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APR 17 2002

L-2002-052
10 CFR 50.36b

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-00001

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
2001 Annual Radiological
Environmental Operating Report

Enclosed is the 2001 Annual Radiological Environmental Operating Report for Turkey Point Units 3 and 4, as required by Technical Specification 6.9.1.3.

Should there be any questions or comments regarding this information, please contact Walter Parker at (305) 246-6632.

Sincerely,

John P. McElwain
Vice President
Turkey Point Plant

SM

Enclosure

NRC Regulatory Issue Summary 2001-05 waived the requirements that multiple copies of documents be submitted to the NRC.

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2001

ANNUAL

RADIOLOGICAL ENVIRONMENTAL

OPERATING REPORT

TURKEY POINT PLANT

UNITS 3 & 4

LICENSE NOS. DPR-31, DPR-41

DOCKET NOS. 50-250, 50-251

Data Submitted by: Florida DOH

Prepared by: _____

Reviewed by: _____

2001
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT – UNITS 3 & 4

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

EXECUTIVE SUMMARY

The data obtained through the Turkey Point Radiological Environmental Monitoring Program verifies that the levels of radiation and concentrations of radioactive materials in environmental samples are not increasing. These measurements verify that the dose or dose commitment to members of the public, due to operation of Turkey Point Units 3 & 4, during the surveillance year, is well within the limits established by 10 CFR 50, Appendix I. The sampling period was from January 1, 2001 to December 31, 2001.

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

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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 described in the Offsite Dose Calculation Manual (ODCM) meeting the requirements of Unit 3 and Unit 4 Technical Specifications.

II. RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

A. Purpose

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

B. Program Description

The Radiological Environmental Monitoring Program (REMP) for the Turkey Point Plant is conducted pursuant to Control 5.1 of Turkey Point Unit 3 & 4 ODCM.

1. Sample Locations, Types and Frequencies:

   a. Direct radiation gamma exposure rate is monitored continuously at 21 locations by thermoluminescent dosimeters (TLDs). TLDs are collected and analyzed quarterly.

   b. Airborne radioiodine and particulate samplers are operated continuously at five locations. Samples are collected and analyzed weekly. Analyses include Iodine-131, gross beta, and gamma isotopic measurements.

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

d. Shoreline sediment samples are collected from three locations coinciding with the locations for surface water samples. Samples are collected and analyzed semi-annually. Sediment samples are analyzed by gamma isotopic measurements.

e. Fish and invertebrate samples are collected from two locations coinciding with two of the locations for surface water samples. Samples are collected and analyzed semi-annually. Fish and invertebrate samples are analyzed by gamma isotopic measurements.

f. Broad leaf vegetation samples are collected from three locations. Samples are collected and analyzed monthly. Broad leaf vegetation samples are analyzed by gamma isotopic measurements.

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

2. Analytical Responsibility:

Radiological environmental monitoring for the Turkey Point Plant is conducted by the State of Florida, Department of Health (DOH). Samples are collected and analyzed by DOH personnel.

Samples are analyzed at the DOH Environmental Radiation Control Laboratory in Orlando, Florida.

C. Analytical Results

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

D. Land Use Census

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

E. Interlaboratory Comparison Program

The intercomparison program consists of participating in the Department of Energy's EML New York Quality Assessment Program (DOE-QAP). The DOE-QAP consists of two rounds of Air Filter, Water, Soil, and Vegetation matrices. The samples are analyzed using the methods applicable to the REMP (gamma spectroscopy, Gross Beta, and Tritium for water). The results for nuclides associated with the REMP are listed in ATTACHMENT C, RESULTS FROM THE INTERLABORATORY COMPARISON PROGRAM.

III. DISCUSSION AND INTERPRETATION OF RESULTS

A. Reporting of Results

The Annual Radiological Environmental Operating Report contains the summaries, interpretations and information required by Control 1.4 of ODCM. Table 1 provides a summary of the measurements made for the nuclides required by ODCM Table 5.1-2, for all samples specified by Table 5.1-1. In addition, summaries are provided for other nuclides identified in the specified samples, including those not related to station operation. These include nuclides such as K-40, Th-232, Ra-226, and Be-7 which are common in the Florida environment.

B. Interpretation of Results

1. Direct Radiation:

The results of direct radiation monitoring are consistent with past measurements for the specified locations.
The exposure rate data shows no indication of any trends attributed to effluents from the plant. The measured exposure rates are consistent with exposure rates that were observed during the pre-operational surveillance program. Direct radiation monitoring results are summarized in Table 1.

2. Air Particulates/Radioiodine:

The results for radioactive air particulate and radioiodine monitoring are consistent with past measurements and indicate no trends attributed to plant effluents. All samples for radioiodine yielded no detectable I-131. Gamma isotopic measurements yielded no indication of any nuclides attributed to station operation. The results for air particulate/radioiodine samples are consistent with measurements that were made during the pre-operational surveillance program. Air particulate and radioiodine monitoring results are summarized in Table 1.

3. Waterborne, Surface Water:

The results of radioactivity measurements in surface water samples are consistent with past measurements. Tritium was reported as present in 5 of the 36 surface water samples collected. These results are consistent with the known subsurface interchange that occurs between the closed cooling canal and its surrounding waters, and the pressure gradients caused by the flow of aquifer subsurface waters in South Florida. The highest reported tritium is less than 21% of the required detection level specified by ODCM Table 5.1-3.

4. Waterborne, Sediment:

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

5. Waterborne, Food Products:

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

6. Broad Leaf Vegetation

The results of radioactivity measurements are consistent with past measurements. Cs-137 was detected, as in the past, in samples collected from the indicator and control locations. The maximum concentration reported was less than 19% of the reporting level specified by ODCM Table 5.1-2. No other fission products were detected.

7. Land Use Census

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.

8. Interlaboratory Comparison Program

For those nuclides associated with nuclear power plant operation and using analytical methods used in the REMP, the results were acceptable for all but one matrix in one of two test sessions.
The Air Filter matrix Gamma Spectroscopy results for QAP-55 were a combination of "Warning" and "Not Acceptable"; the laboratory results were high, above the limits. The Gross Beta analysis for the same specimen was Acceptable.
Cause : The detector used was recently repaired & re-calibrated. An 'end cap', used during air filter calibration and air filter counting, was improperly placed during calibration; it was properly placed during air filter counting.
Effect : Underestimated system efficiency resulting in over-estimating activity. Had there been any gamma emitters above LLD, the results would have been over-estimated; a conservative error.
The laboratory technician was counseled on the importance of maintaining consistent geometry between calibration & sample counting.

Data for BI212, BI214, PB212 and PB214 are not included because these radionuclides are not required under the Radiological Environmental Monitoring Program.

C. Conclusions

The data obtained through the Turkey Point Plant Radiological Environmental Monitoring Program verifies that the levels of radiation and concentrations of radioactive materials in environmental samples, representing the highest potential exposure pathways to members of the public, are not being increased.

