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 CONWAY, W.F. Florida Power & Light Co.  
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SUBJECT: "1987 Annual Radiological Environ Operating. Rept Turkey Point Plant Units 3 & 4." W/880428 ltr.

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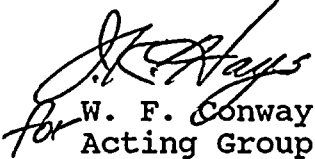
Gentlemen:

Re: Turkey Point Units 3 and 4  
Docket Nos. 50-250 and 50-251  
1987 Annual Radiological  
Environmental Operating Report

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

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

Very truly yours,

  
for W. F. Conway  
Acting Group Vice President  
Nuclear Energy

WFC/TCG/gp

Attachment

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

TCG.EOR

*TEAG*  
*11*

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1987

ANNUAL

RADIOLOGICAL ENVIRONMENTAL

OPERATING REPORT

TURKEY POINT PLANT

UNIT NOS. 3 AND 4

License Nos. DPR-31, DPR-41

Docket Nos. 50-250, 50-251

Data Submitted By: Florida DHRS

Report Prepared: PDR G. B. G. 21 MAR 88

Report Reviewed: J. L. V. 4/1/88

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TURKEY POINT PLANT - UNITS NOS. 3 AND 4

TABLE OF CONTENTS

DESCRIPTION	PAGE
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 4.12-3 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, 1987 SECOND QUARTER, 1987 THIRD QUARTER, 1987 FOURTH QUARTER, 1987	
RESULTS FROM THE INTERLABORATORY COMPARISON PROGRAM, 1987	ATTACHMENT C

1987  
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT  
TURKEY POINT PLANT - UNITS NOS. 3 AND 4

I. INTRODUCTION

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

II. RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

A. Purpose: The purpose of the radiological environmental monitoring program is to provide representative measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides which lead to the highest potential radiation exposures 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 measureable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and the modeling of the environmental exposure pathways.

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

1. Sample Locations, Types and Frequencies:

- a. Direct radiation gamma exposure rate is monitored continuously at 21 locations by thermoluminescent dosimeters (TLD's). TLD's 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.
- 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.

1987  
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT  
TURKEY POINT PLANT - UNITS NOS. 3 AND 4

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

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

2. Analytical Responsibility:

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

- C. Analytical Results: Table 1, Environmental Radiological Monitoring Program Annual Summary provides a summary for all specified samples collected during the referenced surveillance period. Deviations from the sample schedule, missing data and/or samples not meeting the specified "A PRIORI" LLD, if any, are noted and explained in Tables 1A and 1B respectively. Analysis data for all specified samples analyzed during the surveillance period is provided in Attachment B.

- D. Land Use Census: A land use census out to a distance of 5 miles radius from the Turkey Point Plant is conducted annually to determine the location of the nearest milk animal, residence, and garden producing broad leaf vegetation in each of the sixteen meteorological sectors. A summary of the land use census for the surveillance year is provided in Table 2, Land Use Census Summary.

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

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 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.



1987  
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT  
TURKEY POINT PLANT - UNITS NOS. 3 AND 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 the Turkey Point Units 3 & 4 Technical Specifications. Table 1 provides a summary of the measurements made for the nuclides required by Technical Specifications, Table 4.12-2, for all samples specified by Table 4.12-1. In addition, summaries are provided for other nuclides identified in the specified samples, including those not related to station operation. These include nuclides such as  $^{40}\text{K}$ ,  $^{232}\text{Th}$ ,  $^{226}\text{Ra}$ ,  $^{228}\text{Ra}$ ,  $^{7}\text{Be}$ ,  $^{235}\text{U}$ ,  $^{238}\text{U}$ , and  $^{210}\text{Pb}$  which are common in the Florida environment.
- B. Interpretation of Results
1. Direct Radiation: The results for direct radiation monitoring are consistent with past measurements for the specified locations. The exposure rate data shows no indication of any trends attributed to effluents from the plant. The measured exposure rates are consistent with exposure rates that were observed during the preoperational surveillance program. Direct radiation monitoring results are summarized in Table 1.
  2. Air Particulates/Radioiodine: Results of gross beta measurement are consistent with past measurements. No radioiodine was detected. During one sampling period, third quarter, Cs-137 was detected at all sampling locations. The highest value was .017% of the reporting level identified in the Technical Specification. The other identified isotopes are naturally occurring and were found at levels consistent with past measurements.

1987  
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT  
TURKEY POINT PLANT - UNITS NOS. 3 AND 4

3. Surface Water: The results for radioactivity measurements in surface water samples are consistent with past measurements. Tritium was reported as present in 15 of 18 of 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 less than 6% of the concentration of tritium that is permitted in community drinking water systems and less than 4% of the reporting value specified by Technical Specifications Table 4.12-2.
4. Waterborne Sediment and Food Products: The results for radioactivity measurements in waterborne sediment and fish samples are consistent with past measurements and (except for Cs-137) with measurements made during the preoperational surveillance program. One fish sample, of four collected, had a positive Cs-137 value reported. The maximum value is 7% of the table 4.12-3 LLD and is about .5% of the table 4.12-2 reporting levels. Although the reported concentration was very low, future samples will be closely evaluated to determine any trends which might be attributed to station operation. Results for the waterborne sediment, fish and crustacea samples are summarized in Table 1.
5. Broad Leaf Vegetation: The results for radioactivity measurements are consistent with past measurements.

C. Conclusions

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

TABLE 1

## ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Unit Nos. 3 and 4 Docket No.(s) 50-250 and 50-251  
 Location of Facility Dade, Florida Reporting Period January 1 - December 31, 1987  
 (County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of a Detection (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean <u>c</u> Name <u>b</u> Distance & Direction	Mean (f) Range	Control Locations Mean (f) Range	Number of Nonroutine Reported Measurements
<u>DIRECT RADIATION</u>							
TLD (micro-R/hr)	Exposure Rate 82 <sup>(d)</sup>	-	5.6 (82/82) 4.2 - 8.1	NW-10 10 miles, NW	7.8 (3/3) 7.4 - 8.1		0
<u>AIRBORNE</u>							
Radioisotopes (pCi/m <sup>3</sup> )	<sup>131</sup> I 260	0.024	< MDA	-	-	< MDA	0
	Gross Beta 260	0.0025	0.012 (260/260) 0.004 - 0.026	T-58 1 mile, NW	0.013 (52/52) 0.004 - 0.024	0.012 (52/52) 0.004 - 0.023	0
	Gamma Isotopic Composite; 20						
	<sup>7</sup> Be	0.0052	0.132 (20/20) 0.019 - 0.161	T-72 < 1 mile, WSW	0.147 (4/4) 0.124 - 0.161	0.140 (4/4) 0.124 - 0.160	0
	<sup>137</sup> Cs	0.00066	0.0031 (5/20) 0.0027 - 0.0035	T-72 < 1 mile, WSW	0.0035 (1/4)	0.0032 (1/4)	0
	<sup>210</sup> Pb	-	0.043 (1/20)	T-64 22 miles, NNE	0.043 (1/4)	0.043 (1/4)	0
	<sup>40</sup> K	0.012	0.021 (1/20)	T-58 1 mile, NW	0.021 (1/20)	< MDA	0
	<sup>134</sup> Cs	0.00069	< MDA	-	-	< MDA	0

TABLE 1

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<u>WATERBORNE</u>							
Surface Water	Tritium 42	230	440 (16/42) 120-1040	T-81 6 miles, S	470 (15/18) 140-1040	< MDA	0
	<sup>40</sup> K	60	280 (42/42) 110-400	T-81 6 miles, S	300 (18/18) 240-400	260 (12/12) 170-320	0
	<sup>54</sup> Mn	4	< MDA	-	-	< MDA	0
	<sup>59</sup> Fe	8	< MDA	-	-	< MDA	0
	<sup>58</sup> Co	4	< MDA	-	-	< MDA	0
	<sup>60</sup> Co	4	< MDA	-	-	< MDA	0
	<sup>65</sup> Zn	8	< MDA	-	-	< MDA	0
	<sup>95</sup> Zr-Nb	7	< MDA	-	-	< MDA	0
	<sup>131</sup> I	5	< MDA	-	-	< MDA	0
	<sup>134</sup> Cs	5	< MDA	-	-	< MDA	0
	<sup>137</sup> Cs	4	< MDA	-	-	< MDA	0
	<sup>140</sup> Ba-La	11	< MDA	-	-	< MDA	0



TABLE 1

## ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

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<u>WATERBORNE</u>						
Sediment (pCi/kg, dry)	Gamma Isotopic					
	<sup>6</sup>					
	<sup>7</sup> Be	100	220 (4/6) 120-380	T-67 13-18 miles, N/NNE	380 (1/2) 380 (1/2)	0
	<sup>40</sup> K	140	690 (6/6) 390-1300	T-67 13-18 miles, N/NNE	660 (2/2) 530-1300	0
	<sup>137</sup> Cs	12	39 (3/6) 13-88	T-67 13-18 miles, N/NNE	50 (2/2) 13-88	0
	<sup>226</sup> Ra	49	720 (6/6) 280-1010	T-42 < 1 mile, ENE	780 (2/2) 760-810	0
	<sup>228</sup> Ra	-	120 (3/6) 100-170	T-67 13-18 miles, N/NNE	135 (2/2) 100-170	0
	<sup>232</sup> Th	52	93 (4/6) 41-166	T-67 13-18 miles, N/NNE	118 (2/2) 70-166	0
	<sup>235</sup> U	-	84 (3/6) 53-110	T-42 < 1 mile, ENE	99 (2/2) 88-110	0
					< MDA	0

