

RADIOLOGICAL SURVEILLANCE OF
FLORIDA POWER AND LIGHT COMPANY'S
ST. LUCIE SITE

Third Quarter, 1985

Office of Radiation Control
Florida Department of Health
and Rehabilitative Services

ST. LUCIE SITE

Technical Specifications Sampling

Third Quarter, 1985

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	27	56
2. Airborne			
2.a Air Iodines	Weekly	5	65
2.b Air Particulates	Weekly	5	69*
3. Waterborne			
3.a Surface Water	Weekly	1	13
	Monthly	1	3
3.b Shoreline sediment	Semiannually	2	3*
4. Ingestion			
4.a Fish and Invertebrates			
4.a.1 Crustacea	Semiannually	2	2
4.a.2 Fish	Semiannually	2	3#
4.b Food Products			
4.b.1 Broadleaf Vegetation	Monthly	3	9
			Total: 223

* - Includes DOE split samples.

- Includes samples for HRS purposes.

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

THIRD 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 6-12-85</u> <u>Collected 9-18-85</u>
N-1	5.2 ± 0.3
NNW-5	5.2 ± 0.3
NNW-10	5.1 ± 0.3
NW-5	4.9 ± 0.3
NW-10	6.1 ± 0.3
WNW-2	5.0 ± 0.3
WNW-5	5.0 ± 0.3
WNW-10	4.7 ± 0.2
W-2	5.3 ± 0.3
W-5	5.0 ± 0.3
W-10	4.8 ± 0.3
WSW-2	4.9 ± 0.3
WSW-5	5.1 ± 0.3
WSW-10	4.8 ± 0.3
SW-2	4.9 ± 0.3
SW-5	4.8 ± 0.3
SW-10	4.9 ± 0.3
SSW-2	5.0 ± 0.3
SSW-5	4.8 ± 0.3
SSW-10	5.3 ± 0.3
S-5	5.2 ± 0.3 << See Note 4.
S-10	5.1 ± 0.3
S/SSE-10	4.9 ± 0.3
SSE-5	5.2 ± 0.3
SSE-10	5.1 ± 0.3
SE-1	4.8 ± 0.3
H-32	5.7 ± 0.3

NOTES:

1. 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.
2. These results have been determined with the assumption that fading is negligible, although detailed testing to confirm this has not been done.

** See notes 3 and 4 on next page.

ST. LUCIE TECHNICAL SPECIFICATIONS SAMPLING

THIRD QUARTER, 1985

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

NOTES:

3. Testing to confirm compliance with NRC Reg. Guide 4.13 and ANSI N545-1975 performance standards has not been completed.
4. The dosimeters deployed at site S-5 on 6-12-85 apparently fell from their holder during this sample interval. They were found in the street at the sample site by a local resident on 7-16-85. The dosimeters were recovered and read out, and they were subsequently re-deployed on 7-19-85. The average exposure rate from 6-12-85 to 7-16-85 was 5.0 ± 0.3 micro-R/hr. The average exposure rate from 7-19-85 to 9-18-85 was 5.3 ± 0.3 micro-R/hr. The quarterly result in the above table is the time-weighted average of the results for the two sub-intervals.

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

Collection Date	Sample Site				
	H08	H12	H14	H30	H34
7-02-85	<0.02	<0.03	<0.02	<0.02	<0.02
7-09-85	<0.03	<0.03	<0.02	<0.03	<0.03
7-17-85	<0.02	<0.02	<0.02	<0.02	<0.02
7-23-85	<0.03	<0.03	<0.03	<0.03	<0.03
7-30-85	<0.03	<0.03	<0.03	<0.03	<0.03
8-06-85	<0.03	<0.03	<0.02	<0.02	<0.03
8-13-85	<0.02	<0.03	<0.02	<0.02	<0.03
8-20-85	<0.03	<0.03	<0.03	<0.03	<0.03
8-27-85	<0.04	<0.04	<0.04	<0.04	<0.04
9-03-85	<0.03	<0.02	<0.02	<0.02	<0.02
9-10-85	<0.03	<0.03	<0.02	<0.03	<0.03
9-17-85	<0.03	<0.03	<0.02	<0.03	<0.03
9-24-85	<0.03	<0.03	<0.02	<0.03	(A<0.05)

A - This sample had a low collected volume due to a tripped circuit breaker. Severe storms this week are the suspected cause. The equipment is estimated to have run for 80 hours out of the 168 total hours for this sampling interval.

