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**MAY 8 2003**

L-2003-112  
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  
2002 Annual Radiological  
Environmental Operating Report

Enclosed is the 2002 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,

Terry G. Jones  
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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**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: Peter G. B. [Signature]

Reviewed by: [Signature]

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TURKEY POINT PLANT – UNITS 3 & 4

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**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, 2002 to December 31, 2002.

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

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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.

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

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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.

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3. Waterborne, Surface Water:

The results of radioactivity measurements in surface water samples are consistent with past measurements. Tritium was reported as present in 3 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 11% 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 11% 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.

Note that the bearing changed for virtually all locations, the range changed slightly for some. The locations have not changed, just their range and bearing relative to the plant. This is the result of using a GPS, polar north as datum, to refine the locations determined from maps & use of a compass (magnetic north).

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.



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8. Interlaboratory Comparison Program

For those nuclides associated with nuclear power plant operation and using analytical methods used in the REMP, the results are listed in Attachment C.

The Air Filter matrix results for QAP-56 included "Warning" and "Not Acceptable"; laboratory results specifically for Co-60 and Mn-54 were high, above the limits. Both Cs-137 and Gross Beta analysis for the same specimen were Acceptable. The laboratory technician performing the analysis entered an incorrect 'sample collection date'; causing an overcompensation for radioactive decay. Upon discovery of the problem and cause, the results were recalculated. The corrected results are within the Acceptable range.

The Vegetation matrix results for QAP-56 were all "Not Acceptable"; the laboratory results were low by an order of magnitude. The laboratory technician performing the analysis entered a 'typical sample mass' rather than the actual sample mass which happened to be one-tenth of a typical sample mass; causing an underestimation of activity concentration. Upon discovery of the problem and cause, the results were recalculated. The corrected results are within the Acceptable range.

The laboratory has enhanced the Laboratory Instruction to include additional details concerning the review of the data used for calculating the results.

Data for AC228, AM241, BI212, BI214, Bq U, PB212, 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.

## ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251Location of Facility Miami-Dade, Florida, Reporting Period January 1 - December 31, 2002  
(County, State)

PATHWAY: DIRECT RADIATION

SAMPLES COLLECTED: TLD

UNITS: micro-R/hr

Type and Total Number of Analyses Performed	Lower Limit of Detection <sup>a</sup> (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) <sup>b</sup> Range
			Name <sup>c</sup>	Mean (f) <sup>b</sup>	
			Distance & Direction	Range	
Exposure Rate, 87 <sup>d</sup>	---	5.5 (83/83) 4.1 - 8.2	NW-10 10 mi., NW	7.8 (4/4) 7.2 - 8.2	6.1 (4/4) 5.9 - 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, 2002  
 (County, State)

PATHWAY: AIRBORNE

SAMPLES COLLECTED: RADIOIODINE AND PARTICULATES

UNITS: pCi/m<sup>3</sup>

Type and Total Number of Analyses Performed	Lower Limit of Detection <sup>a</sup> (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) <sup>b</sup> Range
			Name <sup>c</sup>	Mean (f) <sup>b</sup>	
			Distance & Direction	Range	
<sup>131</sup> I, 265	0.024	<MDA	---	---	<MDA
Gross Beta, 265	0.0025	0.014 (210/211) 0.004 - 0.027	T-57 4 mi., NW	0.015 (52/52) 0.007 - 0.026	0.015 (53/53) 0.007 - 0.028
Composite Gamma Isotopic, 20					
<sup>7</sup> Be	0.0052	0.1334 (16/16) 0.0963 - 0.1803	T-72 <1 mi., WSW	0.1407 (4/4) 0.1147 - 0.1803	0.1415 (4/4) 0.1185 - 0.1639
<sup>134</sup> Cs	0.00069	<MDA	---	---	<MDA
<sup>137</sup> Cs	0.00066	<MDA	---	---	<MDA
<sup>210</sup> Pb	---	0.0192 (7/16) 0.0091 - 0.0300	T-72 <1 mi., WSW	0.0211 (2/4) 0.0122 - 0.0299	0.0141 (2/4) 0.0120 - 0.0162

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 & 50-251Location of Facility Miami-Dade, Florida, Reporting Period January 1 - December 31, 2002  
(County, State)

PATHWAY: WATERBORNE

SAMPLES COLLECTED: SURFACE WATER

UNITS: pCi/L

Type and Total Number of Analyses Performed	Lower Limit of Detection <sup>a</sup> (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) <sup>b</sup> Range
			Name <sup>c</sup> Distance & Direction	Mean (f) <sup>b</sup> Range	
Tritium, 36	230	227 (3/24) 160 - 310	T-81 6 mi., S	227 (3/12) 160 - 310	<MDA
Gamma Isotopic, 36					
<sup>40</sup> K	60	294 (24/24) 175 - 384	T-81 6 mi., S	308 (12/12) 205 - 384	216 (12/12) 64 - 381
<sup>54</sup> Mn	4	<MDA	---	---	<MDA
<sup>59</sup> Fe	8	<MDA	---	---	<MDA
<sup>58</sup> Co	4	<MDA	---	---	<MDA
<sup>60</sup> Co	4	<MDA	---	---	<MDA
<sup>65</sup> Zn	8	<MDA	---	---	<MDA
<sup>95</sup> Zr-Nb	7	<MDA	---	---	<MDA
<sup>131</sup> I	5	<MDA	---	---	<MDA
<sup>134</sup> Cs	5	<MDA	---	---	<MDA
<sup>137</sup> Cs	5	<MDA	---	---	<MDA
<sup>140</sup> Ba-La	11	<MDA	---	---	<MDA

Number of Non-routine Reported Measurements = 0

## ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

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PATHWAY: WATERBORNE

SAMPLES COLLECTED: SHORELINE SEDIMENT

UNITS: pCi/kg, DRY

Type and Total Number of Analyses Performed	Lower Limit of Detection <sup>a</sup> (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) <sup>b</sup> Range
			Name <sup>c</sup>	Mean (f) <sup>b</sup>	
			Distance & Direction	Range	
Gamma Isotopic, 6					
<sup>7</sup> Be	100	417 (4/4) 206 - 621	T-81 6 mi., S	546 (2/2) 470 - 621	< MDA
<sup>40</sup> K	140	358 (4/4) 244 - 517	T-81 6 mi., S	450 (2/2) 383 - 517	126 (2/2) 122 - 130
<sup>210</sup> Pb	---	1003 (1/4)	T-81 6 mi., S	1003 (1/2)	<MDA
<sup>226</sup> Ra	49	677 (4/4) 450 - 956	T-42 <1 mi., ENE	720 (2/2) 85 - 956	76 (2/2) 60 - 93
<sup>232</sup> Th	---	116 (1/2)	T-81 6 mi., S	116 (1/2)	< MDA
<sup>235</sup> U		46 (2/2) 34 - 57	T-81 6 mi., S	57 (1/2)	< MDA
<sup>238</sup> U	---	593 (3/4) 523 - 634	T-81 6 mi., S	628 (2/2) 621 - 634	200 (1/2)
<sup>58</sup> Co	9	<MDA	---	---	<MDA
<sup>60</sup> Co	12	<MDA	---	---	<MDA
<sup>134</sup> Cs	14	<MDA	---	---	<MDA
<sup>137</sup> 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, 2002  
 (County, State)

PATHWAY: INGESTION

SAMPLES COLLECTED: CRUSTACEA

UNITS: pCi/kg, WET

Type and Total Number of Analyses Performed	Lower Limit of Detection <sup>a</sup> (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) <sup>b</sup> Range
			Name <sup>c</sup>	Mean (f) <sup>b</sup>	
			Distance & Direction	Range	
Gamma Isotopic, 4					
<sup>40</sup> K	130	1854 (2/2) 1707 - 2001	T-81 6 mi., S	1854 (2/2) 1707 - 2001	1822 (2/2) 1803 - 1840
<sup>226</sup> Ra	20	816 (2/2) 714 - 918	T-81 6 mi., S	816 (2/2) 714 - 918	<MDA
<sup>228</sup> Ra	---	<MDA	---	---	<MDA
<sup>54</sup> Mn	9	<MDA	---	---	<MDA
<sup>59</sup> Fe	16	<MDA	---	---	<MDA
<sup>58</sup> Co	9	<MDA	---	---	<MDA
<sup>60</sup> Co	19	<MDA	---	---	<MDA
<sup>65</sup> Zn	17	<MDA	---	---	<MDA
<sup>134</sup> Cs	9	<MDA	---	---	<MDA
<sup>137</sup> Cs	9	<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 & 50-251Location of Facility Miami-Dade, Florida, Reporting Period January 1 - December 31, 2002  
(County, State)

