

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9105070093 DOC.DATE: 90/12/31 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
 PLUNKETT,T.F. Florida Power & Light Co. *Sub En Rpt*
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: "1990 Annual Radiological Environ Operating Rept Turkey
 Point Plant Units 3 & 4." W/910430 ltr.

DISTRIBUTION CODE: IE25D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 64
 TITLE: Environmental Monitoring Rept (per Tech Specs)

NOTES:

RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
PD2-2 LA	3 3	PD2-2 PD	1 1
AULUCK,R	1 1		
INTERNAL: AEOD/DSP/TPAB	1 1	NRR/DREP/PRPB11	2 2
<u>REG FILE</u> 01	1 1	RGN2 DRSS/RPB	1 1
RGN2 FILE 02	1 1		
EXTERNAL: EG&G SIMPSON,F	2 2	NRC PDR	1 1

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,
 ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION
 LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTTR 14 ENCL 14

Environ



FPL

P.O. Box 029100, Miami, FL, 33102-9100

APR 30 1991

L-91-119

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

Gentlemen:

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
1990 Annual Radiological
Environmental Operating Report

This letter transmits the subject report in accordance with
Technical Specification 6.9.1.3 for Turkey Point Units 3 and 4.

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

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point Nuclear

TFP/RJT/rjt

Enclosure

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

9105070093 901231
PDR ADOCK 05000250
R PDR

030104

an FPL Group company

LE25
11

FORM 92 5-73

~~1~~

1990

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 DHRS

9103070093



1990
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

TABLE OF CONTENTS

<u>DESCRIPTION</u>	<u>PAGE</u>
Executive Summary	ii
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 Table 4.12-1 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, 1990	
Second Quarter, 1990	
Third Quarter, 1990	
Fourth Quarter, 1990	
Results from the Interlaboratory Comparison Program, 1990	ATTACHMENT C

1990
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 the levels of radiation and concentrations of radioactive materials in environmental samples, is 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.



1990
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 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 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 Technical Specifications 3/4.12 of Turkey Point Unit 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.



100

100

100

100

100

100

100

100

100

100

100

100

1990
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

- c. Surface water samples are collected from three locations. Samples are collected and analyzed monthly. Analyses include gamma isotopic and tritium measurements.
- 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 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.

205
206
207
208
209
210

24

4

●

1990
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

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.

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 3.12-2, for all samples specified by Table 3.12-1. 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, and Be-7 which are common in the Florida environment.



1990
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT - UNITS 3 & 4

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 naturally occurring K-40 at levels consistent with past measurements.

3. Waterborne; Surface Water:

The results for radioactivity measurements in surface water samples are consistent with past measurements. Tritium was reported as present in the surface water samples collected from Site T-81. 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 about 3% of the reporting value specified by Technical Specifications, Table 3.12-2.

4. Waterborne; Sediment, and Food Products:

4.1 Sediment: The results are consistent with past measurements; Cs-137 was detected in one sample collected at the control location. The result is about 18% of the table 4.12-1 LLD. No other fission products were detected.

12
11
10
9
8
7
6
5
4
3
2
1

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

1990
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT. - UNITS 3 & 4

4.2 Food Products: The results are consistent with past measurements. Mn-54 was detected in one sample collected at an indicator location; the result is about 15% of the table 4.12-1 LLD and is less than 0.1% of the table 3.12-2 reporting level. Cs-137 was detected in two samples collected at an indicator location; the maximum value is about 28% of the table 4.12-1 LLD and is 2% of the table 3.12-2 reporting level. Again, the occasional extremely low level appearance of these nuclides is consistent with past measurements. No other fission products were detected.

5. Broad Leaf Vegetation:

The results for radioactivity measurements are consistent with past measurements. Cs-137 was detected, as in the past, in samples collected from all locations. The maximum value, occurring at the control location, is about 19% of the table 3.12-2 reporting level. 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. 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.



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, 1990
 (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 Distance & Direction	Mean (f) ^b Range	
Exposure Rate, 84 ^d	---	5.6 (84/84) 4.5 - 7.8	NW-10 10 mi., 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 Units 3 & 4, Docket No(s). 50-250 & 50-251
 Location of Facility Dade, Florida, Reporting Period January 1 - December 31, 1990
 (County, State)

PATHWAY: AIRBORNE

SAMPLES COLLECTED: RADIOIODINE AND PARTICULATES

UNITS: PICO - Ci/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 Distance & Direction	Mean (f) ^b Range	
¹³¹ I, 260	0.024	<MDA	---	---	<MDA
Gross Beta, 260	0.0025	0.010 (258/260) 0.003 - 0.018	T-57 4 mi., NW	0.010 (51/52) 0.003 - 0.018	0.010 (52/52) 0.004 - 0.018
Composite Gamma Isotopic, 20					
⁷ Be	0.0052	0.092 (20/20) 0.074 - 0.122	T-57 4 mi., NW	0.100 (4/4) 0.074 - 0.122	0.096 (4/4) 0.079 - 0.114
⁴⁰ K	0.012	0.011 (2/20) 0.011 - 0.011	T-57 4 mi., NW	0.011 (2/4) 0.011 - 0.011	<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 Units 3 & 4, Docket No(s). 50-250 & 50-251
 Location of Facility Dade, Florida, Reporting Period January 1 - December 31, 1990
 (County, State)

PATHWAY: WATERBORNE

SAMPLES COLLECTED: SURFACE WATER

UNITS: PICO - Ci/LITER

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 Distance & Direction	Mean (f) ^b Range	
Tritium, 36	230	297 (6/36) 121 - 910	T-81 6 mi., S	297 (6/12) 121 - 910	<MDA
Gamma Isotopic, 36					
⁴⁰ K	60	319 (36/36) 200 - 450	T-81 6 mi., S	360 (12/12) 250 - 450	277 (12/12) 210 - 330
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

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, 1990
(County, State)

PATHWAY: WATERBORNE

SAMPLES COLLECTED: SHORELINE SEDIMENT

UNITS: PICO - Ci/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	
			Distance & Direction	Range	
Gamma- Isotopic, 6					
⁷ Be	100	365 (4/6) 270 - 610	T-67 13-18 mi., N/NNE	610 (1/2)	610 (1/2)
⁴⁰ K	140	657 (6/6) 220 - 1650	T-67 13-18 mi., N/NNE	1225 (2/2) 800 - 1650	1225 (2/2) 800 - 1650
¹³⁷ Cs	12	33 (2/6) 29 - 36	T-67 13-18 mi., N/NNE	33 (2/2) 29 - 36	33 (2/2) 29 - 36
²³² Th	52	104 (5/6) 76 - 135	T-67 13-18 mi., N/NNE	112 (2/2) 100 - 124	112 (2/2) 100 - 124
²²⁶ Ra	49	532 (6/6) 298 - 721	T-42 <1 mi., ENE	688 (2/2) 655-721	363 (2/2) 298 - 427
²³⁸ U	---	1010 (1/6)	T-67 13-18 mi, N/NNE	1010 (1/6)	1010 (1/6)
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 Units 3 & 4, Docket No(s). 50-250 & 50-251
 Location of Facility Dade, Florida, Reporting Period January 1 - December 31, 1990
 (County, State)

PATHWAY: INGESTION
 SAMPLES COLLECTED: CRUSTACEA
 UNITS: PICO - Ci/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	1875 (4/4) 1840 - 2060	T-81 6 mi., S	1960 (2/2) 1860 - 2060	1790 (2/2) 1740 - 1840
²²⁶ Ra	20	500 (4/4) 156 - 1174	T-81 6 mi., S	837 (2/2) 500 - 1174	163 (2/2) 156 - 169
⁵⁴ Mn	9	19 (1/4)	T-81 6 mi., S	19 (1/2)	<MDA
²²⁸ Ra	---	90 (2/4) 61 - 117	T-81 6 mi., S	117 (1/2)	62 (1/2)
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 Units 3 & 4, Docket No(s). 50-250 & 50-251Location of Facility Dade, Florida, Reporting Period January 1 - December 31, 1990
(County, State)PATHWAY: INGESTION
SAMPLES COLLECTED: FISH
UNITS: PICO - Ci/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	2366 (4/4) 1870 - 3090	T-81 6 mi., S	2480 (2/2) 1870 - 3090	2251 (2/2) 2150 - 2352
¹³⁷ Cs	9	30 (2/4) 18 - 42	T-81 6 mi., S	30 (2/2) 18 - 42	<MDA
²²⁶ Ra	18	70 (2/4)	T-81 6 mi. S	116 (1/2)	24 (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

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, 1990
(County, State)

PATHWAY: INGESTION

SAMPLES COLLECTED: BROAD LEAF VEGETATION

UNITS: PICO - Ci/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 Distance & Direction	Mean (f) ^b Range	
Gamma Isotopic, 36					
⁷ Be	71	1000 (36/36) 240 - 2130	T-41 2 mi., W/NW	1024 (12/12) 550 - 1740	995 (12/12) 620 - 1580
⁴⁰ K	100	3376 (36/36) 1381 - 5260	T-40 3 mi., W	4413 (12/12) 2490 - 5190	2819 (12/12) 1381 - 5260
¹³⁷ Cs	8	139 (31/36) 24 - 372	T-67 6 mi., S	233 (8/12) 24 - 372	233 (8/12) 24 - 372
¹³¹ I	9	<MDA	---	---	<MDA
¹³⁴ Cs	8	<MDA	---	---	<MDA

Number of Nonroutine Reported Measurements = 0



1990
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT, UNITS 3 & 4

TABLE 1

Page 8 of 8

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Units 1 & 2

Docket No.(s) 50-250 and 50-251

Location of Facility Dade, Florida
(County, State)

Reporting Period January 1 - December 31, 1990

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

MDA refers to minimum detectable activity.

