are reported as "non-detectable" (ND) or as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.



TURKEY POINT TECHNICAL SPECIFICATIONS SAMPLING

Fourth Quarter, 1988

1. DIRECT RADIATION - TLDs - (micro-R/hour)

Each result is the average net response of two dosimeters.

<u>Sample Site</u>	<u>Deployment Collection</u>	<u>09-19-88</u> <u>12-20-88</u>
N-1	5.1	± 0.3
N-5	5.7	± 0.3
N-10	5.4	± 0.3
NNW-1	6.2	± 0.3
NNW-10	5.9	± 0.3
NW/WNW-1	4.7	± 0.2
NW-5	5.4	± 0.3
NW-10	7.3	± 0.4
W/WNW-5	4.9	± 0.3
WNW-10	6.5	± 0.3
W-1	5.3	± 0.3
W-10	6.7	± 0.4
WSW-10	4.9	± 0.3
SW/SSW-1	4.7	± 0.2
SW-10	4.8	± 0.3
SSW/SW-5	5.5	± 0.3
SSW-10	6.1	± 0.3
S-5	4.9	± 0.3
S-10	5.3	± 0.3
SSE/S-1	4.9	± 0.3
SSE-10	4.8	± 0.3

Notes:

- (A) These results have been determined with the assumption that fading is negligible, although detailed testing to confirm this has not been completed.
- (B) Testing to confirm compliance with NRC Reg. Guide 4.13 and ANSI N545-1975 performance standards has not been completed.



2.a IODINE-131 IN WEEKLY AIR FILTERS - (pCi/m³)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
10-04-88	<0.02	<0.02	<0.02	<0.02	<0.02
10-10-88	<0.03	<0.03	<0.03	<0.03	<0.03
10-18-88	<0.03	<0.03	<0.03	<0.03	<0.03
10-25-88	<0.03	<0.03	<0.03	<0.03	<0.03
11-01-88	<0.04	<0.04	<0.04	<0.04	<0.04
11-09-88	<0.03	<0.03	<0.03	<0.03	<0.03
11-15-88	<0.03	<0.03	<0.03	<0.03	<0.03
11-22-88	<0.03	<0.04	<0.03	<0.03	<0.03
11-29-88	<0.03	<0.03	<0.04	<0.03	<0.03
12-05-88	<0.04	<0.04	<0.04	<0.04	<0.04
12-13-88	<0.02	<0.02	<0.02	<0.02	<0.02
12-20-88	<0.02	<0.02	<0.02	<0.02	<0.02
12-27-88	<0.02	<0.02	<0.02	<0.02	<0.02

2.b

AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
10-04-88	0.010 ± 0.002	0.008 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.007 ± 0.002
10-10-88	0.011 ± 0.002	0.009 ± 0.002	0.012 ± 0.002	0.012 ± 0.002	0.012 ± 0.002
10-18-88	0.016 ± 0.002	0.013 ± 0.002	0.015 ± 0.002	0.013 ± 0.002	0.014 ± 0.002
10-25-88	0.013 ± 0.002	0.014 ± 0.002	0.013 ± 0.002	0.009 ± 0.002	0.017 ± 0.002
11-01-88	0.019 ± 0.002	0.016 ± 0.002	*0.022 ± 0.002	0.018 ± 0.002	0.018 ± 0.002
11-09-88	0.016 ± 0.002	0.015 ± 0.002	*0.014 ± 0.002	0.015 ± 0.002	0.013 ± 0.002
11-15-88	0.016 ± 0.002	0.009 ± 0.002	*0.011 ± 0.002	0.009 ± 0.002	0.011 ± 0.002
11-22-88	0.007 ± 0.002	0.006 ± 0.002	*0.008 ± 0.002	0.005 ± 0.001	0.007 ± 0.002
11-29-88	0.009 ± 0.002	0.009 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.011 ± 0.002
12-05-88	0.015 ± 0.002	0.017 ± 0.002	0.015 ± 0.002	0.013 ± 0.002	0.020 ± 0.002
12-13-88	0.013 ± 0.002	0.012 ± 0.002	0.013 ± 0.002	0.012 ± 0.002	0.011 ± 0.002
12-20-88	0.015 ± 0.002	0.017 ± 0.002	0.014 ± 0.002	0.017 ± 0.002	0.017 ± 0.002
12-27-88	0.007 ± 0.002	0.007 ± 0.002	0.006 ± 0.002	0.007 ± 0.002	0.009 ± 0.002
Means:	0.013 ± 0.001	0.012 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.013 ± 0.001

* - DOE split samples.

