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FEBRUARY 29 1988

L-88-106

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


Gentlemen:

Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Semi-Annual Radioactive Effluent Release Report

Attached is the Radioactive Effluent Release Report for the period of July 1, 1987 through December 31, 1987 for St. Lucie Units 1 and 2, as required by Technical Specification 6.9.1.7.

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

Very truly yours,


W. F. Conway
Senior Vice President - Nuclear

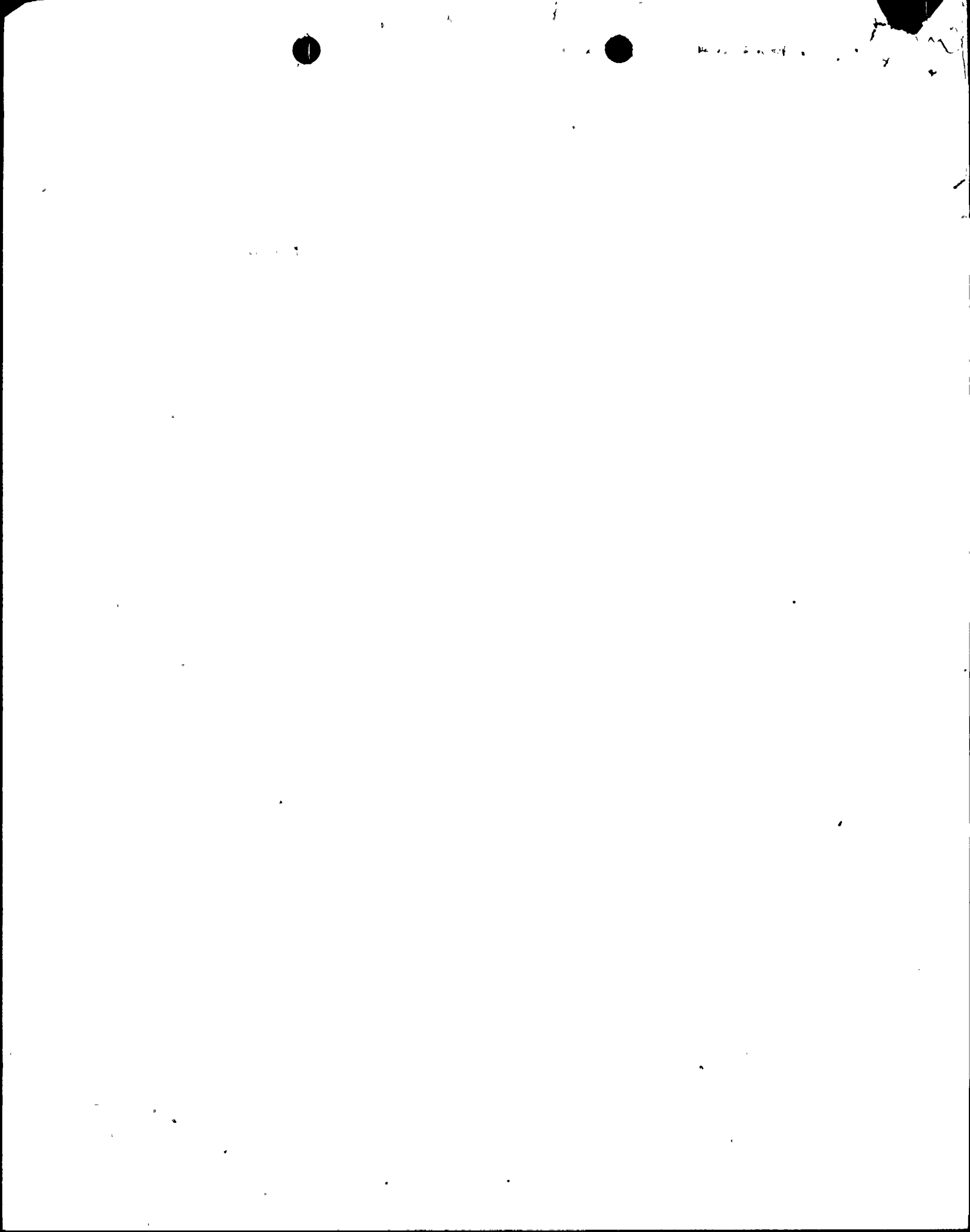
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Attachment

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

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FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNITS NO. 1 & 2
LICENSE NO.8 DPR-87 & NPF-16

COMBINED SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
FOR THE PERIOD
JULY 1, 1987 THROUGH DECEMBER 31, 1987

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EFFLUENT AND WASTE DISPOSAL SUPPLEMENTAL INFORMATION

1. Regulatory Limits

1.1 For Liquid Waste Effluents

A. The concentration of radioactive material released from the site shall be limited to the concentrations specified in 10 CFR Part 20 Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to $2E-4$ micro-Curies/ml total activity.

B. The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive material in liquid effluents released, from each reactor unit, to UNRESTRICTED AREAS shall be limited to:
During any calendar quarter to ≤ 1.5 mrems to the Total Body and to ≤ 5 mrems to any organ, and

During any calendar year to ≤ 3 mrems to the Total Body and to ≤ 10 mrems to any organ.