1990
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT, UNITS 3 & 4

TABLE 1A

DEVIATIONS/MISSING DATA

A) Pathway: Airborne

Locations: T-51 (2 miles NNW) and T-57 (4 miles NW)

Date: 10/2/90 to 10/15/90

Deviation: Failure to continuously provide air sampling at these locations.

Description of Problem: Due to massive storms, there were power outages to the areas in which these sample stations are located. The power was out for approximately the last four hours of the sampling period 10/2/90 to 10/9/90 and the first eight hours of the sampling period 10/9/90 to 10/15/90.

Corrective Action: Verified equipment as operable upon notification that power was restored.



1990
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT, UNITS 3 & 4

TABLE 1B

ANALYSES WITH LLDs ABOVE TABLE 4.12-1 DETECTION CAPABILITIES
1/1/90 - 12/31/90

The values specified in Table 4.12-1, Detection Capabilities, were achieved for all samples.

1990
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT, UNITS 3 & 4

TABLE 2

LAND USE CENSUS

Distance to Nearest (a, b)

Sector	5/90 Milk (c) Animal	5/90 Residence	5/90 Garden (d)
N	L (e)	2.1/350 (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 (g)	O
SSW	L	L	L
SW	L	L	L
WSW	L	L	L
W	L	L	L
WNW	L	L	4.0/229
NW	L	3.7/319	3.8/305
NNW	L	L (g)	4.0/328

1990
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 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

1990
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT, UNITS 3 & 4

ATTACHMENT A

KEY TO SAMPLE LOCATIONS



1990
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

<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/WNW-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/WNW-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

1990
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	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
------	-----	----	-------------------

1990
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
LT-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 A1A
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
------	--------	-------	-----------------------------------------------------------------------------

1990
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 Park, 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:

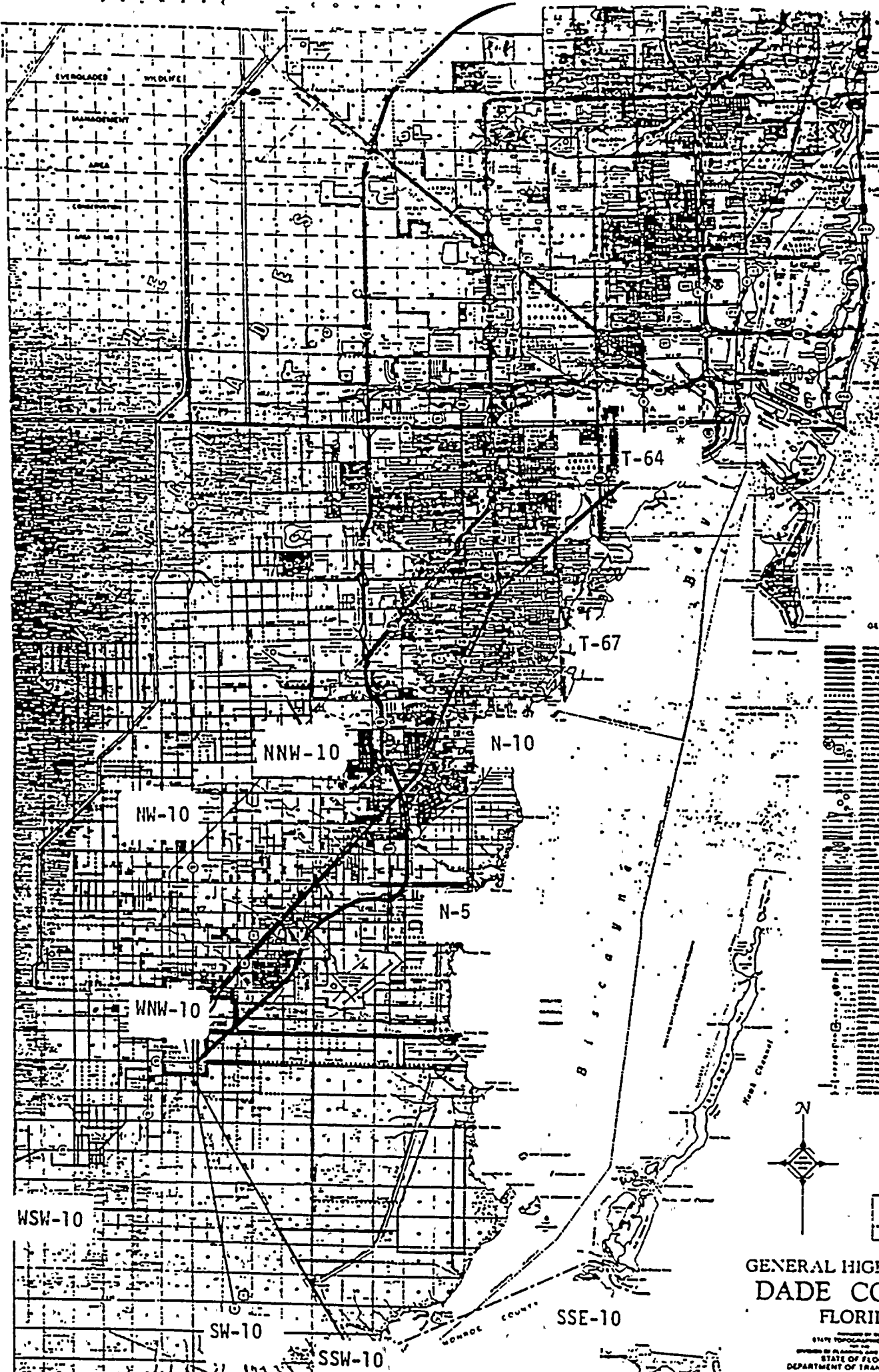
T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Park, North to Matheson Hammock Park
------	--------	-------	----------------------------------------------------------------------------



100-111-102

100-111-102





ATLANTIC

GENERAL LEG.

