

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9805150093 DOC. DATE: 97/12/31 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
 MOVEY, R.J. Florida Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION

*See
Environ Rpts*

SUBJECT: "197 Annual Radiological Environ Operating Rept." W/980507
 ltr.

DISTRIBUTION CODE: C001D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 60
 TITLE: Licensing Submittal: Environmental Rept Amdt & Related Correspondence

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	JABBOUR, K	1 1		
INTERNAL:	<u>FILE CENTER</u> 01 OGC/HDS3	1 1 1 0	NUDOCS-ABSTRACT RGN2 DRS/RSB	1 1 1 1
EXTERNAL:	NOAC	1 1	NRC PDR	1 1

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE. TO HAVE YOUR NAME OR ORGANIZATION REMOVED FROM DISTRIBUTION LISTS OR REDUCE THE NUMBER OF COPIES RECEIVED BY YOU OR YOUR ORGANIZATION, CONTACT THE DOCUMENT CONTROL DESK (DCD) ON EXTENSION 415-2083

TOTAL NUMBER OF COPIES REQUIRED: LTTR 7 ENCL 6

C
A
E
G
O
R
Y

1

D
O
C
U
M
E
N
T





FPL

MAY 07 1998

L-98-102
10 CFR 50.36b

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

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
1997 Annual Radiological
Environmental Operating Report

Attached is the 1997 Annual Radiological Environmental Operating Report for Turkey Point Units 3 and 4, as required by Technical Specification 6.9.1.3.

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

Very truly yours,

R. J. Hovey
Vice President
Turkey Point Plant

SM

Attachment

cc: L. A. Reyes, Regional Administrator, Region II, USNRC
T. P. Johnson, Sr. Resident Inspector, USNRC, Turkey Point Plant

9805150093 971231
PDR ADOCK 05000250
R PDR

COOL 1/1

443

1997

ANNUAL
RADIOLOGICAL ENVIRONMENTAL
OPERATING REPORT

TURKEY POINT PLANT

UNITS 3 & 4

LICENSE NOS. DPR-31, DPR-41

DOCKET NOS. 50-250, 50-251

Data submitted by: Florida DOH

Prepared by:

Reviewed by:

Robert G. Bledsoe
John Vanech

1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

TABLE OF CONTENTS

<u>DESCRIPTION</u>	<u>PAGE</u>
Introduction	1
Radiological Environmental Monitoring Program	1
Discussion and Interpretation of Results	3
Environmental Radiological Monitoring Program Annual Summary	TABLE 1
Deviations/Missing Data	TABLE 1A
Analyses with LLDs Above Required Detection Capabilities	TABLE 1B
Land Use Census	TABLE 2
Key to Sample Locations	ATTACHMENT A
Radiological Surveillance of Florida Power and Light Company's Turkey Point Site	ATTACHMENT B
First Quarter, 1997	
Second Quarter, 1997	
Third Quarter, 1997	
Fourth Quarter, 1997	
Results from the Interlaboratory Comparison Program, 1997	ATTACHMENT C

1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

EXECUTIVE SUMMARY

The data obtained through the Turkey Point Radiological Environmental Monitoring Program verifies that the levels of radiation and concentrations of radioactive materials in environmental samples are not increasing. These measurements verify that the dose or dose commitment to members of the public, due to operation of Turkey Point Units 3 & 4, during the surveillance year, is well within the limits established by 10 CFR 50, Appendix I. The sampling period was from January 1, 1997 to December 31, 1997.

Additionally, supplemental samples collected by the State of Florida, Department of Health, do not indicate adverse trends in the radiological environment.

1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

I. INTRODUCTION

This report is submitted pursuant to Specification 6.9.1.3 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 described in the Offsite Dose Calculation Manual (ODCM) meeting the requirements of Unit 3 and Unit 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 of 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 Control 5.1 of Turkey Point Unit 3 & 4 ODCM.

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.



1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

- 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 collected from 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 (DOH). Samples are collected and analyzed by DOH personnel.

Samples are analyzed at the DOH 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.

1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

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

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 Interlaboratory Comparison Program is being changed.

Prior to 1997, the Department of Health Laboratory, performing our analyses, participated in the EPA sponsored program. This program consisted of air filters, milk; and water samples. The results were reported in ATTACHMENT C, RESULTS FROM THE INTERLABORATORY.COMPARISON PROGRAM.

The EPA Interlaboratory Comparison program relative to nuclear power plant environmental monitoring programs was discontinued. The EPA program did continue, however, in support of the Safe Drinking Water Program(SDWP); the State laboratory, being a Certified SDWP laboratory, continued to receive, and analyze, water samples.

Since 1990, the State Laboratory has participated in the Department of Energy's Interlaboratory Comparison Program (the "DOE-QAP" program). This program consists of air filters, water, soil, and vegetation.

For the reports covering calendar year 1997, and proposed for calendar year 1998, the results of participating in the DOE-QAP will be included with the results of the EPA water samples in ATTACHMENT C, RESULTS FROM THE INTERLABORATORY COMPARISON PROGRAM. Note that the right most columns, QAP45 and QAP 46 Evaluation, are the result of the last intercomparison results for comparison to the most recent evaluation shown in the second from right column.

The future of both the EPA and DOE programs past the end of 1998 is uncertain. FPL is in the process of identifying a new suitable interlaboratory comparison program. The program will be described in the ODCM and the results will be incorporated in ATTACHMENT C, RESULTS FROM THE INTERLABORATORY COMPARISON PROGRAM.

1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

III. DISCUSSION AND INTERPRETATION OF RESULTS

A. Reporting of Results

The Annual Radiological Environmental Operating Report contains the summaries, interpretations and information required by Control 1.4 of ODCM. Table 1 provides a summary of the measurements made for the nuclides required by ODCM Table 5.1-2, for all samples specified by Table 5.1-1. 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, and Be-7 which are common in the Florida environment.

B. Interpretation of Results

1. Direct Radiation:

The results of 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 isotopes are cosmic-ray produced Be-7 and naturally occurring Pb-210 at levels consistent with past measurements.

3. Waterborne, Surface Water:

The results of radioactivity measurements in surface water samples are consistent with past measurements. Tritium was reported as present in 5 of the 36 surface water samples collected. 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 reporting value specified by ODCM Table 5.1-2.

4. Waterborne, Sediment:

The results are consistent with past measurements. The only identified isotopes are cosmic-ray produced Be-7 and naturally occurring isotopes.

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

5. Waterborne, Food Products:

The results are consistent with past measurements; only naturally occurring radionuclides were detected.

6. Broad Leaf Vegetation

The results of radioactivity measurements are consistent with past measurements. Cs-137 was detected, as in the past, in samples collected from the indicator and control locations. The maximum concentration reported was less than 17% of the reporting level specified by ODCM Table 5.1-2. No other fission products were detected.

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.

Additionally, supplemental to the ODCM program, sampling of the direct exposure, inhalation, and ingestion pathways, performed by DOH, does not show adverse trends in levels of radiation and radioactive materials in unrestricted areas. The measurements verify that the dose or dose commitment to members of the public, due to operation of Turkey Point Units 3 & 4, during the surveillance year, are well within "as low as reasonably achievable (ALARA)" criteria established by 10 CFR 50, Appendix I.



TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
 Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
 Location of Facility Dade, Florida, Reporting Period January 1 - December 31, 1997
 (County, State)

PATHWAY: DIRECT RADIATION

SAMPLES COLLECTED: TLD

UNITS: micro-R/hr

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c	Mean (f) ^b Range	
Exposure Rate, 88 ^d	---	5.74 (84/84) 4.34 - 7.82	NW-10 10 mi., NW	7.54 (4/4) 7.15 - 7.82	5.74 (4/4) 5.60 - 6.01

Number of Nonroutine Reported Measurements = 0



TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
 Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
 Location of Facility Dade, Florida, Reporting Period January 1 - December 31, 1997
 (County, State)

PATHWAY: AIRBORNE

SAMPLES COLLECTED: RADIOIODINE AND PARTICULATES

UNITS: pCi/m³

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c	Mean (f) ^b	
¹³¹ I, 260	0.024	<MDA	---	---	<MDA
Gross Beta, 260	0.0025	0.012 (207/208) 0.004 - 0.029	T-72 <1 mi., WSW	0.013 (52/52) 0.005 - 0.029	0.013 (52/52) 0.005 - 0.021
Composite Gamma Isotopic, 20					
⁷ Be	0.0052	0.1166 (16/16) 0.0790 - 0.1502	T-58 1 mi, NW	0.1284 (4/4) 0.0993 - 0.1502	0.1199 (4/4) 0.1095 - 0.1303
¹³⁴ Cs	0.00069	<MDA	---	---	<MDA
¹³⁷ Cs	0.00066	<MDA	---	---	<MDA
²¹⁰ Pb	---	0.0116 (16/16) 0.0064 - 0.0174	T-58 1 mi., NW	0.0125 (4/4) 0.0081 - 0.0174	0.0102 (4/4) 0.0054 - 0.0139

Number of Nonroutine Reported Measurements = 0



TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
 Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
 Location of Facility Dade, Florida, Reporting Period January 1 - December 31, 1997
 (County, State)

PATHWAY: WATERBORNE
 SAMPLES COLLECTED: SURFACE WATER
 UNITS: pCi/L

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c	Mean (f) ^b Range	
Tritium, 36	230	343 (5/24) 117 - 800	T-81 6 mi., S	343 (5/12) 117 - 800	<MDA
Gamma Isotopic, 36					
⁴⁰ K	60	278 (24/24) 122 - 373	T-81 6 mi., S	285 (12/12) 179 - 373	181 (12/12) 91 - 285
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	5	<MDA	---	---	<MDA
¹⁴⁰ Ba-La	11	<MDA	---	---	<MDA

Number of Nonroutine Reported Measurements = 0



TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
 Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
 Location of Facility Dade, Florida, Reporting Period January 1 - December 31, 1997
 (County, State)

PATHWAY: WATERBORNE

SAMPLES COLLECTED: SHORELINE SEDIMENT

UNITS: pCi/kg, DRY

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c	Mean (f) ^b	
Gamma Isotopic, 6					
¹³⁷ Cs	12	<MDA	---	---	<MDA
⁷ Be	100	379 (3/4) 234 - 532	T-81 6 mi., S	452 (2/2) 372 - 532	147 (1/2)
⁴⁰ K	140	314 (4/4) 205 - 424	T-81 6 mi., S	314 (2/2) 279 - 349	258 (1/2)
²¹⁰ Pb	---	803 (3/4) 500 - 1062	T-42 <1 mi., ENE	1062 (1/2)	<MDA
²²⁶ Ra	49	771 (4/4) 605 - 999	T-81 6 mi., S	802 (2/2) 605 - 999	113 (1/2)
²³⁸ U	---	631 (3/4) 476 - 713	T-42 <1 mi., ENE	709 (2/2) 704 - 713	<MDA
⁵⁸ Co	9	<MDA	---	---	<MDA
⁶⁰ Co	12	<MDA	---	---	<MDA
¹³⁴ Cs	14	<MDA	---	---	<MDA

Number of Nonroutine Reported Measurements = 0

PATHWAY: INGESTION

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
 Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
 Location of Facility Dade, Florida, Reporting Period January 1 - December 31, 1997
 (County, State)

SAMPLES COLLECTED: CRUSTACEA

UNITS: pCi/kg, WET

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c	Mean (f) ^b	
			Distance & Direction	Range	
Gamma Isotopic, 4					
⁴⁰ K	130	1111 (2/2) 1110 - 1112	T-81 6 mi., S	1111 (2/2) 1110 - 1112	1392 (2/2) 1366 - 1417
²²⁶ Ra	20	384 (1/2)	T-81 6 mi., S	384 (1/2)	<MDA
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

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
 Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
 Location of Facility Dade, Florida, Reporting Period January 1 - December 31, 1997
 (County, State)

PATHWAY: INGESTION
 SAMPLES COLLECTED: FISH
 UNITS: pCi/kg, WET

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c	Mean (f) ^b	
			Distance & Direction	Range	
Gamma Isotopic, 4					
⁴⁰ K	130	2354 (2/2) 2232 - 2475	T-81 6 mi., S	2354 (2/2) 2232 - 2475	2148 (2/2) 2099 - 2196
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



TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
 Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
 Location of Facility Dade, Florida, Reporting Period January 1 - December 31, 1997
 (County, State)

PATHWAY: INGESTION

SAMPLES COLLECTED: BROAD LEAF VEGETATION

UNITS: pCi/kg, WET

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c	Mean (f) ^b	
Gamma Isotopic, 36					
⁷ Be	71	1904 (24/24) 661 - 3752	T-40 3 mi., W	1972 (12/12) 911 - 3292	1289 (12/12) 870 - 1928
⁴⁰ K	100	3764 (24/24) 1505 - 5633	T-41 2 mi., W/NW	4327 (12/12) 2235 - 5633	3278 (12/12) 1855 - 4746
¹³⁷ Cs	8	93 (24/24) 30 - 330	T-41 2 mi., W/NW	129 (12/12) 40 - 330	16 (5/12) 9 - 20
⁵⁸ Co	9	<MDA	---	---	<MDA
²¹⁰ Pb	---	642 (5/24) 437 - 900	T-40 3 mi., W	704 (2/12) 508 - 900	657 (5/12) 452 - 873
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 Units 3 & 4, Docket No(s). 50-250 & 50-251Location of Facility Dade, Florida, Reporting Period January 1 - December 31, 1997
(County, State)NOTES

- 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.

LLDs 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 were based upon the average net response of two TLDs. (Thermoluminescent dosimeters).

MDA refers to minimum detectable activity.

1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

TABLE 1A

DEVIATIONS/MISSING DATA

A)	Pathway:	Direct Exposure - TLDs
	Location:	NW-5, 5 miles NW
	Dates:	12/04/96 to 03/19/97
	Deviation:	Failure to provide continuous monitoring.
	Description of Problem:	TLDs were missing when collection was attempted.
	Corrective Action:	Replaced TLDs.
B)	Pathway:	Direct Exposure - TLDs
	Location:	NNW-10, 10 miles NNW NW-5, 5 miles NW WNW-10, 10 miles WNW
	Dates:	03/18/97 to 06/04/97
	Deviation:	Failure to provide continuous monitoring.
	Description of Problem:	TLDs were missing when collection was attempted.
	Corrective Action:	Replaced TLDs.



1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

TABLE 1B

ANALYSES WITH LLDs ABOVE DETECTION CAPABILITIES
1/1/97- 12/31/97

The values specified in ODCM Table 5.1-3, Detection Capabilities, were achieved for all samples.

1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

TABLE 2

LAND USE CENSUS

Distance to Nearest (a, b)

Sector	6/96 Milk (c) Animal	6/96 Residence	6/96 Garden (d)
N	L (e)	L (g)	L
NNE	O (f)	O	O
NE	O	O	O
ENE	O	O	O
E	O	O	O
ESE	O	O	O
SE	O	O	O
SSE	O	O	O
S	L	L	L
SSW	L	L	L
SW	L	L	L
WSW	L	L	L
W	L	L	L
WNW	L	4.8/285	L
NW	L	3.7/316 (g)	4.4/306
NNW	L	4.4/337 (g)	4.5/332

1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

TABLE 2
LAND USE CENSUS

NOTES

- 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 these sectors include the following:

<u>Sector</u>	<u>Distance</u>	<u>Description</u>
N	1.8/349	24-hour Security Staff Building
NW	3.5/304	24-hour Security Staffing
NNW	1.8/345	Security booth at park entrance



