

RADIOLOGICAL SURVEILLANCE OF  
FLORIDA POWER AND LIGHT COMPANY'S  
ST. LUCIE SITE  
Fourth Quarter, 1985

Office of Radiation Control

Florida Department of Health  
and Rehabilitative Services

ST. LUCIE SITE

Technical Specifications Sampling

Fourth Quarter, 1985

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	27	54
2. Airborne			
2.a Air Iodines	Weekly	5	70
2.b Air Particulates	Weekly	5	74*
3. Waterborne			
3.a Surface Water	Weekly	1	14
	Monthly	1	3
3.b Shoreline sediment	Semiannually	0	0
4. Ingestion			
4.a Fish and Invertebrates			
4.a.1 Crustacea	Semiannually	0	0
4.a.2 Fish	Semiannually	0	0
4.b Food Products			
4.b.1 Broadleaf Vegetation	Monthly	3	9
			Total: 224

\* - Includes DOE split samples.

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

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

## ST. LUCIE TECHNICAL SPECIFICATIONS SAMPLING

FOURTH QUARTER, 1985

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

Each result is the average net response of two dosimeters.

<u>Sample Site</u>	<u>Deployed 9-18-85 Collected 12-17-85</u>
N-1	5.4 ± 0.3
NNW-5	5.0 ± 0.3
NNW-10	5.3 ± 0.3
NW-5	5.2 ± 0.3
NW-10	6.3 ± 0.3
WNW-2	5.2 ± 0.3
WNW-5	5.0 ± 0.3
WNW-10	5.0 ± 0.3
W-2	5.7 ± 0.3
W-5	5.2 ± 0.3
W-10	5.2 ± 0.3
WSW-2	5.2 ± 0.3
WSW-5	5.1 ± 0.3
WSW-10	4.5 ± 0.2
SW-2	4.9 ± 0.3
SW-5	5.0 ± 0.3
SW-10	5.1 ± 0.3
SSW-2	4.9 ± 0.3
SSW-5	4.7 ± 0.2
SSW-10	5.8 ± 0.3
S-5	5.0 ± 0.3
S-10	5.4 ± 0.3
S/SSE-10	5.3 ± 0.3
SSE-5	5.4 ± 0.3
SSE-10	4.9 ± 0.3
SE-1	5.1 ± 0.3
H-32	6.1 ± 0.3

## NOTES:

- The error terms reported above are based on an empirical statistical analysis of the differences in the results from the individual dosimeters at each site. As such, these error terms are representative of the typical error for such measurements rather than accurately representing the error terms for individual measurements.
- These results have been determined with the assumption that fading is negligible, although detailed testing to confirm this has not been done.
- Testing to confirm compliance with NRC Reg. Guide 4.13 and ANSI N545-1975 performance standards has not been completed.
- These results were determined using only two determinations of self-exposure rate for the dosimeters used rather than using three such determinations as required by HRS procedures.

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

Collection Date	Sample Site				
	H08	H12	H14	H30	H34
10-01-85	(A<0.04	<0.03	<0.03	<0.03	<0.03
10-08-85	<0.03	<0.03	<0.03	<0.03	<0.03
10-15-85	<0.03	<0.03	<0.03	<0.03	<0.03
10-22-85	<0.04	<0.04	<0.04	<0.04	<0.04
10-29-85	<0.03	<0.03	<0.03	<0.03	<0.03
11-05-85	<0.03	<0.02	<0.02	<0.03	<0.03
11-12-85	<0.02	<0.02	<0.02	<0.02	<0.02
11-20-85	<0.03	<0.03	<0.03	<0.03	<0.03
11-26-85	<0.03	<0.03	<0.03	<0.03	<0.03
12-03-85	<0.03	<0.03	<0.02	<0.03	<0.02
12-09-85	<0.05	<0.05	<0.05	<0.05	<0.05
12-17-85	<0.02	<0.02	<0.02	<0.02	<0.02
12-23-85	<0.03	<0.03	<0.03	<0.03	<0.03
12-30-85	<0.03	<0.03	<0.03	<0.03	<0.03

A - The air pump for this site failed and was replaced during this sampling interval. The equipment is estimated to have run for 136 hours out of the 168 total hours for this interval.