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

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
Location of Facility Miami-Dade, Florida, Reporting Period January 1 - December 31, 2001
(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, 85[d]	---	5.6 (81/81) 4.4 – 8.3	NW-10 10 mi., NW	7.9 (4/4) 7.6 - 8.3	6.4 (4/4) 6.1 – 6.6

Number of Non-routine 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 Miami-Dade, Florida, Reporting Period January 1 - December 31, 2001
(County, State)

PATHWAY: AIRBORNE
SAMPLES COLLECTED: RADIOIODINE AND PARTICULATES
UNITS: pCi/m^3

Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean Name[c] Distance & Direction	Location with Highest Annual Mean Mean (f)[b] Range	Control Locations Mean (f)[b] Range
^{131}I, 260	0.024	<MDA	---	---	<MDA
Gross Beta, 260	0.0025	0.013 (206/208) 0.004 - 0.029	T-72 <1 mi., WSW	0.013 (52/52) 0.006 - 0.024	0.014 (51/52) 0.006 - 0.024
Composite Gamma Isotopic, 20					
^{7}Be	0.0052	0.1389 (16/16) 0.1098 - 0.1661	T-57 4 mi., NW	0.1417 (4/4) 0.1184 - 0.1562	0.1395 (4/4) 0.1152 - 0.1716
^{134}Cs	0.00069	<MDA	---	---	<MDA
^{137}Cs	0.00066	<MDA	---	---	<MDA
^{210}Pb	---	0.0203 (8/16) 0.0164 - 0.0287	T-57 4 mi., NW	0.0249 (2/4) 0.0211 - 0.0287	0.0169 (2/4) 0.0149 - 0.0188

Number of Non-routine 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 Miami-Dade, Florida, Reporting Period January 1 - December 31, 2001
(County, State)

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

Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean Name[c] Distance & Direction	Location with Highest Annual Mean Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Tritium, 36	230	305 (5/24) 166 - 610	T-81 6 mi., S	305 (5/12) 166 - 610	<MDA
Gamma Isotopic, 36					
^{40}K	60	271 (23/24) 104 - 429	T-81 6 mi., S	299 (12/12) 230 - 429	233 (12/12) 106 - 327
^{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 Non-routine Reported Measurements = 0

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Location of Facility Miami-Dade, Florida , Reporting Period January 1 - December 31, 2001
(County, State)

PATHWAY: WATERBORNE
SAMPLES COLLECTED: SHORELINE SEDIMENT
UNITS: pCi/kg, DRY

Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean Name[c] Distance & Direction	Location with Highest Annual Mean Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic, 6					
^{7}Be	100	371 (1/4)	T-42 <1 mi., ENE	371 (1/2)	106 (1/2)
^{40}K	140	248 (4/4) 147 - 376	T-81 6 mi., S	262 (2/2) 147 - 376	236 (2/2) 167 - 305
^{210}Pb	---	999 (2/4) 739 - 1258	T-42 <1 mi., ENE	1258 (1/2)	<MDA
^{226}Ra	49	465 (4/4) 305 - 653	T-42 <1 mi., ENE	549 (2/2) 445 - 653	127 (1/2)
^{232}Th	---	< MDA	---	---	33 (1/2)
^{238}U	---	98 (1/4)	T-81 6 mi., S	98 (1/2)	<MDA
^{58}Co	9	<MDA	---	---	<MDA
^{60}Co	12	<MDA	---	---	<MDA
^{134}Cs	14	<MDA	---	---	<MDA
^{137}Cs	12	<MDA	---	---	<MDA

Number of Non-routine 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 Miami-Dade, Florida , Reporting Period January 1 - December 31, 2001
(County, State)

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

Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean: Name[c] Distance & Direction	Location with Highest Annual Mean: Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic, 4					
^{40}K	130	1561 (2/2) 1005 - 2117	T-81 6 mi., S	1561 (2/2) 1005 - 2117	1790 (2/2) 1772 - 1808
^{226}Ra	20	1019 (1/2)	T-81 6 mi., S	1019 (1/2)	<MDA
^{228}Ra	---	<MDA	---	---	<MDA
^{54}Mn	9	<MDA	---	---	<MDA
^{59}Fe	16	<MDA	---	---	<MDA
^{58}Co	9	<MDA	---	---	<MDA
^{60}Co	19	<MDA	---	---	<MDA
^{65}Zn	17	<MDA	---	---	<MDA
^{134}Cs	9	<MDA	---	---	<MDA
^{137}Cs	9	<MDA	---	---	<MDA

Number of Non-routine Reported Measurements = 0

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
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PATHWAY: INGESTION
SAMPLES COLLECTED: FISH
UNITS: pCi/kg, WET

Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean Name[c] Distance & Direction	Location with Highest Annual Mean Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic, 4					
^{7}Be	---	<MDA	---	---	<MDA
^{40}K	130	3256 (2/2) 3101 - 3412	T-81 6 mi., S	3256 (2/2) 3101 - 3412	2616 (2/2) 2480 - 2753
^{226}Ra	20	1387 (1/2)	T-81 6 mi., S	1387 (1/2)	<MDA
^{54}Mn	9	<MDA	---	---	<MDA
^{59}Fe	16	<MDA	---	---	<MDA
^{58}Co	9	<MDA	---	---	<MDA
^{60}Co	10	<MDA	---	---	<MDA
^{65}Zn	17	<MDA	---	---	<MDA
^{134}Cs	9	<MDA	---	---	<MDA
^{137}Cs	9	<MDA	---	---	<MDA

Number of Non-routine Reported Measurements = 0

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
Location of Facility Miami-Dade, Florida, Reporting Period January 1 - December 31, 2001
(County, State)

PATHWAY: INGESTION
SAMPLES COLLECTED: BROAD LEAF VEGETATION
UNITS: pCi/kg, WET

Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f)Range	Location with Highest Annual Mean: Name[c] Distance & Direction	Location with Highest Annual Mean: Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic, 36					
^{7}Be	71	1732 (24/24) 705 - 3186	T-41 2 mi., W/NW	1719 (12/12) 705 - 2737	1618 (12/12) 487 - 2783
^{40}K	100	3357 (24/24) 2223 - 6287	T-41 2 mi., W/NW	3660 (12/12) 2265 - 6287	4143 (12/12) 2754 - 5542
^{58}Co	9	<MDA	---	---	<MDA
^{60}Co	10	<MDA	---	---	<MDA
^{131}I	9	<MDA	---	---	<MDA
^{134}Cs	8	<MDA	---	---	<MDA
^{137}Cs	8	118 (24/24) 30 - 370	T-41 2 mi., W/NW	164 (12/12) 30 - 370	35 (3/12) 26 - 42
^{210}Pb	---	2389 (1/24)	T-40 3 mi., W	2389 (1/12)	1191 (2/12) 1021 - 1361

Number of Non routine Reported Measurements = 0

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Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
Location of Facility Miami-Dade, Florida , Reporting Period January 1 - December 31, 2001
(County, State)

NOTES

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

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

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (f).

c. Specific identifying information for each sample location is provided in Attachment A.

d. Results were based upon the average net response of three elements in a TLD. (Thermoluminescent Dosimeter).

MDA refers to minimum detectable activity.

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TABLE 1A

DEVIATIONS / MISSING DATA

A)	Pathway:	Direct Exposure
	Location:	W-9 , 9 miles West
	Dates:	First calendar quarter
	Deviation:	Failure to provide continuous monitoring.
	Description of Problem:	TLDs missing when collection was attempted.
	Corrective Action:	Replaced missing TLD.
B)	Pathway:	Direct Exposure
	Location:	SW-8 , 8 miles Southwest
	Dates:	First calendar quarter
	Deviation:	Failure to provide continuous monitoring.
	Description of Problem:	TLDs missing when collection was attempted.
	Corrective Action:	Replaced missing TLD.
C)	Pathway:	Direct Exposure
	Location:	SW-8 , 8 miles Southwest
	Dates:	Third calendar quarter
	Deviation:	Failure to provide continuous monitoring.
	Description of Problem:	TLDs missing when collection was attempted.
	Corrective Action:	Replaced missing TLD, adjusted 'hiding' location.