1.2 For Gaseous Waste Effluents:

A. The dose rate in UNRESTRICTED AREAS due to radioactive materials released in gaseous effluents from the site shall be limited to:
For Noble Gases: ≤ 500 mrems/yr to the total body and
 ≤ 3000 mrems/yr to the skin, and

For Iodine-131, Iodine-133, Tritium, and all radionuclides in particulate form with half-lives greater than 8 days:

≤ 1500 mrems/yr to any organ.

*B. The air dose due to noble gases released in gaseous effluents from each reactor unit, to areas at and beyond the SITE BOUNDARY shall be limited to the following:
During any calendar quarter, to ≤ 5 mrad for gamma radiation, and ≤ 10 mrad for beta radiation and, during any calendar year to ≤ 10 mrad for gamma radiation and ≤ 20 mrad for beta radiation.

*C. The dose to a MEMBER OF THE PUBLIC from Iodine-131, Iodine-133, Tritium, and all radionuclides in particulate form, with half-lives > 8 Days in gaseous effluents released, from each reactor unit to areas at and beyond the site boundary, shall be limited to the following:

During any calendar quarter to ≤ 7.5 mrem to any organ, and
During any calendar year to ≤ 15 mrem to any organ.

* The calculated doses contained in a semi-annual report shall not apply to any STS LCO. The reported values are based on actual release conditions instead of historical conditions that the STS LCO dose calculations are based on. The STS LCO dose limits are therefore included in Item 1 of the report, for information only.

**EFFLUENT AND WASTE DISPOSAL SUPPLEMENTAL INFORMATION
(Continued)**

2. Maximum Permissible Concentrations

Water: As per 10 CFR 20 Part 20, Appendix B, Table II, Column 2, except for entrained or dissolved noble gases as described in 1.1.A of this report.

Air: Release concentrations are limited to dose rate limits described in 1.2.A. of this report.

3. Average Energy of fission and activation gases in gaseous effluents is not applicable.

4. Measurements and approximations of total radioactivity

Where alpha, tritium, and named nuclides are shown as zero Curies released, this should be interpreted as "no activity was detected on the samples using the Plant Technical Specification analyses techniques to achieve required Lower Limit of Detection (LLD) sensitivity for radioactive effluents."

A summary of liquid effluent accounting methods is described in Table 3.1.

A summary of gaseous effluent accounting methods is described in Table 3.2.

4.1 Estimate of Errors

Error Topic	LIQUID		GASEOUS	
	Avg. %	Max. %	Avg. %	Max. %
Release Point Mixing	2	5	NA	NA
Sampling	1	5	2	5
Sample Preparation	1	5	1	5
Sample Analysis	3	10	3	10
Release Volume	2	5	4	15
	-----	-----	-----	-----
Total %	9	30	10	35

The predictability of error for radioactive releases can only be applied to nuclides that are predominant in sample spectrums. Nuclides that are near background relative to the predominant nuclides in a given sample could easily have errors greater than the above listed maximums.

**EFFLUENT AND WASTE DISPOSAL SUPPLEMENTAL INFORMATION
(Continued)**

4. Measurements and Approximations of Total Radioactivity (Cont.)
4.1 (Continued)
B. (Continued)

TABLE 3.1

RADIOACTIVE LIQUID EFFLUENT SAMPLING AND ANALYSIS

Liquid Source	Sampling Frequency	Type of Analysis	Method of Analysis
Monitor Tank 1 Releases	Each Batch	Principal Gamma Emitters	p.h.a.
	Monthly Composite	Tritium Gross Alpha	L.S. G.F.P.
	Quarterly Composite	Sr-89, Sr-90, & Fe-55	C.S.
Continuous Releases	Daily Grab Samples	Principal Gamma Emitters & I-131 for 4/M Composite Analysis	p.h.a.
		Dissolved & Entrained Gases One Batch/ Month	p.h.a.
		Tritium Composite Monthly	L.S.
		Alpha Composite Monthly	G.F.P.
		Sr-89, Sr-90, & Fe-55 Composite Quarterly	C.S.

1-Boric Acid Evaporator Condensate is normally recovered to the Primary Water Storage Tank for recycling into the reactor coolant system and does not contribute to Liquid Waste Effluent Totals.
p.h.a.-Gamma Spectrum Pulse Height Analysis using Lithium Germanium Detectors. All peaks are identified and quantified.
L.S.-Liquid Scintillation Counting
C.S.-Chemical Separation
G.F.P.-Gas Flow Proportional Counting
4/M-Four per Month

**EFFLUENT AND WASTE DISPOSAL SUPPLEMENTAL INFORMATION
(Continued)**

4. Measurements and Approximations of Total Radioactivity (Continued)
 4.1 (Continued)
 B. (Continued)

TABLE 3.2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS

Gaseous Source	Sampling Frequency	Type of Analysis	Method of Analysis
Waste Gas Decay Tank Releases	Each Batch	Principal Gamma Emitters	p.h.a.
Containment Purge Releases	Each Purge	Principal Gamma Emitters Tritium	p.h.a. L.S.
	4/M	Principal Gamma Emitters Tritium	p.h.a. L.S.
Plant Vent	Monthly Composite	Particulate Gross Alpha	G.F.P.
	Quarterly Composite	Particulate Sr-89 & Sr-90	C.S.

p.h.a.-Gamma Spectrum Pulse Height Analysis using Lithium Germanium Detectors. All peaks are identified and quantified.