PATHWAY: INGESTION

SAMPLES COLLECTED: FISH

UNITS: pCi/kg, WET

Type and Total Number of Analyses Performed	Lower Limit of Detection <sup>a</sup> (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) <sup>b</sup> Range
			Name <sup>c</sup>	Mean (f) <sup>b</sup>	
			Distance & Direction	Range	
Gamma Isotopic, 4					
<sup>7</sup> Be	---	<MDA	---	---	<MDA
<sup>40</sup> K	130	2736 (2/2) 2263 - 3208	T-81 6 mi., S	2736 (2/2) 2263 - 3208	3608 (2/2) 2716 - 3421
<sup>54</sup> Mn	9	<MDA	---	---	<MDA
<sup>59</sup> Fe	16	<MDA	---	---	<MDA
<sup>58</sup> Co	9	<MDA	---	---	<MDA
<sup>60</sup> Co	10	<MDA	---	---	<MDA
<sup>65</sup> Zn	17	<MDA	---	---	<MDA
<sup>134</sup> Cs	9	<MDA	---	---	<MDA
<sup>137</sup> Cs	9	<MDA	---	---	<MDA
<sup>226</sup> Ra	20	<MDA)	---	---	<MDA

Number of Non-routine Reported Measurements = 0

## ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

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(County, State)

PATHWAY: INGESTION

SAMPLES COLLECTED: BROAD LEAF VEGETATION

UNITS: pCi/kg, WET

Type and Total Number of Analyses Performed	Lower Limit of Detection <sup>a</sup> (LLD)	All Indicator Locations Mean (f)Range	Location with Highest Annual Mean		Control Locations Mean (f) <sup>b</sup> Range
			Name <sup>c</sup>	Mean (f) <sup>b</sup>	
Gamma Isotopic, 36					
<sup>7</sup> Be	71	1498 (24/24) 596 - 3233	T-40 3 mi., W	1572 (12/12) 596 - 3233	1306 (12/12) 490 - 1851
<sup>40</sup> K	100	722 (24/24) 1745 - 7035	T-41 2 mi., W/NW	4531 (12/12) 2669 - 7035	4179 (12/12) 2291 - 5922
<sup>58</sup> Co	9	<MDA	---	---	<MDA
<sup>60</sup> Co	10	<MDA	---	---	<MDA
<sup>131</sup> I	9	<MDA	---	---	<MDA
<sup>134</sup> Cs	8	<MDA	---	---	<MDA
<sup>137</sup> Cs	8	78 (23/24) 22 - 208	T-41 2 mi., W/NW	78 (11/12) 22 - 208	46 (1/12)
<sup>210</sup> Pb	---	579 (3/24) 296 - 749	T-40 3 mi., W	683 (1/12)	545 (1/12)
<sup>226</sup> Ra	---	200 (1/24)	T-40 3 mi., W	200 (1/12)	< 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 & 50-251Location of Facility Miami-Dade, Florida, Reporting Period January 1 - December 31, 2002  
(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

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DEVIATIONS / MISSING DATA

- |    |                         |  |
|----|-------------------------|--|
| A) | Pathway:                | Airborne, Radioiodines & Particulates  |
|    | Location:               | T-57 , 4 miles NorthWest   |
|    | Dates:                  | 02/05/03 to 02/14/03   |
|    | Deviation:              | Failure to provide continuous monitoring.  |
|    | Description of Problem: | Vacuum hose found disconnected from air sampling system; unknown cause.                                      |
|    | Corrective Action:      | Reconnected hose, ensured good fit ; checked connections at other air sampling locations.                    |
|    |                         |  |
| B) | Pathway:                | Airborne, Radioiodines & Particulates  |
|    | Location:               | T-51, 2 miles, NorthNorthWest  |
|    | Dates:                  | 05/06/03 to 05/13/03   |
|    | Deviation:              | Failure to provide continuous monitoring.  |
|    | Description of Problem: | Partial sample collected; sampling station damaged by gunfire  |
|    | Corrective Action:      | Repaired sampling station 'hut'; replaced sampling station equipment, ensured equipment operating correctly. |
|    |                         |  |
| C) | Pathway:                | Airborne, Radioiodines & Particulates  |
|    | Location:               | T-72, < 1 mile WestSouthWest   |
|    | Dates:                  | 06/03/03 to 06/12/03   |
|    | Deviation:              | Failure to provide continuous monitoring.  |
|    | Description of Problem: | Partial sample collected; suspect power interruptions during sampling period.                                |
|    | Corrective Action:      | Ensured equipment operating correctly.   |

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TABLE 1A

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DEVIATIONS / MISSING DATA

D)	Pathway:	Airborne, Radioiodines & Particulates
	Location:	T-72, < 1 mile WestSouthWest
	Dates:	08/28/03 to 09/12/03 , two sampling periods
	Deviation:	Failure to provide continuous monitoring.
	Description of Problem:	Power was unavailable during the end of the first sampling period and beginning of second sampling period; cause was construction activities and temporary shutdown of power.
	Corrective Action:	Ensured equipment operating correctly.
E)	Pathway:	Direct Exposure
	Location:	WSW-8 , 8 miles WestSouthWest
	Dates:	Fourth calendar quarter
	Deviation:	Failure to provide continuous monitoring.
	Description of Problem:	TLDs missing when collection was attempted.
	Corrective Action:	Replaced missing TLD.

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**TABLE 1B**

ANALYSIS WITH LLDs ABOVE ODCM TABLE 5.1-3 DETECTION CAPABILITIES  
1/1/2002 – 12/31/2002

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	6/02 Milk (c) Animal	6/02 Residence (g)	6/02 Garden (d)
N	L (e)	2.0 / 354	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	3.7 / 302	4.5 / 303
NW	L	3.7 / 311	4.2 / 323
NNW	L	4.4 / 333	4.6 / 327

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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 354 degrees is recorded as 2.1/354.

c. Potential milk animal locations.

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

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

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

g. Non-residential occupied buildings in these sectors include the following:

<u>Sector</u>	<u>Distance</u>	<u>Description</u>
N	1.9 / 349	24-hour Security Staff Building
NNW	1.9 / 349	Security booth at park entrance