TABLE 1

## ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Unit Nos. 3 and 4 Docket No.(s) 50-250 and 50-251  
 Location of Facility Dade, Florida Reporting Period January 1 - December 31, 1987  
 (County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of a Detection (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean c Name _____ Distance & Direction	b Mean (f) Range	Control Locations Mean (f) Range	Number of Nonroutine Reported Measurements
<u>WATERBORNE</u> (cont'd)							
	<sup>238</sup> U	-	550 (6/6) 240-740	T-42 < 1 mile, ENE	610 (2/2) 600-620	560 (2/2) 440-680	0
	<sup>58</sup> Co	9	< MDA	-	-	< MDA	0
	<sup>60</sup> Co	12	< MDA	-	-	< MDA	0
	<sup>134</sup> Cs	14	< MDA	-	-	< MDA	0





TABLE 1

## ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Unit Nos. 3 and 4 Docket No.(s) 50-250 and 50-251  
 Location of Facility Dade, Florida Reporting Period January 1 - December 31, 1987  
 (County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of a Detection (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean <div><div><div>c</div><div>Name</div><div>Distance &amp; Direction</div></div><div><div>b</div><div>Mean (f)</div><div>Range</div></div></div>	Control Locations Mean (f) Range	Number of Nonroutine Reported Measurements	
<u>INGESTION</u>							
Crustacea (pCi/kg, wet)	Gamma Isotopic 4						
	<sup>40</sup> K	130	1650 (4/4) 1550-1800	T-81 6 miles, S	1750 (2/2) 1700-1800	1550 (2/2) 1500-1600	0
	<sup>226</sup> Ra	20	430 (4/4) 90-970	T-67 13-18 miles, N/NNE	530 (2/2) 90-970	530 (2/2) 90-970	0
	<sup>228</sup> Ra	-	170 (2/4) 130-210	T-67 13-18 miles, N/NNE	210 (1/2)	210 (1/2)	0
	<sup>54</sup> Mn	9	< MDA	-	-	< MDA	0
	<sup>59</sup> Fe	16	< MDA	-	-	< MDA	0
	<sup>58</sup> Co	9	< MDA	-	-	< MDA	0
	<sup>60</sup> Co	19	< MDA	-	-	< MDA	0
	<sup>65</sup> Zn	17	< MDA	-	-	< MDA	0
	<sup>134</sup> Cs	9	< MDA	-	-	< MDA	0
	<sup>137</sup> Cs	9	< MDA	-	-	< MDA	0

TABLE 1

## ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Unit Nos. 3 and 4 Docket No.(s) 50-250 and 50-251  
 Location of Facility Dade, Florida Reporting Period January 1 - December 31, 1987  
 (County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of <sup>a</sup> Detection (LLD)	All Indicator Locations Mean (f) Range	Location with Highest <sup>c</sup> Annual Mean <u>Name</u> <u>Mean (f)</u> <sup>b</sup> Distance & Direction	Control Locations Mean (f) Range	Number of Nonroutine Reported Measurements	
<u>INGESTION</u> (cont'd)							
Fish (pCi/kg, wet)	Gamma Isotopic 4						
	<sup>40</sup> K	130	2350 (4/4) 2300-2500	T-67 13-18 miles N/NNE	2400 (2/2) 2300-2500	2400 (2/2) 2300-2500	0
	<sup>137</sup> Cs	9	11 (1/4)	T-81 6 mile, S	11 (1/2)	< MDA	0
	<sup>226</sup> Ra	18	56 (3/4) 34-72	T-81 6 miles, S	67 (2/2) 62-72	34 (1/2)	0
	<sup>54</sup> Mn	9	< MDA	-	-	< MDA	0
	<sup>59</sup> Fe	16	< MDA	-	-	< MDA	0
	<sup>58</sup> Co	9	< MDA	-	-	< MDA	0
	<sup>60</sup> Co	10	< MDA	-	-	< MDA	0
	<sup>65</sup> Zn	17	< MDA	-	-	< MDA	0
	<sup>134</sup> Cs	9	< MDA	-	-	< MDA	0

TABLE 1

## ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Unit Nos. 3 and 4 Docket No. (s) 50-250 and 50-251  
 Location of Facility Dade, Florida Reporting Period January 1 - December 31, 1987  
 (County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of <sup>a</sup> Detection (LLD)	All Indicator Locations Mean (f) Range	Location with Highest <sup>c</sup> Annual Mean Name <sup>b</sup> Mean (f) Distance & Range Direction	Control Locations Mean (f) Range	Number of Nonroutine Reported Measurements	
<u>INGESTION</u> (cont'd)							
Broad Leaf Vegetation (pCi/kg, wet)	Gamma Isotopic 36						
	<sup>7</sup> Be	71	1350 (36/36) 470-2960	T-40 3 miles, W	1600 (12/12) 680-2960	1010 (12/12) 470-1260	0
	<sup>40</sup> K	100	3980 (36/36) 1800-6700	T-67 13-18 miles,	4200 (12/12) 2900-6700	4200 (12/12) 2900-6700	0
	<sup>137</sup> Cs	8	147 (32/36) 13-507	T-40 3 miles, W	246 (12/12) 30-507	45 (8/12) 13-105	0
	<sup>131</sup> I	9	< MDA	-	-	< MDA	0
	<sup>134</sup> Cs	8	< MDA	-	-	< MDA	0

TABLE 1

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.

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

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

MDA refers to minimum detectable activity.

1987  
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT  
TURKEY POINT PLANT, UNIT NOS. 3 & 4

Page 1 of 1

TABLE 1A

DEVIATIONS/MISSING DATA

<u>Date</u>	<u>Location</u>	<u>Description of Problem</u>	<u>Deviation(s)</u>	<u>Corrective Action</u>
12/15/86 to 03/17/87	SW-10	TLD's & utility pole mount was removed, TLD's not found.	Failure to provide continuous exposure monitoring at this location for the First Quarter 1987.	Replaced TLD's upon discovery of situation.
03/17/87 to 06/16/87	NW-10	TLD's stolen during sampling period.	Failure to provide continuous exposure monitoring at this location for the Second Quarter 1987	Replaced TLD's upon discovery of situation.

1987  
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT  
TURKEY POINT PLANT, UNIT NOS. 3 & 4

TABLE 1B

ANALYSES WITH LLDs ABOVE TABLE 4.12-3 DETECTION CAPABILITIES  
1/1/87 - 12/31/87

<u>Date</u>	<u>Sample Type</u>	<u>Location</u>	<u>Radionuclide</u>	<u>MDA</u>	<u>Table 4.12-1 LLD</u>	<u>Reason for Deviation</u>
-------------	--------------------	-----------------	---------------------	------------	-------------------------	-----------------------------

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

1987  
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT  
TURKEY POINT PLANT - UNITS NOS. 3 AND 4

TABLE 2

LAND USE CENSUS

DISTANCE TO NEAREST (a, b)

Sector	5/87 Milk (c) Animal	5/87 Residence	5/87 Garden (d)
N	L (e)	2.1/350 (g)	L
NNE	0 (f)	0	0
NE	0	0	0
ENE	0	0	0
E	0	0	0
ESE	0	0	0
SE	0	0	0
S	L	L (g)	0
SSW	L	L	L
SW	L	L	L
WSW	L	L	L
W	L	L	L
WNW	L	1.6/303	3.9/303
NW	L	3.7/311	3.6/309
NNW	L	L (g)	4.5/328

1987  
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT  
TURKEY POINT PLANT - UNITS NOS. 3 AND 4

TABLE 2 NOTES

LAND USE CENSUS

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

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

distance (miles)/bearing (degrees)

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

(c) Potential milk animal locations.

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

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

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

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

Sector	Distance	Description
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



1987  
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT  
TURKEY POINT PLANT - UNITS NOS. 3 AND 4

ATTACHMENT A

KEY TO SAMPLE LOCATIONS

RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE  
TURKEY POINT PLANT  
Key to Sample Locations

Pathway	Location	Description	Samples Collected	Sample Collection Frequency	Approximate Distance (miles)	Direction Sector
DIRECT RADIATION	N-1	Convoy Point	TLD	Quarterly	2	N
DIRECT RADIATION	N-5	North of Moody Dr.	TLD	Quarterly	6	N
DIRECT RADIATION	N-10	Old Cutler Rd. at S.W. 87th Ave.	TLD	Quarterly	12	N
DIRECT RADIATION	NNW-1	Turkey Point Entrance Road	TLD	Quarterly	<1	NNW
DIRECT RADIATION	NNW-10	Burr Rd. at Mainlin Hill Dr.	TLD	Quarterly	9	NNW
DIRECT RADIATION	NW/NNW-1	Turkey Point Entrance Road	TLD	Quarterly	1	NNW
DIRECT RADIATION	NW-5	Dolan's Farm on King's Highway	TLD	Quarterly	4	NNW
DIRECT RADIATION	NW-10	Intersection of Farm Life Rd. and Coconut Palm Dr.	TLD	Quarterly	10	NW