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TABLE 1B

ANALYSIS WITH LLDs ABOVE ODCM TABLE 5.1-3 DETECTION CAPABILITIES
1/1/2001 – 12/31/2001

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

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TABLE 2

LAND USE CENSUS

Distance to Nearest (a, b)

Sector	9/01 Milk (c) Animal	9/01 Residence (g)	9/01 Garden (d)
N	L (e)	2.0/357	L
NNE	O (f)	O	O
NE	O	O	O
ENE	O	O	O
E	O	O	O
ESE	O	O	O
SE	O	O	O
SSE	O	O	O
S	L	L	L
SSW	L	L	L
SW	L	L	L
WSW	L	L	L
W	L	L	L
WNW	L	L	L
NW	L	3.7/316	4.4/306
NNW	L	4.4/337	4.5/332

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:

Sector	Distance	Description
N	1.9/351	24-hour Security Staff Building
NNW	2.0/349	Security booth at park entrance

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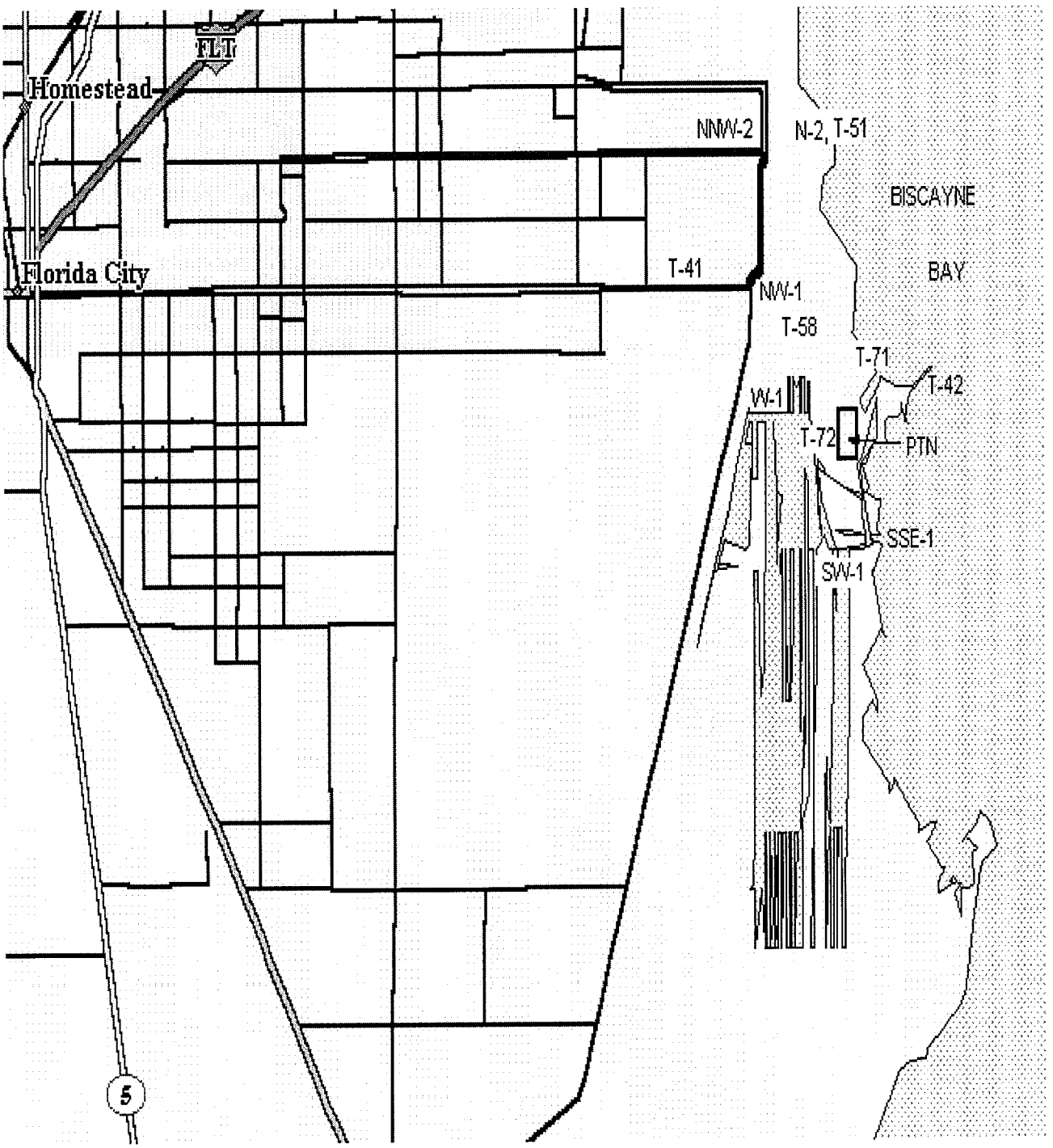
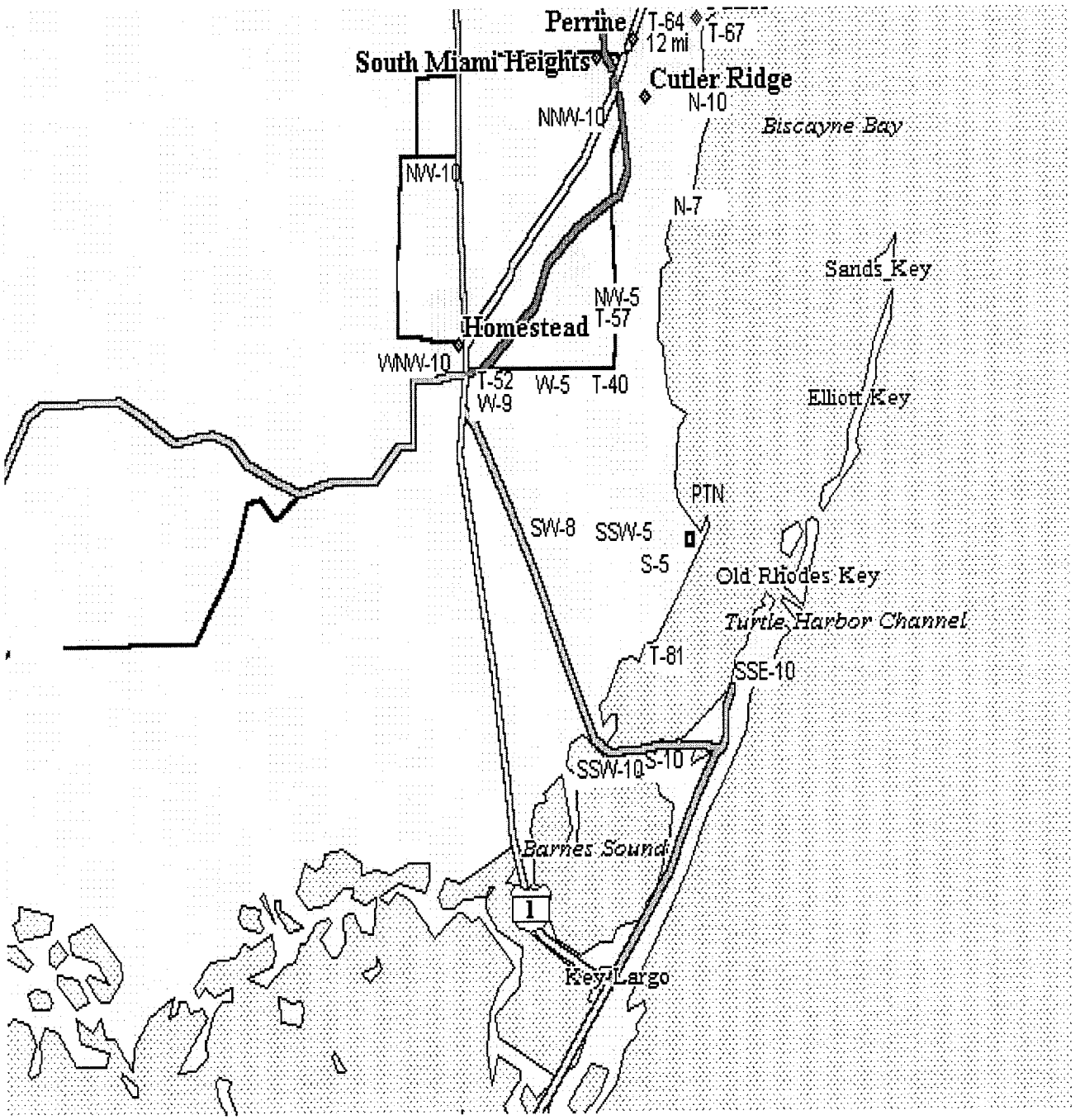
ATTACHMENT A