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

Collection Date	Sample Site				
	H08	H12	H14	H30	H34
7-02-85	0.011 ± 0.002	0.010 ± 0.002	0.012 ± 0.002	0.010 ± 0.002	0.013 ± 0.002
7-09-85	0.016 ± 0.002	0.014 ± 0.002	0.018 ± 0.002	0.014 ± 0.002	0.018 ± 0.002
7-17-85	0.009 ± 0.002	0.011 ± 0.002	0.012 ± 0.002	0.010 ± 0.001	0.013 ± 0.002
7-23-85	0.009 ± 0.002	0.009 ± 0.002	0.008 ± 0.002	0.008 ± 0.002	0.011 ± 0.002
7-30-85	0.017 ± 0.002	0.011 ± 0.002	0.008 ± 0.002	0.011 ± 0.002	0.011 ± 0.002
8-06-85	0.010 ± 0.002	0.011 ± 0.002	*0.010 ± 0.002	0.010 ± 0.002	0.009 ± 0.002
8-13-85	0.011 ± 0.002	0.012 ± 0.002	*0.008 ± 0.001	0.010 ± 0.001	0.012 ± 0.002
8-20-85	0.011 ± 0.002	0.011 ± 0.002	*0.009 ± 0.001	0.008 ± 0.001	0.010 ± 0.001
8-27-85	0.017 ± 0.002	0.016 ± 0.002	*0.018 ± 0.002	0.019 ± 0.002	0.019 ± 0.002
9-03-85	0.019 ± 0.002	0.018 ± 0.002	0.014 ± 0.002	0.013 ± 0.002	0.015 ± 0.002
9-10-85	0.020 ± 0.002	0.012 ± 0.002	0.014 ± 0.002	0.020 ± 0.002	0.014 ± 0.002
9-17-85	0.017 ± 0.002	0.017 ± 0.002	0.014 ± 0.002	0.014 ± 0.002	0.014 ± 0.002
9-24-85	0.006 ± 0.001	0.008 ± 0.001	0.008 ± 0.001	0.011 ± 0.002	(A)0.013 ± 0.003
Means:	0.013 ± 0.001	0.012 ± 0.001	0.012 ± 0.001	0.012 ± 0.001	0.013 ± 0.001

* - DOE split samples.

A - This sample had a low collected volume due to a tripped circuit breaker. Severe storms this week are the suspected cause. The equipment is estimated to have run for 80 hours out of the 168 total hours for this sampling interval.

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

Third Quarter, 1985

Sample Site	Be-7	K-40	Cs-134	Cs-137
H08	0.068 ± 0.006	<0.014	<0.0006	<0.0007
H12	0.078 ± 0.007	<0.013	<0.0008	<0.0007
H14	0.070 ± 0.007	<0.017	<0.0005	<0.0008
H30	0.072 ± 0.007	<0.015	<0.0008	<0.0006
H34	0.074 ± 0.006	<0.014	<0.0007	<0.0007

3.a SURFACE WATER - (pCi/l)