L.S.-Liquid Scintillation Counting

C.S.-Chemical Separation

G.F.P.-Gas Flow Proportional Counting

4/M-Four per Month

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT, UNIT NO. 1

SEMIANNUAL REPORT
JULY 1, 1987 THROUGH DECEMBER 31, 1987

EFFLUENT AND WASTE DISPOSAL - SUPPLEMENTAL INFORMATION (CONTINUED)

5. BATCH RELEASES AND UNPLANNED RELEASES

LIQUIDS FOR : ST. LUCIE PLANT UNIT NO. 1

A. NUMBER OF BATCH RELEASES:	35.
B. TOTAL TIME PERIOD OF BATCH RELEASES:	21486. MINUTES
C. MAXIMUM TIME PERIOD FOR A BATCH RELEASE:	920. MINUTES
D. AVERAGE TIME PERIOD FOR A BATCH RELEASE:	623. MINUTES
E. MINIMUM TIME PERIOD FOR A BATCH RELEASE:	403. MINUTES
F. AVERAGE STREAM FLOW DURING REPORTING PERIOD INTO A FLOWING STREAM:	896444. G.P.M.

6. GASEOUS FOR : ST. LUCIE PLANT UNIT NO. 1

A. NUMBER OF BATCH RELEASES:	7.0
B. TOTAL TIME PERIOD OF BATCH RELEASES:	2180. MINUTES
C. MAXIMUM TIME PERIOD FOR A BATCH RELEASE:	600. MINUTES
D. AVERAGE TIME PERIOD FOR A BATCH RELEASE:	311. MINUTES
E. MINIMUM TIME PERIOD FOR A BATCH RELEASE:	178. MINUTES

UNPLANNED RELEASES

LIQUIDS FOR : ST. LUCIE PLANT UNIT NO. 1

A. NUMBER OF RELEASES:	0.
B. TOTAL ACTIVITY RELEASED:	0. CURIES

GASEOUS FOR : ST. LUCIE PLANT UNIT NO. 1

A. NUMBER OF RELEASES:	0.
B. TOTAL ACTIVITY RELEASED:	0. CURIES

SEE ATTACHMENTS (IF APPLICABLE) FOR:

- A DESCRIPTION OF THE EVENT AND EQUIPMENT INVOLVED.
- CAUSE(S) FOR THE UNPLANNED RELEASE.
- ACTIONS TAKEN TO PREVENT A RECURRENCE.
- CONSEQUENCES OF THE UNPLANNED RELEASE.

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT NO. 2

SEMIANNUAL REPORT
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EFFLUENT AND WASTE DISPOSAL - SUPPLEMENTAL INFORMATION (CONTINUED)

5. BATCH RELEASES AND UNPLANNED RELEASES

LIQUIDS FOR : ST. LUCIE PLANT UNIT NO. 2

A. NUMBER OF BATCH RELEASES:	34.
B. TOTAL TIME PERIOD OF BATCH RELEASES:	21486. MINUTES
C. MAXIMUM TIME PERIOD FOR A BATCH RELEASE:	920. MINUTES
D. AVERAGE TIME PERIOD FOR A BATCH RELEASE:	623. MINUTES
E. MINIMUM TIME PERIOD FOR A BATCH RELEASE:	403. MINUTES
F. AVERAGE STREAM FLOW DURING REPORTING PERIOD INTO A FLOWING STREAM:	896475. G.P.M.

6. GASEOUS FOR : ST. LUCIE PLANT UNIT NO. 2

A. NUMBER OF BATCH RELEASES:	34.0
B. TOTAL TIME PERIOD OF BATCH RELEASES:	23698. MINUTES
C. MAXIMUM TIME PERIOD FOR A BATCH RELEASE:	2647. MINUTES
D. AVERAGE TIME PERIOD FOR A BATCH RELEASE:	697. MINUTES
E. MINIMUM TIME PERIOD FOR A BATCH RELEASE:	30. MINUTES

UNPLANNED RELEASES

LIQUIDS FOR : ST. LUCIE PLANT UNIT NO. 2

A. NUMBER OF RELEASES:	0.
B. TOTAL ACTIVITY RELEASED:	0. CURIES

GASEOUS FOR : ST. LUCIE PLANT UNIT NO. 2

A. NUMBER OF RELEASES:	0.
B. TOTAL ACTIVITY RELEASED:	0. CURIES

SEE ATTACHMENTS (IF APPLICABLE) FOR:

- A DESCRIPTION OF THE EVENT AND EQUIPMENT INVOLVED.
- CAUSE(S) FOR THE UNPLANNED RELEASE.
- ACTIONS TAKEN TO PREVENT A RECURRENCE.
- CONSEQUENCES OF THE UNPLANNED RELEASE.