KEY TO SAMPLE LOCATIONS

NEAR SITE SAMPLING LOCATIONS



DISTANT REMP SAMPLING LOCATIONS



ATTACHMENT A

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

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

[a]The location name is the direction sector - approximate distance (miles)

ATTACHMENT A

PATHWAY: AIRBORNE
SAMPLES COLLECTED: RADIOIODINE AND PARTICULATES
SAMPLE COLLECTION FREQUENCY: WEEKLY

Location Name	Direction Sector	Approximate Distance (miles)	Description
T-51	NNW	2	Entrance Area to Biscayne National Park
T-57	NW	4	SW 107th Avenue at Mowry Canal
T-58	NW	1	Turkey Point Entrance Road
T-72	WSW	<1	Just before entrance to Land Utilization's access gate.
Control:			
T-64	NNE	22	Natoma Substation

ATTACHMENT A

PATHWAY: WATERBORNE
SAMPLES COLLECTED: SURFACE WATER (OCEAN)
SAMPLE COLLECTION FREQUENCY: MONTHLY

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

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

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

ATTACHMENT A

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

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

SAMPLES COLLECTED: BROAD LEAF VEGETATION
SAMPLE COLLECTION FREQUENCY: MONTHLY

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

2001
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

2001

First Quarter, 2001

Second Quarter, 2001

Third Quarter, 2001

Fourth Quarter, 2001

TURKEY POINT SITE

Offsite Dose Calculation Manual Sampling

First Quarter, 2001

Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	22	20
2. Airborne			
2.a. Air Iodines	Weekly	5	65
2.b. Air Particulates	Weekly	5	65
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			
Broadleaf Vegetation	Monthly	3	9
			Total: 175

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 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 - (μR/hour)

Sample Site	Deployment 05-Dec-00 Collection 21-Mar-01	Sample Site	Deployment 05-Dec-00 Collection 21-Mar-01
N-2	5.5 ± 0.2	WSW-8	4.9 ± 0.2
N-7	4.9 ± 0.2		
N-10	5.2 ± 0.2	SW-1	5.0 ± 0.2
		SW-8	(A)
NNW-2	4.6 ± 0.2		
NNW-10	5.3 ± 0.2	SSW-5	4.9 ± 0.2
		SSW-10	5.4 ± 0.2
NW-1	6.5 ± 0.2		
NW-5	4.4 ± 0.2	S-5	4.9 ± 0.2
NW-10	7.6 ± 0.3	S-10	5.8 ± 0.2
WNW-10	6.3 ± 0.2	SSE-1	4.8 ± 0.2
		SSE-10	5.9 ± 0.2
W-1	6.4 ± 0.2		
W-5	5.2 ± 0.2	NNE-22	6.1 ± 0.2
W-9	(A)		

(A) - The dosimeters for sites W-9 and SW-8 were missing when collection was attempted. New dosimeters were deployed.

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

Collection Date	T51	T57	T58	T64	T72
02-Jan-01	<0.01	<0.02	<0.02	<0.02	<0.01
11-Jan-01	<0.01	<0.01	<0.01	<0.01	<0.01
17-Jan-01	<0.01	<0.01	<0.01	<0.01	<0.01
25-Jan-01	<0.02	<0.02	<0.02	<0.02	<0.02
02-Feb-01	<0.03	<0.03	<0.03	<0.03	<0.03
06-Feb-01	<0.03	<0.02	<0.02	<0.02	<0.02
13-Feb-01	<0.02	<0.02	<0.02	<0.02	<0.02
19-Feb-01	<0.02	<0.02	<0.02	<0.02	<0.02
26-Feb-01	<0.03	<0.03	<0.03	<0.03	<0.02
07-Mar-01	<0.02	<0.02	<0.02	<0.02	<0.02
14-Mar-01	<0.03	<0.03	<0.03	<0.03	<0.03
21-Mar-01	<0.02	<0.02	<0.02	<0.02	<0.02
27-Mar-01	<0.03	<0.03	<0.03	<0.03	<0.03

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

Collection Date	Sample Site T51	T57	T58	T64	T72
02-Jan-01	0.015 ± 0.002	0.016 ± 0.002	0.012 ± 0.002	0.019 ± 0.002	0.014 ± 0.002
11-Jan-01	0.019 ± 0.002	0.017 ± 0.002	0.012 ± 0.002	0.021 ± 0.002	0.022 ± 0.002
17-Jan-01	0.012 ± 0.002	0.011 ± 0.002	0.008 ± 0.002	0.009 ± 0.002	0.011 ± 0.002
25-Jan-01	0.011 ± 0.002	0.015 ± 0.002	0.013 ± 0.002	0.017 ± 0.002	0.013 ± 0.002
02-Feb-01	0.014 ± 0.002	0.021 ± 0.002	0.015 ± 0.002	0.021 ± 0.002	0.016 ± 0.002
06-Feb-01	0.017 ± 0.003	0.018 ± 0.003	0.012 ± 0.003	0.018 ± 0.003	0.013 ± 0.003
13-Feb-01	0.010 ± 0.002	0.011 ± 0.002	0.013 ± 0.002	0.014 ± 0.002	0.015 ± 0.002
19-Feb-01	0.013 ± 0.002	0.016 ± 0.002	0.011 ± 0.002	0.015 ± 0.002	0.010 ± 0.002
26-Feb-01	0.014 ± 0.002	0.015 ± 0.002	0.010 ± 0.002	0.015 ± 0.002	0.014 ± 0.002
07-Mar-01	0.011 ± 0.002	0.012 ± 0.002	0.013 ± 0.002	0.010 ± 0.002	0.009 ± 0.002
14-Mar-01	0.018 ± 0.002	0.018 ± 0.002	0.023 ± 0.002	0.019 ± 0.002	0.021 ± 0.002
21-Mar-01	0.015 ± 0.002	0.011 ± 0.002	0.011 ± 0.002	0.012 ± 0.002	0.016 ± 0.002
27-Mar-01	0.015 ± 0.002	0.010 ± 0.003	0.014 ± 0.002	0.021 ± 0.003	0.012 ± 0.002
Mean:	0.014 ± 0.001	0.015 ± 0.001	0.013 ± 0.001	0.016 ± 0.001	0.014 ± 0.001