2.b

AIR PARTICULATES - GAMMA SCANS OF QUARTERLY COMPOSITES - (pCi/m³)

Fourth Quarter, 1988				
Sample Site	Be-7	K-40	Cs-134	Cs-137
T51	0.116 ± 0.009	<0.015	<0.0008	<0.0008
T57	0.131 ± 0.010	<0.016	<0.0011	<0.0006
T58	0.144 ± 0.010	<0.017	<0.0010	<0.0006
T64	0.111 ± 0.009	<0.015	<0.0009	<0.0007
T72	0.144 ± 0.010	<0.013	<0.0007	<0.0008

3.a

SURFACE WATER - (pCi/l)

Sample Site	Collection Date	H-3	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T42	10-10-88	<180	140 \pm 40	<4	<11	<3	<6	<10	<7	<8	<5	<4	<6
	11-14-88	<180	150 \pm 40	<4	<6	<4	<4	<10	<5	<6	<4	<5	<6
	12-12-88	<160	220 \pm 40	<4	<6	<3	<5	<8	<7	<6	<3	<4	<8
T67	10-10-88	<180	240 \pm 40	<4	<10	<5	<5	<10	<8	<8	<5	<3	<6
	11-14-88	<180	180 \pm 40	<5	<11	<4	<5	<7	<6	<15	<4	<4	<6
	12-12-88	<180	200 \pm 50	<5	<8	<4	<5	<8	<8	<7	<4	<4	<9
T81	10-10-88	<180	160 \pm 40	<5	<8	<5	<4	<7	<8	<8	<5	<5	<6
	11-14-88	300 \pm 60	230 \pm 50	<4	<9	<5	<4	<9	<8	<6	<4	<4	<5
	12-12-88	160 \pm 50	260 \pm 50	<4	<10	<5	<5	<10	<7	<8	<5	<4	<6

(A) These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLDs.

(B) These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

4.b.1 BROADLEAF VEGETATION - Brazilian Pepper - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>
T40	10-10-88	1810 \pm 90	3900 \pm 200	<17	<13	234 \pm 12
	*11-14-88	1380 \pm 80	4500 \pm 200	<15	<13	106 \pm 9
	12-12-88	1040 \pm 80	4600 \pm 200	<16	<13	278 \pm 13
T41	10-10-88	2020 \pm 90	3300 \pm 200	<16	<12	152 \pm 10
	11-14-88	1150 \pm 80	3600 \pm 200	<15	<9	147 \pm 10
	12-12-88	1050 \pm 70	3500 \pm 200	<14	<11	112 \pm 9
T67	10-10-88	910 \pm 70	4900 \pm 200	<14	<13	21 \pm 5
	11-14-88	1000 \pm 70	4200 \pm 200	<14	<11	<12
	12-12-88	750 \pm 70	3800 \pm 200	<14	<12	16 \pm 6

* - DOE split sample.



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ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT - UNITS NOS. 3 AND 4