1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

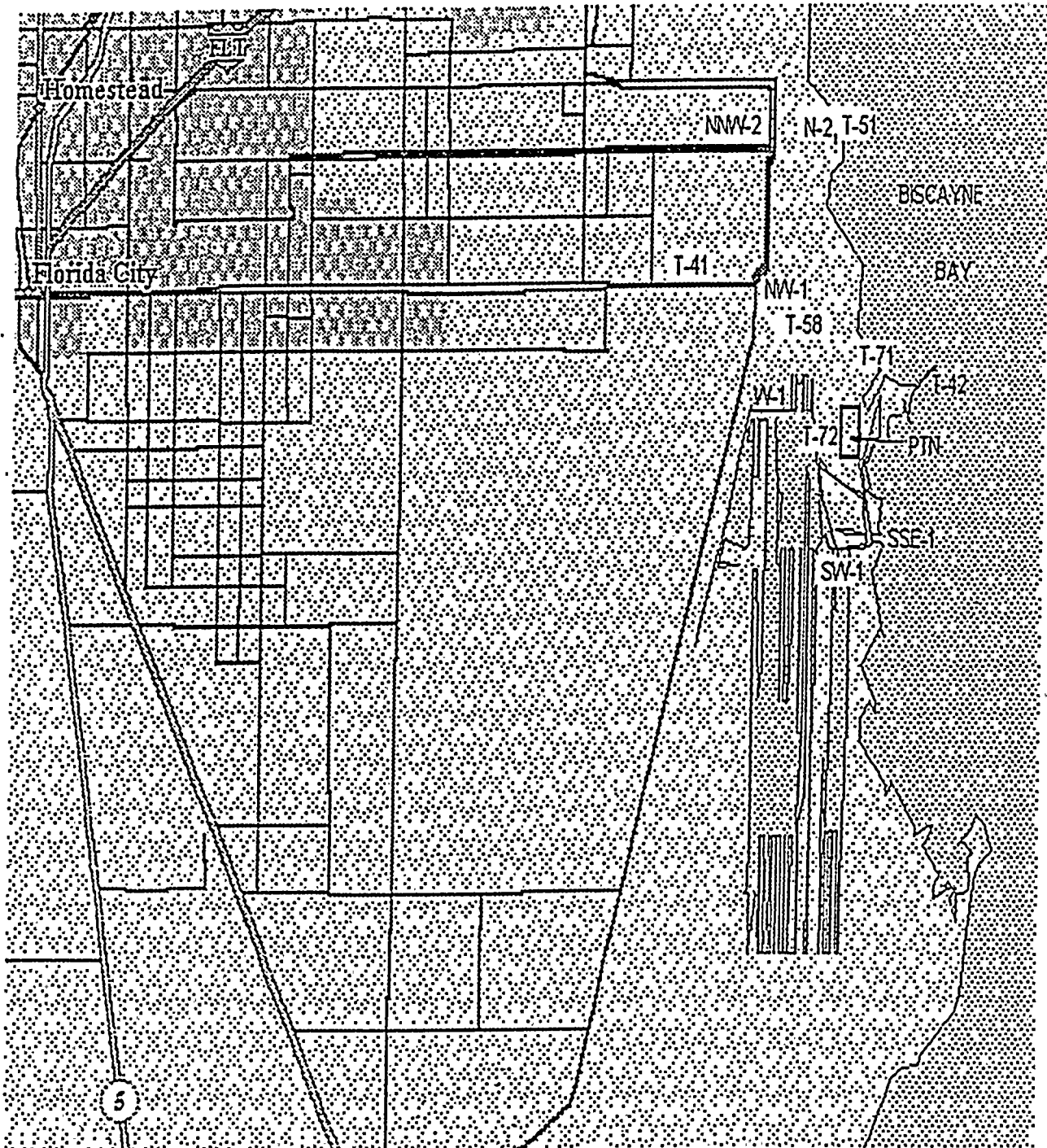
ATTACHMENT A

KEY TO SAMPLE LOCATIONS



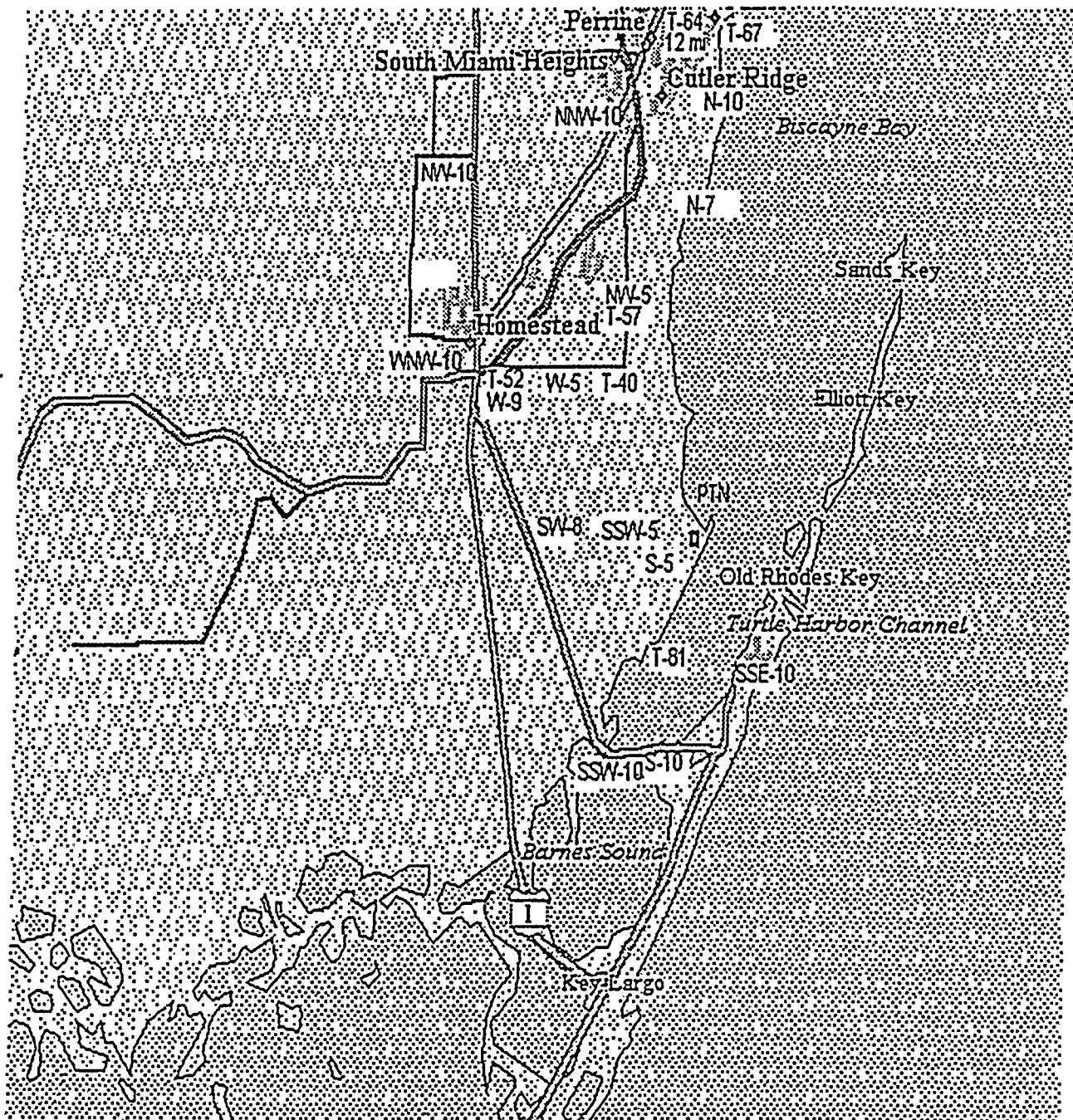
1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

NEAR SITE SAMPLING LOCATIONS



1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

DISTANT REMP SAMPLING LOCATIONS





1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

ATTACHMENT A

Page 1 of 4

PATHWAY: DIRECT RADIATION
SAMPLES COLLECTED: TLD
SAMPLE COLLECTION FREQUENCY: QUARTERLY

Location ^(a)

<u>Name</u>	<u>Description</u>
N-2	Convey Point, Parking Area
N-7	Black Point Marina Parking Lot
N-10	Old Cutler Rd. approx. 196th Street
NNW-2	East End North Canal Road
NNW-10	Bailes Road & U.S. #1
NW-1	Turkey Point Entrance Road
NW-5	Mowry Drive & 117th Avenue
NW-10	Newton Road, North of Coconut Palm Drive
WNW-10	Homestead Middle School
W-1	On-Site, North Side of Discharge Canal
W-5	Palm Drive & Tallahassee Road
W-9	Card Sound Road, 0.6 mile from U.S. #1
WSW-8	Card Sound Road, 3.4 miles from U.S. #1
SW-1	On-Site near Land Utilization Offices
SW-8	Card Sound Road, 5 miles from U.S. #1
SSW-5	On-Site, Southwest Corner of Cooling Canals
SSW-10	Card Sound Road, west side of Toll Plaza
S-5	On-Site, South East Corner of Cooling Canals
S-10	Card Sound Road at Steamboat Creek
SSE-1	Turtle Point
SSE-10	Ocean Reef
<u>Control</u>	
NNE-22	Natoma Substation

^aThe location name is the direction sector - approximate distance (miles)

1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

ATTACHMENT A

Page 2 of 4

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	Entrance Area to Biscayne National Park
T-57	NW	4	SW 107th Avenue at Mowry Canal
T-58	NW	1	Turkey Point Entrance Road
T-72	WSW	<1	Just before entrance to Land Utilization's access gate.