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

First Quarter, 2001

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T51	0.1435 ± 0.0095	<0.0156	<0.0006	<0.0006	0.0172 ± 0.0037
T57	0.1184 ± 0.0086	<0.0156	<0.0009	<0.0009	0.0211 ± 0.0027
T58	0.1285 ± 0.0102	<0.0195	<0.0008	<0.0009	0.0168 ± 0.0032
T64	0.1203 ± 0.0110	<0.0182	<0.0009	<0.0006	0.0149 ± 0.0029
T72	0.1233 ± 0.0103	<0.0175	<0.0010	<0.0008	0.0164 ± 0.0029

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

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)	Other
T42	29-Jan-01	<117	237 ± 30	<4	<4	<7	<4	<7	<6	<4	<3	<4	<9	
	14-Feb-01	<123	352 ± 30	<4	<3	<8	<4	<7	<6	<8	<3	<3	<6	Be-7: 55 ±12
	12-Mar-01	<122	341 ± 34	<4	<4	<9	<4	<9	<7	<8	<4	<5	<6	
T67	29-Jan-01	<117	327 ± 36	<4	<4	<8	<3	<8	<7	<4	<4	<4	<5	
	16-Feb-01	<123	295 ± 30	<3	<3	<6	<4	<8	<5	<10	<3	<4	<5	
	12-Mar-01	<122	142 ± 28	<4	<4	<9	<4	<8	<6	<8	<4	<5	<6	
T81	29-Jan-01	304 ± 43	315 ± 30	<3	<4	<7	<4	<7	<6	<5	<4	<4	<6	
	14-Feb-01	<123	330 ± 35	<3	<4	<7	<5	<8	<7	<11	<4	<4	<6	
	12-Mar-01	166 ± 23	326 ± 39	<3	<4	<8	<4	<8	<7	<9	<4	<4	<5	

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

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

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

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-238
T42	05-Feb-01	<122	278 ± 46	<11	<8	<9	<10	1258 ± 339	653 ± 31	<38	<610
T67	08-Feb-01	<70	305 ± 41	<8	<6	<9	<7	<404	127 ± 15	<37	<339
T81	05-Feb-01	<110	376 ± 52	<10	<9	<10	<9	739 ± 228	458 ± 27	<42	980 ± 113

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

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226
T67	08-Jan-01	1772 ± 205	<18	<18	<54	<20	<40	<21	<19	<379
T81	04-Jan-01	2117 ± 160	<18	<23	<54	<20	<44	<20	<18	1019 ± 142

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

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	16-Jan-01	2753 ± 215	<16	<21	<39	<26	<45	<21	<17	<389	<87
T81	20-Feb-01	3101 ± 222	<22	<19	<47	<27	<54	<24	<25	1387 ± 222	<129

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

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137	Pb-210	Ra-226
T40	29-Jan-01	1499 ± 85	5248 ± 189	<17	<14	82 ± 8	<1216	<323
	16-Feb-01	1249 ± 73	3355 ± 135	<19	<10	98 ± 8	2389 ± 372	<269
	13-Mar-01	1096 ± 89	2830 ± 153	<21	<11	63 ± 6	<1069	<299
T41	29-Jan-01	1974 ± 87	4248 ± 170	<16	<15	86 ± 10	<1123	<338
	16-Feb-01	1372 ± 99	5341 ± 208	<25	<19	30 ± 8	<1168	<363
	13-Mar-01	1138 ± 36	2265 ± 57	<10	<5	214 ± 5	<397	<120
T67	29-Jan-01	487 ± 59	2832 ± 132	<12	<10	<11	<1006	<249
	16-Feb-01	1504 ± 70	5021 ± 172	<18	<13	<11	1361 ± 330	<286
	13-Mar-01	1393 ± 87	5028 ± 192	<25	<15	<12	<1125	<365

TURKEY POINT SITE

Technical Specifications Sampling

Second Quarter, 2001

Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	22	22
2. Airborne			
2.a. Air Iodines	Weekly	5	65
2.b. Air Particulates	Weekly	5	65
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. Broadleaf Vegetation	Monthly	3	9
			Total: 170

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 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 - (μR/hour)

Sample Site	Deployment Collection 21-Mar-01 13-Jun-01
N-2	5.7 ± 0.2
N-7	5.1 ± 0.2
N-10	5.1 ± 0.2
NNW-2	4.7 ± 0.2
NNW-10	6.0 ± 0.2
NW-1	7.0 ± 0.3
NW-5	5.3 ± 0.2
NW-10	7.8 ± 0.3
WNW-10	6.8 ± 0.3
W-1	7.4 ± 0.3
W-5	5.5 ± 0.2

Sample Site	Deployment Collection 21-Mar-01 13-Jun-01
W-9	5.0 ± 0.2
WSW-8	5.1 ± 0.2
SW-1	5.3 ± 0.2
SW-8	5.3 ± 0.3
SSW-5	5.5 ± 0.2
SSW-10	5.3 ± 0.2
S-5	4.9 ± 0.2
S-10	5.9 ± 0.2
SSE-1	4.7 ± 0.2
SSE-10	6.1 ± 0.2
NNE-22	6.5 ± 0.3

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

Collection Date	T51	T57	T58	T64	T72
04-Apr-01	<0.01	<0.03	<0.01	<0.01	<0.01
10-Apr-01	<0.02	<0.02	<0.02	<0.02	<0.02
16-Apr-01	<0.03	<0.03	<0.06	<0.03	<0.03
24-Apr-01	<0.02	<0.02	<0.02	<0.02	<0.02
01-May-01	<0.04	<0.04	<0.04	<0.04	<0.04
09-May-01	<0.02	<0.02	<0.02	<0.02	<0.02
14-May-01	<0.05	<0.05	<0.05	<0.05	<0.05
24-May-01	<0.03	<0.03	<0.03	<0.03	<0.03
29-May-01	<0.03	<0.03	<0.03	<0.03	<0.03
05-Jun-01	<0.02	<0.02	<0.02	<0.02	<0.02
11-Jun-01	<0.04	<0.04	<0.04	<0.04	<0.04
19-Jun-01	<0.02	<0.02	<0.02	<0.02	<0.02
26-Jun-01	<0.03	<0.03	<0.03	<0.03	<0.03

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

Collection Date	Sample Site T51	T57	T58	T64	T72
04/04/01	0.015 ± 0.002	0.018 ± 0.004	0.018 ± 0.002	0.015 ± 0.002	0.014 ± 0.002
04/10/01	0.014 ± 0.002	0.014 ± 0.002	0.014 ± 0.002	0.018 ± 0.002	0.018 ± 0.002
04/16/01	0.011 ± 0.002	0.012 ± 0.002	0.012 ± 0.002	0.010 ± 0.002	0.010 ± 0.002
04/24/01	0.018 ± 0.002	0.016 ± 0.002	0.014 ± 0.002	0.015 ± 0.002	0.017 ± 0.002
05/01/01	0.014 ± 0.002	0.012 ± 0.002	0.014 ± 0.002	0.011 ± 0.002	0.013 ± 0.002
05/09/01	0.014 ± 0.002	0.013 ± 0.002	0.015 ± 0.002	0.015 ± 0.002	0.016 ± 0.002
05/14/01	0.015 ± 0.003	0.014 ± 0.003	0.011 ± 0.003	0.018 ± 0.003	0.012 ± 0.003
05/24/01	0.016 ± 0.002	0.016 ± 0.002	0.018 ± 0.002	0.017 ± 0.002	0.018 ± 0.002
05/29/01	0.010 ± 0.002	0.008 ± 0.002	0.006 ± 0.002	0.013 ± 0.003	0.009 ± 0.002
06/05/01	0.017 ± 0.002	0.011 ± 0.002	0.009 ± 0.002	0.011 ± 0.002	0.007 ± 0.002
06/11/01	0.009 ± 0.002	0.006 ± 0.002	0.007 ± 0.002	0.014 ± 0.002	0.014 ± 0.002
06/19/01	0.022 ± 0.002	0.019 ± 0.002	0.025 ± 0.002	0.018 ± 0.002	0.024 ± 0.002
06/26/01	0.009 ± 0.002	0.009 ± 0.002	0.014 ± 0.002	0.013 ± 0.002	0.016 ± 0.002
Mean:	0.014 ± 0.001	0.013 ± 0.001	0.014 ± 0.001	0.015 ± 0.001	0.014 ± 0.001