- 1. Major Highway
- 2. Minor Highway
- 3. Road
- 4. Footpath
- 5. Canal
- 6. Waterway
- 7. Bay
- 8. Lake
- 9. Swamp
- 10. Marsh
- 11. Forest
- 12. Field
- 13. Pasture
- 14. Cultivated Land
- 15. Uncultivated Land
- 16. Bare Land
- 17. Beach
- 18. Dune
- 19. Cliff
- 20. Rock
- 21. Island
- 22. Shoal
- 23. Reef
- 24. Sandbar
- 25. Sandspit
- 26. Spit
- 27. Point
- 28. Headland
- 29. Peninsula
- 30. Isthmus
- 31. Strait
- 32. Inlet
- 33. Cove
- 34. Bay
- 35. Sound
- 36. Gulf
- 37. Ocean
- 38. Sea
- 39. Strait
- 40. Inlet
- 41. Cove
- 42. Bay
- 43. Sound
- 44. Gulf
- 45. Ocean
- 46. Sea
- 47. Strait
- 48. Inlet
- 49. Cove
- 50. Bay
- 51. Sound
- 52. Gulf
- 53. Ocean
- 54. Sea
- 55. Strait
- 56. Inlet
- 57. Cove
- 58. Bay
- 59. Sound
- 60. Gulf
- 61. Ocean
- 62. Sea
- 63. Strait
- 64. Inlet
- 65. Cove
- 66. Bay
- 67. Sound
- 68. Gulf
- 69. Ocean
- 70. Sea
- 71. Strait
- 72. Inlet
- 73. Cove
- 74. Bay
- 75. Sound
- 76. Gulf
- 77. Ocean
- 78. Sea
- 79. Strait
- 80. Inlet
- 81. Cove
- 82. Bay
- 83. Sound
- 84. Gulf
- 85. Ocean
- 86. Sea
- 87. Strait
- 88. Inlet
- 89. Cove
- 90. Bay
- 91. Sound
- 92. Gulf
- 93. Ocean
- 94. Sea
- 95. Strait
- 96. Inlet
- 97. Cove
- 98. Bay
- 99. Sound
- 100. Gulf
- 101. Ocean
- 102. Sea
- 103. Strait
- 104. Inlet
- 105. Cove
- 106. Bay
- 107. Sound
- 108. Gulf
- 109. Ocean
- 110. Sea
- 111. Strait
- 112. Inlet
- 113. Cove
- 114. Bay
- 115. Sound
- 116. Gulf
- 117. Ocean
- 118. Sea
- 119. Strait
- 120. Inlet
- 121. Cove
- 122. Bay
- 123. Sound
- 124. Gulf
- 125. Ocean
- 126. Sea
- 127. Strait
- 128. Inlet
- 129. Cove
- 130. Bay
- 131. Sound
- 132. Gulf
- 133. Ocean
- 134. Sea
- 135. Strait
- 136. Inlet
- 137. Cove
- 138. Bay
- 139. Sound
- 140. Gulf
- 141. Ocean
- 142. Sea
- 143. Strait
- 144. Inlet
- 145. Cove
- 146. Bay
- 147. Sound
- 148. Gulf
- 149. Ocean
- 150. Sea
- 151. Strait
- 152. Inlet
- 153. Cove
- 154. Bay
- 155. Sound
- 156. Gulf
- 157. Ocean
- 158. Sea
- 159. Strait
- 160. Inlet
- 161. Cove
- 162. Bay
- 163. Sound
- 164. Gulf
- 165. Ocean
- 166. Sea
- 167. Strait
- 168. Inlet
- 169. Cove
- 170. Bay
- 171. Sound
- 172. Gulf
- 173. Ocean
- 174. Sea
- 175. Strait
- 176. Inlet
- 177. Cove
- 178. Bay
- 179. Sound
- 180. Gulf
- 181. Ocean
- 182. Sea
- 183. Strait
- 184. Inlet
- 185. Cove
- 186. Bay
- 187. Sound
- 188. Gulf
- 189. Ocean
- 190. Sea
- 191. Strait
- 192. Inlet
- 193. Cove
- 194. Bay
- 195. Sound
- 196. Gulf
- 197. Ocean
- 198. Sea
- 199. Strait
- 200. Inlet
- 201. Cove
- 202. Bay
- 203. Sound
- 204. Gulf
- 205. Ocean
- 206. Sea
- 207. Strait
- 208. Inlet
- 209. Cove
- 210. Bay
- 211. Sound
- 212. Gulf
- 213. Ocean
- 214. Sea
- 215. Strait
- 216. Inlet
- 217. Cove
- 218. Bay
- 219. Sound
- 220. Gulf
- 221. Ocean
- 222. Sea
- 223. Strait
- 224. Inlet
- 225. Cove
- 226. Bay
- 227. Sound
- 228. Gulf
- 229. Ocean
- 230. Sea
- 231. Strait
- 232. Inlet
- 233. Cove
- 234. Bay
- 235. Sound
- 236. Gulf
- 237. Ocean
- 238. Sea
- 239. Strait
- 240. Inlet
- 241. Cove
- 242. Bay
- 243. Sound
- 244. Gulf
- 245. Ocean
- 246. Sea
- 247. Strait
- 248. Inlet
- 249. Cove
- 250. Bay
- 251. Sound
- 252. Gulf
- 253. Ocean
- 254. Sea
- 255. Strait
- 256. Inlet
- 257. Cove
- 258. Bay
- 259. Sound
- 260. Gulf
- 261. Ocean
- 262. Sea
- 263. Strait
- 264. Inlet
- 265. Cove
- 266. Bay
- 267. Sound
- 268. Gulf
- 269. Ocean
- 270. Sea
- 271. Strait
- 272. Inlet
- 273. Cove
- 274. Bay
- 275. Sound
- 276. Gulf
- 277. Ocean
- 278. Sea
- 279. Strait
- 280. Inlet
- 281. Cove
- 282. Bay
- 283. Sound
- 284. Gulf
- 285. Ocean
- 286. Sea
- 287. Strait
- 288. Inlet
- 289. Cove
- 290. Bay
- 291. Sound
- 292. Gulf
- 293. Ocean
- 294. Sea
- 295. Strait
- 296. Inlet
- 297. Cove
- 298. Bay
- 299. Sound
- 300. Gulf
- 301. Ocean
- 302. Sea
- 303. Strait
- 304. Inlet
- 305. Cove
- 306. Bay
- 307. Sound
- 308. Gulf
- 309. Ocean
- 310. Sea
- 311. Strait
- 312. Inlet
- 313. Cove
- 314. Bay
- 315. Sound
- 316. Gulf
- 317. Ocean
- 318. Sea
- 319. Strait
- 320. Inlet
- 321. Cove
- 322. Bay
- 323. Sound
- 324. Gulf
- 325. Ocean
- 326. Sea
- 327. Strait
- 328. Inlet
- 329. Cove
- 330. Bay
- 331. Sound
- 332. Gulf
- 333. Ocean
- 334. Sea
- 335. Strait
- 336. Inlet
- 337. Cove
- 338. Bay
- 339. Sound
- 340. Gulf
- 341. Ocean
- 342. Sea
- 343. Strait
- 344. Inlet
- 345. Cove
- 346. Bay
- 347. Sound
- 348. Gulf
- 349. Ocean
- 350. Sea
- 351. Strait
- 352. Inlet
- 353. Cove
- 354. Bay
- 355. Sound
- 356. Gulf
- 357. Ocean
- 358. Sea
- 359. Strait
- 360. Inlet
- 361. Cove
- 362. Bay
- 363. Sound
- 364. Gulf
- 365. Ocean
- 366. Sea
- 367. Strait
- 368. Inlet
- 369. Cove
- 370. Bay
- 371. Sound
- 372. Gulf
- 373. Ocean
- 374. Sea
- 375. Strait
- 376. Inlet
- 377. Cove
- 378. Bay
- 379. Sound
- 380. Gulf
- 381. Ocean
- 382. Sea
- 383. Strait
- 384. Inlet
- 385. Cove
- 386. Bay
- 387. Sound
- 388. Gulf
- 389. Ocean
- 390. Sea
- 391. Strait
- 392. Inlet
- 393. Cove
- 394. Bay
- 395. Sound
- 396. Gulf
- 397. Ocean
- 398. Sea
- 399. Strait
- 400. Inlet
- 401. Cove
- 402. Bay
- 403. Sound
- 404. Gulf
- 405. Ocean
- 406. Sea
- 407. Strait
- 408. Inlet
- 409. Cove
- 410. Bay
- 411. Sound
- 412. Gulf
- 413. Ocean
- 414. Sea
- 415. Strait
- 416. Inlet
- 417. Cove
- 418. Bay
- 419. Sound
- 420. Gulf
- 421. Ocean
- 422. Sea
- 423. Strait
- 424. Inlet
- 425. Cove
- 426. Bay
- 427. Sound
- 428. Gulf
- 429. Ocean
- 430. Sea
- 431. Strait
- 432. Inlet
- 433. Cove
- 434. Bay
- 435. Sound
- 436. Gulf
- 437. Ocean
- 438. Sea
- 439. Strait
- 440. Inlet
- 441. Cove
- 442. Bay
- 443. Sound
- 444. Gulf
- 445. Ocean
- 446. Sea
- 447. Strait
- 448. Inlet
- 449. Cove
- 450. Bay
- 451. Sound
- 452. Gulf
- 453. Ocean
- 454. Sea
- 455. Strait
- 456. Inlet
- 457. Cove
- 458. Bay
- 459. Sound
- 460. Gulf
- 461. Ocean
- 462. Sea
- 463. Strait
- 464. Inlet
- 465. Cove
- 466. Bay
- 467. Sound
- 468. Gulf
- 469. Ocean
- 470. Sea
- 471. Strait
- 472. Inlet
- 473. Cove
- 474. Bay
- 475. Sound
- 476. Gulf
- 477. Ocean
- 478. Sea
- 479. Strait
- 480. Inlet
- 481. Cove
- 482. Bay
- 483. Sound
- 484. Gulf
- 485. Ocean
- 486. Sea
- 487. Strait
- 488. Inlet
- 489. Cove
- 490. Bay
- 491. Sound
- 492. Gulf
- 493. Ocean
- 494. Sea
- 495. Strait
- 496. Inlet
- 497. Cove
- 498. Bay
- 499. Sound
- 500. Gulf
- 501. Ocean