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANTS UNITS 1 & 2

SEMIANNUAL REPORT

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EFFLUENT AND WASTE DISPOSAL - SUPPLEMENTAL INFORMATION

(Continued)

7. Assessment of radiation dose from radioactive effluents to MEMBERS OF THE PUBLIC due to their activities inside the SITE BOUNDARY assume the visitor onsite for 40 hours, at an average distance of 0.3 kilometers in the worst dispersion direction, and received exposure from each of the two reactor units on the St. Lucie Site.

VISITOR DOSE RESULTS FOR CALENDAR YEAR 1987 WERE:

GASEOUS PARTICULATES & IODINE EXPOSURE		NOBLE GAS EXPOSURE DOSE in mrad	
ORGAN	DOSE (mrem)		
Bone	7.55 E-06	Gamma Air Dose	1.67 E-02
Liver	1.04 E-04	Beta Air Dose	2.94 E-02
Thyroid	2.93 E-03		
Kidney	4.40 E-05		
Lung	9.48 E-05		
GI-LLI	9.52 E-05		
Total Body	1.26 E-04		

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNITS NO. 1 & 2

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EFFLUENT AND WASTE DISPOSAL - SUPPLEMENTAL INFORMATION (Continued)

8. Offsite Dose Calculation Manual Revisions (ODCM):

The ODCM was not revised during the reporting period.

9. Solid Waste and Irradiated Fuel Shipments:

No irradiated fuel shipments were made from the site. Common Solid waste from St. Lucie Units 1 and 2 were shipped jointly. A summation of these shipments is given in Table 3.9 of this report.

10. Process Control Program (PCP) Revisions:

The PCP was not revised during the reporting interval.

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT NO. 1

SEMIANNUAL REPORT
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TABLE 3.3-1
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

NUCLIDES RELEASED	UNIT	QUARTER #3	QUARTER #4
A. FISSION AND ACTIVATION PRODUCTS			
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	3.97E-02	2.20E-01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	7.86E-11	5.67E-10
B. TRITIUM			
1. TOTAL RELEASE	CI	1.44E 02	5.64E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.86E-07	1.45E-07
C. DISSOLVED AND ENTRAINED GASES			
1. TOTAL RELEASE	CI	7.34E-01	4.25E-01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.45E-09	1.09E-09
D. GROSS ALPHA RADIOACTIVITY			
1. TOTAL RELEASE	CI	0.00E-01	1.10E-05
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)			
	LITERS	3.44E 07	3.72E 07
F. VOLUME OF DILUTION WATER USED DURING REPORTING PERIOD			
	LITERS	5.05E 11	3.89E 11

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT NO. 2

SEMIANNUAL REPORT
JULY 1, 1987 THROUGH DECEMBER 31, 1987

TABLE 3.3-2
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

NUCLIDES RELEASED	UNIT	QUARTER #3	QUARTER #4
A. FISSION AND ACTIVATION PRODUCTS			
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	3.97E-02	2.16E-01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	7.86E-11	5.57E-10
B. TRITIUM			
1. TOTAL RELEASE	CI	1.44E 02	5.64E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.86E-07	1.45E-07
C. DISSOLVED AND ENTRAINED GASES			
1. TOTAL RELEASE	CI	7.34E-01	4.25E-01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.45E-09	1.09E-09
D. GROSS ALPHA RADIOACTIVITY			
1. TOTAL RELEASE	CI	0.00E-01	1.10E-05
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)			
	LITERS	2.54E 06	1.80E 06
F. VOLUME OF DILUTION WATER USED DURING REPORTING PERIOD			
	LITERS	5.05E 11	3.89E 11