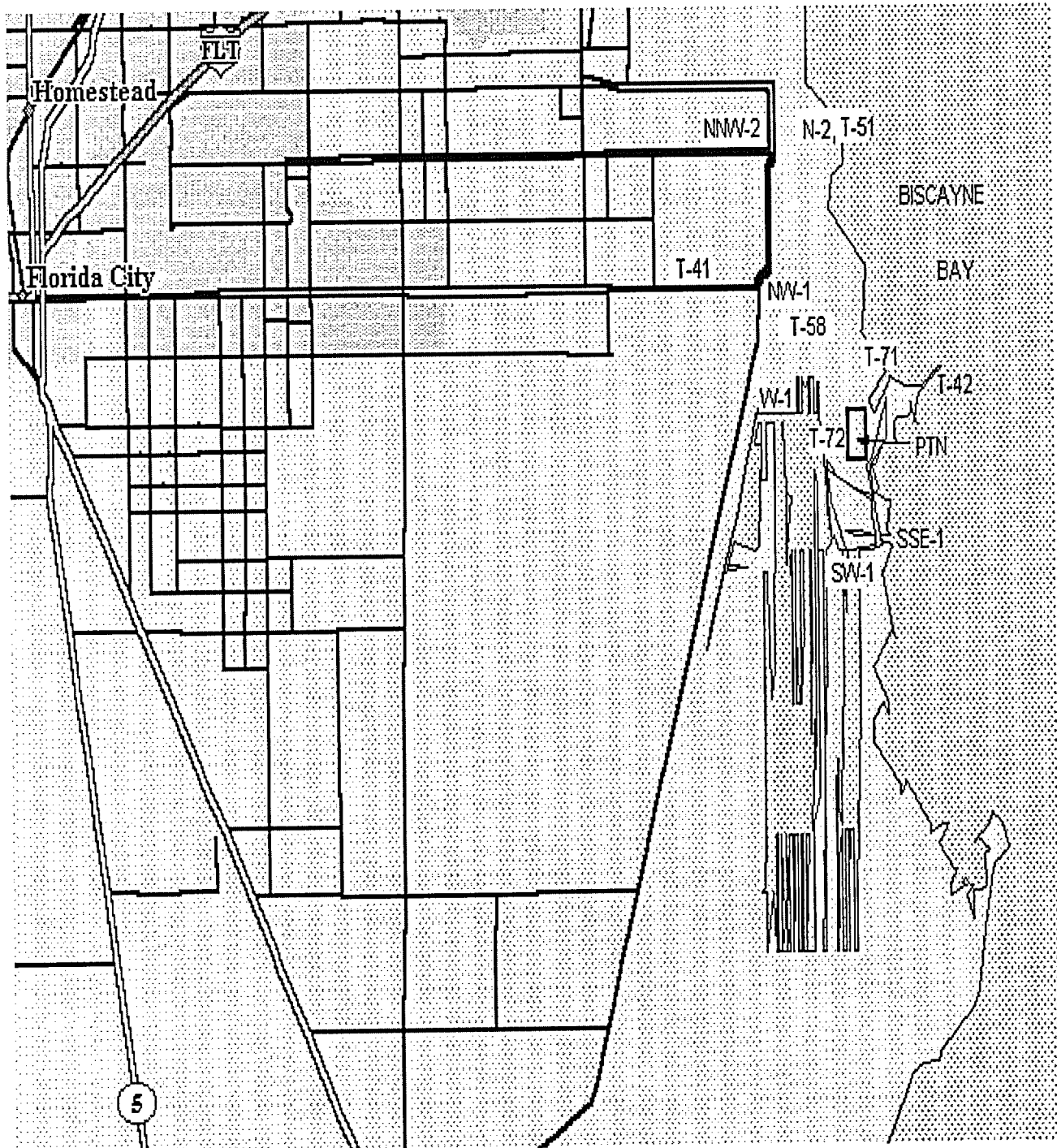
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**ATTACHMENT A**

**KEY TO SAMPLE LOCATIONS**

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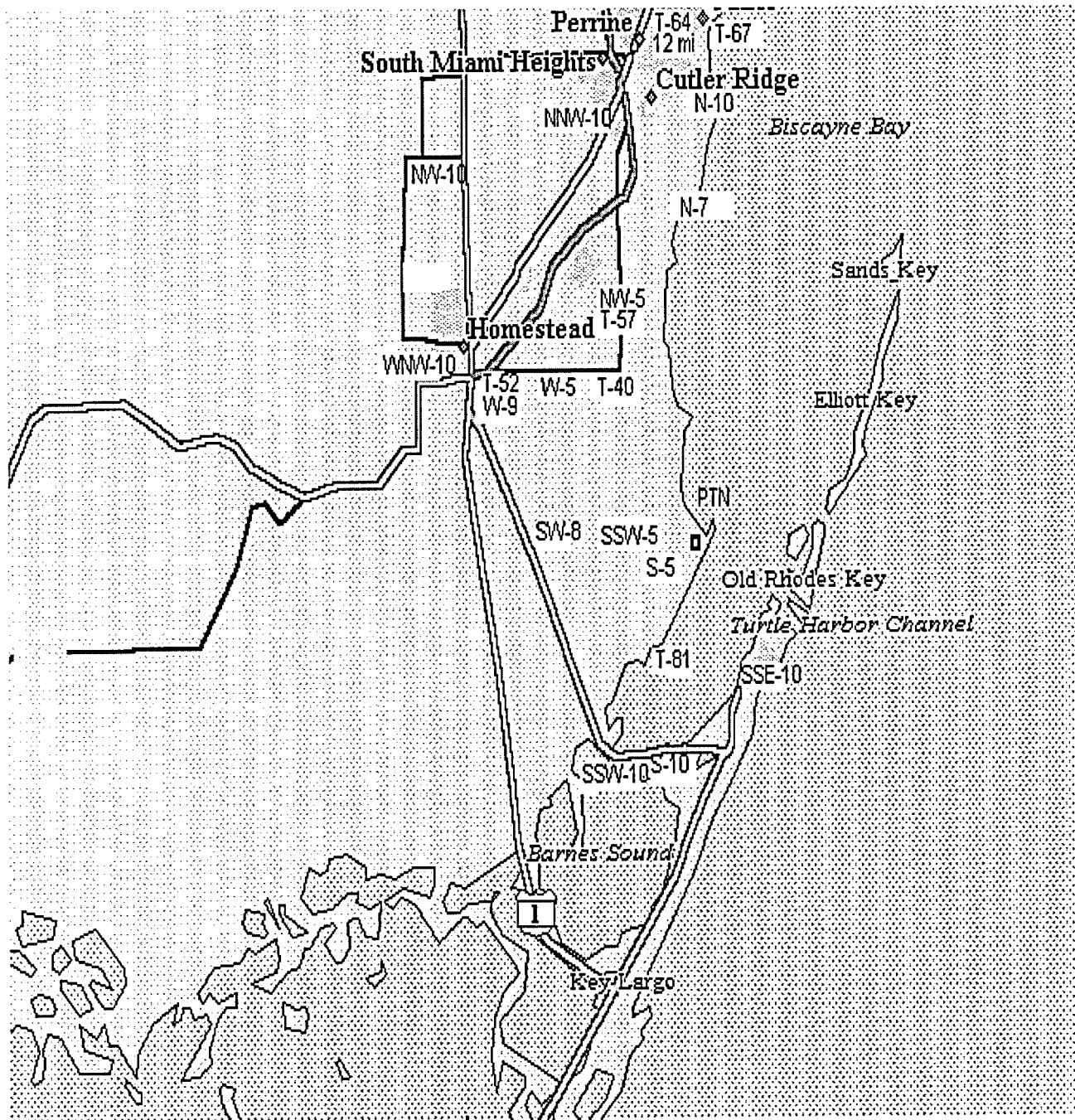
NEAR SITE SAMPLING LOCATIONS





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DISTANT REMP SAMPLING LOCATIONS



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ATTACHMENT A

PAGE 1 OF 4

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

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

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<sup>a</sup>The location name is the direction sector - approximate distance (miles)

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ATTACHMENT A

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

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

Control:

T-64	NNE	22	Natoma Substation
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PATHWAY: WATERBORNE  
SAMPLES COLLECTED: SURFACE WATER (OCEAN)  
SAMPLE COLLECTION FREQUENCY: MONTHLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-42	ENE	<1	Biscayne Bay at Turkey Point
T-81	S	6	Card Sound, near Mouth of Old Discharge Canal

Control:

T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park
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SAMPLES COLLECTED: SHORELINE SEDIMENT  
SAMPLE COLLECTION FREQUENCY: SEMI-ANNUALLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-42	ENE	<1	Biscayne Bay at Turkey Point
T-81	S	6	Card Sound, near Mouth of Old Discharge Canal

Control:

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

SAMPLES COLLECTED: CRUSTACEA AND FISH

SAMPLE COLLECTION FREQUENCY: SEMI-ANNUALLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-81	S	6	Card Sound Vicinity of Turkey Point Facility

Control:

T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park
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SAMPLES COLLECTED: BROAD LEAF VEGETATION

SAMPLE COLLECTION FREQUENCY: MONTHLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-40	W	3	South of Palm Dr. on S.W. 117th Street Extension
T-41	WNW	2	Palm Dr., West of Old Missile Site near Plant Site Boundary

Control:

T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park
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TURKEY POINT PLANT – UNITS 3 & 4