- 502. Sea
- 503. Strait
- 504. Inlet
- 505. Cove
- 506. Bay
- 507. Sound
- 508. Gulf
- 509. Ocean
- 510. Sea
- 511. Strait
- 512. Inlet
- 513. Cove
- 514. Bay
- 515. Sound
- 516. Gulf
- 517. Ocean
- 518. Sea
- 519. Strait
- 520. Inlet
- 521. Cove
- 522. Bay
- 523. Sound
- 524. Gulf
- 525. Ocean
- 526. Sea
- 527. Strait
- 528. Inlet
- 529. Cove
- 530. Bay
- 531. Sound
- 532. Gulf
- 533. Ocean
- 534. Sea
- 535. Strait
- 536. Inlet
- 537. Cove
- 538. Bay
- 539. Sound
- 540. Gulf
- 541. Ocean
- 542. Sea
- 543. Strait
- 544. Inlet
- 545. Cove
- 546. Bay
- 547. Sound
- 548. Gulf
- 549. Ocean
- 550. Sea
- 551. Strait
- 552. Inlet
- 553. Cove
- 554. Bay
- 555. Sound
- 556. Gulf
- 557. Ocean
- 558. Sea
- 559. Strait
- 560. Inlet
- 561. Cove
- 562. Bay
- 563. Sound
- 564. Gulf
- 565. Ocean
- 566. Sea
- 567. Strait
- 568. Inlet
- 569. Cove
- 570. Bay
- 571. Sound
- 572. Gulf
- 573. Ocean
- 574. Sea
- 575. Strait
- 576. Inlet
- 577. Cove
- 578. Bay
- 579. Sound
- 580. Gulf
- 581. Ocean
- 582. Sea
- 583. Strait
- 584. Inlet
- 585. Cove
- 586. Bay
- 587. Sound
- 588. Gulf
- 589. Ocean
- 590. Sea
- 591. Strait
- 592. Inlet
- 593. Cove
- 594. Bay
- 595. Sound
- 596. Gulf
- 597. Ocean
- 598. Sea
- 599. Strait
- 600. Inlet
- 601. Cove
- 602. Bay
- 603. Sound
- 604. Gulf
- 605. Ocean
- 606. Sea
- 607. Strait
- 608. Inlet
- 609. Cove
- 610. Bay
- 611. Sound
- 612. Gulf
- 613. Ocean
- 614. Sea
- 615. Strait
- 616. Inlet
- 617. Cove
- 618. Bay
- 619. Sound
- 620. Gulf
- 621. Ocean
- 622. Sea
- 623. Strait
- 624. Inlet
- 625. Cove
- 626. Bay
- 627. Sound
- 628. Gulf
- 629. Ocean
- 630. Sea
- 631. Strait
- 632. Inlet
- 633. Cove
- 634. Bay
- 635. Sound
- 636. Gulf
- 637. Ocean
- 638. Sea
- 639. Strait
- 640. Inlet
- 641. Cove
- 642. Bay
- 643. Sound
- 644. Gulf
- 645. Ocean
- 646. Sea
- 647. Strait
- 648. Inlet
- 649. Cove
- 650. Bay
- 651. Sound
- 652. Gulf
- 653. Ocean
- 654. Sea
- 655. Strait
- 656. Inlet
- 657. Cove
- 658. Bay
- 659. Sound
- 660. Gulf
- 661. Ocean
- 662. Sea
- 663. Strait
- 664. Inlet
- 665. Cove
- 666. Bay
- 667. Sound
- 668. Gulf
- 669. Ocean
- 670. Sea
- 671. Strait
- 672. Inlet
- 673. Cove
- 674. Bay
- 675. Sound
- 676. Gulf
- 677. Ocean
- 678. Sea
- 679. Strait
- 680. Inlet
- 681. Cove
- 682. Bay
- 683. Sound
- 684. Gulf
- 685. Ocean
- 686. Sea
- 687. Strait
- 688. Inlet
- 689. Cove
- 690. Bay
- 691. Sound
- 692. Gulf
- 693. Ocean
- 694. Sea
- 695. Strait
- 696. Inlet
- 697. Cove
- 698. Bay
- 699. Sound
- 700. Gulf
- 701. Ocean
- 702. Sea
- 703. Strait
- 704. Inlet
- 705. Cove
- 706. Bay
- 707. Sound
- 708. Gulf
- 709. Ocean
- 710. Sea
- 711. Strait
- 712. Inlet
- 713. Cove
- 714. Bay
- 715. Sound
- 716. Gulf
- 717. Ocean
- 718. Sea
- 719. Strait
- 720. Inlet
- 721. Cove
- 722. Bay
- 723. Sound
- 724. Gulf
- 725. Ocean
- 726. Sea
- 727. Strait
- 728. Inlet
- 729. Cove
- 730. Bay
- 731. Sound
- 732. Gulf
- 733. Ocean
- 734. Sea
- 735. Strait
- 736. Inlet
- 737. Cove
- 738. Bay
- 739. Sound
- 740. Gulf
- 741. Ocean
- 742. Sea
- 743. Strait
- 744. Inlet
- 745. Cove
- 746. Bay
- 747. Sound
- 748. Gulf
- 749. Ocean
- 750. Sea
- 751. Strait
- 752. Inlet
- 753. Cove
- 754. Bay
- 755. Sound
- 756. Gulf
- 757. Ocean
- 758. Sea
- 759. Strait
- 760. Inlet
- 761. Cove
- 762. Bay
- 763. Sound
- 764. Gulf
- 765. Ocean
- 766. Sea
- 767. Strait
- 768. Inlet
- 769. Cove
- 770. Bay
- 771. Sound
- 772. Gulf
- 773. Ocean
- 774. Sea
- 775. Strait
- 776. Inlet
- 777. Cove
- 778. Bay
- 779. Sound
- 780. Gulf
- 781. Ocean
- 782. Sea
- 783. Strait
- 784. Inlet
- 785. Cove
- 786. Bay
- 787. Sound
- 788. Gulf
- 789. Ocean
- 790. Sea
- 791. Strait
- 792. Inlet
- 793. Cove
- 794. Bay
- 795. Sound
- 796. Gulf
- 797. Ocean
- 798. Sea
- 799. Strait
- 800. Inlet
- 801. Cove
- 802. Bay
- 803. Sound
- 804. Gulf
- 805. Ocean
- 806. Sea
- 807. Strait
- 808. Inlet
- 809. Cove
- 810. Bay
- 811. Sound
- 812. Gulf
- 813. Ocean
- 814. Sea
- 815. Strait
- 816. Inlet
- 817. Cove
- 818. Bay
- 819. Sound
- 820. Gulf
- 821. Ocean
- 822. Sea
- 823. Strait
- 824. Inlet
- 825. Cove
- 826. Bay
- 827. Sound
- 828. Gulf
- 829. Ocean
- 830. Sea
- 831. Strait
- 832. Inlet
- 833. Cove
- 834. Bay
- 835. Sound
- 836. Gulf
- 837. Ocean
- 838. Sea
- 839. Strait
- 840. Inlet
- 841. Cove
- 842. Bay
- 843. Sound
- 844. Gulf
- 845. Ocean
- 846. Sea
- 847. Strait
- 848. Inlet
- 849. Cove
- 850. Bay
- 851. Sound
- 852. Gulf
- 853. Ocean
- 854. Sea
- 855. Strait
- 856. Inlet
- 857. Cove
- 858. Bay
- 859. Sound
- 860. Gulf
- 861. Ocean
- 862. Sea
- 863. Strait
- 864. Inlet
- 865. Cove
- 866. Bay
- 867. Sound
- 868. Gulf
- 869. Ocean
- 870. Sea
- 871. Strait
- 872. Inlet
- 873. Cove
- 874. Bay
- 875. Sound
- 876. Gulf
- 877. Ocean
- 878. Sea
- 879. Strait
- 880. Inlet
- 881. Cove
- 882. Bay
- 883. Sound
- 884. Gulf
- 885. Ocean
- 886. Sea
- 887. Strait
- 888. Inlet
- 889. Cove
- 890. Bay
- 891. Sound
- 892. Gulf
- 893. Ocean
- 894. Sea
- 895. Strait
- 896. Inlet
- 897. Cove
- 898. Bay
- 899. Sound
- 900. Gulf
- 901. Ocean
- 902. Sea
- 903. Strait
- 904. Inlet
- 905. Cove
- 906. Bay
- 907. Sound
- 908. Gulf
- 909. Ocean
- 910. Sea
- 911. Strait
- 912. Inlet
- 913. Cove
- 914. Bay
- 915. Sound
- 916. Gulf
- 917. Ocean
- 918. Sea
- 919. Strait
- 920. Inlet
- 921. Cove
- 922. Bay
- 923. Sound
- 924. Gulf
- 925. Ocean
- 926. Sea
- 927. Strait
- 928. Inlet
- 929. Cove
- 930. Bay
- 931. Sound
- 932. Gulf
- 933. Ocean
- 934. Sea
- 935. Strait
- 936. Inlet
- 937. Cove
- 938. Bay
- 939. Sound
- 940. Gulf
- 941. Ocean
- 942. Sea
- 943. Strait
- 944. Inlet
- 945. Cove
- 946. Bay
- 947. Sound
- 948. Gulf
- 949. Ocean
- 950. Sea
- 951. Strait
- 952. Inlet
- 953. Cove
- 954. Bay
- 955. Sound
- 956. Gulf
- 957. Ocean
- 958. Sea
- 959. Strait
- 960. Inlet
- 961. Cove
- 962. Bay
- 963. Sound
- 964. Gulf
- 965. Ocean
- 966. Sea
- 967. Strait
- 968. Inlet
- 969. Cove
- 970. Bay
- 971. Sound
- 972. Gulf
- 973. Ocean
- 974. Sea
- 975. Strait
- 976. Inlet
- 977. Cove
- 978. Bay
- 979. Sound
- 980. Gulf
- 981. Ocean
- 982. Sea
- 983. Strait
- 984. Inlet
- 985. Cove
- 986. Bay
- 987. Sound
- 988. Gulf
- 989. Ocean
- 990. Sea
- 991. Strait
- 992. Inlet
- 993. Cove
- 994. Bay
- 995. Sound
- 996. Gulf
- 997. Ocean
- 998. Sea
- 999. Strait
- 1000. Inlet