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT NO. 1

SEMIANNUAL REPORT
JULY 1, 1987 THROUGH DECEMBER 31, 1987

TABLE 3.4-1

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QTR. #3	QTR. #4	QTR. #3	QTR. #4
I-131	CI	0.00E-01	1.05E-03	1.30E-02	9.71E-03
I-132	CI	0.00E-01	0.00E-01	0.00E-01	6.10E-04
I-133	CI	0.00E-01	0.00E-01	1.18E-03	9.20E-04
I-135	CI	0.00E-01	0.00E-01	0.00E-01	6.25E-05
NA-24	CI	0.00E-01	0.00E-01	0.00E-01	4.12E-04
CR-51	CI	0.00E-01	0.00E-01	0.00E-01	1.78E-02
MN-54	CI	0.00E-01	0.00E-01	5.18E-04	1.36E-03
FE-55	CI	0.00E-01	0.00E-01	6.05E-04	2.97E-02
CO-57	CI	0.00E-01	0.00E-01	0.00E-01	1.04E-04
CO-58	CI	0.00E-01	0.00E-01	2.98E-03	7.58E-02
FE-59	CI	0.00E-01	0.00E-01	0.00E-01	3.13E-03
CO-60	CI	0.00E-01	0.00E-01	8.41E-03	7.54E-03
AG-110	CI	0.00E-01	0.00E-01	4.42E-04	1.93E-03
SN-113	CI	0.00E-01	0.00E-01	4.19E-05	8.05E-04
SB-122	CI	0.00E-01	0.00E-01	3.20E-05	5.86E-04
SB-124	CI	0.00E-01	0.00E-01	2.57E-04	1.91E-02
NP-239	CI	0.00E-01	0.00E-01	0.00E-01	9.94E-04
SR-89	CI	0.00E-01	0.00E-01	1.37E-04	1.98E-04
SR-90	CI	0.00E-01	0.00E-01	0.00E-01	3.42E-05
Y-90	CI	0.00E-01	0.00E-01	0.00E-01	3.42E-05
ZR-95	CI	0.00E-01	0.00E-01	2.28E-04	1.55E-03
NB-95	CI	0.00E-01	0.00E-01	6.13E-04	3.03E-03
NB-97	CI	0.00E-01	0.00E-01	6.14E-04	2.70E-03
TC-99M	CI	0.00E-01	0.00E-01	8.80E-05	4.02E-05
RU-103	CI	0.00E-01	0.00E-01	0.00E-01	2.60E-04
SB-125	CI	0.00E-01	0.00E-01	4.13E-03	2.09E-02
CS-134	CI	0.00E-01	8.97E-04	2.39E-03	4.10E-03
CS-136	CI	0.00E-01	0.00E-01	9.77E-05	0.00E-01
CS-137	CI	0.00E-01	2.07E-03	3.10E-03	6.26E-03
CS-138	CI	0.00E-01	0.00E-01	5.82E-05	3.62E-04

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT NO. 1

SEMIANNUAL REPORT
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TABLE 3.4-1 CONTINUED

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QTR. #3	QTR. #4	QTR. #3	QTR. #4
BA-140	CI	0.00E-01	0.00E-01	7.64E-05	0.00E-01
LA-140	CI	0.00E-01	0.00E-01	7.26E-04	1.31E-03
CE-141	CI	0.00E-01	0.00E-01	0.00E-01	4.35E-05
PR-144	CI	0.00E-01	0.00E-01	0.00E-01	2.26E-03
TE-129	CI	0.00E-01	0.00E-01	0.00E-01	2.07E-03
TE-129M	CI	0.00E-01	0.00E-01	0.00E-01	7.23E-05
TE-132	CI	0.00E-01	0.00E-01	0.00E-01	5.25E-04
NI-56	CI	0.00E-01	0.00E-01	0.00E-01	1.14E-04
TOTAL FOR PERIOD	CI	0.00E-01	4.01E-03	3.97E-02	2.16E-01
AR-41	CI	0.00E-01	0.00E-01	0.00E-01	5.00E-04
KR-85M	CI	0.00E-01	0.00E-01	0.00E-01	2.05E-05
XE-131M	CI	0.00E-01	0.00E-01	3.14E-03	1.39E-03
XE-133	CI	0.00E-01	0.00E-01	7.14E-01	3.73E-01
XE-133M	CI	0.00E-01	0.00E-01	8.28E-03	3.83E-03
XE-135	CI	0.00E-01	0.00E-01	7.98E-03	4.61E-02
TOTAL FOR PERIOD	CI	0.00E-01	0.00E-01	7.34E-01	4.25E-01

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT NO. 2

SEMIANNUAL REPORT
JULY 1, 1987 THROUGH DECEMBER 31, 1987

TABLE 3.4-2

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QTR. #3	QTR. #4	QTR. #3	QTR. #4
I-131	CI	0.00E-01	0.00E-01	1.30E-02	9.71E-03
I-132	CI	0.00E-01	0.00E-01	0.00E-01	6.10E-04
I-133	CI	0.00E-01	0.00E-01	1.18E-03	9.20E-04
I-135	CI	0.00E-01	0.00E-01	0.00E-01	6.25E-05
NA-24	CI	0.00E-01	0.00E-01	0.00E-01	4.12E-04
CR-51	CI	0.00E-01	0.00E-01	0.00E-01	1.78E-02
MN-54	CI	0.00E-01	0.00E-01	5.18E-04	1.36E-03
FE-55	CI	0.00E-01	0.00E-01	6.05E-04	2.97E-02
CO-57	CI	0.00E-01	0.00E-01	0.00E-01	1.04E-04
CO-58	CI	0.00E-01	0.00E-01	2.98E-03	7.58E-02
FE-59	CI	0.00E-01	0.00E-01	0.00E-01	3.13E-03
CO-60	CI	0.00E-01	0.00E-01	8.41E-03	7.54E-03
AG-110	CI	0.00E-01	0.00E-01	4.42E-04	1.93E-03
SN-113	CI	0.00E-01	0.00E-01	4.19E-05	8.05E-04
SB-122	CI	0.00E-01	0.00E-01	3.20E-05	5.86E-04
SB-124	CI	0.00E-01	0.00E-01	2.57E-04	1.91E-02
NP-239	CI	0.00E-01	0.00E-01	0.00E-01	9.94E-04
SR-89	CI	0.00E-01	0.00E-01	1.37E-04	1.98E-04
SR-90	CI	0.00E-01	0.00E-01	0.00E-01	3.42E-05
Y-90	CI	0.00E-01	0.00E-01	0.00E-01	3.42E-05
ZR-95	CI	0.00E-01	0.00E-01	2.28E-04	1.55E-03
NB-95	CI	0.00E-01	0.00E-01	6.13E-04	3.03E-03
NB-97	CI	0.00E-01	0.00E-01	6.14E-04	2.70E-03
TC-99M	CI	0.00E-01	0.00E-01	8.80E-05	4.02E-05
RU-103	CI	0.00E-01	0.00E-01	0.00E-01	2.60E-04
SB-125	CI	0.00E-01	0.00E-01	4.13E-03	2.09E-02
CS-134	CI	0.00E-01	0.00E-01	2.39E-03	4.10E-03
CS-136	CI	0.00E-01	0.00E-01	9.77E-05	0.00E-01
CS-137	CI	0.00E-01	0.00E-01	3.10E-03	6.26E-03
CS-138	CI	0.00E-01	0.00E-01	5.82E-05	3.62E-04