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

Pathway	Location	Description	Samples Collected	Sample Collection Frequency	Approximate Distance (miles)	Direction Sector
DIRECT RADIATION	W/WHW-5	Palm Drive at Tallahassee Rd.	TLD	Quarterly	5	W
DIRECT RADIATION	WHW-10	Homestead near vehicle inspection station	TLD	Quarterly	9	WHW
DIRECT RADIATION	W-1	On site near cooling tower	TLD	Quarterly	1	W
DIRECT RADIATION	W-10	Florida City near fire tower	TLD	Quarterly	10	W
DIRECT RADIATION	WSW-10	Old Hawk missile site south of Florida City	TLD	Quarterly	12	WSW
DIRECT RADIATION	SW/SSW-1	On site near land utilization offices	TLD	Quarterly	1	SSW
DIRECT RADIATION	SW-10	U.S. 1 south of Florida City	TLD	Quarterly	10	SW
DIRECT RADIATION	SSW/SW-5	On site, southeast corner of cooling canals	TLD	Quarterly	5	SSW

RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE  
TURKEY POINT PLANT  
Key to Sample Locations

Pathway	Location	Description	Samples Collected	Sample Collection Frequency	Approximate Distance (miles)	Direction Sector
DIRECT RADIATION	SSW-10	At Card Sound Bridge	TLD	Quarterly	10	SSW
DIRECT RADIATION	S-5	On site, south end of cooling canals	TLD	Quarterly	5	S
DIRECT RADIATION	S-10	Card Sound Rd. at Steamboat Creek	TLD	Quarterly	10	S
DIRECT RADIATION	SSE/S-1	Turtle Point	TLD	Quarterly	1	SSE
DIRECT RADIATION	SSE-10	Ocean Reef	TLD	Quarterly	8	SSE
AIRBORNE	T51	Honestead Bayfront Park	Radiiodine and particulates	Weekly	2	NNW
AIRBORNE	T57	Tree Nursery 316th Street	Radiiodine and particulates	Weekly	4	NN
AIRBORNE	T58	Turkey Point Entrance Rd.	Radiiodine and particulates	Weekly	1	NN



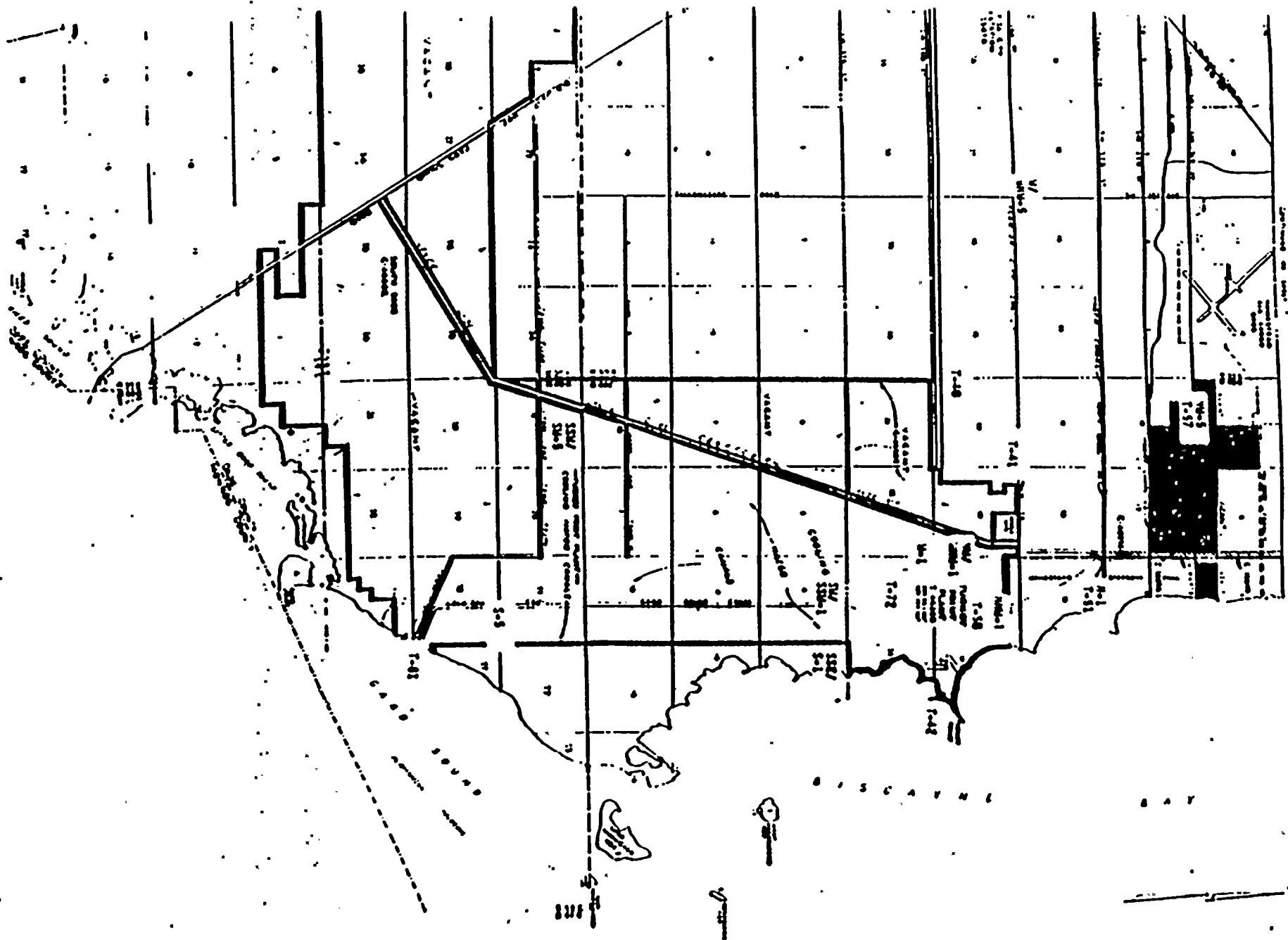
RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE  
TURKEY POINT PLANT  
Key to Sample Locations

Pathway	Location	Description	Samples Collected	Sample Collection Frequency	Approximate Distance (miles)	Direction Sector
AIRBORNE	T64*	Natoma Substation	Radiolodine and particulates	Weekly	22	NNE
AIRBORNE	T72	Turkey Point Boy Scout Camp	Radiolodine and particulates	Weekly	<1	WSW
WATERBORNE	T42	Biscayne Bay, at Turkey Point	Surface water	Monthly	<1	ENE
			Sediment from shoreline	Semi-annually		
WATERBORNE	T67*	Biscayne Bay, vicinity of Cutler Plant, north to Matheson Hammock Park	Surface water	Monthly	13-18	N, NNE
			Sediment from shoreline	Semi-annually		
WATERBORNE	T81	Card Sound, near mouth of old discharge canal	Surface water	Monthly	6	S
			Sediment from shoreline	Semi-annually		

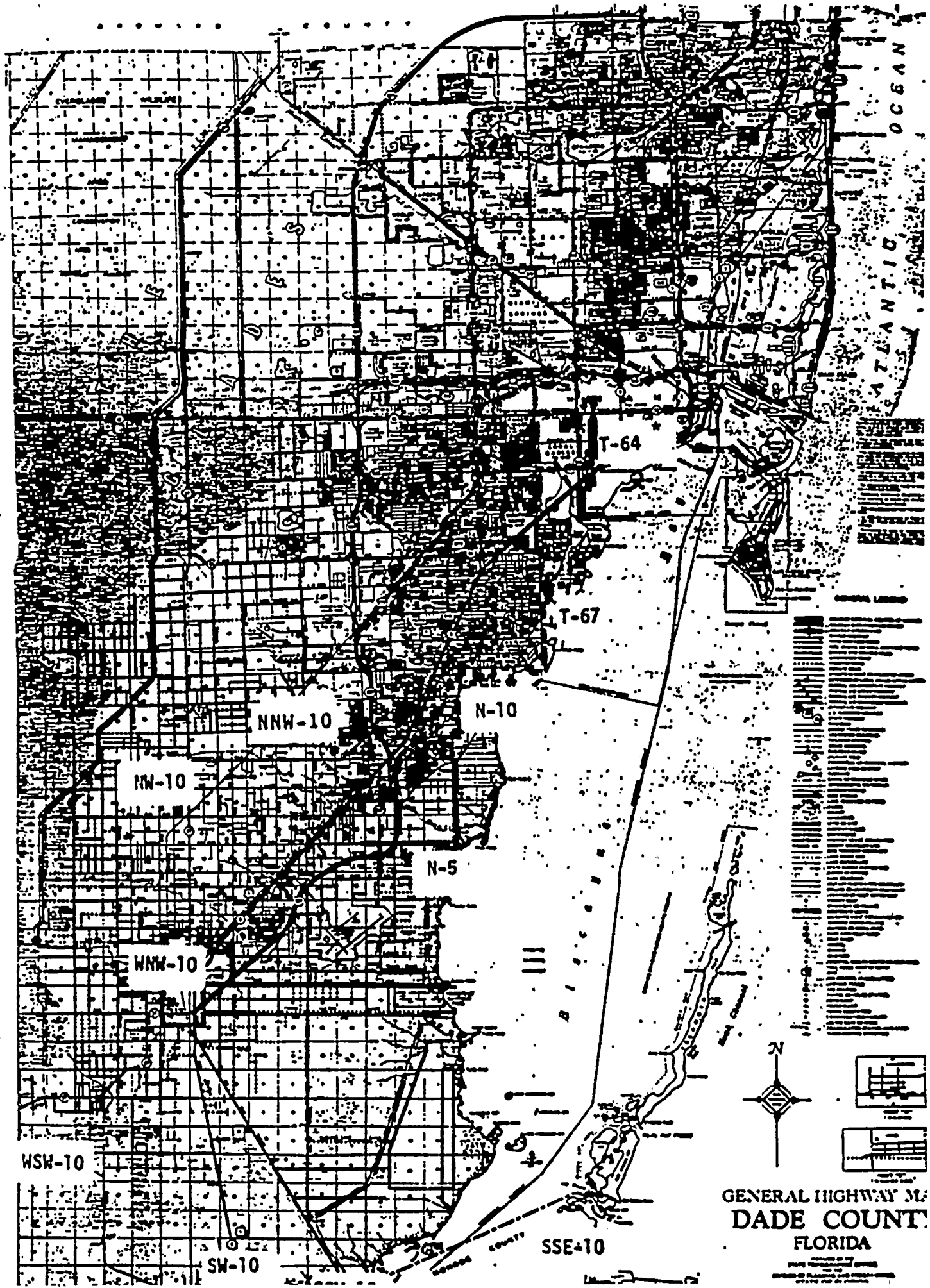
\* Denotes control sample.

RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE  
TURKEY POINT PLANT  
Key to Sample Locations

Pathway	Location	Description	Samples Collected	Sample Collection Frequency	Approximate Distance (miles)	Direction Sector
FOOD PRODUCTS	T67*	Biscayne Bay, vicinity of Cutler Plant north to Matheson Hammock Park	Crustacea	Semi-annually	13-18	N, NNE
			Fish	Semi-annually		
FOOD PRODUCTS	T81	Card Sound, vicinity of Turkey Point Facility	Crustacea	Semi-annually	6	S
			Fish	Semi-annually		
FOOD PRODUCTS	T40	South of Palm Dr. on SW 117th St. extension	Broad leaf vegetation	Monthly	3	W
FOOD PRODUCTS	T41	Palm Dr. West of old missile site near the site boundary	Broad leaf vegetation	Monthly	2	NNW
FOOD PRODUCTS	T67	Near Biscayne Bay, vicinity of Cutler Plant north to Matheson Hammock Park	Broad leaf vegetation	Monthly	13-18	N, NNE







GENERAL HIGHWAY M  
DADE COUNTY  
FLORIDA

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION  
BUREAU OF HIGHWAYS AND STREETS  
OFFICE OF PLANNING AND DESIGN

1987  
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT  
TURKEY POINT PLANT - UNITS NOS. 3 AND 4

ATTACHMENT B

RADIOLOGICAL SURVEILLANCE OF  
FLORIDA POWER AND LIGHT COMPANY'S

TURKEY POINT SITE

1987

First Quarter, 1987  
Second Quarter, 1987  
Third Quarter, 1987  
Fourth Quarter, 1987

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

First Quarter, 1987

Office of Radiation Control  
Florida Department of Health  
and Rehabilitative Services

# TURKEY POINT SITE

## Technical Specifications Sampling

First Quarter, 1987

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	21	40
2. Airborne			
2.a Air Iodines	Weekly	5	65
2.b Air Particulates	Weekly	5	69*
3. Waterborne			
3.a Surface Water	Monthly	3	12
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
			Total: 202

\* - Includes DOE split samples.

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

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

# TURKEY POINT TECHNICAL SPECIFICATIONS SAMPLING

First Quarter, 1987

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

Each result is the average net response of two dosimeters.

Sample Site	Deployment Collection	12-15-86 03-17-87
N-1	5.5 $\pm$ 0.3	(A)
N-5	6.0 $\pm$ 0.3	
N-10	5.4 $\pm$ 0.3	
NNW-1	6.1 $\pm$ 0.3	
NNW-10	6.4 $\pm$ 0.3	
NW/WNW-1	5.3 $\pm$ 0.3	
NW-5	5.7 $\pm$ 0.3	
NW-10	7.8 $\pm$ 0.4	
W/WNW-5	5.2 $\pm$ 0.3	
WNW-10	6.8 $\pm$ 0.4	
W-1	5.4 $\pm$ 0.3	
W-10	6.7 $\pm$ 0.4	
WSW-10	5.2 $\pm$ 0.3	
SW/SSW-1	5.0 $\pm$ 0.3	
SW-10	(B)	
SSW/SW-5	5.4 $\pm$ 0.3	
SSW-10	5.7 $\pm$ 0.3	
S-5	5.0 $\pm$ 0.3	
S-10	5.8 $\pm$ 0.3	
SSE/S-1	5.0 $\pm$ 0.3	
SSE-10	4.7 $\pm$ 0.2	

### Notes:

- A. The result for site N-1 is based on only one dosimeter because the other was not returned for analysis due to a procedural error.
- B. The dosimeters for site SW-10 were missing when collection was attempted. The utility pole upon which they were mounted had been removed. Efforts to locate the missing dosimeters were not successful. New dosimeters were deployed on a new pole at this location.
- C. These results have been determined with the assumption that fading is negligible, although detailed testing to confirm this has not been completed.
- D. 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/m<sup>3</sup>)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
01-06-87	<0.03	<0.03	<0.03	<0.03	<0.03
01-12-87	<0.03	<0.03	<0.03	<0.03	<0.03
01-19-87	<0.02	<0.02	<0.02	<0.03	<0.02
01-27-87	<0.02	<0.03	<0.02	<0.02	<0.03
02-02-87	<0.03	<0.03	<0.03	<0.03	<0.03
02-10-87	<0.03	<0.03	<0.03	<0.03	<0.03
02-17-87	<0.02	<0.03	<0.02	<0.02	<0.03
02-24-87	<0.02	<0.02	<0.02	<0.02	<0.02
03-03-87	<0.02	<0.02	<0.02	<0.02	<0.02
03-10-87	<0.03	<0.03	<0.03	<0.03	<0.02
03-17-87	<0.03	<0.02	<0.03	<0.02	<0.02
03-24-87	<0.04	<0.04	<0.04	<0.04	<0.04
03-31-87	<0.03	<0.03	<0.03	<0.03	<0.03

2.b

AIR PARTICULATES - GROSS BETA - (pCi/m<sup>3</sup>)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
01-06-87	0.012 ± 0.002	0.013 ± 0.002	0.015 ± 0.002	0.014 ± 0.002	0.014 ± 0.002
01-12-87	0.010 ± 0.002	0.015 ± 0.002	0.015 ± 0.002	0.009 ± 0.002	0.012 ± 0.002
01-19-87	0.011 ± 0.002	0.010 ± 0.002	0.011 ± 0.002	0.012 ± 0.002	0.010 ± 0.002
01-27-87	0.010 ± 0.002	0.010 ± 0.002	0.015 ± 0.002	0.011 ± 0.002	0.011 ± 0.002
02-02-87	0.014 ± 0.002	0.015 ± 0.002	*0.015 ± 0.002	0.020 ± 0.002	0.016 ± 0.002
02-10-87	0.008 ± 0.002	0.012 ± 0.002	*0.010 ± 0.002	0.016 ± 0.002	0.013 ± 0.002
02-17-87	0.012 ± 0.002	0.017 ± 0.002	*0.018 ± 0.002	0.014 ± 0.002	0.020 ± 0.002
02-24-87	0.009 ± 0.001	0.013 ± 0.002	*0.010 ± 0.002	0.011 ± 0.002	0.013 ± 0.002
03-03-87	0.010 ± 0.002	0.012 ± 0.002	0.011 ± 0.002	0.014 ± 0.002	0.015 ± 0.002
03-10-87	0.011 ± 0.002	0.011 ± 0.002	0.007 ± 0.002	0.011 ± 0.002	0.012 ± 0.002
03-17-87	0.020 ± 0.002	0.026 ± 0.003	0.024 ± 0.002	0.016 ± 0.002	0.024 ± 0.002
03-24-87	0.011 ± 0.002	0.016 ± 0.002	0.016 ± 0.002	0.014 ± 0.002	0.015 ± 0.002
03-31-87	0.009 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.012 ± 0.002
Means:	0.011 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.013 ± 0.001	0.014 ± 0.001

\* - DOE split samples.

2.b

AIR PARTICULATES - GAMMA SCANS OF QUARTERLY COMPOSITES - (pCi/m<sup>3</sup>)

First Quarter, 1987

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T51	0.109 ± 0.009	<0.014	<0.0007	<0.0007	<0.034
T57	0.121 ± 0.009	<0.015	<0.0007	<0.0008	<0.029
T58	0.137 ± 0.009	0.021 ± 0.007	<0.0007	<0.0007	<0.062
T64	0.147 ± 0.009	<0.023	<0.0008	<0.0006	0.043 ± 0.017
T72	0.154 ± 0.009	<0.023	<0.0009	<0.0007	<0.030

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	01-12-87	<260	180 $\pm$ 50	<4	<11	<4	<5	<9	<9	<5	<4	<5	<8
	02-16-87	<180	280 $\pm$ 50	<4	<9	<4	<6	<9	<8	<6	<5	<4	<8
	03-17-87	<180	180 $\pm$ 50	<4	<9	<4	<5	<8	<8	<5	<5	<5	<6
T67	01-12-87	<260	170 $\pm$ 50	<4	<7	<4	<5	<10	<7	<5	<5	<5	<3
	02-17-87	<180	230 $\pm$ 50	<4	<10	<5	<3	<9	<7	<5	<6	<5	<7
	03-17-87	<180	270 $\pm$ 50	<4	<11	<3	<4	<10	<8	<5	<5	<5	<8
T81	01-12-87 (C)	430 $\pm$ 80	260 $\pm$ 50	<3	<9	<4	<4	<9	<9	<6	<4	<5	<8
	01-12-87 (D)	590 $\pm$ 80	240 $\pm$ 50	<4	<9	<4	<5	<11	<7	<5	<5	<5	<7
	02-16-87 (C)	240 $\pm$ 60	250 $\pm$ 50	<4	<8	<3	<5	<7	<7	<5	<5	<4	<8
	02-16-87 (D)	300 $\pm$ 60	270 $\pm$ 50	<5	<11	<3	<5	<11	<7	<5	<4	<5	<7
	03-17-87 (C)	310 $\pm$ 60	270 $\pm$ 50	<4	<11	<5	<4	<10	<7	<5	<4	<4	<5
	03-17-87 (D)	140 $\pm$ 60	290 $\pm$ 50	<5	<10	<4	<5	<9	<8	<6	<5	<5	<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.