GENERAL HIGHWAY
DADE COUN
FLORIDA

STATE TOPOGRAPHIC OFFICE
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

W-10

1990
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

1990

First Quarter, 1990

Second Quarter, 1990

Third Quarter, 1990

Fourth Quarter, 1990

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

First Quarter, 1990

Office of Radiation Control

Florida Department of Health
and Rehabilitative Services

TURKEY POINT SITE

Technical Specifications Sampling

First Quarter, 1990

<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	2
4.b Food Products			
4.b.1 Broadleaf Vegetation	Monthly	3	9
			<hr/> Total: 201

* - Includes NRC 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, 1990

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

Each result is the average net response of two dosimeters.

<u>Sample Site</u>	<u>Deployment 12-19-89 Collection 03-13-90</u>
N-1	6.5 ± 0.3
N-5	6.2 ± 0.3
N-10	5.6 ± 0.3
NNW-1	6.4 ± 0.3
NNW-10	6.5 ± 0.3
NW/WNW-1	5.1 ± 0.3
NW-5	5.5 ± 0.3
NW-10	7.8 ± 0.4
W/WNW-5	4.8 ± 0.3
WNW-10	6.5 ± 0.3
W-1	5.3 ± 0.3
W-10	7.0 ± 0.4
WSW-10	5.1 ± 0.3
SW/SSW-1	5.1 ± 0.3
SW-10	5.1 ± 0.3
SSW/SW-5	6.0 ± 0.3
SSW-10	6.1 ± 0.3
S-5	5.6 ± 0.3
S-10	6.2 ± 0.3
SSE/S-1	5.4 ± 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.

2.a IODINE-131 IN WEEKLY AIR FILTERS - (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>
01-02-90	<0.02	<0.02	<0.02	<0.02	<0.02
01-09-90	<0.02	<0.02	<0.02	<0.02	<0.02
01-16-90	<0.03	<0.03	<0.03	<0.03	<0.03
01-23-90	<0.02	<0.02	<0.02	<0.02	<0.02
01-30-90	<0.02	<0.02	<0.02	<0.02	<0.02
02-06-90	<0.02	<0.02	<0.02	<0.02	<0.02
02-13-90	<0.03	<0.03	<0.03	<0.03	<0.03
02-20-90	<0.02	<0.03	<0.02	<0.02	<0.02
02-28-90	<0.03	<0.03	<0.03	<0.03	<0.03
03-06-90	<0.03	<0.03	<0.03	<0.02	<0.03
03-13-90	<0.02	<0.02	<0.02	<0.02	<0.02
03-19-90	<0.04	<0.04	<0.03	<0.03	<0.04
03-26-90	<0.03	<0.03	<0.03	<0.03	<0.03



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

101



102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200

201



2.b

AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
01-02-90	0.014 ± 0.002	0.012 ± 0.002	0.008 ± 0.002	0.012 ± 0.002	0.015 ± 0.002
01-09-90	0.009 ± 0.002	0.007 ± 0.002	0.004 ± 0.001	0.008 ± 0.002	0.007 ± 0.002
01-16-90	0.019 ± 0.002	0.018 ± 0.002	0.017 ± 0.002	0.009 ± 0.002	0.016 ± 0.002
01-23-90	0.006 ± 0.002	0.005 ± 0.002	0.006 ± 0.002	0.007 ± 0.002	0.008 ± 0.002
01-30-90	0.007 ± 0.002	0.003 ± 0.001	0.006 ± 0.002	0.004 ± 0.001	0.008 ± 0.002
02-06-90	0.005 ± 0.001	0.006 ± 0.002	*0.004 ± 0.001	0.004 ± 0.001	0.003 ± 0.001
02-13-90	0.006 ± 0.002	0.007 ± 0.002	*0.005 ± 0.001	0.004 ± 0.001	0.005 ± 0.002
02-20-90	0.007 ± 0.002	0.009 ± 0.002	*0.006 ± 0.002	0.006 ± 0.002	0.006 ± 0.002
02-28-90	0.012 ± 0.002	0.010 ± 0.002	*0.010 ± 0.002	0.009 ± 0.002	0.009 ± 0.002
03-06-90	0.008 ± 0.002	0.008 ± 0.002	0.009 ± 0.002	0.007 ± 0.002	0.008 ± 0.002
03-13-90	0.012 ± 0.002	0.011 ± 0.002	0.015 ± 0.002	0.010 ± 0.002	0.013 ± 0.002
03-19-90	0.004 ± 0.002	0.006 ± 0.002	0.004 ± 0.002	0.006 ± 0.002	0.007 ± 0.002
03-26-90	0.013 ± 0.002	0.016 ± 0.002	0.013 ± 0.002	0.013 ± 0.002	0.014 ± 0.002
Means:	0.009 ± 0.001	0.009 ± 0.001	0.008 ± 0.001	0.008 ± 0.001	0.009 ± 0.001

* - NRC split samples.

2.b

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

First Quarter, 1990

Sample Site	Be-7	K-40	Cs-134	Cs-137
T51	0.100 ± 0.008	<0.012	<0.0007	<0.0006
T57	0.106 ± 0.008	0.011 ± 0.004	<0.0008	<0.0007
T58	0.106 ± 0.009	<0.012	<0.0009	<0.0007
T64	0.102 ± 0.008	<0.013	<0.0007	<0.0006
T72	0.113 ± 0.009	<0.015	<0.0008	<0.0007

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	01-11-90	<150	350 ± 30	<2	<7	<2	<3	<6	<5	<7	<3	<3	<5
	02-19-90	<130	330 ± 40	<4	<9	<5	<5	<10	<7	<9	<5	<4	<6
	03-19-90	<160	340 ± 40	<3	<10	<4	<5	<7	<6	<8	<4	<3	<8
T67	01-11-90	<150	250 ± 40	<4	<10	<4	<3	<7	<8	<11	<4	<5	<7
	02-19-90	<130	240 ± 40	<3	<10	<4	<5	<9	<6	<9	<3	<4	<9
	03-19-90	<160	210 ± 40	<4	<11	<4	<8	<11	<8	<9	<3	<3	<6
T81	01-12-90	220 ± 50	360 ± 50	<4	<11	<4	<4	<9	<9	<9	<5	<4	<8
	02-19-90	910 ± 60	390 ± 40	<4	<14	<4	<4	<10	<5	<8	<4	<4	<7
	03-19-90	<180	380 ± 50	<3	<12	<5	<4	<8	<9	<9	<4	<4	<8

(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>Others</u>
T42	01-11-90	<130	430 ± 80	<11	<14	<12	<12	Ra-226: 721 ± 25
T67	01-10-90	<210	1650 ± 140	<12	<16	<15	36 ± 7	Ra-226: 298 ± 24 Th-232: 100 ± 27 U-238: 1010 ± 110
T81	01-12-90	300 ± 50	490 ± 90	<10	<12	<14	<11	Ra-226: 615 ± 22 Th-232: 135 ± 46

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

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Fe-59</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>
T67	01-10-90	1840 ± 120	<9	<27	<10	<13	<23	<11	<8	156 ± 9
T81	01-26-90	2060 ± 170	<16	<51	<19	<20	<37	<20	<19	500 ± 32

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

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Fe-59</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>
T67	03-29-90	2150 ± 120	<9	<28	<12	<12	<25	<9	<11	24 ± 7
T81	01-26-90	3090 ± 200	<16	<45	<18	<15	<39	<17	18 ± 8	116 ± 12

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	01-11-90	820 ± 60	3850 ± 150	<14	<10	<10
	02-19-90	490 ± 60	4590 ± 200	<15	<12	24 ± 6
	03-19-90	630 ± 60	5150 ± 200	<15	<13	24 ± 7
T41	01-11-90	990 ± 70	3760 ± 160	<18	<10	177 ± 10
	02-19-90	560 ± 70	3570 ± 170	<15	<12	141 ± 10
	03-19-90	650 ± 60	2760 ± 130	<12	<9	93 ± 7
T67	01-11-90	700 ± 60	4240 ± 180	<19	<11	<13
	02-19-90	970 ± 70	2290 ± 140	<16	<11	40 ± 7
	03-19-90	1200 ± 70	2620 ± 150	<11	<10	<12

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

Second Quarter, 1990

Office of Radiation Control

Florida Department of Health
and Rehabilitative Services



11

12

13

TURKEY POINT SITE

Technical Specifications Sampling

Second Quarter, 1990

<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*
			Total: 195

* - Includes NRC 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, 1990

1. DIRECT RADIATION - TLD's - (micro-R/hour)

Each result is the average net response of two dosimeters.