Control:

T-64	NNE	22	Natoma Substation
------	-----	----	-------------------

1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

ATTACHMENT A

Page 3 of 4

PATHWAY: WATERBORNE
SAMPLES COLLECTED: SURFACE WATER (OCEAN)
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
 <u>Control:</u>			
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
 <u>Control:</u>			
T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park



1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

ATTACHMENT A

Page 4 of 4

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

1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

ATTACHMENT B

RADIOLOGICAL SURVEILLANCE OF
FLORIDA POWER AND LIGHT COMPANY'S

TURKEY POINT SITE

1997

First Quarter, 1997

Second Quarter, 1997

Third Quarter, 1997

Fourth Quarter, 1997





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

FIRST QUARTER 1997

BUREAU OF RADIATION CONTROL



TURKEY POINT SITE

Technical Specifications Sampling

First Quarter, 1997

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	22	21
2. Airborne			
2.a. Air Iodines	Weekly	5	60
2.b. Air Particulates	Weekly	5	60
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	1	1
4.a.2. Fish	Semiannually	1	1
4.b. Food Products			
Broadleaf Vegetation	Monthly	3	9
			<hr/> Total: 164

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.

1. DIRECT RADIATION - TLDs - ($\mu\text{R}/\text{hour}$)

<u>Sample Site</u>	<u>Deployment 04-Dec-96 Collection 19-Mar-97</u>	<u>Sample Site</u>	<u>Deployment 04-Dec-96 Collection 11-Mar-97</u>
N-2	5.41 ± 0.42	WSW-8	4.98 ± 0.40
N-7	4.64 ± 0.37		
N-10	5.04 ± 0.40	SW-1	4.67 ± 0.37
		SW-8	4.72 ± 0.38
NNW-2	4.46 ± 0.36		
NNW-10	5.72 ± 0.44	SSW-5	4.62 ± 0.36
		SSW-10	4.74 ± 0.38
NW-1	4.74 ± 0.38		
NW-5	(A)	S-5	4.51 ± 0.35
NW-10	7.74 ± 0.58	S-10	5.59 ± 0.44
WNW-10	6.09 ± 0.47	SSE-1	4.65 ± 0.36
		SSE-10	5.57 ± 0.44
W-1	6.32 ± 0.49		
W-5	5.02 ± 0.40	NNE-22	5.71 ± 0.45
W-9	4.63 ± 0.37		

(A) - The dosimeter for site NW-5 was missing when collection was attempted.

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m^3)

<u>Collection Date</u>	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
07-Jan-97	<0.01	<0.01	<0.01	<0.01	<0.01
15-Jan-97	<0.02	<0.02	<0.02	<0.02	<0.02
21-Jan-97	<0.02	<0.01	<0.02	<0.02	<0.01
28-Jan-97	<0.02	<0.02	<0.02	<0.02	<0.02
04-Feb-97	<0.02	<0.02	<0.02	<0.02	<0.02
12-Feb-97	<0.01	<0.01	<0.01	<0.02	<0.01
17-Feb-97	<0.03	<0.02	<0.02	<0.02	<0.02
25-Feb-97	<0.02	<0.02	<0.02	<0.02	<0.02
04-Mar-97	<0.03	<0.03	<0.03	<0.03	<0.03
11-Mar-97	<0.02	<0.02	<0.02	<0.02	<0.02
18-Mar-97	<0.02	<0.02	<0.02	<0.02	<0.02
25-Mar-97	<0.02	<0.02	<0.02	<0.02	<0.02

2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m³)

<u>Collection Date</u>	<u>Sample Site</u>				
	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
07-Jan-97	0.006±0.002	0.004±0.002	0.005±0.002	0.008±0.002	0.005±0.001
15-Jan-97	0.006±0.002	0.008±0.002	0.009±0.002	0.014±0.002	0.006±0.002
21-Jan-97	0.016±0.003	0.017±0.003	0.020±0.003	0.017±0.003	0.015±0.002
28-Jan-97	0.009±0.002	0.012±0.002	0.010±0.002	0.009±0.002	0.010±0.002
04-Feb-97	0.006±0.002	0.008±0.002	0.011±0.002	0.012±0.002	0.006±0.002
12-Feb-97	0.009±0.002	0.010±0.002	0.005±0.002	0.009±0.002	0.006±0.002
17-Feb-97	0.007±0.003	0.008±0.002	0.011±0.002	0.015±0.002	0.011±0.002
25-Feb-97	0.008±0.002	0.006±0.002	0.010±0.002	0.011±0.002	0.006±0.001
04-Mar-97	0.009±0.002	0.005±0.002	0.007±0.002	0.007±0.002	0.006±0.002
11-Mar-97	0.009±0.002	0.011±0.002	0.015±0.002	0.014±0.002	0.014±0.002
18-Mar-97	0.014±0.002	0.016±0.002	0.014±0.002	0.012±0.002	0.012±0.002
25-Mar-97	0.015±0.002	0.015±0.002	0.014±0.002	0.021±0.002	0.015±0.002

Mean: 0.010 ± 0.001 0.010 ± 0.001 0.011 ± 0.001 0.012 ± 0.001 0.009 ± 0.001

2.b.2. AIR PARTICULATES GAMMA ANALYSIS OF QUARTERLY COMPOSITES (pCi/m³)

First Quarter, 1997

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>
T51	0.1212 ± 0.0106	<0.0234	<0.0012	<0.0008	0.0098 ± 0.0024
T57	0.1212 ± 0.0102	<0.0193	<0.0012	<0.0010	<0.0075
T58	0.1474 ± 0.0111	<0.0196	<0.0009	<0.0009	0.0127 ± 0.0026
T64	0.1245 ± 0.0046	<0.0077	<0.0004	<0.0004	0.0104 ± 0.0013
T72	0.1142 ± 0.0092	<0.0200	<0.0006	<0.0007	0.0064 ± 0.0029

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T42	08-Jan-97	<140	268 ± 32	<3	<2	<7	<4	<6	<7	<6	<4	<4	<7
	20-Feb-97	<145	287 ± 32	<3	<4	<8	<4	<7	<9	<7	<4	<4	<4
	12-Mar-97	<140	335 ± 43	<3	<4	<8	<3	<9	<6	<10	<3	<4	<7
T67	08-Jan-97	<140	91 ± 25	<3	<4	<7	<4	<8	<6	<7	<4	<4	<5
	21-Feb-97	<145	112 ± 27	<4	<3	<7	<4	<7	<7	<9	<4	<4	<6
	18-Mar-97	<140	<69	<3	<4	<8	<3	<7	<6	<7	<4	<4	<5
T81	08-Jan-97	257 ± 48	277 ± 32	<4	<4	<7	<4	<8	<7	<7	<4	<4	<5
	21-Feb-97	117 ± 46	284 ± 31	<4	<3	<9	<4	<8	<6	<8	<4	<4	<7
	12-Mar-97	383 ± 50	264 ± 33	<3	<5	<11	<4	<6	<8	<12	<4	<4	<5

(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)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>	<u>U-238</u>
T42	13-Feb-97	234 ± 86	205 ± 55	<12	<9	<12	<13	1062 ± 344	775 ± 18	713 ± 305
T67	14-Feb-97	<92	<141	<6	<6	<6	<7	<503	113 ± 7	<275
T81	13-Feb-97	532 ± 76	279 ± 68	<14	<13	<12	<11	846 ± 192	999 ± 20	476 ± 171

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

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67	12-Feb-97	1366 ± 174	<18	<22	<49	<19	<34	<23	<23	<330	<71
T81	Efforts to collect this sample have been unsuccessful. We will continue our attempts.										

4.a.2. FISH - Mangrove Snapper, Schoolmaster Snapper - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67	06-Mar-97	2196 ± 124	<11	<13	<26	<14	<29	<13	<11	<205	<46
T81	Efforts to collect this sample have been unsuccessful. We will continue our attempts.										