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

Collection Date	Sample Site				
	H08	H12	H14	H30	H34
10-01-85	(A)0.015 ± 0.002	0.012 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.014 ± 0.002
10-08-85	0.013 ± 0.002	0.011 ± 0.002	0.012 ± 0.002	0.011 ± 0.002	0.012 ± 0.002
10-15-85	0.015 ± 0.002	0.010 ± 0.001	0.011 ± 0.002	0.011 ± 0.002	0.009 ± 0.001
10-22-85	0.010 ± 0.002	0.009 ± 0.001	0.009 ± 0.002	0.010 ± 0.002	0.008 ± 0.001
10-29-85	0.006 ± 0.001	0.007 ± 0.001	0.008 ± 0.001	0.006 ± 0.001	0.006 ± 0.001
11-05-85	0.016 ± 0.002	0.014 ± 0.002	0.016 ± 0.002	0.017 ± 0.002	0.015 ± 0.002
11-12-85	0.015 ± 0.002	0.013 ± 0.002	*0.014 ± 0.002	0.012 ± 0.002	0.014 ± 0.002
11-20-85	0.010 ± 0.001	0.011 ± 0.001	*0.010 ± 0.001	0.012 ± 0.002	0.010 ± 0.001
11-26-85	0.011 ± 0.002	0.013 ± 0.002	*0.010 ± 0.002	0.011 ± 0.002	0.011 ± 0.002
12-03-85	0.010 ± 0.001	0.012 ± 0.002	*0.010 ± 0.001	0.011 ± 0.002	0.011 ± 0.001
12-09-85	0.016 ± 0.002	0.015 ± 0.002	0.015 ± 0.002	0.015 ± 0.002	0.017 ± 0.002
12-17-85	0.014 ± 0.002	0.010 ± 0.001	0.012 ± 0.002	0.015 ± 0.002	0.014 ± 0.002
12-23-85	0.023 ± 0.002	0.017 ± 0.002	0.022 ± 0.002	0.017 ± 0.002	0.022 ± 0.002
12-30-85	0.024 ± 0.002	0.016 ± 0.002	0.014 ± 0.002	0.015 ± 0.002	0.017 ± 0.002
Means:	0.014 ± 0.001	0.012 ± 0.001	0.013 ± 0.001	0.013 ± 0.001	0.013 ± 0.001

\* - DOE split samples.

A - The air pump for this site failed and was replaced during this sampling interval. The equipment is estimated to have run for 136 hours out of the 168 total hours for this interval.

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

Fourth Quarter, 1985

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>
H08	0.098 ± 0.007	0.007 ± 0.003	<0.0007	<0.0005	<0.03
H12	0.107 ± 0.008	<0.012	<0.0007	<0.0006	<0.03
H14	0.105 ± 0.008	0.020 ± 0.005	<0.0007	<0.0007	0.02 ± 0.01
H30	0.108 ± 0.008	0.012 ± 0.005	<0.0007	<0.0007	0.04 ± 0.01
H34	0.110 ± 0.038	<0.015	<0.0007	<0.0007	<0.03

3.a SURFACE WATER - (pCi/l)

Sample Site	Collection Date	H-3	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Zr-95		I-131	Cs-134	Cs-137	Ba-140
									Nb-95	(A)				La-140
														(B)
H15	10-01-85	<180	300 + 40	<4	<10	<5	<5	<8	<8	<7	<4	<4	<4	<7
	10-08-85	<180	360 + 50	<3	<9	<3	<5	<10	<8	<6	<6	<4	<4	<9
	10-15-85	<200	310 + 40	<4	<9	<5	<6	<9	<7	<8	<6	<4	<4	<4
	10-22-85	<180	290 + 40	<4	<9	<5	<4	<8	<7	<8	<5	<4	<4	<5
	10-29-85	<180	340 + 40	<4	<9	<5	<4	<11	<5	<5	<5	<4	<4	<8
	11-05-85	<190	290 + 40	<5	<7	<5	<5	<7	<5	<6	<5	<4	<4	<7
	11-12-85	<190	280 + 40	<3	<9	<5	<5	<13	<6	<7	<5	<4	<4	<6
	11-20-85	<190	290 + 40	<5	<8	<4	<4	<9	<8	<6	<4	<4	<5	<7
	11-26-85	<180	360 + 40	<4	<8	<5	<5	<9	<9	<8	<5	<5	<5	<5
	12-03-85	<180	380 + 40	<4	<8	<3	<5	<10	<7	<6	<4	<4	<4	<7
	12-09-85	<180	260 + 40	<4	<8	<4	<4	<10	<8	<6	<5	<5	<5	<5
	12-17-85	<180	360 + 50	<4	<9	<4	<5	<10	<5	<6	<4	<4	<4	<5
	12-23-85	<180	270 + 40	<2	<9	<4	<5	<11	<8	<6	<4	<4	<5	<8
12-30-85	<180	320 + 40	<4	<9	<4	<6	<10	<8	<6	<5	<4	<4	<8	
H59	10-02-85	<180	220 + 40	<4	<8	<4	<6	<11	<5	<8	<4	<4	<5	<8
	11-06-85	<210	310 + 50	<4	<10	<4	<4	<9	<7	<7	<4	<4	<5	<7
	12-04-85	<180	350 + 50	<4	<11	<4	<4	<12	<7	<7	<6	<4	<5	<7