(C) Collected at the normal location - in the old discharge canal about 200 feet west of the mouth.

(D) Collected at a comparison location - at the mouth of the old discharge canal on the south side of the prominent embankment in this area.



3.b

## SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Others
T42	01-09-87	210 $\pm$ 60	390 $\pm$ 70	<12	<11	<11	<12	Ra-226: 760 $\pm$ 30 U-235: 88 $\pm$ 9 U-238: 620 $\pm$ 90
T67	01-12-87	380 $\pm$ 70	1300 $\pm$ 100	<11	<13	<13	13 $\pm$ 4	Ra-226: 1010 $\pm$ 20 Ra-228: 170 $\pm$ 20 Th-232: 166 $\pm$ 8 U-238: 680 $\pm$ 90
T81	01-09-87	160 $\pm$ 60	700 $\pm$ 90	<10	<12	<13	15 $\pm$ 4	Ra-226: 990 $\pm$ 30 Ra-228: 100 $\pm$ 20 Th-232: 94 $\pm$ 9 U-235: 53 $\pm$ 4 U-238: 740 $\pm$ 90

4.a.1

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

Sample Site	Collection Date	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	03-17-87	1600 $\pm$ 200	<16	<34	<13	<18	<28	<19	<15	970 $\pm$ 20	210 $\pm$ 50
T81	02-12-87	1800 $\pm$ 100	<12	<35	<11	<12	<31	<14	<12	450 $\pm$ 30	130 $\pm$ 30

4.a.2

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

Sample Site	Collection Date	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	03-16-87	2500 $\pm$ 100	<9	<27	<9	<13	<27	<12	<12	34 $\pm$ 9	<40
T81	02-19-87	2300 $\pm$ 100	<9	<38	<12	<12	<28	<11	<12	62 $\pm$ 8	<60

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	01-12-87	1630 $\pm$ 60	3600 $\pm$ 100	<13	<8	212 $\pm$ 8
	02-17-87	1270 $\pm$ 60	3600 $\pm$ 100	<12	<9	135 $\pm$ 7
	03-17-87	2690 $\pm$ 90	1800 $\pm$ 100	<14	<8	166 $\pm$ 8
T41	01-12-87	1620 $\pm$ 70	2900 $\pm$ 100	<13	<8	116 $\pm$ 7
	02-17-87	1550 $\pm$ 80	3000 $\pm$ 100	<13	<9	105 $\pm$ 8
	03-17-87	2120 $\pm$ 80	3900 $\pm$ 200	<17	<11	91 $\pm$ 7
T67	01-12-87	1470 $\pm$ 70	3800 $\pm$ 100	<13	<9	98 $\pm$ 7
	02-17-87	1010 $\pm$ 70	4500 $\pm$ 200	<13	<12	22 $\pm$ 6
	03-17-87	860 $\pm$ 60	3700 $\pm$ 100	<15	<9	13 $\pm$ 5

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

Second Quarter, 1987

Office of Radiation Control

Florida Department of Health  
and Rehabilitative Services

# TURKEY POINT SITE

## Technical Specifications Sampling

Second Quarter, 1987

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	21	40
2. Airborne			
2.a Air Iodines	Weekly	5	65
2.b Air Particulates	Weekly	5	69*
3. Waterborne			
3.a Surface Water	Monthly	3	12
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: 196

\* - Includes DOE split samples.

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

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

# TURKEY POINT TECHNICAL SPECIFICATIONS SAMPLING

Second Quarter, 1987

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

Each result is the average net response of two dosimeters.

<u>Sample Site</u>	<u>Deployment Collection</u>	<u>03-17-87 06-16-87</u>
N-1	4.9	$\pm 0.3$
N-5	5.8	$\pm 0.3$
N-10	5.3	$\pm 0.3$
NNW-1	6.2	$\pm 0.3$
NNW-10	6.3	$\pm 0.3$
NW/WWN-1	5.1	$\pm 0.3$
NW-5	4.9	$\pm 0.3$
NW-10	(A)	
W/WWN-5	4.9	$\pm 0.3$
WWN-10	6.7	$\pm 0.4$
W-1	5.2	$\pm 0.3$
W-10	6.7	$\pm 0.4$
WSW-10	4.9	$\pm 0.3$
SW/SSW-1	4.9	$\pm 0.3$
SW-10	4.2	$\pm 0.2$
SSW/SW-5	5.5	$\pm 0.3$
SSW-10	5.8	$\pm 0.3$
S-5	5.3	$\pm 0.3$
S-10	5.7	$\pm 0.3$
SSE/S-1	4.5	$\pm 0.2$
SSE-10	4.2	$\pm 0.2$

### Notes:

- (A) The dosimeters for site NW-10 were missing when collection was attempted. The holder was found upside down. Tampering is suspected as the cause. A search for the missing dosimeters was not successful.
- (B) These results have been determined with the assumption that fading is negligible, although detailed testing to confirm this has not been completed.
- (C) 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/m<sup>3</sup>)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
04-07-87	<0.05 (A)	<0.02	<0.03	<0.03	<0.02
04-14-87	<0.02	<0.02	<0.02	<0.02	<0.02
04-21-87	<0.03	<0.03	<0.03	<0.03	<0.04
04-28-87	<0.03	<0.03	<0.03	<0.03	<0.03
05-05-87	<0.02	<0.02	<0.02	<0.02	<0.02
05-12-87	<0.02	<0.02	<0.02	<0.02	<0.02
05-18-87	<0.03	<0.03	<0.03	<0.03	<0.03
05-26-87	<0.03	<0.03	<0.03	<0.03	<0.03
06-02-87	<0.02	<0.02	<0.02	<0.02	<0.02
06-08-87	<0.02	<0.02	<0.03	<0.03	<0.03
06-16-87	<0.02	<0.02	<0.02	<0.02	<0.02
06-23-87	<0.02	<0.02	<0.02	<0.02	<0.02
06-30-87	<0.02	<0.02	<0.02	<0.02	<0.02

(A) The air pump had failed during this sample. The equipment is estimated to have run for 105 hours out of the 166 total hours for this sampling interval.

2.b

AIR PARTICULATES - GROSS BETA - (pCi/m<sup>3</sup>)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
04-07-87	(A) 0.017 ± 0.003	0.017 ± 0.002	0.020 ± 0.002	0.016 ± 0.002	0.018 ± 0.002
04-14-87	0.019 ± 0.002	0.020 ± 0.002	0.019 ± 0.002	0.018 ± 0.002	0.023 ± 0.002
04-21-87	0.015 ± 0.002	0.015 ± 0.002	0.012 ± 0.002	0.014 ± 0.002	0.020 ± 0.002
04-28-87	0.021 ± 0.002	0.018 ± 0.002	0.018 ± 0.002	0.017 ± 0.002	0.020 ± 0.002
05-05-87	0.017 ± 0.002	0.020 ± 0.002	*0.023 ± 0.002	0.018 ± 0.002	0.023 ± 0.002
05-12-87	0.012 ± 0.002	0.013 ± 0.002	*0.010 ± 0.002	0.014 ± 0.002	0.012 ± 0.002
05-18-87	0.015 ± 0.002	0.013 ± 0.002	*0.015 ± 0.002	0.018 ± 0.002	0.014 ± 0.002
05-26-87	0.010 ± 0.002	0.012 ± 0.002	*0.010 ± 0.002	0.008 ± 0.002	0.011 ± 0.002
06-02-87	0.006 ± 0.002	0.005 ± 0.001	0.010 ± 0.002	0.006 ± 0.002	0.009 ± 0.002
06-08-87	0.010 ± 0.002	0.010 ± 0.002	0.008 ± 0.002	0.013 ± 0.002	0.009 ± 0.002
06-16-87	0.014 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.010 ± 0.002	0.012 ± 0.002
06-23-87	0.008 ± 0.002	0.010 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.012 ± 0.002
06-30-87	0.009 ± 0.002	0.006 ± 0.002	0.009 ± 0.002	0.008 ± 0.002	0.008 ± 0.002
Means:	0.013 ± 0.001	0.013 ± 0.001	0.014 ± 0.001	0.013 ± 0.001	0.015 ± 0.001

\* - DOE split samples.

(A) The air pump had failed during this sample. The equipment is estimated to have run for 105 hours out of the 166 total hours for this sampling interval.