4.b. 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>	<u>Pb-210</u>	<u>Ra-226</u>
T40	08-Jan-97	1501 ± 86	2425 ± 156	<15	<13	45 ± 8	<850	<340
	24-Feb-97	2551 ± 109	3257 ± 146	<15	<10	82 ± 8	<884	<324
	18-Mar-97	1006 ± 75	3415 ± 152	<17	<10	51 ± 8	<668	<241
T41	08-Jan-97	1404 ± 83	5477 ± 174	<15	<10	50 ± 8	<773	<234
	24-Feb-97	1561 ± 90	3193 ± 149	<15	<11	172 ± 10	795 ± 234	<268
	18-Mar-97	661 ± 73	5633 ± 166	<18	<10	61 ± 8	<590	<231
T67	08-Jan-97	1105 ± 89	3551 ± 169	<12	<15	<13	<851	<328
	21-Feb-97	1355 ± 36	3214 ± 62	<7	<4	<5	474 ± 96	<118
	18-Mar-97	952 ± 73	4746 ± 155	<17	<10	<10	<675	<240





RADIOLOGICAL SURVEILLANCE
OF
FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT SITE

SECOND QUARTER 1997

BUREAU OF RADIATION CONTROL

TURKEY POINT SITE

Technical Specifications Sampling

Second Quarter, 1997

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	22	19
2. Airborne			
2.a. Air Iodines	Weekly	5	70
2.b. Air Particulates	Weekly	5	70
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	1	1
4.a.2. Fish	Semiannually	1	1
4.b. Food Products			
Broadleaf Vegetation	Monthly	3	9

Total: 179

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.

1. DIRECT RADIATION - TLDs - ($\mu\text{R}/\text{hour}$)

Sample Site	Deployment 04-Dec-96 Collection 19-Mar-97	Sample Site	Deployment 18-Mar-97 Collection 04-Jun-97
N-2	5.20 ± 0.40	WSW-8	5.02 ± 0.38
N-7	4.60 ± 0.35	SW-1	4.83 ± 0.37
N-10	4.74 ± 0.36	SW-8	4.68 ± 0.36
NNW-2	4.42 ± 0.34	SSW-5	4.80 ± 0.37
NNW-10	(A)	SSW-10	4.34 ± 0.33
NW-1	4.59 ± 0.35	S-5	4.72 ± 0.36
NW-5	(A)	S-10	5.26 ± 0.40
NW-10	7.43 ± 0.56	SSE-1	4.45 ± 0.34
WNW-10	(A)	SSE-10 (B)	5.33 ± 0.41
W-1	6.16 ± 0.46	NNE-22	5.60 ± 0.42
W-5	5.01 ± 0.39		
W-9	4.50 ± 0.35		

(A) - The dosimeters for sites NNW-10, NW-5, and WNW-10 were missing when collection was attempted.

(B) - The dosimeter for SSE-10 was found lying on the ground upon collection.

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m^3)

Collection Date	T51	T57	T58	T64	T72
01-Apr-97	<0.02	<0.02	<0.03	<0.02	<0.02
08-Apr-97	<0.01	<0.01	<0.01	<0.01	<0.01
15-Apr-97	<0.02	<0.02	<0.03	<0.02	<0.03
22-Apr-97	<0.02	<0.02	<0.02	<0.02	<0.02
29-Apr-97	<0.02	<0.02	<0.02	<0.02	<0.02
05-May-97	<0.02	<0.02	<0.01	<0.02	<0.02
13-May-97	<0.01	<0.01	<0.01	<0.01	<0.01
21-May-97	<0.02	<0.02	<0.02	<0.02	<0.02
27-May-97	<0.01	<0.01	<0.01	<0.01	<0.01
02-Jun-97	<0.02	<0.02	<0.02	<0.02	<0.02
10-Jun-97	<0.02	<0.03	<0.02	<0.02	<0.02
16-Jun-97	<0.02	<0.02	<0.03	<0.02	<0.03
23-Jun-97	<0.01	<0.01	<0.01	<0.01	<0.01
30-Jun-97	<0.02	<0.02	<0.02	<0.02	<0.02

2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m³)

<u>Collection Date</u>	<u>Sample Site</u>				
	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
01-Apr-97	0.013 ± 0.002	0.014 ± 0.002	0.017 ± 0.003	0.014 ± 0.002	0.015 ± 0.002
08-Apr-97	0.018 ± 0.002	0.018 ± 0.002	0.017 ± 0.002	0.019 ± 0.003	0.020 ± 0.002
15-Apr-97	0.015 ± 0.002	0.013 ± 0.002	0.019 ± 0.003	0.013 ± 0.002	0.017 ± 0.003
22-Apr-97	0.019 ± 0.002	0.018 ± 0.002	0.015 ± 0.002	0.018 ± 0.002	0.015 ± 0.002
29-Apr-97	0.011 ± 0.002	0.017 ± 0.002	0.017 ± 0.003	0.012 ± 0.002	0.021 ± 0.002
05-May-97	0.013 ± 0.002	0.011 ± 0.002	0.018 ± 0.002	0.013 ± 0.002	0.009 ± 0.002
13-May-97	0.015 ± 0.002	0.012 ± 0.002	0.015 ± 0.002	0.013 ± 0.002	0.018 ± 0.002
21-May-97	0.011 ± 0.002	0.010 ± 0.002	0.015 ± 0.002	0.014 ± 0.002	0.014 ± 0.002
27-May-97	0.012 ± 0.002	0.010 ± 0.002	0.011 ± 0.002	0.011 ± 0.002	0.011 ± 0.002
02-Jun-97	0.007 ± 0.002	0.009 ± 0.002	0.008 ± 0.002	0.005 ± 0.002	0.011 ± 0.002
10-Jun-97	0.007 ± 0.002	0.009 ± 0.002	0.011 ± 0.002	0.011 ± 0.002	0.010 ± 0.002
16-Jun-97	0.009 ± 0.002	0.006 ± 0.002	0.013 ± 0.003	0.015 ± 0.002	0.012 ± 0.003
23-Jun-97	0.013 ± 0.002	0.013 ± 0.002	0.012 ± 0.002	0.014 ± 0.002	0.011 ± 0.002
30-Jun-97	0.015 ± 0.002	0.014 ± 0.002	0.013 ± 0.002	0.010 ± 0.002	0.010 ± 0.002
Mean:	0.013 ± 0.001	0.012 ± 0.001	0.014 ± 0.001	0.013 ± 0.001	0.014 ± 0.001

2.b.2. AIR PARTICULATES GAMMA ANALYSIS OF QUARTERLY COMPOSITES (pCi/m³)

Second Quarter, 1997

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>
T51	0.1236 ± 0.0100	<0.0109	<0.0008	<0.0008	0.0092 ± 0.0030
T57	0.1275 ± 0.0095	<0.0119	<0.0010	<0.0007	0.0104 ± 0.0030
T58	0.1502 ± 0.0102	<0.0179	<0.0008	<0.0008	0.0119 ± 0.0024
T64	0.1154 ± 0.0104	<0.0160	<0.0008	<0.0009	0.0110 ± 0.0033
T72	0.1168 ± 0.0104	<0.0146	<0.0008	<0.0008	0.0159 ± 0.0032



3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95-Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T42	10-Apr-97	<145	342 ± 37	<3	<3	<8	<5	<9	<6	<7	<4	<4	<4
	07-May-97	<147	366 ± 38	<4	<4	<5	<4	<7	<7	<8	<4	<4	<4
	12-Jun-97	<148	303 ± 33	<3	<5	<9	<5	<9	<8	<12	<4	<3	<7
T67	28-Apr-97	<144	285 ± 41	<4	<3	<7	<3	<7	<7	<5	<5	<4	<6
	12-May-97	<147	279 ± 30	<3	<4	<8	<4	<7	<7	<7	<4	<4	<5
	13-Jun-97	<148	156 ± 26	<4	<3	<9	<4	<7	<8	<11	<4	<4	<5
T81	10-Apr-97	<145	347 ± 40	<3	<4	<8	<4	<8	<8	<7	<4	<4	<5
	07-May-97	<147	373 ± 31	<4	<4	<9	<3	<10	<7	<8	<4	<4	<5
	12-Jun-97	<148	295 ± 32	<3	<4	<8	<5	<8	<8	<12	<4	<4	<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.