<u>Sample Site</u>	<u>Deployment Collection</u>	<u>03-13-90 06-13-90</u>
N-1	6.6 ± 0.3	
N-5	5.8 ± 0.3	
N-10	5.5 ± 0.3	
NNW-1	5.8 ± 0.3	
NNW-10	5.9 ± 0.3	
NW/WWN-1	4.9 ± 0.3	
NW-5	5.3 ± 0.3	
NW-10	7.6 ± 0.4	
W/WWN-5	4.9 ± 0.3	
WWN-10	6.5 ± 0.3	
W-1	5.2 ± 0.3	
W-10	6.8 ± 0.4	
WSW-10	4.9 ± 0.3	
SW/SSW-1	4.7 ± 0.2	
SW-10	4.8 ± 0.3	
SSW/SW-5	5.8 ± 0.3	
SSW-10	5.6 ± 0.3	
S-5	4.9 ± 0.3	
S-10	5.4 ± 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
04-03-90	<0.02	<0.02	<0.02	<0.02	<0.02
04-10-90	<0.03	<0.03	<0.03	<0.03	<0.03
04-17-90	<0.02	<0.02	<0.02	<0.02	<0.02
04-24-90	<0.02	<0.02	<0.02	<0.02	<0.02
04-30-90	<0.02	<0.03	<0.03	<0.02	<0.03
05-08-90	<0.02	<0.02	<0.02	<0.02	<0.02
05-14-90	<0.04	<0.04	<0.04	<0.03	<0.03
05-21-90	<0.03	<0.02	<0.03	<0.02	<0.02
05-29-90	<0.02	<0.02	<0.03	<0.02	<0.02
06-05-90	<0.02	<0.02	<0.02	<0.02	<0.02
06-12-90	<0.02	<0.02	<0.02	<0.02	<0.02
06-18-90	<0.02	<0.02	<0.02	<0.02	<0.03
06-26-90	<0.02	<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
04-03-90	0.007 ± 0.001	0.008 ± 0.002	0.007 ± 0.001	0.008 ± 0.002	0.007 ± 0.001
04-10-90	0.009 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.008 ± 0.002	0.011 ± 0.002
04-17-90	0.010 ± 0.002	0.010 ± 0.002	0.008 ± 0.002	0.009 ± 0.002	0.008 ± 0.002
04-24-90	0.015 ± 0.002	0.012 ± 0.002	0.012 ± 0.002	0.015 ± 0.002	0.014 ± 0.002
04-30-90	0.016 ± 0.002	0.011 ± 0.002	*0.014 ± 0.002	0.011 ± 0.002	0.013 ± 0.002
05-08-90	0.014 ± 0.002	0.013 ± 0.002	*0.012 ± 0.002	0.016 ± 0.002	0.012 ± 0.002
05-14-90	0.007 ± 0.002	0.009 ± 0.002	*0.008 ± 0.002	0.011 ± 0.002	0.008 ± 0.002
05-21-90	0.008 ± 0.002	0.012 ± 0.002	*0.009 ± 0.002	0.012 ± 0.002	0.007 ± 0.001
05-29-90	0.013 ± 0.002	0.013 ± 0.002	0.012 ± 0.002	0.008 ± 0.001	0.010 ± 0.001
06-05-90	0.011 ± 0.002	0.008 ± 0.002	0.008 ± 0.001	0.010 ± 0.002	0.011 ± 0.002
06-12-90	0.007 ± 0.002	0.005 ± 0.001	0.005 ± 0.001	0.005 ± 0.001	0.009 ± 0.002
06-18-90	0.009 ± 0.002	0.012 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.011 ± 0.002
06-26-90	0.010 ± 0.002	0.009 ± 0.002	0.010 ± 0.002	0.008 ± 0.001	0.010 ± 0.002
Means:	0.010 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.010 ± 0.001

* - NRC split samples.

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

Second Quarter, 1990				
Sample Site	Be-7	K-40	Cs-134	Cs-137
T51	0.103 ± 0.010	<0.018	<0.0013	<0.0008
T57	0.122 ± 0.012	<0.018	<0.0011	<0.0010
T58	0.100 ± 0.010	<0.021	<0.0009	<0.0007
T64	0.090 ± 0.010	<0.015	<0.0012	<0.0010
T72	0.093 ± 0.010	<0.014	<0.0013	<0.0009

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	04-13-90	<150	380 ± 50	<4	<8	<4	<5	<10	<6	<7	<4	<4	<5
	05-11-90	<190	390 ± 50	<3	<8	<4	<5	<10	<8	<7	<4	<5	<5
	06-15-90	<150	380 ± 50	<4	<8	<4	<6	<9	<7	<5	<5	<4	<8
T67	04-13-90	<150	280 ± 40	<4	<11	<4	<4	<11	<7	<7	<4	<4	<4
	05-11-90	<190	330 ± 50	<3	<10	<4	<5	<11	<8	<8	<4	<4	<6
	06-15-90	<150	300 ± 40	<4	<11	<4	<4	<10	<6	<6	<5	<4	<6
T81	04-13-90	<150	450 ± 50	<4	<11	<4	<4	<11	<9	<11	<4	<5	<5
	05-11-90	<190	370 ± 40	<4	<10	<3	<5	<10	<8	<8	<4	<4	<4
	06-15-90	260 ± 50	380 ± 40	<3	<9	<5	<5	<11	<7	<8	<4	<5	<9

(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	04-13-90	990 ± 70	4620 ± 190	<29	<12	143 ± 10
	*05-11-90	520 ± 40	4660 ± 140	<12	<9	51 ± 5
	06-15-90	240 ± 30	2490 ± 100	<9	<6	22 ± 4
T41	04-13-90	860 ± 80	2900 ± 150	<30	<13	197 ± 11
	05-11-90	550 ± 50	2860 ± 150	<16	<10	106 ± 8
	06-15-90	940 ± 70	2400 ± 130	<13	<9	160 ± 9
T67	04-13-90	1030 ± 80	2870 ± 170	<25	<9	<13
	05-11-90	800 ± 70	5140 ± 200	<19	<14	<13
	06-15-90	620 ± 60	5260 ± 190	<16	<11	24 ± 5

* - NRC split sample.

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

Third Quarter, 1990

Office of Radiation Control

Florida Department of Health
and Rehabilitative Services



11



12



TURKEY POINT SITE

Technical Specifications Sampling

Third Quarter, 1990

<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
			Total: 200

* - Includes NRC 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.

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

Each result is the average net response of two dosimeters.

<u>Sample Site</u>	<u>Deployment 06-12-90 Collection 09-19-90</u>
N-1	6.4 ± 0.3
N-5	6.0 ± 0.3
N-10	5.5 ± 0.3
NNW-1	6.3 ± 0.3
NNW-10	6.1 ± 0.3
NW/WNW-1	4.9 ± 0.3
NW-5	5.5 ± 0.3
NW-10	7.6 ± 0.4
W/WNW-5	4.8 ± 0.3
WNW-10	6.4 ± 0.3
W-1	5.1 ± 0.3
W-10	6.5 ± 0.3
WSW-10	4.5 ± 0.2
SW/SSW-1	4.6 ± 0.2
SW-10	4.7 ± 0.2
SSW/SW-5	5.8 ± 0.3
SSW-10	5.9 ± 0.3
S-5	5.1 ± 0.3
S-10	6.0 ± 0.3
SSE/S-1	5.7 ± 0.3
SSE-10	4.9 ± 0.3

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

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
07-03-90	<0.03	<0.03	<0.03	<0.03	<0.03
07-10-90	<0.02	<0.02	<0.02	<0.02	<0.02
07-18-90	<0.02	<0.02	<0.02	<0.02	<0.02
07-23-90	<0.03	<0.03	<0.03	<0.03	<0.03
07-31-90	<0.02	<0.02	<0.02	<0.02	<0.02
08-07-90	<0.03	<0.03	<0.03	<0.03	<0.03
08-14-90	<0.02	<0.03	<0.03	<0.02	<0.02
08-22-90	<0.03	<0.03	<0.03	<0.03	<0.03
08-28-90	<0.04	<0.04	<0.04	<0.04	<0.04
09-04-90	<0.03	<0.03	<0.03	<0.03	<0.03
09-11-90	<0.03	<0.03	<0.03	<0.03	<0.03
09-18-90	<0.02	<0.02	<0.02	<0.02	<0.02
09-24-90	<0.02	<0.03	<0.03	<0.02	<0.02

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

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
07-03-90	0.010 ± 0.002	0.012 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.009 ± 0.002
07-10-90	0.008 ± 0.002	0.013 ± 0.002	0.012 ± 0.002	0.007 ± 0.002	0.012 ± 0.002
07-18-90	0.010 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.011 ± 0.002	0.011 ± 0.002
07-23-90	0.009 ± 0.002	<0.007	<0.006	0.009 ± 0.002	0.009 ± 0.002
07-31-90	0.010 ± 0.002	0.010 ± 0.002	0.009 ± 0.002	0.011 ± 0.002	0.011 ± 0.002
08-07-90	0.011 ± 0.002	0.012 ± 0.002	*0.007 ± 0.002	0.012 ± 0.002	0.008 ± 0.002
08-14-90	0.007 ± 0.002	0.009 ± 0.002	*0.008 ± 0.002	0.009 ± 0.002	0.007 ± 0.002
08-22-90	0.015 ± 0.002	0.013 ± 0.002	*0.017 ± 0.002	0.014 ± 0.002	0.014 ± 0.002
08-28-90	0.013 ± 0.002	0.013 ± 0.002	*0.009 ± 0.002	0.009 ± 0.002	0.011 ± 0.002
09-04-90	0.006 ± 0.002	0.006 ± 0.002	0.004 ± 0.002	0.007 ± 0.002	0.004 ± 0.001
09-11-90	0.009 ± 0.002	0.013 ± 0.002	0.013 ± 0.002	0.012 ± 0.002	0.011 ± 0.002
09-18-90	0.007 ± 0.002	0.011 ± 0.002	0.008 ± 0.002	0.011 ± 0.002	0.013 ± 0.002
09-24-90	0.006 ± 0.002	0.005 ± 0.002	0.009 ± 0.002	0.007 ± 0.002	0.010 ± 0.002
Means:	0.009 ± 0.001	0.011 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.010 ± 0.001

* - NRC split samples.