ATTACHMENT C

RESULTS FROM THE
INTERLABORATORY COMPARISON PROGRAM
1988

FLORIDA DEPT. OF HRS - EPA INTERLABORATORY CROSS-CHECK PROGRAM DATA

January through June, 1988

Media	Nuclide	Collection	EPA	Units	Normal.	Mean of	N.D.K.	Action
		Mon Day Yr	Known		Range	Analyses		Level
FILTER	Alpha	03 25 88	20	pCi/F	0.118	23.33	1.15	
FILTER	Beta	03 25 88	50	pCi/F	0.000	50.00	0.00	
FILTER	Cs-137	03 25 88	16	pCi/F	0.237	18.33	0.81	
FILTER	Sr-90	03 25 88	17	pCi/F	0.395	14.67	-2.69	
FOOD	I-131	01 29 88	102	pCi/Kg	0.058	99.33	-0.45	
FOOD	Cs-137	01 29 88	91	pCi/Kg	0.355	92.00	0.35	
FOOD	K	01 29 88	1230	mg/Kg	0.578	1176.67	-1.50	
FOOD	Sr-89	01 29 88	46	pCi/Kg	0.237	36.00	-3.46	1
FOOD	Sr-90	01 29 88	55	pCi/Kg	0.215	48.33	-4.20	2
MILK	I-131	06 24 88		pCi/L			NA	
MILK	Cs-137	06 24 88		pCi/L			NA	
MILK	K	06 24 88		mg/L			NA	
MILK	Sr-89	06 24 88		pCi/L			NA	
MILK	Sr-90	06 24 88		pCi/L			NA	
WATER	Alpha	01 22 88	4	pCi/L	0.000	3.00	-0.35	
WATER	Alpha	03 18 88	6	pCi/L	0.118	5.33	-0.23	
WATER	Alpha	05 20 88	11	pCi/L	0.118	7.33	-1.27	
WATER	Beta	01 22 88	8	pCi/L	0.118	8.67	0.23	
WATER	Beta	03 18 88	13	pCi/L	0.118	14.33	0.46	
WATER	Beta	05 20 88	11	pCi/L	0.118	12.67	0.58	
WATER	Cr-51	06 03 88		pCi/L			NA	
WATER	Co-60	02 05 88	69	pCi/L	0.355	70.67	0.58	
WATER	Co-60	06 03 88		pCi/L			NA	
WATER	Zn-65	02 05 88	94	pCi/L	0.252	98.00	0.74	
WATER	Zn-65	06 03 88		pCi/L			NA	
WATER	Ru-106	02 05 88	105	pCi/L	0.451	102.33	-0.44	
WATER	Ru-106	06 03 88		pCi/L			NA	
WATER	Cs-134	02 05 88	64	pCi/L	0.000	60.00	-1.39	
WATER	Cs-134	06 03 88		pCi/L			NA	
WATER	Cs-137	02 05 88	94	pCi/L	0.118	91.67	-0.81	
WATER	Cs-137	06 03 88		pCi/L			NA	
WATER	H-3	02 12 88	3327	pCi/L	0.082	3313.33	-0.07	
WATER	H-3	06 10 88		pCi/L			NA	
WATER	Sr-89	01 08 88	30	pCi/L	0.118	27.67	-0.81	
WATER	Sr-89	05 06 88		pCi/L			NA	
WATER	Sr-90	01 08 88	15	pCi/L	0.000	14.00	-1.15	
WATER	Sr-90	05 06 88		pCi/L			NA	

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100

100



TES:

Normal.: Normalized range. As defined in "Environmental Radioactivity Laboratory Intercomparison Studies Program Fiscal Year 1981 - 1982", Environmental Monitoring Systems Laboratory, U. S. Environmental Protection Agency, P. O. Box 15027, Las Vegas, Nevada, 89114. EPA-600/4-81-004, February, 1981.

N.D.K.: Normalized deviation of the mean from the known value. As defined in EPA-600/4-81-004.

NDP: No data provided. No data was provided to EPA for inclusion in their report.

NA: Not available. Report containing this data has not yet been received from EPA, Las Vegas.

Action Level:

- (1) Cause: Erroneously over estimated chemical recovery of strontium carrier. Corrective action: Try to improve purity of isolated strontium carrier.
- (2) Cause: Erroneously over estimated chemical recovery of strontium carrier. Corrective action: Try to improve purity of isolated strontium carrier.