ATTACHMENT B

RADIOLOGICAL SURVEILLANCE OF  
FLORIDA POWER AND LIGHT COMPANY'S

TURKEY POINT SITE

2002

First Quarter, 2002

Second Quarter, 2002

Third Quarter, 2002

Fourth Quarter, 2002

## TURKEY POINT SITE

## Offsite Dose Calculation Manual Sampling

First Quarter, 2002

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	22	22
2. Airborne			
2.a. Air Iodines	Weekly	5	64
2.b. Air Particulates	Weekly	5	64
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. Broadleaf Vegetation	Monthly	3	9
			<hr/> 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 - ( $\mu$ R/hour)

<u>Sample Site</u>	<u>Deployment 05-ec 01 Collection 20-Mar-02</u>	<u>Sample Site</u>	<u>Deployment 05-ec 01 Collection 20-Mar-02</u>
N-2	$5.7 \pm 0.2$	WSW-8	$5.0 \pm 0.2$
N-7	$5.0 \pm 0.2$		
N-10	$5.1 \pm 0.2$	SW-1	$5.0 \pm 0.2$
		SW-8	$5.6 \pm 0.2$
NNW-2	$4.8 \pm 0.2$		
NNW-10	$6.2 \pm 0.2$	SSW-5	$4.9 \pm 0.2$
		SSW-10	$5.2 \pm 0.2$
NW-1	$7.0 \pm 0.3$		
NW-5	$4.7 \pm 0.2$	S-5	$4.7 \pm 0.2$
NW-10	$8.0 \pm 0.3$	S-10	$5.7 \pm 0.2$
WNW-10	$6.7 \pm 0.3$	SSE-1	$4.8 \pm 0.2$
		SSE-10	$5.8 \pm 0.2$
W-1	$7.0 \pm 0.3$		
W-5	$5.2 \pm 0.2$	NNE-22	$5.9 \pm 0.2$
W-9	$5.1 \pm 0.2$		



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

Collection Date	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
02-Jan-02	<0.05	<0.06	<0.05	<0.06	<0.05
07-Jan-02	<0.03	<0.03	<0.03	<0.03	<0.03
14-Jan-02	<0.03	<0.03	<0.03	<0.03	<0.03
24-Jan-02	<0.02	<0.02	<0.02	<0.02	<0.02
28-Jan-02	<0.06	<0.06	<0.05	<0.06	<0.05
05-Feb-02	<0.02	<0.02	<0.02	<0.02	<0.02
14-Feb-02	<0.02	(A)	<0.02	<0.02	<0.02
19-Feb-02	<0.03	<0.03	<0.03	<0.03	<0.03
26-Feb-02	<0.02	<0.02	<0.02	<0.02	<0.02
05-Mar-02	<0.03	<0.03	<0.03	<0.03	<0.03
11-Mar-02	<0.04	<0.04	<0.04	<0.04	<0.04
18-Mar-02	<0.02	<0.02	<0.02	<0.02	<0.02
26-Mar-02	<0.03	<0.03	<0.03	<0.03	<0.03

(A) No sample was collected due to a disconnected hose.

2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m<sup>3</sup>)

Collection Date	<u>Sample site</u>				
	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
02-Jan-02	0.027 ± 0.003	0.024 ± 0.003	0.017 ± 0.003	0.018 ± 0.003	0.022 ± 0.003
07-Jan-02	0.017 ± 0.003	0.015 ± 0.003	0.015 ± 0.003	0.019 ± 0.003	0.013 ± 0.003
14-Jan-02	0.015 ± 0.002	0.021 ± 0.003	0.017 ± 0.002	0.018 ± 0.002	0.020 ± 0.002
24-Jan-02	0.010 ± 0.001	0.011 ± 0.002	0.012 ± 0.002	0.011 ± 0.002	0.009 ± 0.001
28-Jan-02	0.007 ± 0.002	0.007 ± 0.003	0.011 ± 0.003	0.009 ± 0.003	0.009 ± 0.003
05-Feb-02	0.012 ± 0.002	0.008 ± 0.002	0.010 ± 0.002	0.011 ± 0.002	0.011 ± 0.002
14-Feb-02	0.017 ± 0.002	(A)	0.016 ± 0.002	0.020 ± 0.002	0.017 ± 0.002
19-Feb-02	0.017 ± 0.003	0.018 ± 0.003	0.027 ± 0.003	0.019 ± 0.003	0.018 ± 0.003
26-Feb-02	0.020 ± 0.002	0.018 ± 0.002	0.018 ± 0.002	0.019 ± 0.002	0.020 ± 0.002
05-Mar-02	0.021 ± 0.002	0.021 ± 0.002	0.020 ± 0.002	0.022 ± 0.002	0.023 ± 0.002
11-Mar-02	0.010 ± 0.002	0.008 ± 0.002	0.010 ± 0.002	0.009 ± 0.002	0.012 ± 0.002
18-Mar-02	0.016 ± 0.002	0.018 ± 0.002	0.014 ± 0.002	0.016 ± 0.002	0.016 ± 0.002
26-Mar-02	0.017 ± 0.002	0.020 ± 0.002	0.015 ± 0.002	0.018 ± 0.002	0.018 ± 0.002
Mean:	0.016 ± 0.001	0.016 ± 0.001	0.016 ± 0.001	0.016 ± 0.001	0.016 ± 0.001

(A) No sample was collected due to a disconnected hose.

2.b.2. AIR PARTICULATES GAMMA ANALYSIS OF QUARTERLY COMPOSITES (pCi/m<sup>3</sup>)

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>
T51	0.1577 ± 0.0133	<0.0294	<0.0013	<0.0012	<0.0459
T57	0.1783 ± 0.0130	<0.0225	<0.0014	<0.0010	0.0300 ± 0.0037
T58	0.1610 ± 0.0164	<0.0286	<0.0017	<0.0014	<0.0459
T64	0.1639 ± 0.0126	<0.0183	<0.0011	<0.0012	0.0162 ± 0.0039
T72	0.1803 ± 0.0134	<0.0187	<0.0012	<0.0008	0.0299 ± 0.0041

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

Sample Site	Collection Date	Zr-95											Ba-140 La-140 (B)
		H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95 (A)	I-131	Cs-134	Cs-137	
T42	25-Jan-02	<120	248 ± 21	<2	<2	<5	<2	<5	<4	<4	<3	<2	<4
	07-Feb-02	<119	271 ± 46	<4	<5	<13	<6	<12	<13	<14	<6	<7	<10
	19-Mar-02	<122	286 ± 42	<6	<5	<10	<5	<11	<11	<8	<6	<6	<8
T67	26-Jan-02	<119	236 ± 43	<5	<5	<10	<5	<12	<11	<11	<6	<6	<10
	07-Feb-02	<119	111 ± 26	<3	<5	<13	<4	<6	<9	<35	<5	<4	<9
	19-Mar-02	<122	64 ± 31	<4	<5	<12	<3	<14	<11	<9	<5	<6	<7
T81	22-Jan-02	<121	343 ± 33	<3	<4	<9	<4	<9	<7	<12	<4	<4	<6
	08-Feb-02	160 ± 23	276 ± 40	<6	<5	<11	<7	<14	<11	<14	<6	<7	<7
	19-Mar-02	<122	293 ± 38	<4	<4	<9	<4	<8	<6	<7	<3	<4	<6

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

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

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

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>	<u>Th-232</u>	<u>U-238</u>
T42	25-Jan-02	206 ± 42	244 ± 53	<10	<8	<11	<10	<1910	485 ± 116	<39	<540
T67	26-Jan-02	<41	122 ± 28	<4	<4	<4	<5	<1642	60 ± 10	<24	<581
T81	22-Jan-02	470 ± 35	383 ± 47	<6	<6	<7	<6	1003 ± 128	815 ± 10	116 ± 11	634 ± 86

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>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>
T67	26-Feb-02	1803 ± 184	<22	<23	<73	<17	<41	<25	<22	<432
T81	19-Feb-02	2001 ± 237	<37	<44	<85	<42	<63	<31	<40	714 ± 342

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

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67	28-Feb-02	3421 ± 272	<28	<41	<97	<35	<87	<28	<37	<618	<84
T81	18-Feb-02	3208 ± 337	<30	<41	<103	<37	<54	<35	<38	<599	<115