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

Third Quarter, 1990				
Sample Site	Be-7	K-40	Cs-134	Cs-137
T51	0.081 ± 0.008	<0.016	<0.0006	<0.0007
T57	0.074 ± 0.007	0.011 ± 0.004	<0.0007	<0.0007
T58	0.093 ± 0.007	<0.021	<0.0007	<0.0009
T64	0.079 ± 0.006	<0.017	<0.0008	<0.0006
T72	0.083 ± 0.008	<0.014	<0.0008	<0.0007

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	07-11-90	<170	360 ± 50	<4	<11	<4	<5	<9	<8	<6	<5	<3	<5
	08-20-90	<120	340 ± 40	<4	<9	<4	<3	<8	<7	<5	<4	<3	<5
	09-19-90	<130	230 ± 40	<4	<8	<4	<4	<9	<7	<5	<4	<4	<5
T67	07-13-90	<170	300 ± 40	<3	<8	<4	<4	<10	<6	<7	<4	<4	<3
	08-17-90	<120	250 ± 40	<4	<10	<3	<5	<11	<7	<7	<4	<4	<6
	09-18-90	<130	290 ± 40	<4	<11	<4	<5	<7	<6	<7	<5	<4	<8
T81	07-11-90	140 ± 60	430 ± 40	<4	<9	<4	<4	<7	<8	<8	<5	<5	<7
	08-16-90	130 ± 40	230 ± 40	<4	<9	<4	<4	<12	<6	<6	<5	<5	<6
	09-12-90	<140	410 ± 40	<5	<11	<4	<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.



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>Ra-226</u>	<u>Th-232</u>
T42	07-11-90	280 ± 50	350 ± 80	<11	<11	<10	<9	655 ± 14	76 ± 18
T67	07-12-90	610 ± 70	800 ± 100	<15	<15	<12	29 ± 7	427 ± 13	124 ± 17
T81	07-11-90	270 ± 50	220 ± 70	<7	<11	<11	<8	476 ± 12	84 ± 13

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

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Fe-59</u>	<u>Co-58</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	08-10-90	1740 ± 170	<19	<36	<16	<16	<37	<15	<19	169 ± 14	62 ± 24
T81	08-07-90	1860 ± 160	19 ± 5	<54	<19	<18	<45	<21	<18	1174 ± 21	117 ± 25

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

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Fe-59</u>	<u>Co-58</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	Third quarter attempts to collect this sample were not successful. Efforts continue.										
T81	08-08-90	1870 ± 540	<48	<117	<40	<63	<116	<49	42 ± 16	ND	ND

ND - Non-detectable.

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

<u>Sample</u> <u>Site</u>	<u>Collection</u> <u>Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>
T40	07-13-90	1200 ± 80	4450 ± 180	<16	<11	270 ± 13
	08-17-90	1210 ± 80	4110 ± 180	<14	<13	51 ± 8
	09-18-90	2130 ± 100	4560 ± 190	<16	<12	42 ± 8
T41	07-13-90	1160 ± 70	2470 ± 140	<13	<10	252 ± 12
	08-17-90	1070 ± 70	2530 ± 140	<11	<10	153 ± 10
	09-19-90	1740 ± 80	3180 ± 140	<15	<9	75 ± 7
T67	07-13-90	1330 ± 80	1730 ± 120	<14	<12	264 ± 13
	08-17-90	1280 ± 80	1970 ± 140	<15	<10	372 ± 15
	09-18-90	740 ± 70	1530 ± 110	<17	<9	329 ± 13

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

Fourth Quarter, 1990

Office of Radiation Control

Florida Department of Health
and Rehabilitative Services



100



100



TURKEY POINT SITE

Technical Specifications Sampling

Fourth Quarter, 1990

<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	10*
			Total: 196

* - Includes NRC 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.



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

Each result is the average net response of two dosimeters.

<u>Sample Site</u>	<u>Deployment 09-19-90</u> <u>Collection 12-18-90</u>
N-1	6.5 ± 0.3
N-5	5.8 ± 0.3
N-10	5.6 ± 0.3
NNW-1	5.9 ± 0.3
NNW-10	6.2 ± 0.3
NW/WNW-1	5.1 ± 0.3
NW-5	5.6 ± 0.3
NW-10	7.3 ± 0.4
W/WNW-5	4.7 ± 0.2
WNW-10	6.1 ± 0.3
W-1	5.0 ± 0.3
W-10	6.3 ± 0.3
WSW-10	4.7 ± 0.2
SW/SSW-1	4.5 ± 0.2
SW-10	4.5 ± 0.2
SSW/SW-5	5.5 ± 0.3
SSW-10	5.7 ± 0.3
S-5	5.0 ± 0.3
S-10	5.4 ± 0.3
SSE/S-1	5.2 ± 0.3
SSE-10	4.8 ± 0.3



100

100

100

100

100

100

100

100

100



2.a IODINE-131 IN WEEKLY AIR FILTERS - (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>
10-02-90	<0.03	<0.03	<0.03	<0.03	<0.03
10-09-90	<0.03 (A)	<0.03 (B)	<0.03	<0.03	<0.03
10-15-90	<0.04 (C)	<0.04 (D)	<0.04	<0.04	<0.04
10-23-90	<0.02	<0.02	<0.02	<0.02	<0.02
10-30-90	<0.03	<0.03	<0.03	<0.03	<0.03
11-05-90	<0.05	<0.05	<0.05	<0.05	<0.05
11-14-90	<0.02	<0.02	<0.02	<0.02	<0.02
11-20-90	<0.04	<0.04	<0.04	<0.04	<0.04
11-26-90	<0.02	<0.02	<0.03	<0.02	<0.02
12-03-90	<0.02	<0.02	<0.02	<0.02	<0.02
12-12-90	<0.05	<0.05	<0.05	<0.04	<0.05
12-18-90	<0.03	<0.03	<0.04	<0.03	<0.03
12-26-90	<0.04	<0.04	<0.04	<0.04	<0.04

- (A) - Electrical power was out at the end of this sample due to storms. The equipment is estimated to have run for 165 hours out of the 168 total hours for this sampling interval.
- (B) - Electrical power was out at the end of this sample due to storms. The equipment is estimated to have run for 166 hours out of the 169 total hours for this sampling interval.
- (C) - Electrical power was out at the start of this sample due to storms. The equipment is estimated to have run for 134 hours out of the 143 total hours for this sampling interval.
- (D) - Electrical power was out at the start of this sample due to storms. The equipment is estimated to have run for 135 hours out of the 143 total hours for this sampling interval.



2.b

AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
10-02-90	0.013 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.014 ± 0.002	0.015 ± 0.002
10-09-90	(A)0.009 ± 0.002	(B)0.009 ± 0.002	0.008 ± 0.002	0.010 ± 0.002	0.008 ± 0.002
10-15-90	(C)0.008 ± 0.002	(D)0.007 ± 0.002	0.006 ± 0.002	0.007 ± 0.002	0.004 ± 0.002
10-23-90	0.012 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.008 ± 0.002	0.009 ± 0.002
10-30-90	0.018 ± 0.002	0.018 ± 0.002	0.017 ± 0.002	0.018 ± 0.002	0.017 ± 0.002
11-05-90	0.014 ± 0.002	0.017 ± 0.002	*0.013 ± 0.002	0.017 ± 0.002	0.011 ± 0.002
11-14-90	0.011 ± 0.001	0.017 ± 0.002	*0.014 ± 0.002	0.013 ± 0.002	0.013 ± 0.002
11-20-90	0.009 ± 0.002	0.012 ± 0.002	*0.014 ± 0.002	0.014 ± 0.002	0.013 ± 0.002
11-26-90	0.015 ± 0.002	0.014 ± 0.002	*0.013 ± 0.002	0.013 ± 0.002	0.016 ± 0.002
12-03-90	0.008 ± 0.002	0.009 ± 0.002	0.008 ± 0.002	0.010 ± 0.002	0.010 ± 0.002
12-12-90	0.011 ± 0.002	0.010 ± 0.002	0.012 ± 0.002	0.013 ± 0.002	0.013 ± 0.002
12-18-90	0.011 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.008 ± 0.002	0.009 ± 0.002
12-26-90	0.010 ± 0.002	0.006 ± 0.001	0.012 ± 0.002	0.011 ± 0.002	0.011 ± 0.002
Means:	0.011 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.012 ± 0.001	0.011 ± 0.001

* - NRC split samples.