FLORIDA DEPT. OF HRS - EPA INTERLABORATORY CROSS-CHECK PROGRAM DATA

July through December, 1988

Media	Nuclide	Collection			EPA	Units	Normal.	Mean of	N.D.K.	Action
		Mon	Day	Yr	Known		Range	Analyses		Level
FILTER	Alpha	08	26	88	8	pCi/F	0.000	9.00	0.35	
FILTER	Beta	08	26	88	29	pCi/F	0.237	27.00	-0.69	
FILTER	Cs-137	08	26	88	12	pCi/F	0.000	13.00	0.35	
FILTER	Sr-90	08	26	88	8	pCi/F	0.790	6.00	-2.31	
FOOD	I-131	07	29	88	107	pCi/Kg	0.108	109.00	0.31	
FOOD	Cs-137	07	29	88	49	pCi/Kg	0.355	49.33	0.12	
FOOD	K	07	29	88	1240	mg/Kg	0.669	1186.67	-1.49	
FOOD	Sr-89	07	29	88	33	pCi/Kg	0.237	25.00	-2.77	
FOOD	Sr-90	07	29	88	34	pCi/Kg	0.296	28.67	-4.62	1
MILK	I-131	06	24	88	94	pCi/L	0.132	95.00	0.19	
MILK	I-131	10	28	88	91	pCi/L	0.197	90.33	-0.13	
MILK	Cs-137	06	24	88	51	pCi/L	0.118	50.67	-0.12	
MILK	Cs-137	10	28	88	50	pCi/L	0.355	47.33	-0.92	
MILK	K	06	24	88	1600	mg/L	0.148	1593.33	-0.14	
MILK	K	10	28	88	1600	mg/L	0.296	1520.00	-1.73	
MILK	Sr-89	06	24	88	40	pCi/L	0.237	36.00	-1.39	
MILK	Sr-89	10	28	88	40	pCi/L	0.237	33.00	-2.42	
MILK	Sr-90	06	24	88	60	pCi/L	0.592	55.67	-2.50	
MILK	Sr-90	10	28	88	60	pCi/L	0.592	52.33	-4.43	2
WATER	Alpha	07	22	88	15	pCi/L	0.237	10.67	-1.50	
WATER	Alpha	09	23	88	8	pCi/L	0.000	6.00	-0.69	
WATER	Alpha	11	25	88	9	pCi/L	0.237	9.33	0.12	
WATER	Beta	07	22	88	4	pCi/L	0.000	6.00	0.69	
WATER	Beta	09	23	88	10	pCi/L	0.000	12.00	0.69	
WATER	Beta	11	25	88	9	pCi/L	0.000	11.00	0.69	
WATER	Cr-51	06	03	88	302	pCi/L	0.178	294.33	-0.44	
WATER	Cr-51	10	07	88	251	pCi/L	0.237	250.33	-0.05	
WATER	Co-60	06	03	88	15	pCi/L	0.118	16.33	0.46	
WATER	Co-60	10	07	88	25	pCi/L	0.118	26.33	0.46	
WATER	Zn-65	06	03	88	101	pCi/L	0.415	99.67	-0.23	
WATER	Zn-65	10	07	88	151	pCi/L	0.237	151.67	0.08	
WATER	Ru-106	06	03	88	195	pCi/L	0.237	189.33	-0.49	
WATER	Ru-106	10	07	88	152	pCi/L	0.434	142.33	-1.21	
WATER	Cs-134	06	03	88	20	pCi/L	0.000	19.00	-0.35	
WATER	Cs-134	10	07	88	25	pCi/L	0.237	23.33	-0.58	
WATER	Cs-137	06	03	88	25	pCi/L	0.118	25.67	0.23	
WATER	Cs-137	10	07	88	15	pCi/L	0.237	15.33	0.12	
WATER	H-3	06	10	88	5565	pCi/L	0.064	5620.00	0.17	
WATER	H-3	10	14	88	2316	pCi/L	0.152	2336.67	0.10	
WATER	I-131	08	05	88	76	pCi/L	0.074	75.67	-0.07	
WATER	I-131	12	09	88	115	pCi/L	0.049	116.33	0.19	
WATER	Sr-89	05	06	88	20	pCi/L	0.000	18.00	-0.69	
WATER	Sr-90	05	06	88	20	pCi/L	0.395	18.67	-1.54	

NOTES:

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- N.D.K.: Normalized deviation of the mean from the known value. As defined in EPA-600/4-81-004.
- NDP: No data provided. No data was provided to EPA for inclusion in their report.
- NA: Not available. Report containing this data has not yet been received from EPA, Las Vegas.

ACTION LEVEL:

- (1) Cause: Erroneously over estimated chemical recovery of strontium carrier. Corrective action: Try to improve purity of isolated strontium carrier.
- (2) Cause: Erroneously over estimated chemical recovery of strontium carrier. Corrective action: Try to improve purity of isolated strontium carrier.