2.b

AIR PARTICULATES - GAMMA SCANS OF QUARTERLY COMPOSITES - (pCi/m<sup>3</sup>)

Second Quarter, 1987					
Sample Site	Be-7	K-40	Cs-134	Cs-137	
T51	0.129 ± 0.009	<0.022	<0.0009	<0.0008	
T57	0.123 ± 0.009	<0.024	<0.0009	<0.0006	
T58	0.120 ± 0.009	<0.017	<0.0009	<0.0005	
T64	0.124 ± 0.010	<0.024	<0.0008	<0.0007	
T72	0.161 ± 0.011	<0.022	<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	04-13-87	<190	340 + 50	<5	<11	<4	<4	<12	<7	<5	<4	<4	<7
	05-11-87	<190	340 + 50	<5	<8	<5	<4	<9	<6	<5	<5	<5	<8
	06-15-87	120 + 60	330 + 50	<4	<11	<5	<5	<12	<8	<6	<6	<4	<6
T67	04-13-87	<190	280 + 50	<4	<11	<5	<7	<10	<9	<6	<5	<5	<6
	05-11-87	<190	260 + 60	<5	<8	<4	<5	<12	<6	<5	<5	<5	<8
	06-16-87	<180	290 + 50	<5	<11	<4	<4	<10	<6	<8	<3	<5	<6
T81	04-13-87 (C)	810 + 70	360 + 50	<4	<10	<5	<4	<11	<8	<8	<6	<4	<8
	04-13-87 (D)	1040 + 70	350 + 50	<5	<8	<4	<4	<10	<9	<8	<4	<5	<7
	05-11-87 (C)	<190	290 + 50	<5	<9	<5	<6	<10	<7	<6	<4	<4	<7
	05-11-87 (D)	<190	370 + 50	<5	<11	<4	<5	<10	<7	<5	<5	<4	<7
	06-15-87 (C)	500 + 60	330 + 50	<5	<10	<5	<5	<9	<8	<7	<5	<5	<5
	06-15-87 (D)	950 + 70	340 + 50	<3	<11	<5	<4	<10	<8	<8	<4	<5	<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.
- (C) Collected at the normal location - in the old discharge canal about 200 feet west of the mouth.
- (D) Collected at a comparison location - at the mouth of the old discharge canal on the south side of the prominent embankment in this area.



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	04-13-87	2310 $\pm$ 80	2900 $\pm$ 100	<16	<9	182 $\pm$ 8
	*05-11-87	680 $\pm$ 50	3600 $\pm$ 200	<10	<9	30 $\pm$ 5
	06-16-87	1020 $\pm$ 70	4000 $\pm$ 200	<17	<12	112 $\pm$ 7
T41	04-13-87	1930 $\pm$ 80	3000 $\pm$ 100	<16	<11	83 $\pm$ 6
	05-11-87	1480 $\pm$ 80	3900 $\pm$ 200	<12	<11	254 $\pm$ 10
	06-16-87	830 $\pm$ 60	5500 $\pm$ 200	<27	<10	23 $\pm$ 5
T67	04-13-87	1200 $\pm$ 70	3900 $\pm$ 200	<16	<12	31 $\pm$ 5
	05-11-87	1630 $\pm$ 70	2500 $\pm$ 100	<10	<9	42 $\pm$ 5
	06-16-87	470 $\pm$ 60	6700 $\pm$ 200	<24	<11	19 $\pm$ 5

\* - DOE split sample.

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

Third Quarter, 1987

Office of Radiation Control

Florida Department of Health  
and Rehabilitative Services

# TURKEY POINT TECHNICAL SPECIFICATIONS SAMPLING

Third Quarter, 1987

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

Each result is the average net response of two dosimeters.

<u>Sample Site</u>	<u>Deployment Collection</u>	<u>06-15-87</u> <u>09-23-87</u>
N-1	5.2	$\pm 0.3$
N-5	6.1	$\pm 0.3$
N-10	5.8	$\pm 0.3$
NNW-1	6.5	$\pm 0.3$
NNW-10	6.5	$\pm 0.3$
NW/WNW-1	5.5	$\pm 0.3$
NW-5	5.7	$\pm 0.3$
NW-10	8.1	$\pm 0.4$
W/WNW-5	5.4	$\pm 0.3$
WNW-10	6.8	$\pm 0.4$
W-1	5.6	$\pm 0.3$
W-10	7.3	$\pm 0.4$
WSW-10	5.0	$\pm 0.3$
SW/SSW-1	5.1	$\pm 0.3$
SW-10	5.0	$\pm 0.3$
SSW/SW-5	5.7	$\pm 0.3$
SSW-10	5.8	$\pm 0.3$
S-5	5.2	$\pm 0.3$
S-10	5.5	$\pm 0.3$
SSE/S-1	5.1	$\pm 0.3$
SSE-10	5.2	$\pm 0.3$

### 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/m<sup>3</sup>)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
07-07-87	<0.02	<0.03	<0.03	<0.02	<0.03
07-14-87	<0.02	<0.02	<0.02	<0.02	<0.02
07-21-87	<0.02	<0.03	<0.03	<0.02	<0.02
07-28-87	<0.03	<0.03	<0.03	<0.03	<0.03
08-04-87	<0.02	<0.03	<0.02	<0.02	<0.02
08-10-87	<0.03	<0.03	<0.03	<0.03	<0.03
08-18-87	<0.02	<0.02	<0.02	<0.02	<0.02
08-25-87	<0.03	<0.03	<0.02	<0.02	<0.03
09-01-87	<0.02	<0.02	<0.02	<0.02	<0.02
09-09-87	<0.03	<0.03	<0.03	<0.03	<0.03
09-15-87	<0.03	<0.03	<0.03	<0.03	<0.03
09-22-87	<0.04	<0.04	<0.04	<0.04	<0.04
09-29-87	<0.04	<0.04	<0.04	<0.04	<0.04

2.b

AIR PARTICULATES - GROSS BETA - (pCi/m<sup>3</sup>)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
07-07-87	0.009 ± 0.002	0.011 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.007 ± 0.002
07-14-87	0.016 ± 0.002	0.012 ± 0.002	0.017 ± 0.002	0.014 ± 0.002	0.020 ± 0.002
07-21-87	0.014 ± 0.002	0.009 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.010 ± 0.002
07-28-87	0.020 ± 0.002	0.017 ± 0.002	0.016 ± 0.002	0.023 ± 0.002	0.018 ± 0.002
08-04-87	0.012 ± 0.002	0.007 ± 0.002	*0.009 ± 0.002	0.007 ± 0.002	0.010 ± 0.002
08-10-87	0.022 ± 0.002	0.022 ± 0.002	*0.018 ± 0.002	0.020 ± 0.002	0.020 ± 0.002
08-18-87	0.013 ± 0.002	0.016 ± 0.002	*0.016 ± 0.002	0.014 ± 0.002	0.014 ± 0.002
08-25-87	0.014 ± 0.002	0.014 ± 0.002	*0.011 ± 0.002	0.013 ± 0.002	0.013 ± 0.002
09-01-87	0.011 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.009 ± 0.002	0.011 ± 0.002
09-09-87	0.006 ± 0.001	0.006 ± 0.002	0.005 ± 0.001	0.006 ± 0.001	0.007 ± 0.001
09-15-87	0.006 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.008 ± 0.002	0.005 ± 0.002
09-22-87	0.008 ± 0.002	0.007 ± 0.002	0.006 ± 0.002	0.004 ± 0.001	0.012 ± 0.002
09-29-87	0.005 ± 0.002	0.006 ± 0.002	0.004 ± 0.001	0.008 ± 0.002	0.004 ± 0.001
Means:	0.012 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.012 ± 0.001

\* - DOE split samples.

2.b

AIR PARTICULATES - GAMMA SCANS OF QUARTERLY COMPOSITES - (pCi/m<sup>3</sup>)

Third Quarter, 1987

Sample Site	Be-7	K-40	Cs-134	Cs-137
T51	0.122 ± 0.011	<0.026	<0.0010	0.0030 ± 0.0005
T57	0.120 ± 0.010	<0.026	<0.0009	0.0027 ± 0.0005
T58	0.122 ± 0.011	<0.017	<0.0009	0.0030 ± 0.0004
T64	0.130 ± 0.009	<0.028	<0.0011	0.0032 ± 0.0005
T72	0.124 ± 0.010	<0.025	<0.0009	0.0035 ± 0.0005

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	07-13-87	<180	270 $\pm$ 50	<3	<11	<4	<5	<9	<9	<8	<4	<5	<6
	08-17-87	<190	350 $\pm$ 50	<5	<11	<3	<5	<11	<6	<7	<4	<4	<5
	09-15-87	<190	390 $\pm$ 60	<3	<11	<5	<4	<10	<8	<8	<4	<5	<6
T67	07-14-87	<180	320 $\pm$ 40	<4	<10	<4	<4	<9	<9	<11	<5	<4	<6
	08-17-87	<190	320 $\pm$ 50	<4	<10	<4	<4	<10	<8	<8	<4	<5	<7
	09-14-87	<190	290 $\pm$ 50	<5	<10	<5	<6	<11	<8	<10	<5	<5	<8
T81	07-15-87	380 $\pm$ 60	400 $\pm$ 50	<5	<9	<5	<4	<9	<6	<14	<4	<5	<9
	08-17-87	320 $\pm$ 60	390 $\pm$ 50	<3	<12	<4	<5	<11	<8	<8	<5	<4	<7
	09-15-87	370 $\pm$ 60	300 $\pm$ 50	<5	<11	<5	<5	<10	<8	<10	<5	<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)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Others
T42	07-21-87	<150	700 $\pm$ 100	<14	<16	<12	<13	Ra-226: 810 $\pm$ 50 Ra-228: <73 Th-232: 41 $\pm$ 9 U-235: 110 $\pm$ 10 U-238: 600 $\pm$ 100
T67	07-21-87	<140	530 $\pm$ 80	<10	<15	<13	88 $\pm$ 8	Ra-226: 500 $\pm$ 30 Ra-228: 100 $\pm$ 20 Th-232: 70 $\pm$ 21 U-235: <190 U-238: 440 $\pm$ 80
T81	07-21-87	120 $\pm$ 50	520 $\pm$ 70	<8	<10	<12	<10	Ra-226: 280 $\pm$ 20 Ra-228: <60 Th-232: <80 U-235: <150 U-238: 240 $\pm$ 60