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

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T81	20-May-97	1110 ± 161	<19	<19	<31	<23	<50	<16	<26	384 ± 174	<100

4.a.2. FISH - Lookdown, Jack - (pCi/kg. wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T81	09-May-97	2475 ± 223	<21	<22	<53	<23	<48	<19	<25	<350	<58

4.b. 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>	<u>Pb-210</u>	<u>Ra-226</u>
T40	28-Apr-97	911 ± 60	2928 ± 125	<11	<8	41 ± 6	<553	<220
	13-May-97	1305 ± 70	3414 ± 133	<15	<9	48 ± 7	<638	<248
	13-Jun-97	1825 ± 95	3301 ± 129	<25	<10	56 ± 8	508 ± 229	<221
T41	28-Apr-97	1204 ± 92	4106 ± 160	<15	<12	330 ± 13	<841	<293
	12-May-97	981 ± 89	4495 ± 153	<19	<11	240 ± 11	<656	<241
	13-Jun-97	1234 ± 66	2235 ± 96	<20	<8	40 ± 6	<540	<164
T67	28-Apr-97	1403 ± 85	4293 ± 165	<14	<13	<16	<1465	<288
	12-May-97	1006 ± 28	1855 ± 47	<7	<4	9 ± 3	799 ± 146	<101
	13-Jun-97	1453 ± 84	2117 ± 114	<25	<10	17 ± 6	<651	<261



RADIOLOGICAL SURVEILLANCE
OF
FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT SITE

THIRD QUARTER 1997

BUREAU OF RADIATION CONTROL

TURKEY POINT SITE

Technical Specifications Sampling

Third Quarter, 1997

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	22	22
2. Airborne			
2.a. Air Iodines	Weekly	5	60
2.b. Air Particulates	Weekly	5	60
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	0	0
4.a.2. Fish	Semiannually	0	0
4.b. Food Products			
Broadleaf Vegetation	Monthly	3	9

Total: 163

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.

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

<u>Sample Site</u>	<u>Deployment 03-Jun-97 Collection 23-Sep-97</u>	<u>Sample Site</u>	<u>Deployment 03-Jun-97 Collection 23-Sep-97</u>
N-2	5.46 ± 0.40	WSW-8	5.61 ± 0.41
N-7	4.97 ± 0.37		
N-10	4.69 ± 0.34	SW-1	4.74 ± 0.35
		SW-8	4.85 ± 0.36
NNW-2	4.39 ± 0.32		
NNW-10	5.33 ± 0.39	SSW-5	4.86 ± 0.36
		SSW-10	4.82 ± 0.36
NW-1	4.49 ± 0.33		
NW-5	4.35 ± 0.32	S-5	4.49 ± 0.34
NW-10	7.15 ± 0.52	S-10	5.36 ± 0.39
WNW-10	6.14 ± 0.45	SSE-1	4.48 ± 0.33
		SSE-10	5.71 ± 0.42
W-1	6.28 ± 0.46		
W-5	4.93 ± 0.36	NNE-22	5.64 ± 0.41
W-9	4.70 ± 0.35		

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m^3)

<u>Collection Date</u>	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
07-Jul-97	<0.02	<0.02	<0.02	<0.02	<0.02
14-Jul-97	<0.01	<0.01	<0.01	<0.01	<0.01
21-Jul-97	<0.01	<0.01	<0.01	<0.01	<0.01
28-Jul-97	<0.02	<0.02	<0.02	<0.02	<0.02
04-Aug-97	<0.02	<0.02	<0.02	<0.02	<0.02
11-Aug-97	<0.01	<0.01	<0.02	<0.01	<0.01
18-Aug-97	<0.01	<0.01	<0.01	<0.01	<0.01
27-Aug-97	<0.02	<0.02	<0.02	<0.02	<0.02
02-Sep-97	<0.02	<0.02	<0.02	<0.02	<0.02
08-Sep-97	<0.03	<0.02	<0.03	<0.03	<0.03
15-Sep-97	<0.01	<0.01	<0.01	<0.01	<0.01
23-Sep-97	<0.02	<0.02	<0.02	<0.02	<0.02

2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
07-Jul-97	0.009 ± 0.002	0.010 ± 0.002	0.016 ± 0.002	0.016 ± 0.002	0.013 ± 0.002
14-Jul-97	0.010 ± 0.002	0.008 ± 0.002	0.012 ± 0.002	0.009 ± 0.002	0.014 ± 0.002
21-Jul-97	0.007 ± 0.002	0.008 ± 0.002	0.011 ± 0.002	0.012 ± 0.002	0.010 ± 0.002
28-Jul-97	0.011 ± 0.002	0.013 ± 0.002	0.014 ± 0.002	0.015 ± 0.002	0.013 ± 0.002
04-Aug-97	0.008 ± 0.002	0.006 ± 0.002	0.014 ± 0.002	0.009 ± 0.002	0.011 ± 0.002
11-Aug-97	0.014 ± 0.002	0.007 ± 0.002	0.017 ± 0.003	0.013 ± 0.002	0.015 ± 0.002
18-Aug-97	0.009 ± 0.002	0.010 ± 0.002	0.012 ± 0.002	0.008 ± 0.002	0.010 ± 0.002
27-Aug-97	0.007 ± 0.002	0.007 ± 0.001	0.007 ± 0.001	0.006 ± 0.001	0.008 ± 0.002
02-Sep-97	0.007 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.008 ± 0.002	0.010 ± 0.002
08-Sep-97	0.004 ± 0.002	0.006 ± 0.002	0.009 ± 0.002	0.007 ± 0.002	0.009 ± 0.002
15-Sep-97	0.008 ± 0.002	0.013 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.009 ± 0.002
23-Sep-97	0.004 ± 0.001	0.006 ± 0.002	0.005 ± 0.001	0.008 ± 0.002	0.006 ± 0.002
Mean:	0.008 ± 0.001	0.008 ± 0.001	0.012 ± 0.001	0.010 ± 0.001	0.011 ± 0.001

2.b.2. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES (pCi/m³)

Third Quarter, 1997

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T51	0.0973 ± 0.0083	<0.0151	<0.0009	<0.0011	0.0078 ± 0.0022
T57	0.0790 ± 0.0098	<0.0209	<0.0009	<0.0007	0.0091 ± 0.0022
T58	0.0993 ± 0.0092	<0.0192	<0.0009	<0.0011	0.0081 ± 0.0026
T64	0.1095 ± 0.0099	<0.0182	<0.0007	<0.0008	0.0054 ± 0.0024
T72	0.1062 ± 0.0091	<0.0204	<0.0010	<0.0011	0.0132 ± 0.0032

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T42	23-Jul-97	<147	214 ± 30	<3	<4	<7	<5	<8	<8	<8	<5	<4	<7
	20-Aug-97	<147	312 ± 34	<4	<4	<8	<5	<8	<6	<7	<4	<4	<5
	23-Sep-97	<166	237 ± 31	<4	<4	<7	<5	<8	<5	<6	<4	<4	<3
T67	24-Jul-97	<147	209 ± 30	<4	<4	<7	<6	<8	<7	<8	<4	<5	<5
	20-Aug-97	<147	221 ± 16	<2	<2	<4	<2	<4	<3	<3	<2	<2	<2
	17-Sep-97	<166	196 ± 25	<4	<4	<7	<5	<8	<7	<7	<5	<5	<6
T81	24-Jul-97	800 ± 60	286 ± 32	<3	<3	<7	<6	<7	<8	<10	<4	<4	<6
	20-Aug-97	<147	303 ± 37	<3	<3	<9	<5	<10	<6	<8	<5	<4	<4
	17-Sep-97	<166	267 ± 15	<2	<2	<4	<2	<3	<3	<3	<2	<2	<2

(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)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>	<u>U-238</u>
T42	18-Jul-97	<141	424 ± 59	<11	<12	<14	<13	<461	705 ± 17	704 ± 141
T67	11-Jul-97	147 ± 46	258 ± 40	<8	<8	<8	<8	<584	<35	<301
T81	17-Jul-97	372 ± 74	349 ± 62	<12	<12	<10	<12	500 ± 204	605 ± 16	<345

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

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67											This sample has not yet been collected.
T81											This sample has not yet been collected.

4.a.2. FISH - (pCi/kg. wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67											This sample has not yet been collected.
T81											This sample has not yet been collected.