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

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>
T40	25-Jan-02	1569 ± 113	2961 ± 212	<26	<22	72 ± 11	<2179	<429
	08-Feb-02	1559 ± 93	4268 ± 171	<35	<12	84 ± 10	<927	<349
	19-Mar-02	1857 ± 107	2821 ± 165	<23	<17	104 ± 9	<1121	<402
T41	25-Jan-02	1907 ± 55	4597 ± 111	<14	<10	66 ± 5	<931	<193
	08-Feb-02	1446 ± 106	4235 ± 175	<36	<11	85 ± 9	<1070	<328
	19-Mar-02	1220 ± 79	7035 ± 213	<20	<14	26 ± 6	<841	<313
T67	26-Jan-02	490 ± 65	5302 ± 216	<23	<15	<16	<1007	<364
	07-Feb-02	672 ± 119	2842 ± 151	<43	<17	<15	<1075	<386
	19-Mar-02	1567 ± 85	5342 ± 186	<20	<14	<12	<883	<294

## TURKEY POINT SITE

## Offsite Dose Calculation Manual Sampling

Second Quarter, 2002

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	22	22
2. Airborne			
2.a. Air Iodines	Weekly	5	65
2.b. Air Particulates	Weekly	5	65
3. Waterborne	Monthly	3	9
3.a. Surface Water			
3.b. Shoreline Sediment	Semiannually	0	0
		0	0
4. Ingestion			
4.a. Fish and Invertebrates			
4.a.1. Crustacea	Semiannually		
4.a.2. Fish	Semiannually	0	0
4.b. Broadleaf Vegetation	Monthly	3	9
			<hr/> 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 - ( $\mu$ R/hour)

<u>Sample Site</u>	<u>Deployment 20-Mar-02</u> <u>Collection 13-Jun-02</u>	<u>Sample Site</u>	<u>Deployment 20-Mar-02</u> <u>Collection 13-Jun-02</u>
N-2	$5.8 \pm 0.2$	W-9	$4.3 \pm 0.2$ (A)
N-7	$4.9 \pm 0.2$	WSW-8	$5.0 \pm 0.2$ (A)
N-10	$5.0 \pm 0.2$	SW-1	$5.1 \pm 0.2$
NNW-2	$4.5 \pm 0.2$	SW-8	$5.2 \pm 0.2$
NNW-10	$5.6 \pm 0.2$	SSW-5	$4.8 \pm 0.2$
NW-1	$6.4 \pm 0.2$	SSW-10	$4.9 \pm 0.2$
NW-5	$4.7 \pm 0.2$	S-5	$4.6 \pm 0.2$
NW-10	$7.6 \pm 0.3$	S-10	$5.4 \pm 0.2$
WNW-10	$6.0 \pm 0.2$	SSE-1	$4.5 \pm 0.2$
W-1	$6.6 \pm 0.3$	SSE-10	$5.6 \pm 0.2$
W-5	$5.6 \pm 0.2$	NNE-22	$5.9 \pm 0.2$

(A) The TLDs at site W-9 and WSW-8 were found on the ground at the collection time

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

<u>Collection Date</u>	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
01-Apr-02	<0.03	<0.03	<0.02	<0.03	<0.03
08-Apr-02	<0.02	<0.02	<0.02	<0.02	<0.02
18-Apr-02	<0.02	<0.02	<0.02	<0.02	<0.02
23-Apr-02	<0.04	<0.04	<0.04	<0.04	<0.04
02-May-02	<0.02	<0.02	<0.02	<0.02	<0.02
06-May-02	<0.03	<0.04	<0.04	<0.04	<0.04
13-May-02	<0.04 (A)	<0.02	<0.02	<0.02	<0.02
20-May-02	<0.02	<0.02	<0.02	<0.02	<0.02
28-May-02	<0.01	<0.01	<0.01	<0.01	<0.01
03-Jun-02	<0.02	<0.02	<0.02	<0.02	<0.02
12-Jun-02	<0.01	<0.01	<0.01	<0.01	<0.01 (B)
17-Jun-02	<0.03	<0.03	<0.03	<0.02	<0.03
26-Jun-02	<0.02	<0.02	<0.02	<0.02	<0.02

- (A) A partial sample was collected at site T51 due to the sampling box, gas meter and pump being shot with 22 caliber bullets. The vacuum of the system was lost when the gas meter was punctured by multiple bullets. We estimate the run time before the incident at 87.2 hours. Based on this, the incident happened about 0017 hours on May 10. A new gasmeter was deployed and the holes in the sampling box were patched with a metal plate.
- (B) A partial sample was collected at site T72 due to a power interruption of unknown cause. The run time was estimated at 195.5 hours out of a sampling period of 211.75 hours.



2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m<sup>3</sup>)

Collection Date	Sample Site				
	T51	T57	T58	T64	T72
01-Apr-02	0.015 ± 0.002	0.018 ± 0.002	0.013 ± 0.002	0.013 ± 0.002	0.014 ± 0.002
08-Apr-02	0.019 ± 0.002	0.020 ± 0.002	0.015 ± 0.002	0.018 ± 0.002	0.016 ± 0.002
18-Apr-02	0.013 ± 0.002	0.013 ± 0.002	0.012 ± 0.001	0.014 ± 0.002	0.013 ± 0.002
23-Apr-02	0.009 ± 0.002	0.011 ± 0.003	0.009 ± 0.002	0.011 ± 0.003	0.010 ± 0.003
02-May-02	0.017 ± 0.002	0.017 ± 0.002	0.017 ± 0.002	0.018 ± 0.002	0.015 ± 0.002
06-May-02	0.014 ± 0.003	0.019 ± 0.003	0.014 ± 0.003	0.025 ± 0.003	0.020 ± 0.003
13-May-02	0.025 ± 0.004 <sup>(A)</sup>	0.017 ± 0.002	0.017 ± 0.002	0.019 ± 0.002	0.016 ± 0.002
20-May-02	0.015 ± 0.002	0.010 ± 0.002	0.013 ± 0.002	0.010 ± 0.002	0.012 ± 0.002
28-May-02	0.008 ± 0.002	0.008 ± 0.002	0.006 ± 0.001	0.012 ± 0.002	0.007 ± 0.002
03-Jun-02	0.011 ± 0.002	0.011 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.011 ± 0.002
12-Jun-02	0.014 ± 0.002	0.013 ± 0.002	0.017 ± 0.002	0.013 ± 0.002	0.014 ± 0.002 <sup>(B)</sup>
17-Jun-02	0.010 ± 0.002	0.009 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.010 ± 0.002
26-Jun-02	0.009 ± 0.002	0.012 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.013 ± 0.002
Mean:	0.014 ± 0.001	0.014 ± 0.001	0.012 ± 0.001	0.014 ± 0.001	0.013 ± 0.001

- (A) A partial sample was collected at site T51 due to the sampling box, gas meter and pump being shot with 22 caliber bullets. The vacuum of the system was lost when the gas meter was punctured by multiple bullets. We estimate the run time before the incident at 87.2 hours. Based on this, the incident happened about 0017 hours on May 10. A new gas meter was deployed and the holes in the sampling box were patched with a metal plate.
- (B) A partial sample was collected at site T72 due to a power interruption of unknown cause. The run time was estimated at 195.5 hours out of a sampling period of 211.75 hours.