4.a.1

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

Sample Site	Collection Date	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Cs-134	Cs-137	Ra-226
T67	Collection attempts in August were not successful. Additional attempts will be made.									
T81	07-28-87	1700 $\pm$ 100	<10	<27	<10	<13	<28	<13	<11	220 $\pm$ 20

4.a.2

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

Sample Site	Collection Date	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Cs-134	Cs-137	Ra-226
T67	Collection attempts in August were not successful. Additional attempts will be made.									
T81	07-10-87	2300 $\pm$ 100	<10	<28	<10	<12	<28	<11	11 $\pm$ 5	72 $\pm$ 9

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

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>
T40	07-14-87	1230 $\pm$ 100	4900 $\pm$ 200	<35	<12	507 $\pm$ 15
	08-17-87	1400 $\pm$ 90	4600 $\pm$ 200	<25	<13	501 $\pm$ 16
	09-15-87	1210 $\pm$ 90	5300 $\pm$ 200	<28	<13	348 $\pm$ 12
T41	07-14-87	1080 $\pm$ 80	4000 $\pm$ 200	<26	<11	71 $\pm$ 7
	08-17-87	950 $\pm$ 60	4100 $\pm$ 200	<18	<10	119 $\pm$ 9
	09-15-87	1290 $\pm$ 80	3900 $\pm$ 200	<28	<12	194 $\pm$ 10
T67	07-14-87	1200 $\pm$ 80	2900 $\pm$ 200	<25	<13	29 $\pm$ 6
	08-17-87	1150 $\pm$ 70	3800 $\pm$ 200	<19	<11	<13
	09-14-87	770 $\pm$ 70	5300 $\pm$ 200	<25	<13	<10



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

Fourth Quarter, 1987

Office of Radiation Control  
Florida Department of Health  
and Rehabilitative Services

# TURKEY POINT SITE

## Technical Specifications Sampling

Fourth Quarter, 1987

<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	1	1
4.a.2 Fish	Semiannually	1	1
4.b Food Products			
4.b.1 Broadleaf Vegetation	Monthly	3	10*
			Total: 197

\* - Includes DOE split samples.

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

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

# TURKEY POINT TECHNICAL SPECIFICATIONS SAMPLING

Fourth Quarter, 1987

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

Each result is the average net response of two dosimeters.

<u>Sample Site</u>	<u>Deployment Collection</u>	<u>09-23-87</u> <u>12-09-87</u>
N-1	4.9 ± 0.3	
N-5	5.7 ± 0.3	
N-10	5.3 ± 0.3	
NNW-1	6.0 ± 0.3	
NNW-10	6.2 ± 0.3	
NW/WW-1	4.9 ± 0.3	
NW-5	5.4 ± 0.3	
NW-10	7.4 ± 0.4	
W/WW-5	5.0 ± 0.3	
WW-10	6.2 ± 0.3	
W-1	5.4 ± 0.3	
W-10	6.5 ± 0.3	
WSW-10	4.8 ± 0.3	
SW/SSW-1	4.6 ± 0.2	
SW-10	4.8 ± 0.3	
SSW/SW-5	5.4 ± 0.3	
SSW-10	5.8 ± 0.3	
S-5	4.8 ± 0.3	
S-10	5.3 ± 0.3	<< (C)
SSE/S-1	5.0 ± 0.3	
SSE-10	4.9 ± 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.
- (C) The results for site S-10 are based on a single dosimeter. The reading from one of the two dosimeters was lost due to a malfunction of the TLD reader.

2.a IODINE-131 IN WEEKLY AIR FILTERS - (pCi/m<sup>3</sup>)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
10-06-87	<0.04	<0.03	<0.04	<0.04	<0.03
10-13-87	<0.04	<0.04	<0.04	<0.04	<0.04
10-20-87	<0.04	<0.04	<0.04	<0.04	<0.03
10-28-87	<0.03	<0.03	<0.03	<0.03	<0.03
11-03-87	<0.04	<0.04	<0.04	<0.03	<0.04
11-10-87	<0.03	<0.03	<0.03	<0.03	<0.03
11-17-87	<0.02	<0.03	<0.03	<0.03	<0.02
11-23-87	<0.04	<0.04	<0.04	<0.04	<0.04
11-30-87	<0.03	<0.03	<0.03	<0.03	<0.03
12-08-87	<0.02	<0.02	<0.02	<0.02	<0.02
12-15-87	<0.02	<0.03	<0.02	<0.02	<0.02
12-22-87	<0.03	<0.03	<0.03	<0.03	<0.03
12-29-87	<0.03	<0.03	<0.04	<0.03	<0.04

2.b

AIR PARTICULATES - GROSS BETA - (pCi/m<sup>3</sup>)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
10-06-87	0.010 ± 0.002	0.009 ± 0.002	0.012 ± 0.002	0.007 ± 0.002	0.009 ± 0.002
10-13-87	0.007 ± 0.002	0.008 ± 0.002	0.009 ± 0.002	0.010 ± 0.002	0.008 ± 0.002
10-20-87	0.011 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.012 ± 0.002	0.006 ± 0.001
10-28-87	0.014 ± 0.002	0.016 ± 0.002	0.015 ± 0.002	0.013 ± 0.002	0.011 ± 0.002
11-03-87	0.009 ± 0.002	0.007 ± 0.002	*0.008 ± 0.002	0.009 ± 0.002	0.010 ± 0.002
11-10-87	0.008 ± 0.002	0.005 ± 0.001	*0.008 ± 0.002	0.006 ± 0.001	0.004 ± 0.001
11-17-87	0.008 ± 0.002	0.008 ± 0.002	*0.010 ± 0.002	0.011 ± 0.002	0.009 ± 0.002
11-23-87	0.012 ± 0.002	0.010 ± 0.002	*0.016 ± 0.002	0.013 ± 0.002	0.011 ± 0.002
11-30-87	0.007 ± 0.002	0.005 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.008 ± 0.002
12-08-87	0.016 ± 0.002	0.020 ± 0.002	0.023 ± 0.002	0.023 ± 0.002	0.020 ± 0.002
12-15-87	0.017 ± 0.002	0.015 ± 0.002	0.016 ± 0.002	0.017 ± 0.002	0.015 ± 0.002
12-22-87	0.015 ± 0.002	0.012 ± 0.002	0.013 ± 0.002	0.013 ± 0.002	0.015 ± 0.002
12-29-87	0.007 ± 0.002	0.007 ± 0.002	0.004 ± 0.001	0.008 ± 0.002	0.007 ± 0.002
Means:	0.011 ± 0.001	0.010 ± 0.001	0.012 ± 0.001	0.012 ± 0.001	0.010 ± 0.001

\* - DOE split samples.

2.b

AIR PARTICULATES - GAMMA SCANS OF QUARTERLY COMPOSITES - (pCi/m<sup>3</sup>)

Fourth Quarter, 1987.

Sample Site	Be-7	K-40	Cs-134	Cs-137
T51	0.153 ± 0.010	<0.018	<0.0007	<0.0008
T57	0.163 ± 0.011	<0.014	<0.0009	<0.0007
T58	0.156 ± 0.011	<0.017	<0.0009	<0.0008
T64	0.160 ± 0.010	<0.018	<0.0009	<0.0008
T72	0.148 ± 0.010	<0.016	<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	I-131	Cs-134	Cs-137	Ba-140
									Nb-95 (A)				La-140 (B)
T42	10-14-87	<190	110 $\pm$ 40	<5	<10	<5	<5	<7	<8	<15	<5	<4	<7
	11-16-87	<190	240 $\pm$ 50	<5	<8	<5	<4	<9	<8	<6	<5	<5	<5
	12-14-87	<190	280 $\pm$ 50	<3	<8	<4	<5	<10	<7	<6	<4	<5	<8
T67	10-12-87	<190	190 $\pm$ 50	<5	<10	<5	<5	<8	<8	<17	<6	<4	<9
	11-16-87	<190	240 $\pm$ 50	<4	<10	<5	<3	<10	<10	<7	<5	<5	<6
	12-14-87	<190	260 $\pm$ 50	<4	<10	<5	<4	<9	<8	<6	<5	<4	<7
T81	10-13-87	330 $\pm$ 60	310 $\pm$ 50	<5	<9	<4	<3	<8	<11	<12	<5	<5	<9
	11-16-87	<190	260 $\pm$ 50	<4	<9	<5	<4	<10	<8	<6	<6	<4	<9
	12-14-87	380 $\pm$ 60	280 $\pm$ 50	<4	<9	<3	<5	<9	<7	<6	<5	<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 - (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	10-26-87	1500 $\pm$ 100	<10	<23	<9	<13	<21	<11	<9	90 $\pm$ 10