- (A) - Electrical power was out at the end of this sample due to storms. The equipment is estimated to have run for 165 hours out of the 168 total hours for this sampling interval.
- (B) - Electrical power was out at the end of this sample due to storms. The equipment is estimated to have run for 166 hours out of the 169 total hours for this sampling interval.
- (C) - Electrical power was out at the start of this sample due to storms. The equipment is estimated to have run for 134 hours out of the 143 total hours for this sampling interval.
- (D) - Electrical power was out at the start of this sample due to storms. The equipment is estimated to have run for 135 hours out of the 143 total hours for this sampling interval.



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

Fourth Quarter, 1990

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>
T51	0.1016 ± 0.0108	<0.0165	<0.0010	<0.0009
T57	0.0988 ± 0.0108	<0.0152	<0.0008	<0.0008
T58	0.0829 ± 0.0119	<0.0180	<0.0009	<0.0009
T64	0.1141 ± 0.0109	<0.0174	<0.0009	<0.0009
T72	0.0843 ± 0.0127	<0.0191	<0.0009	<0.0009

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	10-15-90	<130	333 ± 40	<5	<10	<4	<5	<9	<7	<8	<5	<4	<6
	11-16-90	<137	219 ± 40	<4	<9	<4	<5	<9	<7	<10	<5	<4	<6
	12-14-90	<136	200 ± 35	<4	<10	<5	<6	<8	<7	<11	<5	<5	<5
T67	10-15-90	<130	308 ± 39	<5	<9	<4	<4	<7	<8	<8	<5	<4	<8
	11-16-90	<175	249 ± 34	<5	<12	<4	<5	<9	<6	<9	<4	<5	<8
	12-14-90	<137	314 ± 34	<4	<10	<4	<4	<8	<8	<12	<5	<5	<6
T81	10-12-90	<140	361 ± 38	<4	<9	<4	<3	<11	<7	<10	<5	<3	<10
	11-16-90	<175	313 ± 40	<4	<10	<4	<4	<8	<8	<10	<4	<4	<8
	12-14-90	121 ± 45	250 ± 42	<4	<11	<5	<5	<8	<7	<11	<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)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Fe-59</u>	<u>Co-58</u>	<u>Co-60</u>
T67	10-08-90	2352 ± 158	<13	<37	<10	<14
			<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	
			<26	<14	<12	

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	10-12-90	2121 ± 109	5190 ± 202	<29	<13	84 ± 9
	*11-16-90	982 ± 68	4204 ± 165	<22	<11	95 ± 8
	12-14-90	569 ± 51	5085 ± 165	<12	<10	30 ± 6
T41	10-12-90	1415 ± 98	3218 ± 162	<26	<14	117 ± 9
	11-16-90	882 ± 67	2808 ± 140	<23	<12	69 ± 7
	12-14-90	1466 ± 81	2301 ± 118	<14	<10	67 ± 7
T67	10-12-90	1580 ± 83	1381 ± 96	<22	<8	270 ± 11
	11-16-90	930 ± 70	2304 ± 122	<21	<11	208 ± 11
	12-14-90	759 ± 65	2494 ± 123	<15	<9	352 ± 13

* - NRC split sample.

1990
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT, UNITS 3 & 4

ATTACHMENT C

RESULTS FROM THE INTERLABORATORY
COMPARISON PROGRAM 1990

1 2 3 4

5 6 7 8



9

10

11

12

13

14

15

16

17 18



19

20

21

22 23



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

January through June, 1990

Media	Nuclide	Collection	EPA	Units	Normal.	Mean of	N.D.K.	Action
		Mon Day Yr	Known		Range	Analyses		Level
FILTER	Alpha	03 30 90	5	pCi/F	0.118	5.33	0.12	
FILTER	Beta	03 30 90	31	pCi/F	0.118	28.33	-0.92	
FILTER	Cs-137	03 30 90	10	pCi/F	0.000	11.00	0.35	
FILTER	Sr-90	03 30 90	10	pCi/F	0.788	8.33	-1.92	
MILK	I-131	04 27 90	99	pCi/L	0.354	98.00	-0.17	
MILK	Cs-137	04 27 90	24	pCi/L	0.000	25.00	0.35	
MILK	K	04 27 90	1550	mg/L	0.379	1536.67	-0.30	
MILK	Sr-89	04 27 90	23	pCi/L	0.000	22.00	-0.35	
MILK	Sr-90	04 27 90	23	pCi/L	0.000	21.00	-0.69	
WATER	Alpha	01 26 90	12	pCi/L	0.118	10.33	-0.58	
WATER	Alpha	05 11 90	22	pCi/L	0.492	15.67	-1.83	
WATER	Beta	01 26 90	12	pCi/L	0.000	12.00	0.00	
WATER	Beta	05 11 90	15	pCi/L	0.236	19.00	1.39	
WATER	Co-60	02 09 90	15	pCi/L	0.118	15.67	0.23	
WATER	Co-60	06 08 90	24	pCi/L	0.118	25.67	0.58	
WATER	Zn-65	02 09 90	139	pCi/L	0.211	139.67	0.08	
WATER	Zn-65	06 08 90	148	pCi/L	0.197	153.00	0.58	
WATER	Ru-106	02 09 90	139	pCi/L	0.464	138.00	-0.12	
WATER	Ru-106	06 08 90	210	pCi/L	0.056	206.00	-0.33	
WATER	Ba-133	02 09 90	74	pCi/L	0.169	73.00	-0.25	
WATER	Ba-133	06 08 90	99	pCi/L	0.295	96.33	-0.46	
WATER	Cs-134	02 09 90	18	pCi/L	0.118	17.33	-0.23	
WATER	Cs-134	06 08 90	24	pCi/L	0.000	24.00	0.00	
WATER	Cs-137	02 09 90	18	pCi/L	0.236	18.00	0.00	
WATER	Cs-137	06 08 90	25	pCi/L	0.118	25.67	0.23	
WATER	H-3	02 23 90	4976	pCi/L	0.225	5143.33	0.58	
WATER	H-3	06 22 90	2933	pCi/L	0.165	3033.33	0.49	
WATER	Sr-89	01 12 90	25	pCi/L	0.236	21.33	-1.27	
WATER	Sr-89	05 04 90	7	pCi/L	0.118	7.67	0.23	
WATER	Sr-90	01 12 90	20	pCi/L	0.394	18.33	-1.92	
WATER	Sr-90	05 04 90	7	pCi/L	0.000	7.00	0.00	

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.

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

July through December, 1990

Media	Nuclide	Collection	EPA	Units	Normal.	Mean of	N.D.K.	Action
		Mon Day Yr	Known		Range	Analyses		Level
FILTER	Alpha	08 31 90	10	pCi/F	0.236	12.33	0.81	
FILTER	Beta	08 31 90	62	pCi/F	0.118	59.33	-0.92	
FILTER	Cs-137	08 31 90	20	pCi/F	0.000	22.00	0.69	
FILTER	Sr-90	08 31 90	20	pCi/F	0.473	15.33	-1.62	
MILK	I-131	09 28 90	58	pCi/L	0.295	58.33	0.10	
MILK	Cs-137	09 28 90	20	pCi/L	0.236	21.00	0.35	
MILK	K	09 28 90	1700	mg/L	0.188	1744.33	0.90	
MILK	Sr-89	09 28 90	16	pCi/L	1.345	21.00	1.73	
MILK	Sr-90	09 28 90	20	pCi/L	0.709	8.67	-3.93	1
WATER	Alpha	09 21 90	10	pCi/L	0.000	10.00	0.00	
WATER	Beta	09 21 90	10	pCi/L	0.000	14.00	1.39	
WATER	Co-60	10 05 90	20	pCi/L	0.118	21.33	0.46	
WATER	Zn-65	10 05 90	115	pCi/L	0.197	119.00	0.58	
WATER	Ru-106	10 05 90	151	pCi/L	0.630	153.67	0.31	
WATER	Ba-133	10 05 90	110	pCi/L	0.054	105.67	-0.68	
WATER	Cs-134	10 05 90	12	pCi/L	0.118	11.33	-0.23	
WATER	Cs-137	10 05 90	12	pCi/L	0.236	13.00	0.35	
WATER	H-3	10 19 90	7203	pCi/L	0.255	5656.33	-3.72	2
WATER	I-131	08 10 90	39	pCi/L	0.098	40.67	0.48	

100 100 100

100 100 100



100 100 100
100 100 100
100 100 100
100 100 100



100 100 100



NOTES:

Normal.: Normalized range. As defined in "Environmental
Range 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.

ACTION LEVEL:

- (1) Cause: Erroneously over estimated chemical recovery of
strontium carrier.
Corrective Action: Try to improve purity of isolated
strontium carrier.
- (2) Cause: Incorrect counting efficiency used in calculation.
Corrective Action: Double check all parameters used in
the calculation.