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

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

4.b.1 BROADLEAF VEGETATION - Mangrove - (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>
H51	10-01-85	1020 ± 40	1830 ± 90	<6	<5	<5
	11-05-85	690 ± 50	2100 ± 100	<11	<7	<6
	12-04-85	940 ± 50	2900 ± 100	<8	<9	<8
H52	10-01-85	1270 ± 60	2300 ± 100	<9	<7	<6
	11-06-85	640 ± 50	2900 ± 100	<11	<8	<8
	12-04-85	720 ± 50	2400 ± 100	<8	<8	<7
H59	10-02-85	1070 ± 50	3000 ± 100	<8	<8	<6
	11-06-85	760 ± 50	2100 ± 100	<10	<8	<8
	12-04-85	710 ± 50	2100 ± 100	<8	<8	<7



1985  
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT  
ST. LUCIE PLANT - UNITS NOS. 3 AND 4

ATTACHMENT C

RESULTS FROM THE  
INTERLABORATORY COMPARISON PROGRAM  
1985

FLORIDA DEPT. OF HEALTH & REHABILITATIVE SERVICES  
 Office of Radiation control  
 Health Physics Laboratory  
 July 17, 1985

Summary of EPA, Las Vegas, Radiochemical, Cross-Check Program Data  
 for the Period January through June 1985

I. Air Filter Samples

1. Gross Alpha/Beta in Air Filter			
	Date	Nuclide	N.D.K.*
	11-23-84	Alpha	-0.3
		Beta	0.0
2. Gamma in Air Filters			
	Date	Nuclide	N.D.K.
	11-23-84	Cs-137	+0.1
3. Sr-90 in Air Filter			
	Date	Nuclide	N.D.K.
	11-23-84	Sr-90	-1.5

II. Milk Samples

1. Gamma in Milk			
	Date	Nuclide	N.D.K.
	10-26-84	I-131	-1.8
		Cs-137	-0.7
		K+	-1.0
2. Strontium-89/90 in Milk			
	Date	Nuclide	N.D.K.
	10-26-84	Sr-89	-1.6
		Sr-90	-4.2

### III. WATER SAMPLES

1. Gross Alpha/Beta in Water			
	Date	Nuclide	N.D.K.
	1-18-85	Alpha	0.0
		Beta	+1.4
	3-22-85	Alpha	-0.3
		Beta	+0.6
2. Gamma in Water			
	Date	Nuclide	N.D.K.
	2-08-85	Cr-51	-0.2
		Co-60	-0.1
		Zn-65	+0.8
		Ru-106	+2.2
		Cs-134	-0.7
		Cs-137	+0.1
3. H-3 in Water			
	Date	Nuclide	N.D.K.
	12-14-84	H-3	+0.2
	2-15-85	H-3	+0.2
	4-12-85	H-3	+0.2
4. Iodine-131 in Water			
	Date	Nuclide	N.D.K.
	12-07-84	I-131	-0.5
5. Strontium-89/90 in Water			
	Date	Nuclide	N.D.K.
	4-01-85	Sr-89	0.0
		Sr-90	-1.2

\*Normalized deviation of the mean from the known value, as defined in "Environmental Radioactivity Laboratory Intercomparison Studies Program Fiscal Year 1981 - 1982", Environmental Monitoring Systems Laboratory, U. S. Environmental Protection Agency, P. O. Box 15027 Las Vegas, Nevada, 89114. EPA-600/4-81-004, February, 1981.