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT NO. 2

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TABLE 3.4-2 CONTINUED

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QTR. #3	QTR. #4	QTR. #3	QTR. #4
BA-140	CI	0.00E-01	0.00E-01	7.64E-05	0.00E-01
LA-140	CI	0.00E-01	0.00E-01	7.26E-04	1.31E-03
CE-141	CI	0.00E-01	0.00E-01	0.00E-01	4.35E-05
FR-144	CI	0.00E-01	0.00E-01	0.00E-01	2.26E-03
TE-129	CI	0.00E-01	0.00E-01	0.00E-01	2.07E-03
TE-129M	CI	0.00E-01	0.00E-01	0.00E-01	7.23E-05
TE-132	CI	0.00E-01	0.00E-01	0.00E-01	5.25E-04
NI-56	CI	0.00E-01	0.00E-01	0.00E-01	1.14E-04
TOTAL FOR PERIOD	CI	0.00E-01	0.00E-01	3.97E-02	2.16E-01
AR-41	CI	0.00E-01	0.00E-01	0.00E-01	5.00E-04
KR-85M	CI	0.00E-01	0.00E-01	0.00E-01	2.05E-05
XE-131M	CI	0.00E-01	0.00E-01	3.14E-03	1.39E-03
XE-133	CI	0.00E-01	0.00E-01	7.14E-01	3.73E-01
XE-133M	CI	0.00E-01	0.00E-01	8.28E-03	3.83E-03
XE-135	CI	0.00E-01	0.00E-01	7.98E-03	4.61E-02
TOTAL FOR PERIOD	CI	0.00E-01	0.00E-01	7.34E-01	4.25E-01

FLORIDA POWER & LIGHT COMPANY

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TABLE 3.5-1

LIQUID EFFLUENTS - DOSE SUMMATION

Age Group: ADULT Location: Any ADULT

Exposure Interval: January 1, 1987 through December 31, 1987

FISH & SHELLFISH ----- ORGAN	Calendar Year ----- Dose (mrem)
Bone	2.77 E-02
Liver	1.17 E-01
Thyroid	3.02 E-02
Kidney	1.89 E-03
Lung	1.33 E-01
GI-LLI	2.64 E-01
Total Body	3.50 E-02

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TABLE 3.5-2

LIQUID EFFLUENTS. - DOSE SUMMATION

Age Group: ADULT Location: Any ADULT

Exposure Interval: January 1, 1987 through December 31, 1987

<u>FISH & SHELLFISH</u>	<u>Calendar Year</u>
<u>ORGAN</u>	<u>Dose (mrem)</u>
Bone	2.73 E-02
Liver	1.16 E-01
Thyroid	1.98 E-02
Kidney	1.59 E-03
Lung	1.33 E-01
GI-LLI	2.64 E-01
Total Body	3.45 E-02

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ST. LUCIE PLANT UNIT NO. 1

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TABLE 3.6-1

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

NUCLIDES RELEASED	UNIT	QUARTER #3	QUARTER #4
A. FISSION AND ACTIVATION GASES			
1. TOTAL RELEASE	CI	1.81E 03	4.98E 02
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.28E 02	6.26E 01
B. IODINES			
1. TOTAL IODINE-131	CI	4.14E-04	5.35E-03
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.21E-05	6.73E-04
C. PARTICULATES			
1. PARTICULATES T-1/2 > 8 DAYS	CI	0.00E-01	8.65E-07
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	0.00E-01	1.09E-07
3. GROSS ALPHA RADIOACTIVITY	CI	1.62E-08	9.31E-08
D. TRITIUM			
1. TOTAL RELEASE	CI	5.12E 01	1.03E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.44E 00	1.29E 00