4.b. 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>	<u>Pb-210</u>	<u>Ra-226</u>
T40	24-Jul-97	2125 ± 88	3504 ± 134	<16	<9	38 ± 7	<639	<212
	21-Aug-97	1795 ± 75	5076 ± 145	<15	<10	56 ± 6	<642	<215
	17-Sep-97	3187 ± 101	4305 ± 141	<20	<9	105 ± 8	900 ± 317	<236
T41	24-Jul-97	1494 ± 72	4375 ± 146	<17	<10	89 ± 7	<624	<223
	21-Aug-97	2189 ± 37	5052 ± 66	<6	<4	51 ± 3	437 ± 94	<94
	17-Sep-97	3752 ± 111	4833 ± 158	<22	<12	129 ± 10	570 ± 269	<264
T67	24-Jul-97	1928 ± 75	2753 ± 113	<18	<8	20 ± 5	<653	<218
	20-Aug-97	1185 ± 61	4645 ± 134	<15	<10	<10	<559	<184
	17-Sep-97	1630 ± 73	3764 ± 132	<14	<9	18 ± 6	452 ± 179	<217





RADIOLOGICAL SURVEILLANCE
OF
FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT SITE

FOURTH QUARTER 1997

BUREAU OF RADIATION CONTROL

TURKEY POINT SITE

Technical Specifications Sampling

Fourth Quarter, 1997

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	22	22
2. Airborne			
2.a. Air Iodines	Weekly	5	70
2.b. Air Particulates	Weekly	5	70
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	2	2
4.a.2. Fish	Semiannually	2	2
4.b. Food Products			
Broad Leaf Vegetation	Monthly	3	9
			<hr/> Total: 184

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.



I. DIRECT RADIATION - TLDs - (μ R/hour)

<u>Sample Site</u>	<u>Deployment 23-Sep-97 Collection 16-Dec-97</u>	<u>Sample Site</u>	<u>Deployment 23-Sep-97 Collection 16-Dec-97</u>
N-2	5.36 ± 0.40	WSW-8	4.98 ± 0.38
N-7	4.57 ± 0.35		
N-10	4.83 ± 0.37	SW-1	4.91 ± 0.38
		SW-8	4.38 ± 0.34
NNW-2	4.43 ± 0.34		
NNW-10	5.61 ± 0.43	SSW-5	4.73 ± 0.37
		SSW-10	4.80 ± 0.37
NW-1	4.73 ± 0.36		
NW-5	4.42 ± 0.34	S-5	4.61 ± 0.36
NW-10	7.82 ± 0.58	S-10	5.47 ± 0.41
WNW-10	6.33 ± 0.48	SSE-1	4.66 ± 0.36
		SSE-10	5.85 ± 0.44
W-1	6.51 ± 0.49		
W-5	5.04 ± 0.39	NNE-22	6.01 ± 0.45
W-9 (A)	5.36 ± 0.41		

(A) TLD was found on the ground at the time of collection.



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

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
01-Oct-97	<0.02	<0.02	<0.02	<0.01	<0.02
09-Oct-97	<0.03	<0.03	<0.03	<0.05	<0.03
13-Oct-97	<0.04	<0.04	<0.04	<0.02	<0.04
20-Oct-97	<0.02	<0.02	<0.02	<0.02	<0.02
28-Oct-97	<0.02	<0.02	<0.02	<0.02	<0.02
04-Nov-97	<0.02	<0.02	<0.02	<0.02	<0.02
13-Nov-97	<0.01	<0.01	<0.01	<0.01	<0.01
18-Nov-97	<0.03	<0.03	<0.03	<0.04	<0.03
26-Nov-97	<0.02	<0.02	<0.02	<0.02	<0.02
01-Dec-97	<0.03	<0.03	<0.03	<0.03	<0.03
08-Dec-97	<0.03	<0.03	<0.03	<0.03	<0.03
15-Dec-97	<0.02	<0.02	<0.02	<0.02	<0.02
22-Dec-97	<0.02	<0.02	<0.02	<0.02	<0.02
29-Dec-97	<0.01	<0.01	<0.01	<0.02	<0.02



2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
01-Oct-97	0.008 ± 0.002	0.005 ± 0.001	0.006 ± 0.002	0.010 ± 0.002	0.009 ± 0.002
09-Oct-97	0.023 ± 0.002	0.024 ± 0.002	0.024 ± 0.002	0.020 ± 0.003	0.029 ± 0.003
13-Oct-97	0.018 ± 0.003	0.019 ± 0.003	0.026 ± 0.004	0.019 ± 0.002	0.020 ± 0.004
20-Oct-97	0.013 ± 0.002	0.015 ± 0.002	0.015 ± 0.002	0.016 ± 0.003	0.013 ± 0.002
28-Oct-97	0.015 ± 0.002	0.016 ± 0.002	0.019 ± 0.002	0.019 ± 0.002	0.015 ± 0.002
04-Nov-97	0.014 ± 0.002	0.011 ± 0.002	0.016 ± 0.002	0.010 ± 0.002	0.018 ± 0.002
13-Nov-97	0.016 ± 0.002	0.016 ± 0.002	0.019 ± 0.002	0.019 ± 0.002	0.017 ± 0.002
18-Nov-97	0.015 ± 0.003	0.019 ± 0.003	0.018 ± 0.003	0.013 ± 0.003	0.016 ± 0.003
26-Nov-97	0.016 ± 0.002	0.016 ± 0.002	0.019 ± 0.002	0.016 ± 0.002	0.015 ± 0.002
01-Dec-97	0.012 ± 0.003	0.012 ± 0.003	<0.008	0.014 ± 0.003	0.010 ± 0.003
08-Dec-97	0.020 ± 0.002	0.020 ± 0.002	0.018 ± 0.002	0.015 ± 0.002	0.023 ± 0.002
15-Dec-97	0.012 ± 0.002	0.012 ± 0.002	0.008 ± 0.002	0.009 ± 0.002	0.012 ± 0.002
22-Dec-97	0.011 ± 0.002	0.015 ± 0.002	0.011 ± 0.002	0.015 ± 0.002	0.016 ± 0.002
29-Dec-97	0.009 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.009 ± 0.002	0.008 ± 0.002
Mean:	0.014 ± 0.001	0.015 ± 0.001	<0.015	0.015 ± 0.001	0.016 ± 0.001

2.b.2. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES (pCi/m³)Fourth Quarter, 1997

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T51	0.1147 ± 0.0090	<0.0153	<0.0008	<0.0006	0.0159 ± 0.0026
T57	0.1030 ± 0.0096	<0.0125	<0.0009	<0.0009	0.0136 ± 0.0031
T58	0.1166 ± 0.0095	<0.0172	<0.0010	<0.0009	0.0174 ± 0.0024
T64	0.1303 ± 0.0103	<0.0171	<0.0009	<0.0007	0.0139 ± 0.0032
T72	0.1278 ± 0.0103	<0.0179	<0.0010	<0.0007	0.0131 ± 0.0022



1997
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

ATTACHMENT C

RESULTS FROM THE INTERLABORATORY
COMPARISON PROGRAM 1997



QAP 46 Results by Laboratory

EML 591 QAP 9703

July 1, 1997

March 1997

Lab: FL Florida Dept of Health & Rehab. Serv., Orlando

No. Test	Radio-nuclide	Reported Value	Reported Error	EML Value	EML Error	Reported EML	Evaluation	QAP 45 Evaluation
----------	---------------	----------------	----------------	-----------	-----------	--------------	------------	-------------------

Matrix: AI Bq/filter

1	AM241	1.000	0.050	0.152	0.013	6.579	N	A
1	CE144	18.200	0.200	15.700	1.000	1.159	W	
1	CO 57	12.660	0.060	10.810	1.000	1.171	W	N
1	CO 60	5.950	0.090	5.010	0.300	1.188	W	W
1	CS134	11.160	0.090	10.880	1.000	1.026	A	W
1	CS137	10.500	0.100	8.700	0.800	1.207	W	W
1	GA 1	0.960	0.020	0.960	0.050	1.000	A	N
1	GB 2	0.590	0.010	0.450	0.030	1.311	A	A
1	MN 54	9.800	0.100	7.620	0.600	1.286	W	N
1	PU238	0.065	0.004	0.100	0.006	0.649	W	A
1	PU239	0.083	0.004	0.119	0.006	0.699	W	
1	SB125	12.800	0.500	12.330	1.000	1.038	A	W
1	U 238	0.800	0.200	0.105	0.004	7.656	N	

Matrix: SO Bq/kg

1	AM241	5.000	0.500	5.880	0.500	0.880	A	A
1	CS137	841.000	2.000	825.500	14.100	1.019	A	A
1	K 40	341.000	6.000	334.250	7.140	1.020	A	A
1	PU238	0.238	0.240	0.530	0.111	0.449	W	W
1	PU239	147.374	4.190	134.930	17.100	1.092	A	A
1	U 238	34.700	3.700	42.430	2.500	0.818	A	

Matrix: VE Bq/kg

1	AM241	2.300	0.500	1.183	0.113	1.944	W	A
1	CO 60	14.500	0.600	12.500	0.320	1.160	A	A
1	CS137	219.000	1.000	189.250	7.270	1.157	A	W
1	K 40	953.000	13.000	811.500	12.200	1.174	A	A

Matrix: WA Bq/L

1	CO 60	97.600	0.800	90.850	1.150	1.074	A	W
1	CS134	22.500	0.400	20.550	0.310	1.095	A	
1	CS137	79.400	0.800	69.780	1.230	1.138	A	W
1	GA 1	1332.000	19.000	1130.000	10.000	1.170	A	W
1	GB 2	643.000	9.000	744.000	10.000	0.860	A	A
1	H 3	228.000	2.000	250.300	4.200	0.911	A	A
1	MN 54	24.300	0.300	20.850	0.310	1.165	W	W
1	PU238	1.310	0.021	1.291	0.063	1.015	A	W
1	PU239	0.815	0.014	0.850	0.050	0.959	A	W

Values for elemental uranium are reported in µg/filter, g, or mL.