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

Second Quarter, 2001

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T51	0.1563 ± 0.0147	<0.0252	<0.0017	<0.0010	<0.0485
T57	0.1562 ± 0.0142	<0.0311	<0.0016	<0.0011	<0.0539
T58	0.1425 ± 0.0152	<0.0297	<0.0015	<0.0009	<0.0546
T64	0.1716 ± 0.0153	<0.0305	<0.0018	<0.0012	<0.0583
T72	0.1661 ± 0.0151	<0.0287	<0.0016	<0.0015	<0.0516

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

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T42	17-Apr-01	<124	321 ± 41	<6	<5	<8	<5	<13	<8	<11	<6	<4	<8
	10-May-01	<121	279 ± 38	<6	<6	<13	<5	<12	<9	<9	<7	<6	<10
	07-Jun-01	<120	413 ± 49	<5	<6	<12	<7	<16	<10	<11	<9	<6	<10
T67	23-Apr-01	<124	106 ± 36	<6	<6	<12	<6	<9	<9	<7	<6	<6	<9
	11-May-01	<121	140 ± 29	<5	<5	<13	<6	<10	<9	<12	<6	<6	<9
	08-Jun-01	<120	294 ± 44	<4	<5	<14	<5	<10	<11	<13	<7	<7	<13
T81	17-Apr-01	<124	337 ± 55	<5	<5	<11	<7	<12	<10	<11	<7	<6	<9
	10-May-01	<121	250 ± 46	<4	<6	<12	<6	<13	<11	<9	<6	<6	<6
	08-Jun-01	610 ± 50	342 ± 46	<6	<7	<12	<6	<12	<11	<12	<7	<5	<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. SHORELINE SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	U-238

These samples were previously collected.

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

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228

These samples were previously collected.

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

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228

These samples were previously collected.

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

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137	Pb-210	Ra-226
T40	23-Apr-01	1116 ± 117	2476 ± 200	<26	<18	64 ± 11	<2609	<479
	11-May-01	1102 ± 102	3813 ± 203	<29	<17	73 ± 11	<2239	<374
	08-Jun-01	2101 ± 125	2723 ± 195	<30	<17	49 ± 10	<2422	<463
T41	23-Apr-01	705 ± 91	4292 ± 222	<23	<24	235 ± 15	<2350	<423
	11-May-01	1615 ± 111	2635 ± 173	<29	<17	318 ± 16	<2358	<421
	08-Jun-01	1753 ± 49	6287 ± 122	<13	<9	51 ± 5	<925	<167
T67	23-Apr-01	717 ± 88	3017 ± 238	<22	<22	26 ± 8	<2215	<409
	11-May-01	2222 ± 131	2836 ± 189	<29	<19	42 ± 9	<2336	<429
	08-Jun-01	1469 ± 117	5542 ± 238	<34	<15	<16	<2171	<367

TURKEY POINT SITE

Offsite Dose Calculation Manual Specifications Sampling

Third Quarter, 2001

Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	22	21
2. Airborne			
2.a. Air Iodines	Weekly	5	65
2.b. Air Particulates	Weekly	5	65
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	0
4.a.2. Fish	Semiannually	2	1
4.b. Food Products			
Broadleaf Vegetation	Monthly	3	9
			Total: 173

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 and with greater than a 50% error term are reported 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 - (μR/hour)

Sample Site	Deployment 13-Jun-01 Collection 19-Sep-01	Sample Site	Deployment 13-Jun-01 Collection 19-Sep-01
N-2	6.0 ± 0.2	W-9	5.9 ± 0.2 (A)
N-7	5.1 ± 0.2	WSW-8	5.3 ± 0.2
N-10	5.5 ± 0.2	SW-1	5.3 ± 0.2
NNW-2	4.8 ± 0.2	SW-8	(B)
NNW-10	5.7 ± 0.2	SSW-5	5.3 ± 0.2
NW-1	6.9 ± 0.3	SSW-10	5.4 ± 0.2
NW-5	4.9 ± 0.2	S-5	5.1 ± 0.2 (A)
NW-10	8.3 ± 0.3	S-10	6.1 ± 0.2
WNW-10	6.6 ± 0.2	SSE-1	5.0 ± 0.2
W-1	7.1 ± 0.3	SSE-10	6.2 ± 0.2
W-5	5.6 ± 0.2	NNE-22	6.6 ± 0.2

(A) - The TLDs at sites W-9 and S-5 were found on the ground upon collection.
(B) – The TLD at site SW-8 was missing when collection was attempted. A new TLD was deployed.

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

	Sample Site				
Collection Date	T51	T57	T58	T64	T72
03-Jul-01	<0.04	<0.04	<0.04	<0.04	<0.04
13-Jul-01	<0.02	<0.02	<0.02	<0.02	<0.02
18-Jul-01	<0.03	<0.03	<0.03	<0.03	<0.03
25-Jul-01	<0.02	<0.02	<0.02	<0.02	<0.02
01-Aug-01	<0.03	<0.03	<0.03	<0.03	<0.03
07-Aug-01	<0.02	<0.02	<0.02	<0.02	<0.02
16-Aug-01	<0.02	<0.02	<0.02	<0.02	<0.02
23-Aug-01	<0.03	<0.03	<0.03	<0.03	<0.03
31-Aug-01	<0.02	<0.02	<0.03	<0.03	<0.03
05-Sep-01	<0.02	<0.02	<0.02	<0.02	<0.02
10-Sep-01	<0.03	<0.03	<0.03	<0.03	<0.03
19-Sep-01	<0.02	<0.02	<0.02	<0.02	<0.02
26-Sep-01	<0.02	<0.02	<0.02	<0.02	<0.02

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

Collection Date	Sample Site T51	T57	T58	T64	T72
03-Jul-01	0.009 ± 0.002	0.007 ± 0.002	0.004 ± 0.002	0.006 ± 0.002	0.011 ± 0.002
13-Jul-01	0.010 ± 0.001	0.009 ± 0.001	0.014 ± 0.002	0.012 ± 0.002	0.012 ± 0.002
18-Jul-01	0.019 ± 0.003	0.019 ± 0.003	0.020 ± 0.003	0.022 ± 0.003	0.021 ± 0.003
25-Jul-01	0.008 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.011 ± 0.002
01-Aug-01	0.013 ± 0.002	0.013 ± 0.002	0.018 ± 0.002	0.015 ± 0.002	0.011 ± 0.002
07-Aug-01	0.011 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.009 ± 0.002
16-Aug-01	0.011 ± 0.002	0.009 ± 0.001	0.014 ± 0.002	0.011 ± 0.002	0.012 ± 0.002
23-Aug-01	0.010 ± 0.002	0.007 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.009 ± 0.002
31-Aug-01	0.016 ± 0.002	0.012 ± 0.002	0.013 ± 0.002	0.013 ± 0.002	0.011 ± 0.002
05-Sep-01	0.007 ± 0.002	0.012 ± 0.003	0.010 ± 0.003	0.010 ± 0.002	0.008 ± 0.002
10-Sep-01	0.008 ± 0.002	0.008 ± 0.002	0.007 ± 0.002	0.007 ± 0.002	0.008 ± 0.002
19-Sep-01	0.007 ± 0.001	0.009 ± 0.002	0.008 ± 0.002	0.008 ± 0.001	0.009 ± 0.002
26-Sep-01	0.017 ± 0.002	0.018 ± 0.002	0.015 ± 0.002	0.012 ± 0.002	0.014 ± 0.002
Mean:	0.011 ± 0.001	0.011 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.011 ± 0.001