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TABLE 3.6-2

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

NUCLIDES RELEASED	UNIT	QUARTER #3	QUARTER #4
A. FISSION AND ACTIVATION GASES			
1. TOTAL RELEASE	CI	2.24E 03	5.34E 02
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.81E 02	6.72E 01
B. IODINES			
1. TOTAL IODINE-131	CI	2.25E-02	1.02E-02
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.83E-03	1.28E-03
C. PARTICULATES			
1. PARTICULATES T-1/2 > 8 DAYS	CI	5.72E-06	6.09E-05
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	7.20E-07	7.66E-06
3. GROSS ALPHA RADIOACTIVITY	CI	5.24E-08	4.17E-08
D. TRITIUM			
1. TOTAL RELEASE	CI	1.87E 01	3.71E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.36E 00	4.66E-01

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TABLE 3.7-1

GASEOUS EFFLUENTS - GROUND LEVEL RELEASES

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QTR.#3	QTR.#4	QTR.#3	QTR.#4
1. NOBLE GASES					
AR-41	CI	0.00E-01	0.00E-01	0.00E-01	3.44E-01
KR-85	CI	0.00E-01	0.00E-01	0.00E-01	7.06E-01
KR-85M	CI	1.11E 01	0.00E-01	0.00E-01	2.09E-01
KR-87	CI	0.00E-01	0.00E-01	0.00E-01	1.30E-02
KR-88	CI	7.25E 00	0.00E-01	0.00E-01	1.36E-01
XE-131M	CI	0.00E-01	0.00E-01	0.00E-01	5.37E-01
XE-133	CI	1.58E 03	3.63E 02	8.54E-01	4.93E 01
XE-133M	CI	2.60E 01	0.00E-01	1.34E-02	7.95E-01
XE-135	CI	1.86E 02	7.60E 01	2.40E-03	6.93E 00
TOTAL FOR PERIOD	CI	1.81E 03	4.39E 02	8.69E-01	5.90E 01
2. IODINE					
I-131	CI	4.14E-04	5.35E-03		
I-133	CI	9.62E-04	1.10E-02		
TOTAL FOR PERIOD	CI	1.38E-03	1.64E-02		
3. PARTICULATE					
CS-137	CI	0.00E-01	8.65E-07		
TOTAL FOR PERIOD	CI	0.00E-01	8.65E-07		

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT NO. 2

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TABLE 3.7-2

GASEOUS EFFLUENTS - GROUND LEVEL RELEASES

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QTR.#3	QTR.#4	QTR.#3	QTR.#4
1. NOBLE GASES					
AR-41	CI	0.00E-01	0.00E-01	6.00E-01	2.77E-02
KR-85	CI	0.00E-01	0.00E-01	1.87E-01	1.06E-01
KR-85M	CI	2.45E 01	3.19E 00	1.77E-01	8.37E-01
KR-87	CI	2.02E 00	0.00E-01	0.00E-01	0.00E-01
KR-88	CI	4.49E 01	2.14E 00	2.76E-03	1.30E-01
XE-131M	CI	0.00E-01	0.00E-01	2.83E-01	5.83E-01
XE-133	CI	1.84E 03	2.51E 02	8.83E 01	2.16E 02
XE-133M	CI	1.37E 01	0.00E-01	1.88E 00	4.18E 00
XE-135	CI	2.19E 02	3.91E 01	3.90E 00	1.67E 01
TOTAL FOR PERIOD	CI	2.14E 03	2.96E 02	9.53E 01	2.39E 02
2. IODINE					
I-131	CI	2.25E-02	1.02E-02		
I-132	CI	0.00E-01	3.13E-04		
I-133	CI	2.89E-02	9.40E-03		
TOTAL FOR PERIOD	CI	5.14E-02	1.99E-02		
3. PARTICULATE					
CO-58	CI	0.00E-01	6.09E-05		
SR-89	CI	5.72E-06	0.00E-01		
TOTAL FOR PERIOD	CI	5.72E-06	6.09E-05		

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT # 1

TABLE 3.8-1

GASEOUS EFFLUENTS - DOSE SUMMATION - QUARTER # N.A.

Age Group: INFANT Exposure Interval: January 1, 1987 through December 31, 1987

NOTE: The below dose results were calculated using actual meteorological data during the specified time interval with Met data reduced as per Reg. Guide 1.111, March 1976

PATHWAY	BONE mrem	LIVER mrem	THYROID mrem	KIDNEY mrem	LUNG mrem	GI-LLI mrem	T. BODY mrem
Ground Plane (A)	0.00 E-01	0.00 E-01	0.00 E-01	0.00 E-01	0.00 E-01	0.00 E-01	1.01 E-04
Grass-Cow-Milk(B)	1.95 E-03	2.83 E-03	7.42 E-01	7.97 E-04	4.95 E-04	5.86 E-04	1.84 E-03
Inhalation (A)	2.36 E-05	3.98 E-04	9.18 E-03	1.70 E-04	3.68 E-04	3.70 E-04	3.82 E-04
TOTAL	1.98 E-03	3.23 E-03	7.51 E-01	9.67 E-04	8.63 E-04	9.56 E-04	2.32 E-03

(A)-Sector : WEST Range: 1.78 miles
(B)-Sector : WEST Range: 4.25 miles (Default Animal)

NOBLE GASES	CALENDAR YEAR (mrad)
Gamma Air Dose	6.48 E-02
Beta Air Dose	1.07 E-01
Sector : WEST	Range: 1.78 miles

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT # 2

TABLE 3.8-2

GASEOUS EFFLUENTS - DOSE SUMMATION - QUARTER # N.A.