FLORIDA DEPT. OF HEALTH & REHABILITATIVE SERVICES  
Office of Radiation Control  
Health Physics Laboratory  
January 17, 1986

Summary of EPA, Las Vegas, Radiochemical, Cross-Check Program Data  
for the period July through December, 1985

I. AIR FILTER SAMPLES

1.	Gross Alpha/Beta in Air Filter			
	Nuclide	Month	Year	N.D.K.
	Gross Alpha	MAR	1985	0.34
	Gross Alpha	AUG	1985	0
	Nuclide	Month	Year	N.D.K.
	Gross Beta	MAR	1985	-0.23
	Gross Beta	AUG	1985	-1.03
2.	Gamma in Air Filter			
	Nuclide	Month	Year	N.D.K.
	Cs-137	MAR	1985	0.69
	Cs-137	AUG	1985	0.58
3.	Strontium in Air Filter			
	Nuclide	Month	Year	N.D.K.
	Sr-90	MAR	1985	-0.77
	Sr-90	AUG	1985	-2.69

## II. FOOD SAMPLES

1. Gamma in Food			
Nuclide	Month	Year	N.D.K.
I-131	JAN	1985	-0.48
I-131	JUL	1985	1.05
Nuclide	Month	Year	N.D.K.
Cs-137	JAN	1985	-0.11
Cs-137	JUL	1985	0.34
Nuclide	Month	Year	N.D.K.
K	JAN	1985	-0.32
K	JUL	1985	-5.18
2. Strontium in Food			
Nuclide	Month	Year	N.D.K.
Sr-89	JAN	1985	-4.04
Sr-89	JUL	1985	NDP
Nuclide	Month	Year	N.D.K.
Sr-90	JAN	1985	0.77
Sr-90	JUL	1985	NDP

## III. MILK SAMPLES

1. Gamma in Milk			
Nuclide	Month	Year	N.D.K.
I-131	JUN	1985	0.38
I-131	OCT	1985	NA
Nuclide	Month	Year	N.D.K.
Cs-137	JUN	1985	0.11
Cs-137	OCT	1985	NA
Nuclide	Month	Year	N.D.K.
K	JUN	1985	-4.52
K	OCT	1985	NA
2. Strontium in Milk			
Nuclide	Month	Year	N.D.K.
Sr-89	JUN	1985	-1.38
Sr-89	OCT	1985	NA
Nuclide	Month	Year	N.D.K.
Sr-90	JUN	1985	-1.92
Sr-90	OCT	1985	NA

#### IV. WATER SAMPLES

1. Gross Alpha/Beta in Water

Nuclide	Month	Year	N.D.K.
Gross Alpha	MAY	1985	-0.69
Gross Alpha	JUL	1985	-0.92
Gross Alpha	SEP	1985	-0.34
Gross Alpha	NOV	1985	NA

Nuclide	Month	Year	N.D.K.
Gross Beta	MAY	1985	0.46
Gross Beta	JUL	1985	0.69
Gross Beta	SEP	1985	0.34
Gross Beta	NOV	1985	NA

2. Gamma in Water

Nuclide	Month	Year	N.D.K.
Cr-51	JUN	1985	NDP
Cr-51	OCT	1985	1.27

Nuclide	Month	Year	N.D.K.
Co-60	JUN	1985	NDP
Co-60	OCT	1985	0.23

Nuclide	Month	Year	N.D.K.
Zn-65	JUN	1985	NDP
Zn-65	OCT	1985	1.15

Nuclide	Month	Year	N.D.K.
Ru-106	JUN	1985	NDP
Ru-106	OCT	1985	-0.23

Nuclide	Month	Year	N.D.K.
Cs-134	JUN	1985	NDP
Cs-134	OCT	1985	0

Nuclide	Month	Year	N.D.K.
Cs-137	JUN	1985	NDP
Cs-137	OCT	1985	0.23

3. Tritium in Water

Nuclide	Month	Year	N.D.K.
H-3	JUN	1985	0.02
H-3	AUG	1985	0.01
H-3	OCT	1985	-0.05

4. Iodine in Water

Nuclide	Month	Year	N.D.K.
I-131	AUG	1985	0.67
I-131	DEC	1985	NA

IV. WATER SAMPLES

5. Strontium in Water				
Nuclide	Month	Year	N.D.K.	
Sr-89	MAY	1985	0.11	
Sr-89	SEP	1985	NDP	
Nuclide	Month	Year	N.D.K.	
Sr-90	MAY	1985	-1.15	
Sr-90	SEP	1985	NDP	

NOTES:

- N.D.K.: Normalized deviation of the mean from the known value, as defined in "Environmental Radioactivity Laboratory Intercomparison Studies Program Fiscal Year 1981 - 1982", Environmental Monitoring Systems Laboratory, U. S. Environmental Protection Agency, P. O. Box 15027, Las Vegas, Nevada, 89114. EPA-600/4-81-004, February, 1981.
- NDP: No data provided. No data was provided to EPA for inclusion in their report.
- NA: Not available. Report containing this data has not yet been received from EPA, Las Vegas.