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

Third Quarter, 2001

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T51	0.1098 ± 0.0116	<0.0258	<0.0015	<0.0013	0.0183 ± 0.0044
T57	0.1476 ± 0.0117	<0.0284	<0.0012	<0.0016	0.0287 ± 0.0048
T58	0.1354 ± 0.0120	<0.0142	<0.0014	<0.0010	0.0203 ± 0.0050
T64	0.1152 ± 0.0112	<0.0264	<0.0016	<0.0012	0.0188 ± 0.0040
T72	0.1360 ± 0.0145	<0.0203	<0.0016	<0.0009	0.0238 ± 0.0040

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

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T42	18-Jul-01	<118	206 ± 47	<5	<6	<13	<5	<16	<9	<10	<7	<5	<10
	09-Aug-01	<122	193 ± 23	<2	<2	<5	<3	<5	<4	<4	<3	<2	<4
	17-Sep-01	<121	246 ± 33	<4	<4	<7	<4	<9	<7	<6	<5	<4	<6
T67	19-Jul-01	<118	231 ± 43	<6	<6	<14	<7	<13	<10	<8	<5	<6	<9
	10-Aug-01	<122	190 ± 29	<4	<3	<9	<4	<9	<7	<6	<5	<4	<5
	17-Sep-01	<121	245 ± 34	<4	<4	<9	<3	<7	<7	<7	<5	<3	<5
T81	18-Jul-01	269 ± 25	429 ± 46	<5	<5	<9	<5	<12	<11	<10	<7	<7	<7
	07-Aug-01	<122	230 ± 40	<4	<5	<12	<4	<12	<8	<10	<5	<5	<7
	17-Sep-01	<121	273 ± 30	<3	<4	<9	<5	<11	<8	<7	<4	<4	<5

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

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

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

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-238
T42	06-Aug-01	371 ± 51	192 ± 38	<7	<8	<8	<8	<2845	445 ± 26	<31	<1008
T67	07-Aug-01	106 ± 23	167 ± 28	<5	<5	<5	<5	<1443	<27	34 ± 6	<559
T81	06-Aug-01	<70	147 ± 41	<7	<7	<8	<6	<2173	305 ± 20	<35	<821

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

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

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

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	This sample has not yet been collected.										
T81	20-Sep-01	3412 ± 255	<25	<25	<59	<32	<53	<19	<28	<449	<111

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

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137	Pb-210	Ra-226
T40	19-Jul-01	3186 ± 178	2349 ± 203	<37	<21	71 ± 16	<2706	<549
	10-Aug-01	2108 ± 95	3754 ± 150	<17	<10	106 ± 7	<854	<279
	17-Sep-01	2496 ± 111	2233 ± 147	<20	<15	91 ± 13	<1090	<397
T41	19-Jul-01	1858 ± 140	3203 ± 193	<34	<16	370 ± 18	<2372	<442
	10-Aug-01	2737 ± 126	3369 ± 179	<19	<16	49 ± 11	<1615	<328
	17-Sep-01	2258 ± 98	3238 ± 156	<18	<14	161 ± 10	<957	<334
T67	19-Jul-01	2334 ± 129	2814 ± 191	<31	<20	36 ± 10	<2379	<446
	10-Aug-01	2082 ± 119	5525 ± 257	<24	<22	<18	<2038	<421
	17-Sep-01	753 ± 70	2754 ± 122	<12	<10	<8	<641	<245

TURKEY POINT SITE

Offsite Dose Calculation Manual Specifications Sampling

Fourth Quarter, 2001

Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	22	22
2. Airborne			
2.a. Air Iodines	Weekly	5	65
2.b. Air Particulates	Weekly	5	65
3. Waterborne			
3.a. Surface Water	Monthly	3	9
3.b. Shoreline Sediment	Semiannually	0	0
4. Ingestion			
4.a. Fish and Invertebrates			
4.a.1. Crustacea	Semiannually	2	2
4.a.2. Fish	Semiannually	1	1
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 173

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 and with greater than a 50% error term are reported 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 - (μR/hour)

Sample Site	Deployment 19-Sep-01 Collection 05-Dec-01	Sample Site	Deployment 19-Sep-01 Collection 05-Dec-01
N-2	5.5 ± 0.2	WSW-8	5.2 ± 0.2
N-7	5.1 ± 0.2		
N-10	5.1 ± 0.2	SW-1	5.4 ± 0.2
		SW-8	6.3 ± 0.2
NNW-2	4.7 ± 0.2		
NNW-10	5.6 ± 0.2	SSW-5	5.4 ± 0.2
		SSW-10	5.5 ± 0.2
NW-1	6.9 ± 0.3		
NW-5	4.8 ± 0.2	S-5	4.8 ± 0.2
NW-10	8.0 ± 0.3	S-10	5.6 ± 0.2
WNW-10	6.8 ± 0.3	SSE-1	4.6 ± 0.2
		SSE-10	6.0 ± 0.2
W-1	7.1 ± 0.3		
W-5	5.7 ± 0.2	NNE-22	6.5 ± 0.2
W-9	4.8 ± 0.2		

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

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
03-Oct-01	<0.01	<0.02	<0.02	<0.01	<0.01
08-Oct-01	<0.05	<0.05	<0.05	<0.05	<0.05
15-Oct-01	<0.02	<0.02	<0.02	<0.02	<0.02
24-Oct-01	<0.01	<0.01	<0.01	<0.01	<0.01
01-Nov-01	<0.02	<0.02	<0.02	<0.02	<0.02
07-Nov-01	<0.04	<0.04	<0.04	<0.04	<0.04
13-Nov-01	<0.03	<0.03	<0.03	<0.03	<0.03
20-Nov-01	<0.03	<0.03	<0.03	<0.03	<0.03
26-Nov-01	<0.03	<0.03	<0.03	<0.03	<0.03
06-Dec-01	<0.01	<0.01	<0.01	<0.01	<0.01
13-Dec-01	<0.02	<0.02	<0.02	<0.02	<0.02
21-Dec-01	<0.03	<0.03	<0.03	<0.03	<0.03
28-Dec-01	<0.04	<0.04	<0.04	<0.04	<0.04