2.b.2. AIR PARTICULATES GAMMA ANALYSIS OF QUARTERLY COMPOSITES (pCi/m<sup>3</sup>)

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T51	0.1028 ± 0.0099	<0.0163	<0.0007	<0.0010	0.0097 ± 0.0022
T57	0.1116 ± 0.0094	<0.0129	<0.0011	<0.0007	0.0091 ± 0.0027
T58	0.1508 ± 0.0152	<0.0304	<0.0021	<0.0016	<0.0612
T64	0.1206 ± 0.0081	<0.0157	<0.0003	<0.0007	0.0120 ± 0.0024
T72	0.1147 ± 0.0029	<0.0046	<0.0003	<0.0002	0.0122 ± 0.0009

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

Sample Site	Collection Date	Zr-95											Ba-140
		H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95 (A)	I-131	Cs-134	Cs-137	La-140 (B)
T42	04-Apr-02	<118	322 ± 40	<5	<5	<10	<6	<13	<11	<10	<6	<6	<9
	07-May-02	<117	326 ± 46	<5	<7	<16	<6	<10	<10	<12	<6	<6	<11
	10-Jun-02	<123	382 ± 46	<6	<5	<10	<7	<15	<11	<9	<7	<6	<9
T67	04-Apr-02	<118	141 ± 29	<6	<6	<12	<6	<13	<10	<10	<5	<6	<7
	10-May-02	<117	381 ± 35	<3	<3	<7	<4	<7	<7	<7	<3	<4	<6
	10-Jun-02	<123	351 ± 32	<3	<3	<7	<4	<8	<5	<7	<4	<4	<7
T81	04-Apr-02	<120	331 ± 32	<3	<3	<8	<4	<7	<7	<7	<4	<3	<5
	08-May-02	<117	309 ± 31	<5	<3	<8	<5	<10	<7	<8	<3	<3	<4
	10-Jun-02	<123	343 ± 46	<6	<6	<13	<6	<14	<9	<9	<6	<6	<9

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

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

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
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These samples were previously collected.

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

Sample Site	Collection Date	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
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These samples were previously collected.

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

Sample Site	Collection Date	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
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These samples were previously collected.

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

Sample Site	Collection Date	<u>Be-7</u>	<u>K-40</u>	<u>I-131'</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>
T40	04-Apr-02	2036 ± 97	2417 ± 128	<21	<10	50 ± 6	683 ± 275	<296
	09-May-02	596 ± 56	2659 ± 133	<19	<11	91 ± 8	<620	<224
	10-Jun-02	928 ± 73	3232 ± 131	<18	<11	82 ± 8	<635	<239
T41	04-Apr-02	1316 ± 81	4688 ± 166	<18	<11	80 ± 8	749 ± 274	<259
	09-May-02	643 ± 73	4956 ± 230	<38	<16	<17	<1939	<333
	10-Jun-02	902 ± 32	4965 ± 84	<9	<6	22 ± 3	296 ± 122	<110
T67	04-Apr-02	1832 ± 85	5922 ± 206	<21	<13	<12	<868	<300
	10-May-02	630 ± 64	4968 ± 172	<26	<11	<10	<674	<239
	10-Jun-02	1511 ± 69	4403 ± 160	<19	<12	<12	<719	<250

## TURKEY POINT SITE

## Offsite Dose Calculation Manual Specifications Sampling

Third Quarter, 2002

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	22	22
2. Airborne			
2.a. Air Iodines	Weekly	5	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	1
4.a.2. Fish	Semiannually	2	1
4.b. Broadleaf Vegetation	Monthly	3	9
			<hr/> 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 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 - ( $\mu\text{R}/\text{hour}$ )

<u>Sample Site</u>	<u>Deployment 13-Jun-02 Collection 18-Sep-02</u>	<u>Sample Site</u>	<u>Deployment 13-Jun-02 Collection 18-Sep-02</u>
N-2	$5.1 \pm 0.2$	W-9	$4.2 \pm 0.2$
N-7	$4.3 \pm 0.2$ (A)	WSW-8	$4.6 \pm 0.2$
N-10	$4.9 \pm 0.2$	SW-1	$4.7 \pm 0.2$
NNW-2	$4.4 \pm 0.2$	SW-8	$5.1 \pm 0.2$
NNW-10	$5.3 \pm 0.2$	SSW-5	$4.6 \pm 0.2$
NW-1	$6.4 \pm 0.2$	SSW-10	$4.6 \pm 0.2$
NW-5	$4.1 \pm 0.2$	S-5	$4.3 \pm 0.2$
NW-10	$7.2 \pm 0.3$	S-10	$5.4 \pm 0.2$
WNW-10	$6.2 \pm 0.2$	SSE-1	$4.5 \pm 0.2$
W-1	$6.4 \pm 0.2$	SSE-10	$5.7 \pm 0.2$
W-5	$5.6 \pm 0.2$	NNE-22	$6.0 \pm 0.2$

(A) The TLD at site N-7 was exchanged 09/24/02.

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - ( $\text{pCi}/\text{m}^3$ )

<u>Collection Date</u>	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
03-Jul-02	<0.02	<0.02	<0.02	<0.02	<0.02
12-Jul-02	<0.02	<0.02	<0.02	<0.02	<0.02
17-Jul-02	<0.03	<0.03	<0.03	<0.03	<0.03
25-Jul-02	<0.03	<0.03	<0.03	<0.03	<0.03
31-Jul-02	<0.05	<0.05	<0.05	<0.05	<0.05
09-Aug-02	<0.02	<0.02	<0.02	<0.02	<0.02
14-Aug-02	<0.04	<0.04	<0.04	<0.04	<0.04
22-Aug-02	<0.03	<0.03	<0.03	<0.03	<0.03
28-Aug-02	<0.04	<0.05	<0.04	<0.04	<0.05
05-Sep-02	<0.03	<0.03	<0.03	<0.03	<0.03 (A)
12-Sep-02	<0.03	<0.03	<0.02	<0.03	<0.03 (B)
18-Sep-02	<0.02	<0.02	<0.02	<0.02	<0.02
24-Sep-02	<0.02	<0.03	<0.02	<0.03	<0.02

(A) Power was off to station T72 for an undetermined time at the end of the sampling period.

(B) Power was off to station T72 at the beginning of the sampling period. The power was off for 59 hours out of 171.

2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m<sup>3</sup>)

<u>Collection Date</u>	<u>Sample Site</u>				
	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
03-Jul-02	0.010 ± 0.002	0.011 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.014 ± 0.002
12-Jul-02	0.010 ± 0.002	0.011 ± 0.002	0.014 ± 0.002	0.010 ± 0.002	0.013 ± 0.002
17-Jul-02	0.022 ± 0.003	0.014 ± 0.003	0.015 ± 0.003	0.017 ± 0.003	0.012 ± 0.003
25-Jul-02	0.016 ± 0.002	0.015 ± 0.002	0.017 ± 0.002	0.017 ± 0.002	0.015 ± 0.002
31-Jul-02	0.018 ± 0.003	0.016 ± 0.003	0.014 ± 0.002	0.021 ± 0.003	0.020 ± 0.003
09-Aug-02	0.012 ± 0.002	0.015 ± 0.002	0.013 ± 0.002	0.018 ± 0.002	0.017 ± 0.002
14-Aug-02	0.016 ± 0.003	0.010 ± 0.002	0.011 ± 0.002	0.014 ± 0.002	0.008 ± 0.002
22-Aug-02	0.009 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.014 ± 0.002	0.011 ± 0.002
28-Aug-02	0.017 ± 0.002	0.020 ± 0.003	0.015 ± 0.002	0.019 ± 0.003	0.022 ± 0.003
05-Sep-02	0.009 ± 0.002	0.010 ± 0.002	0.007 ± 0.001	0.009 ± 0.002	0.009 ± 0.002 (A)
12-Sep-02	0.008 ± 0.002	0.007 ± 0.002	0.004 ± 0.001	0.010 ± 0.002	<0.008 (B)
18-Sep-02	0.015 ± 0.002	0.015 ± 0.002	0.016 ± 0.002	0.017 ± 0.002	0.017 ± 0.002
24-Sep-02	0.009 ± 0.002	0.010 ± 0.002	0.008 ± 0.002	0.013 ± 0.002	0.009 ± 0.002
Mean:	0.013 ± 0.001	0.013 ± 0.001	0.012 ± 0.001	0.015 ± 0.0001	<0.013

(A) Power was off to station T72 for an undetermined time at the end of the sampling period.

(B) Power was off to station T72 at the beginning of the sampling period. The power was off for 59 hours out of 171.