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	10-07-87	2300 $\pm$ 100	<10	<32	<14	<10	<26	<14	<11	<31

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	10-14-87	1810 $\pm$ 80	4100 $\pm$ 200	<25	<11	376 $\pm$ 12
	*11-16-87	1730 $\pm$ 70	4400 $\pm$ 200	<13	<9	87 $\pm$ 7
	12-14-87	1920 $\pm$ 70	4300 $\pm$ 100	<12	<8	300 $\pm$ 10
T41	10-14-87	1560 $\pm$ 80	4100 $\pm$ 200	<23	<13	194 $\pm$ 10
	11-16-87	970 $\pm$ 50	3500 $\pm$ 100	<8	<6	29 $\pm$ 4
	12-14-87	1880 $\pm$ 70	3800 $\pm$ 100	<11	<7	111 $\pm$ 6
T67	10-12-87	470 $\pm$ 60	4600 $\pm$ 200	<25	<13	<13
	11-16-87	650 $\pm$ 60	4800 $\pm$ 200	<13	<10	<12
	12-14-87	1260 $\pm$ 60	4000 $\pm$ 200	<11	<10	105 $\pm$ 7

\* - DOE split sample.





1987  
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT  
TURKEY POINT - UNITS NOS. 3 AND 4

ATTACHMENT C

RESULTS FROM THE  
INTERLABORATORY COMPARISON PROGRAM  
1987

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

January through June, 1987

Media	Nuclide	Collection	EPA	Units	Normal.	Mean of	N.D.K.	Action
		Mon Day Yr	Known		Range	Analyses		Level
FILTER	Alpha	04 10 87	14	pCi/F	0.118	13.33	-0.23	
FILTER	Beta	04 10 87	43	pCi/F	0.118	41.33	-0.58	
FILTER	Cs-137	04 10 87	8	pCi/F	0.118	9.67	0.58	
FILTER	Sr-90	04 10 87	17	pCi/F	0.395	16.33	-0.77	
FOOD	I-131	01 30 87	78	pCi/Kg	0.370	72.00	-1.30	
FOOD	Cs-137	01 30 87	84	pCi/Kg	0.118	78.67	-1.84	
FOOD	K	01 30 87	980	pCi/Kg	0.725	940.00	-1.41	
FOOD	Sr-90	01 30 87	49	pCi/Kg	0.118	24.00	-4.33	1
MILK	I-131	10 31 86	49	pCi/L			NDP	
MILK	I-131	06 26 87		pCi/L			NA	
MILK	Cs-137	10 31 86	39	pCi/L			NDP	
MILK	Cs-137	06 26 87		pCi/L			NA	
MILK	K	10 31 86	1565	mg/L			NDP	
MILK	K	06 26 87		pCi/L			NA	
MILK	Sr-89	10 31 86	9	pCi/L			NDP	
MILK	Sr-89	06 26 87		pCi/L			NA	
MILK	Sr-90	10 31 86	0	pCi/L			NDP	
MILK	Sr-90	06 26 87		pCi/L			NA	
WATER	Alpha	01 23 87	11	pCi/L	0.000	9.00	-0.69	
WATER	Alpha	03 20 87	3	pCi/L	0.118	4.33	0.46	
WATER	Alpha	05 22 87	11	pCi/L	0.118	9.67	-0.46	
WATER	Beta	01 23 87	10	pCi/L	0.118	12.66	0.92	
WATER	Beta	03 20 87	13	pCi/L	0.237	16.66	1.27	
WATER	Beta	05 22 87	7	pCi/L	0.000	8.00	0.34	
WATER	Cr-51	06 05 87		pCi/L			NA	
WATER	Co-60	02 06 87	50	pCi/L	0.237	51.00	0.34	
WATER	Co-60	06 05 87		pCi/L			NA	
WATER	Zn-65	02 06 87	91	pCi/L	0.474	95.00	1.38	
WATER	Zn-65	06 05 87		pCi/L			NA	
WATER	Ru-106	02 06 87	100	pCi/L	0.711	95.33	-1.61	
WATER	Ru-106	06 05 87		pCi/L			NA	
WATER	Cs-134	02 06 87	59	pCi/L	0.237	54.33	-1.61	
WATER	Cs-134	06 05 87		pCi/L			NA	
WATER	Cs-137	02 06 87	87	pCi/L	0.355	87.33	0.11	
WATER	Cs-137	06 05 87		pCi/L			NA	
WATER	H-3	02 13 87	4209	pCi/L	0.098	4336.66	0.53	
WATER	H-3	06 12 87	2895	pCi/L	0.066	2840.00	-0.26	
WATER	Sr-89	01 09 87	25	pCi/L	0.237	23.33	-0.58	
WATER	Sr-89	05 08 87		pCi/L			NA	
WATER	Sr-90	01 09 87	25	pCi/L	4.855	21.00	-4.62	2
WATER	Sr-90	05 08 87		pCi/L			NA	

NOTES:

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

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

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

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

(1) Cause: Poor chemical recovery of strontium carrier. Corrective action: Try to improve chemical recovery.

(2) Cause: Unknown. Corrective action: None at this time.

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

July through December, 1987

Media	Nuclide	Mont	Collection	EPA	Units	Normal.	Mean of	N.D.K.	Action
			Mon Day Yr	Known		Range	Analyses		Level
FILTER	Alpha	AUG	08 28 87	10	pCi/F	0.237	10.00	0.00	
FILTER	Beta	AUG	08 28 87	30	pCi/F	0.237	28.00	-0.69	
FILTER	Cs-137	AUG	08 28 87	10	pCi/F	0.000	10.00	0.00	
FILTER	Sr-90	AUG	08 28 87	10	pCi/F	0.395	8.33	-1.92	
FOOD	I-131	JUL	07 31 87	80	pCi/Kg	0.222	81.67	0.36	
FOOD	Cs-137	JUL	07 31 87	50	pCi/Kg	0.237	54.67	1.62	
FOOD	K	JUL	07 31 87	1680	mg/Kg	0.635	1743.33	1.31	
FOOD	Sr-89	JUL	07 31 87	20	pCi/Kg	0.118	15.33	-1.62	
FOOD	Sr-90	JUL	07 31 87	30	pCi/Kg	0.395	24.67	-6.16	1
MILK	I-131	JUN	06 26 87	59	pCi/L	0.493	61.67	0.77	
MILK	Cs-137	JUN	06 26 87	74	pCi/L	0.592	77.33	1.15	
MILK	K	JUN	06 26 87	1525	mg/L	0.546	1573.33	1.10	
MILK	Sr-89	JUN	06 26 87	69	pCi/L	0.118	56.33	-4.39	2
MILK	Sr-90	JUN	06 26 87	35	pCi/L	0.395	29.66	-6.16	3
WATER	Alpha	JUL	07 24 87	5	pCi/L	0.118	4.33	-0.23	
WATER	Alpha	SEP	09 18 87	4	pCi/L	0.000	3.00	-0.35	
WATER	Alpha	NOV	11 20 87	7	pCi/L	0.000	6.00	-0.35	
WATER	Beta	JUL	07 24 87	5	pCi/L	0.237	7.00	0.69	
WATER	Beta	SEP	09 18 87	12	pCi/L	0.237	13.00	0.35	
WATER	Beta	NOV	11 20 87	19	pCi/L	0.118	21.67	0.92	
WATER	Cr-51	JUN	06 05 87	41	pCi/L	0.711	36.33	-1.61	
WATER	Cr-51	OCT	10 09 87	70	pCi/L	0.829	64.67	-1.85	
WATER	Co-60	JUN	06 05 87	64	pCi/L	0.118	66.67	0.92	
WATER	Co-60	OCT	10 09 87	15	pCi/L	0.118	15.67	0.23	
WATER	Zn-65	JUN	06 05 87	10	pCi/L	0.355	11.33	0.46	
WATER	Zn-65	OCT	10 09 87	46	pCi/L	0.592	44.00	-0.69	
WATER	Ru-106	JUN	06 05 87	75	pCi/L	1.351	76.67	0.58	
WATER	Ru-106	OCT	10 09 87	61	pCi/L	0.829	61.67	0.23	
WATER	Cs-134	JUN	06 05 87	40	pCi/L	0.237	36.66	-1.15	
WATER	Cs-134	OCT	10 09 87	25	pCi/L	0.118	23.33	-0.58	
WATER	Cs-137	JUN	06 05 87	80	pCi/L	0.592	79.00	-0.34	
WATER	Cs-137	OCT	10 09 87	51	pCi/L	0.474	50.00	-0.35	
WATER	H-3	OCT	10 16 87	4492	pCi/L	0.079	4713.33	0.85	
WATER	I-131	AUG	08 07 87	48	pCi/L	0.099	49.33	0.38	
WATER	I-131	DEC	12 04 87	26	pCi/L	0.197	25.00	-0.29	
WATER	Sr-89	MAY	05 08 87	41	pCi/L	0.118	37.33	-1.27	
WATER	Sr-90	MAY	05 08 87	20	pCi/L	0.000	19.00	-1.15	

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 15027, Las Vegas, Nevada, 89114. EPA-600/4-81-004, February, 1981.

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

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

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

Action Level:

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