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

Collection Date	Sample Site T51	T57	T58	T64	T72
03-Oct-01	0.009 ± 0.002	0.007 ± 0.002	0.010 ± 0.002	0.009 ± 0.002	0.009 ± 0.002
08-Oct-01	0.010 ± 0.002	0.012 ± 0.003	0.013 ± 0.003	0.007 ± 0.002	0.013 ± 0.003
15-Oct-01	0.011 ± 0.002	0.008 ± 0.002	0.010 ± 0.002	0.012 ± 0.002	0.012 ± 0.002
24-Oct-01	0.009 ± 0.002	0.010 ± 0.002	0.006 ± 0.001	0.008 ± 0.001	0.006 ± 0.001
01-Nov-01	0.010 ± 0.002	0.016 ± 0.002	0.012 ± 0.002	0.012 ± 0.002	0.014 ± 0.002
07-Nov-01	0.012 ± 0.002	0.017 ± 0.003	0.016 ± 0.002	0.017 ± 0.003	0.012 ± 0.002
13-Nov-01	0.020 ± 0.003	0.029 ± 0.003	0.027 ± 0.003	0.024 ± 0.003	0.019 ± 0.003
20-Nov-01	0.014 ± 0.002	0.014 ± 0.002	0.011 ± 0.002	0.015 ± 0.002	0.010 ± 0.002
26-Nov-01	0.018 ± 0.003	0.022 ± 0.003	0.018 ± 0.003	0.021 ± 0.003	0.022 ± 0.003
06-Dec-01	0.011 ± 0.001	0.011 ± 0.002	0.013 ± 0.002	0.009 ± 0.001	0.009 ± 0.001
13-Dec-01	<0.007	0.006 ± 0.002	<0.008	<0.008	0.006 ± 0.002
21-Dec-01	0.011 ± 0.002	0.012 ± 0.002	0.011 ± 0.002	0.016 ± 0.002	0.013 ± 0.002
28-Dec-01	0.019 ± 0.002	0.019 ± 0.002	0.019 ± 0.002	0.023 ± 0.002	0.019 ± 0.002
Mean:	<0.012	0.014 ± 0.001	<0.013	<0.014	0.013 ± 0.001

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

Fourth Quarter, 2001

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T51	0.1524 ± 0.0138	<0.0285	<0.0020	<0.0015	<0.0503
T57	0.1446 ± 0.0138	<0.0321	<0.0020	<0.0013	<0.0496
T58	0.1304 ± 0.0146	<0.0281	<0.0012	<0.0010	<0.0402
T64	0.1509 ± 0.0157	<0.0215	<0.0014	<0.0013	<0.0458
T72	0.1313 ± 0.0139	<0.0293	<0.0018	<0.0013	<0.0467

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

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T42	05-Oct-01	<123	104 ± 26	<4	<4	<9	<5	<7	<7	<7	<5	<4	<5
	14-Nov-01	<121	209 ± 29	<4	<4	<10	<6	<9	<8	<12	<5	<4	<10
	03-Dec-01	<121	164 ± 26	<4	<3	<8	<4	<10	<7	<6	<5	<5	<4
T67	05-Oct-01	<123	226 ± 30	<4	<3	<8	<4	<7	<7	<7	<4	<4	<5
	14-Nov-01	<121	109 ± 27	<4	<5	<11	<5	<8	<8	<11	<4	<5	<4
	03-Dec-01	<121	136 ± 23	<4	<4	<8	<4	<7	<6	<6	<4	<5	<7
T81	05-Oct-01	<123	261 ± 30	<4	<3	<10	<5	<7	<7	<10	<5	<4	<3
	14-Nov-01	<121	242 ± 33	<4	<4	<9	<3	<10	<7	<15	<4	<4	<10
	03-Dec-01	175 ± 24	249 ± 35	<4	<5	<5	<4	<9	<8	<8	<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)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	U-238

These samples were previously collected.

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

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	01-Nov-01	1808 ± 182	<23	<26	<64	<26	<56	<31	<25	<472	<104
T81	14-Nov-01	1005 ± 170	<24	<25	<59	<28	<51	<26	<29	<561	<109

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

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	10-Oct-01	2480 ± 222	<21	<36	<114	<28	<55	<28	<27	<366	<69
T81	This sample was previously collected										

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

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137	Pb-210	Ra-226
T40	05-Oct-01	1594 ± 93	2370 ± 141	<21	<13	74 ± 9	<861	<326
	14-Nov-01	1649 ± 108	2893 ± 153	<26	<13	39 ± 6	<818	<292
	03-Dec-01	1750 ± 86	2599 ± 132	<13	<10	45 ± 7	<743	<282
T41	05-Oct-01	1917 ± 93	2895 ± 145	<22	<14	324 ± 15	<995	<334
	14-Nov-01	1637 ± 82	2989 ± 140	<37	<9	74 ± 6	<895	<279
	03-Dec-01	1660 ± 87	3157 ± 140	<14	<10	56 ± 7	<802	<284
T67	05-Oct-01	1439 ± 93	4509 ± 171	<22	<14	<12	<995	<293
	14-Nov-01	2783 ± 117	4774 ± 187	<33	<14	<13	<952	<328
	03-Dec-01	2229 ± 114	5058 ± 194	<17	<13	<15	1021 ± 396	<351

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TURKEY POINT PLANT – UNITS 3 & 4

ATTACHMENT C

RESULTS FROM THE INTERLABORATORY

COMPARISON PROGRAM 2001

DEPARTMENT OF ENERGY

QAP 54, June 2001

AND

QAP 55, December 2001

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DOE-QAP 54 RESULTS

Radionuclide	Reported Value	Reported Error	EML Value	EML Error	Reported / EML	Evaluation
Matrix: Al Air Filter Bq/filter						
AM241	0.560	0.0100	0.486	0.016	1.152	A
CO60	20.490	0.320	19.440	.0500	1.054	A
CS134	2.510	0.060	2.830	0.160	0.887	A
CS137	9.950	0.100	8.760	0.340	1.136	A
GROSS BETA	3.218	0.083	2.580	0.150	1.247	A
MN54	7.300	0.090	6.520	0.280	1.120	A
RU106	44.400	0.690	49.540	3.530	0.896	A
Matrix: SO Soil Bq/kg						
AM241	15.140	0.590	14.800	0.510	1.023	A
CS137	1915.780	16.970	1740.000	90.000	1.101	A
K40	489.680	6.980	468.000	25.000	1.046	A
Matrix: VE Vegetation Bq/kg						
AM241	5.740	0.520	6.170	0.320	0.930	A
CO60	29.320	0.700	30.400	1.200	0.964	A
CS137	846.200	3.210	842.000	42.000	1.005	A
K40	631.460	2.470	603.000	32.000	1.047	A
Matrix: WA Water Bq/L						
AM241	1.860	0.190	1.670	0.080	1.114	A
CO60	101.130	0.300	98.200	3.600	1.030	A
CS137	78.270	0.240	73.000	3.700	1.072	A
H3	91.580	3.040	79.300	2.000	1.155	A

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

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DOE-QAP 55 RESULTS

Radionuclide	Reported Value	Reported Error	EML Value	EML Error	Reported / EML	Evaluation
Matrix: AI Air Filter Bq/filter						
AM241	0.150	0.030	0.088	0.009	1.705	W
CO60	20.930	0.100	17.500	0.470	1.196	W
CS134	15.050	.0130	12.950	0.362	1.162	W
CS137	23.480	0.150	17.100	0.580	1.373	N
GROSS BETA	11.820	0.090	12.770	1.277	0.926	A
MN54	109.500	0.580	81.150	4.760	1.349	W
Matrix: SO Soil Bq/kg						
AM241	6.240	1.480	4.432	0.312	1.408	A
CS137	676.450	2.080	612.330	30.620	1.105	A
K40	669.010	4.500	623.330	33.040	1.073	A
Matrix: VE Vegetation Bq/kg						
AM241	8.660	1.450	6.915	0.419	1.252	A
CO60	33.930	0.590	35.300	1.436	0.961	A
CS137	1027.600	5.550	10300.000	51.800	0.998	A
K40	900.600	16.350	898.670	48.230	1.002	A
Matrix: WA Water Bq/L						
CO60	211.120	0.720	209.000	7.590	1.010	A
CS137	48.560	0.580	45.133	2.467	1.076	A
H3	240.230	4.710	207.000	2.690	1.161	A

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