2.b.2. AIR PARTICULATES GAMMA ANALYSIS OF QUARTERLY COMPOSITES (pCi/m<sup>3</sup>)

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>
T51	0.0970 ± 0.0119	<0.0249	<0.0018	<0.0013	<0.0574
T57	0.0992 ± 0.0131	<0.0297	<0.0014	<0.0008	<0.0639
T58	0.0963 ± 0.0118	<0.0317	<0.0016	<0.0009	<0.0592
T64	0.1185 ± 0.0128	<0.0270	<0.0018	<0.0015	<0.0612
T72	0.1154 ± 0.0167	<0.0334	<0.0018	<0.0020	<0.0605

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

Sample Site	Collection Date	Zr-95											Ba-140 La-140 (B)
		H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95 (A)	I-131	Cs-134	Cs-137	
T42	26-Jul-02	<117	295 ± 42	<6	<6	<9	<6	<11	<12	<12	<7	<6	<7
	23-Aug-02	<127	175 ± 34	<5	<6	<13	<5	<11	<11	<8	<6	<7	<11
	18-Sep-02	<122	182 ± 46	<6	<6	<13	<5	<9	<9	<9	<6	<5	<9
T67	26-Jul-02	<117	145 ± 32	<6	<6	<15	<7	<14	<9	<12	<6	<6	<12
	23-Aug-02	<127	228 ± 20	<2	<2	<5	<2	<6	<5	<4	<3	<2	<4
	18-Sep-02	<122	196 ± 38	<5	<5	<11	<6	<12	<11	<7	<7	<5	<10
T81	26-Jul-02	212 ± 25	205 ± 38	<6	<5	<14	<7	<10	<9	<9	<7	<7	<9
	21-Aug-02	310 ± 26	345 ± 50	<4	<6	<13	<6	<13	<11	<9	<6	<4	<8
	18-Sep-02	<122	215 ± 39	<7	<6	<11	<6	<13	<10	<9	<7	<7	<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	<u>Be-7</u>	<u>K-40</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>	<u>U-235</u>	<u>U-238</u>
T42	19-Jul-02	369 ± 56	287 ± 26	<10	<5	<5	7 ± 2	<650	956 ± 83	34 ± 7	523 ± 58
T67	26-Jul-02	<63	130 ± 19	<5	<3	<3	<3	<665	93 ± 3	<15	200 ± 50
T81	26-Jul-02	621 ± 47	517 ± 61	<23	<19	<22	<21	<1792	450 ± 15	57 ± 16	621 ± 83

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

Sample Site	Collection Date	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67	19-Jul-02	1840 ± 195	<42	<47	<119	<47	<103	<53	<42	<842	<182
T81	This sample has not yet been collected.										

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

Sample Site	Collection Date	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67	18-Jul-02	2716 ± 234	<45	<49	<120	<39	<108	<47	<45	<807	<185
T81	This sample has not yet been collected.										



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

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>
T40	30-Jul-02	3233 ± 143	2693 ± 171	<20	<17	69 ± 14	<2271	<359
	23-Aug-02	1333 ± 106	2156 ± 158	<20	<12	73 ± 7	<1699	<324
	18-Sep-02	2083 ± 48	2829 ± 76	<8	<5	79 ± 4	<724	200 ± 61
T41	30-Jul-02	2346 ± 54	2669 ± 88	<8	<7	38 ± 4	<877	<155
	23-Aug-02	1945 ± 122	4438 ± 209	<21	<17	69 ± 10	<1937	<331
	18-Sep-02	1851 ± 96	3046 ± 179	<20	<16	208 ± 13	<1792	<284
T67	30-Jul-02	1630 ± 112	5446 ± 242	<19	<19	<14	<2172	<367
	23-Aug-02	1568 ± 108	2291 ± 153	<21	<12	46 ± 8	<1865	<329
	18-Sep-02	1480 ± 105	3221 ± 178	<21	<20	<14	<1940	<320

## TURKEY POINT SITE

## Offsite Dose Calculation Manual Specifications Sampling

Fourth Quarter, 2002

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	22	21
2. Airborne			
2.a. Air Iodines	Weekly	5	70
2.b. Air Particulates	Weekly	5	70
3. Waterborne	Monthly	3	9
3.a. Surface Water			
3.b. Shoreline Sediment	Semiannually	0	0
4. Ingestion	Semiannually	1	1
4.a. Fish and Invertebrates			
4.a.1. Crustacea			
4.a.2. Fish	Semiannually	1	1
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 181

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 - ( $\mu$ R/hour)

<u>Sample Site</u>	<u>Deployment 18-Sep-02</u> <u>Collection 11Dec-02-</u>	<u>Sample Site</u>	<u>Deployment 18-Sep-02</u> <u>Collection 11Dec-02-</u>
N-2	$5.8 \pm 0.2$	W-9	$5.3 \pm 0.2$
N-7	$5.4 \pm 0.2$	WSW-8	(A)
N-10	$5.5 \pm 0.2$	SW-1	$5.2 \pm 0.2$
NNW-2	$5.0 \pm 0.2$	SW-8	$5.8 \pm 0.2$
NNW-10	$6.3 \pm 0.2$	SSW-5	$5.1 \pm 0.2$
NW-1	$7.1 \pm 0.3$	SSW-10	$5.3 \pm 0.2$
NW-5	$4.8 \pm 0.2$	S-5	$5.0 \pm 0.2$
NW-10	$8.2 \pm 0.3$	S-10	$5.9 \pm 0.2$
WNW-10	$7.3 \pm 0.3$	SSE-1	$5.1 \pm 0.2$
W-1	$6.9 \pm 0.3$	SSE-10	$6.0 \pm 0.2$
W-5	$5.7 \pm 0.2$	NNE-22	$6.6 \pm 0.3$

(A) – The TLD at site WSW-8 was missing when collection was attempted. A new TLD was deployed.

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

Collection Date	<u>Sample Site</u>				
	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
02-Oct-02	<0.02	<0.02	<0.02	<0.02	<0.02
09-Oct-02	<0.03	<0.03	<0.03	<0.03	<0.03
15-Oct-02	<0.02	<0.02	<0.02	<0.02	<0.02
23-Oct-02	<0.02	<0.02	<0.02	<0.05	<0.02
01-Nov-02	<0.02	<0.02	<0.02	<0.02	<0.02
06-Nov-02	<0.04	<0.03	<0.03	<0.03	<0.07
12-Nov-02	<0.02	<0.02	<0.02	<0.02	<0.02
19-Nov-02	<0.01	<0.01	<0.01	<0.01	<0.01
27-Nov-02	<0.02	<0.02	<0.02	<0.03	<0.02
02-Dec-02	<0.04	<0.04	<0.04	<0.04	<0.04
10-Dec-02	<0.03	<0.04	<0.03	<0.03	<0.03
18-Dec-02	<0.02	<0.02	<0.02	<0.02	<0.02
26-Dec-02	<0.02	<0.02	<0.02	<0.02	<0.02
30-Dec-02	<0.03	<0.03	<0.03	<0.03	<0.03

2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m<sup>3</sup>)

Collection Date	<u>Sample Site</u>				
	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
02-Oct-02	0.007 ± 0.002	0.008 ± 0.002	0.011 ± 0.002	0.011 ± 0.002	0.008 ± 0.002
09-Oct-02	0.018 ± 0.002	0.019 ± 0.002	0.025 ± 0.003	0.024 ± 0.003	0.015 ± 0.002
15-Oct-02	0.008 ± 0.002	0.011 ± 0.002	0.008 ± 0.002	0.010 ± 0.002	0.005 ± 0.002
23-Oct-02	0.012 ± 0.002	0.013 ± 0.002	0.010 ± 0.002	0.014 ± 0.004	0.012 ± 0.002
01-Nov-02	0.014 ± 0.002	0.011 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.010 ± 0.002
06-Nov-02	0.025 ± 0.003	0.024 ± 0.003	0.020 ± 0.003	0.022 ± 0.003	0.019 ± 0.005
12-Nov-02	0.019 ± 0.002	0.021 ± 0.003	0.018 ± 0.003	0.007 ± 0.002	0.018 ± 0.002
19-Nov-02	0.013 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.018 ± 0.002	0.015 ± 0.002
27-Nov-02	0.014 ± 0.002	0.016 ± 0.002	0.013 ± 0.002	0.019 ± 0.002	0.016 ± 0.002
02-Dec-02	0.025 ± 0.003	0.026 ± 0.003	0.025 ± 0.003	0.024 ± 0.003	0.026 ± 0.003
10-Dec-02	0.014 ± 0.002	0.016 ± 0.002	0.012 ± 0.002	0.013 ± 0.002	0.012 ± 0.002
18-Dec-02	0.015 ± 0.002	0.017 ± 0.002	0.010 ± 0.002	0.016 ± 0.002	0.014 ± 0.002
26-Dec-02	0.015 ± 0.002	0.017 ± 0.002	0.015 ± 0.002	0.019 ± 0.002	0.016 ± 0.002
30-Dec-02	0.021 ± 0.004	0.016 ± 0.003	0.024 ± 0.004	0.028 ± 0.004	0.018 ± 0.003
Mean:	0.016 ± 0.001	0.016 ± 0.001	0.015 ± 0.001	0.017 ± 0.001	0.015 ± 0.001