Sample Site	Collection Date	H-3	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Zr-95		I-131	Cs-134	Cs-137	Ba-140	
									Nb-95	(A)				La-140	(B)
H15	7-02-85	<240	380 + 40	<4	<8	<3	<5	<8	<5	<7	<5	<4	<4	<5	<5
	7-09-85	<240	310 + 40	<3	<7	<4	<5	<7	<8	<6	<4	<4	<4	<6	<6
	7-16-85	<240	340 + 40	<4	<9	<5	<6	<7	<8	<6	<4	<5	<5	<7	<7
	7-23-85	<240	330 + 40	<4	<8	<4	<4	<9	<8	<8	<4	<4	<4	<7	<7
	7-30-85	<240	360 + 40	<4	<9	<3	<5	<10	<6	<5	<4	<5	<5	<7	<7
	8-05-85	<250	360 + 40	<4	<13	<4	<4	<10	<7	<5	<5	<5	<4	<8	<8
	8-13-85	<250	350 + 40	<3	<10	<3	<5	<9	<7	<6	<4	<4	<4	<7	<7
	8-20-85	<250	330 + 40	<4	<9	<3	<5	<12	<10	<6	<4	<5	<5	<5	<5
	8-27-85	<260	370 + 40	<4	<8	<4	<5	<6	<7	<4	<4	<4	<4	<12	<12
	9-03-85	<190	310 + 40	<4	<7	<3	<5	<10	<7	<5	<5	<5	<5	<6	<6
	9-10-85	<190	320 + 40	<3	<9	<4	<5	<11	<8	<7	<4	<4	<4	<6	<6
	9-17-85	<180	310 + 40	<3	<10	<5	<4	<10	<6	<7	<4	<4	<4	<5	<5
	9-24-85	<180	280 + 50	<5	<9	<5	<4	<9	<7	<5	<5	<5	<3	<9	<9
H59	7-02-85	<240	400 + 40	<4	<9	<5	<5	<10	<8	<14	<5	<5	<5	<7	<7
	8-06-85	<250	400 + 40	<4	<8	<3	<5	<12	<7	<4	<5	<4	<6	<6	
	9-03-85	<190	240 + 40	<4	<8	<4	<3	<10	<7	<5	<5	<4	<8	<8	

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

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

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

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Ra-226	Th-232	U-238
H15*	8-05-85	<70	430 ± 60	<7	<9	<8	<8	210 ± 20	40 ± 10	<340
H59	8-06-85	<70	170 ± 50	<7	<8	<8	<8	191 ± 6	62 ± 7	306 ± 9

* DOE split sample

4.a.1 CRUSTACEA - (H15: Mixed Species), (H59: Blue Crab) - (pCi/kg; wet weight)

Sample Site	Collection Date	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	8-21-85	1600 ± 100	<11	<30	<12	<16	<32	<13	<14	<36	<62
H59	8-15-85	2000 ± 100	<10	<25	<10	<11	<21	<12	<10	120 ± 20	100 ± 30

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

Sample Site	Collection Date	K-40	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	8-12-85 (A)	2000 ± 100	<10	<29	<10	<11	<28	<10	<12	<30	<48
	9-03-85 (B)	2900 ± 100	<10	<22	<9	<13	<22	<10	<12	<25	<49
H59	8-21-85	3000 ± 200	<8	<23	<10	<11	<22	<12	<12	<24	<37

(A) This sample was collected from the plant intake screens in case of unavailability of samples from the designated sampling point (B). It is believed to be representative of the plant area.

(B) This sample was collected from the beach area, as required by Technical Specifications.

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	7-02-85	390 ± 50	4500 ± 100	<26	<8	<8
	8-07-85	580 ± 50	3400 ± 100	<7	<9	<8
	9-03-85	730 ± 40	2300 ± 100	<9	<8	<7
H52	7-02-85	560 ± 50	3500 ± 100	<25	<8	<8
	8-07-85	580 ± 50	3700 ± 100	<8	<9	<9
	9-03-85	700 ± 40	4000 ± 100	<8	<7	<7
H59	7-02-85	560 ± 40	2300 ± 100	<17	<6	<6
	8-06-85	700 ± 50	2600 ± 100	<8	<9	<9
	9-03-85	950 ± 50	2600 ± 100	<8	<8	<7