Evaluation: A=Acceptable, W=Acceptable with Warning, N=Not Acceptable

pCi/g or mL = Bq x 0.027



QAP 47 Results by Laboratory

Lab: FL Florida Dept of Health & Rehab. Serv., Orlando

No. Test	Radio-nuclide	Reported Value	Reported Error	EML Value	EML Error	Reported EML	Evaluation	QAP 46 Evaluation
----------	---------------	----------------	----------------	-----------	-----------	--------------	------------	-------------------

Matrix: AI Air Filter Bq/filter

1	AM241	0.440	0.050	0.210	0.009	2.060	N	N
1	CE144	15.700	0.300	19.120	0.700	0.820	A	W
1	CO 57	10.330	0.050	12.640	0.430	0.810	A	W
1	CO 60	9.170	0.120	10.730	1.090	0.850	A	W
1	CS134	21.900	0.170	28.170	0.730	0.770	W	A
1	CS137	6.900	0.100	7.310	0.250	0.940	A	W
1	GA	1.470	0.040	1.490	0.090	0.980	A	A
1	GB	3.280	0.050	3.000	0.140	1.090	A	A
1	MN 54	6.300	0.100	6.720	0.270	0.930	A	W
1	PU238	0.210	0.007	0.210	0.007	1.000	A	W
1	PU239	0.110	0.005	0.100	0.004	1.030	A	W
1	SB125	13.900	0.400	16.120	0.790	0.860	A	A

Matrix: SO Soil Bq/kg

1	AM241	5.700	0.600	6.040	0.580	0.940	A	A
1	CO 60	1.600	0.200	1.500	0.400	1.060	A	A
1	CS137	838.000	2.000	810.000	40.000	1.030	A	A
1	K 40	306.000	5.000	315.000	20.000	0.970	A	A
1	U238	27.700	3.700	34.900	0.140	0.790	A	A

Matrix: VE Vegetation Bq/kg

1	AM241	5.300	0.700	3.460	0.250	1.530	A	W
1	CO 60	34.900	0.500	32.400	1.600	1.070	A	A
1	CS137	738.000	2.000	624.000	31.000	1.180	A	A
1	K 40	1183.000	10.000	1130.000	70.000	1.040	A	A

Matrix: WA Water Bq/L

1	CO 60	25.700	0.300	23.300	1.200	1.100	A	A
1	CS134	74.500	0.500	66.000	2.600	1.120	A	A
1	CS137	39.300	0.600	34.300	1.700	1.140	A	A
1	GA	841.620	12.750	557.000	60.000	1.510	N	W
1	GB	1060.000	9.400	712.000	70.000	1.480	W	A
1	H 3	112.000	1.700	115.000	6.000	0.970	A	A
1	MN 54	45.300	0.600	37.800	1.900	1.190	W	W

Values for elemental uranium are reported in µg/filter, g, or mL.

Evaluation: A=Acceptable, W=Acceptable with Warning, N=Not Acceptable

pCi/g or mL = Bq x 0.027

If the evaluation system is not appropriate for the types of analyses performed in your lab, apply site specific evaluation.

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

January through June, 1997

Media	Nuclide	Collection	EPA	Units	Normal.	Mean of	N.D.K.	Action
		Mon Day Yr	Known		Range	Analyses		Level
WATER	Co-60	06 06 97	18	pCi/L	0.118	18.67	0.23	
WATER	Zn-65	06 06 97	100	pCi/L	0.236	104.33	0.75	
WATER	Cs-134	06 06 97	22	pCi/L	0.236	21.33	-0.23	
WATER	Cs-137	06 06 97	49	pCi/L	0.118	52.67	1.27	
WATER	Ba-133	06 06 97	25	pCi/L	0.354	23.67	-0.46	
WATER	Sr-89	01 17 97	12	pCi/L	0.000	5.00	-2.42	
WATER	Sr-90	01 17 97	25	pCi/L	0.473	21.33	-1.27	
WATER	Alpha	01 31 97	5.2	pCi/L	0.177	6.47	0.44	
WATER	Beta	01 31 97	14.7	pCi/L	0.319	17.90	1.11	
WATER	I-131	02 07 97	86	pCi/L	0.131	83.67	-0.45	
WATER	H-3	03 07 97	7900	pCi/L	0.043	7332.33	-1.24	

NOTES:

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 93478, Las Vegas, Nevada, 89193-3478. 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.

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

July through December, 1997

Media	Nuclide	Collection	EPA	Units	Normal.	Mean of	N.D.K.	Action
		Mon Day Yr	Known		Range	Analyses		Level
WATER	Alpha	07 18 97	3.1	pCi/L	0.142	4.70	0.55	
WATER	Alpha	10 31 97	14.7	pCi/L	0.177	7.37	-2.54	
WATER	Beta	07 18 97	15.1	pCi/L	0.071	17.17	0.72	
WATER	Beta	10 31 97	48.9	pCi/L	0.354	53.40	1.56	
WATER	Co-60	11 07 97	27	pCi/L	0.118	28.33	0.46	
WATER	Zn-65	11 07 97	75	pCi/L	0.222	80.33	1.15	
WATER	Ba-133	11 07 97	99	pCi/L	0.177	92.33	-1.15	
WATER	Cs-134	11 07 97	10	pCi/L	0.000	10.00	0.00	
WATER	Cs-137	11 07 97	74	pCi/L	0.118	77.67	1.27	
WATER	H-3	08 08 97	11010	pCi/L	0.519	10485.00	-0.83	
WATER	I-131	09 19 97	10	pCi/L	0.295	11.33	0.38	
WATER	Sr-89	07 11 97	44	pCi/L	0.354	36.00	-2.77	
WATER	Sr-90	07 11 97	16	pCi/L	0.236	13.00	-1.04	

NOTES:

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 93478, Las Vegas, Nevada, 89193-3478. 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.



**Addendum to Attachment C -
Results from the Interlaboratory Comparison Program 1997**

Explanation of Comparison Evaluation Indicators

This quality assurance program is maintained for the requirement of a DOE contract. The DOE contract required the performance testing of plutonium and tritium. The matrixes required were air, water and soil for plutonium and water for tritium. Plutonium analysis is not required for the Nuclear Power Plant Program.

The preceeding results, other than tritium, are from gamma spectroscopy analysis; the other analytical methods are not applicable to the Nuclear Power Plant REMP.

NOTE : At the low levels present in EML samples, Americium-241 and Uranium-238 cannot be quantified using gamma spectroscopy.

QAP 46, Air Filters (AI)

The Warnings are due to sample geometry. The calibrated filter geometry is a 47 mm filter, the size of the filters used in the field on our air pumps. The EML filter is 70 mm in diameter. Review of the analysis process indicated that a different efficiency file is more suited to use for this QAP sample. An efficiency file specific to this filter size was used to calculate the activity of the QAP 47 air filters; this corrected all but one Warning. The Warning evaluation for Cs-134, is still under investigation.

QAP 46 & 47

The Warnings for Mn-54 in Water (WA) are due to calibration methodology. Because the error is a slight positive bias, it is felt the conservative approach is not to recalibrate the system.

QAP 47 Gross Alpha & Gross Beta

The Gross Alpha (GA) & Gross Beta (GB) analysis is not required for the Nuclear Power Plant Program.