2.b.2. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES (pCi/m<sup>3</sup>)

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>
T51	0.1385 ± 0.0113	<0.0156	<0.0008	<0.0010	0.0261 ± 0.0032
T57	0.1377 ± 0.0132	<0.0242	<0.0019	<0.0014	<0.0662
T58	0.1406 ± 0.0100	<0.0125	<0.0011	<0.0009	0.0175 ± 0.0031
T64	0.1629 ± 0.0157	<0.0370	<0.0022	<0.0011	<0.0649
T72	0.1523 ± 0.0052	<0.0045	<0.0005	<0.0004	<0.0197

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

Sample Site	Collection Date	Zr-95											Ba-140
		H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95 (A)	I-131	Cs-134	Cs-137	La-140 (B)
T42	28-Oct-02	<120	321 ± 43	<5	<5	<11	<7	<14	<9	<7	<6	<6	<8
	18-Nov-02	<125	297 ± 32	<4	<4	<9	<5	<8	<6	<6	<4	<4	<4
	05-Dec-02	<118	263 ± 34	<3	<4	<6	<4	<8	<7	<5	<4	<4	<6
T67	30-Oct-02	<120	266 ± 29	<3	<4	<8	<4	<8	<5	<4	<4	<4	<8
	18-Nov-02	<125	159 ± 15	<2	<2	<3	<2	<4	<3	<2	<2	<2	<3
	09-Dec-02	<118	283 ± 33	<3	<3	<7	<4	<7	<5	<7	<3	<3	<5
T81	28-Oct-02	<120	332 ± 45	<6	<5	<11	<7	<11	<12	<8	<6	<6	<9
	18-Nov-02	<125	384 ± 54	<6	<6	<9	<7	<12	<8	<7	<7	<7	<7
	05-Dec-02	<118	315 ± 31	<4	<4	<7	<4	<7	<6	<11	<5	<4	<6

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

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

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

Sample Site	Collection Date	<u>Be-7</u>	<u>K-40</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>	<u>U-238</u>
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These samples were previously collected.

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

Sample Site	Collection Date	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67	This sample was previously collected.										
T81	05-Nov-02	1707 ± 187	<21	<37	<101	<23	<45	<21	<17	918 ± 187	<93

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

Sample Site	Collection Date	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67	This sample was previously collected.										
T81	03-Dec-02	2263 ± 213	<15	<24	<58	<26	<51	<21	<21	<314	<84

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

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>
T40	30-Oct-02	1352 ± 105	1745 ± 158	<19	<18	59 ± 13	<2730	<370
	18-Nov-02	754 ± 61	3798 ± 161	<16	<12	38 ± 5	<875	<284
	09-Dec-02	1562 ± 99	3383 ± 156	<18	<12	133 ± 10	<933	<343
T41	30-Oct-02	1011 ± 88	4544 ± 187	<18	<14	101 ± 10	<922	<300
	18-Nov-02	1179 ± 87	4671 ± 198	<19	<15	122 ± 12	<1037	<329
	09-Dec-02	1317 ± 91	4524 ± 225	<22	<19	44 ± 10	<2726	<370
T67	30-Oct-02	1232 ± 38	3674 ± 75	<8	<6	<6	545 ± 144	<121
	18-Nov-02	1213 ± 113	3928 ± 247	<27	<24	<22	<3448	<462
	09-Dec-02	1851 ± 87	2809 ± 134	<14	<11	48 ± 6	<716	<263



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ATTACHMENT C

RESULTS FROM THE INTERLABORATORY

COMPARISON PROGRAM 2002

DEPARTMENT OF ENERGY

QAP 56, June 2002

AND

QAP 57, December 2002

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DOE-QAP 56 RESULTS

Radionuclide	Reported Value	Reported Error	EML Value	EML Error	Reported EML	Evaluation
<b>Matrix: AI Air Filter Bq/filter</b>						
CO60	34.370	0.180	30.520	0.652	1.126	W
CS137	29.210	0.160	28.230	0.701	1.035	A
GROSS ALPHA	0.440	0.020	0.534	0.053	0.824	W
GROSS BETA	1.220	0.030	1.300	0.130	0.936	A
MN54	87.870	0.290	38.530	0.867	2.281	N
<b>Matrix: SO Soil Bq/kg</b>						
CS137	1327.000	4.000	1326.670	66.510	1.000	A
K40	603.500	4.160	621.670	33.860	0.971	A
<b>Matrix: VE Vegetation Bq/kg</b>						
CO60	1.092	0.027	11.230	0.677	0.097	N
CS137	30.770	0.220	313.667	15.910	0.098	N
K40	82.940	1.480	864.330	47.220	0.096	N
<b>Matrix: WA Water Bq/L</b>						
CO60	345.100	0.420	347.330	12.400	0.994	A
CS134	3.440	0.160	3.357	0.200	1.025	A
CS137	57.300	0.230	56.067	2.929	1.022	A
GROSS BETA	1177.970	14.830	1030.000	103.000	1.144	A
H3	301.560	5.140	283.700	3.380	1.063	A
SR90	6.470	0.310	7.579	0.176	0.854	A

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

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DOE-QAP 56 CORRECTED RESULTS

Radionuclide	EML Value	Initial Lab Results		Corrected lab Results	
		Reported Value	<u>Reported</u> EML	Reported Value	<u>Reported</u> EML
<b>Matrix: AI Air Filter Bq/filter</b>					
CO60	30.520	34.370	1.126	30.200	0.989
CS137	28.230	29.210	1.035	Not Applicable, was "A"	
GROSS ALPHA	0.534	0.440	0.824	Not a REMP analysis	
GROSS BETA	1.300	1.220	0.936	Not Applicable, was "A"	
MN54	38.530	87.870	2.281	40.100	1.040
<b>Matrix: VE Vegetation Bq/kg</b>					
CO60	11.230	1.092	0.097	10.920	0.972
CS137	313.667	30.770	0.098	307.700	0.981
K40	864.330	82.940	0.096	829.400	0.960

The  
Corrected  
Ratios  
Are in the  
"Acceptable"  
range.

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DOE-QAP 57 RESULTS

Radionuclide	Reported Value	Reported Error	EML Value	EML Error	Reported EML	Evaluation
<b>Matrix: AI Air Filter Bq/filter</b>						
CO60	24.650	3.100	23.000	0.059	1.072	A
CS137	36.310	0.740	32.500	0.777	1.117	A
MN54	58.590	1.070	52.200	1.170	1.122	A
<b>Matrix: SO Soil Bq/kg</b>						
CS137	884.300	19.380	829.330	41.580	1.066	A
K40	686.860	18.550	637.670	34.260	1.077	A
<b>Matrix: VE Vegetation Bq/kg</b>						
CO60	9.200	0.300	9.660	0.630	0.952	A
CS137	294.000	6.000	300.670	15.250	0.978	A
K40	1463.000	40.000	1480.000	77.800	0.989	A
<b>Matrix: WA Water Bq/L</b>						
CO60	276.300	0.590	268.670	9.710	1.028	A
CS134	59.010	0.310	60.200	1.860	0.980	A
CS137	86.050	0.500	81.430	4.280	1.057	A
GROSS ALPHA	221.160	9.730	210.000	21.000	1.053	A
GROSS BETA	744.630	10.940	900.000	90.000	0.827	A
H3	255.080	4.760	227.300	5.615	1.122	A
SR90	7.840	0.320	8.690	0.420	0.902	A

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