Age Group: INFANT Exposure Interval: January 1, 1987 through December 31, 1987

NOTE: The below dose results were calculated using actual meteorological data during the specified time interval with Met data reduced as per Reg. Guide 1.111, March 1976

PATHWAY	BONE mrem	LIVER mrem	THYROID mrem	KIDNEY mrem	LUNG mrem	GI-LLI mrem	T. BODY mrem
Ground Plane (A)	0.00 E-01	0.00 E-01	0.00 E-01	0.00 E-01	0.00 E-01	0.00 E-01	9.57 E-05
Grass-Cow-Milk(B)	2.71 E-03	3.67 E-03	1.03 E 00	1.00 E-03	4.41 E-04	5.71 E-04	2.32 E-03
Inhalation (A)	3.20 E-05	3.69 E-04	1.24 E-02	1.54 E-04	3.30 E-04	3.31 E-04	3.49 E-04
TOTAL	2.74 E-03	4.04 E-03	1.05 E 00	1.16 E-03	7.71 E-04	9.02 E-04	2.76 E-03

(A)-Sector : WEST Range: 1.78 miles
(B)-Sector : WEST Range: 4.25 miles (Default Animal)

NOBLE GASES	CALENDAR YEAR (mrad)
Gamma Air Dose	7.54 E-02
Beta Air Dose	1.40 E-01
Sector : WEST	Range: 1.78 miles

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 UNITS 1 AND 2, TABLE 3.9

A. Solid Waste Shipped Off-Site for Burial or Disposal

1.	TYPE OF WASTE	UNIT	6 MONTH PERIOD	ERROR%
a.	Spent resin, process filters	M**3 Ci	2.257 E+1 3.893 E+2	2.0 E+1
b.	Dry compressible waste (NOTE 5)	M**3 Ci	1.961 E+2 1.075 E+1	2.0 E+1
c.	Irradiated Components	M**3 Ci	0 0	
d.	Other	M**3	1.306 E+1	
	1. Non-compressible metal (DAW) (NOTE 6)	Ci	5.400 E-2	2.0 E+1

2. ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

Category	Nuclides	%
a.	Cs-137	5.93 E+1
	Cs-134	1.69 E+1
	Ni-63	1.04 E+1
	Co-60	7.48 E+0
	Co-58	2.36 E+0
	Mn-54	1.28 E+0
	Fe-55	9.60 E-1
	C-14	8.60 E-1
b.	Cs-137	2.52 E+1
	Co-60	2.48 E+1
	Co-58	1.76 E+1
	Fe-55	1.01 E+1
	Cs-134	8.91 E+0
	H-3	3.61 E+0
	Ni-63	2.76 E+0
	Nb-95	1.92 E+0
	Mn-54	1.36 E+0
	Zr-95	1.32 E+0
	Cr-51	9.50 E-1
	Ce-144	2.60 E-1
	C-14	1.70 E-1

c.	n/a	n/a
d.	Co-60	9.70 E+1
	Mn-54	2.82 E+0
	I-129	2.00 E-1

3. SOLID WASTE DISPOSITION

Number of Shipments	Mode of Transportation	Destination
40	Sole Use Truck	Barnwell, SC

B. Irradiated Fuel Shipments

Number of Shipments	Mode of Transportation	Destination
0	n/a	n/a

n/a = Not Applicable

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 UNITS 1 AND 2, TABLE 3.9 (CONT'D)

Waste Class	Total Volume Cubic ft.	Total Curies (Note 1)	Principal Radionuclides (Notes 1 & 2)	Type of Waste (Note 3)	Category Reg. Guide 1.21	Type of Container (Note 4)	Solidification Agent
Class A	6736.0	2.15	Cs-137	FWR Compactable Trash (Note 5)	1. b.	Non-specification Strong tight package	None
Class A	194.1	8.60	Cs-137, Ni-63, Sr-90, I-129 Pu-241	FWR Compactable Trash	1. b.	NRC Certified LSA > Type A	None
Class A	461.4	5.4 E-2	N/A	FWR Non- Compactable Trash (Note 6)	1. d.	Non-Specification Strong tight package	None
Class B	595	102.97	Cs-137, Ni-63, Sr-90, I-129, Pu-241, TRU	FWR Ion- Exchange resin	1. a.	NRC Certified LSA > Type A	None
Class C	203.7	286.36	Cs-137, Ni-63, Sr-90, I-129, Co-60, Tc-99, C-14, Sum of nuclides with T 1/2 < 5 yr.	FWR Ion- Exchange resin	1. a.	NRC Certified LSA > Type A	None



6
2
4
5
7

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UNITS 1 AND 2 TABLE 3.9 (CON'T)
SOLID WASTE SUPPLEMENT

Note 1: The total curie quantity and radionuclide composition of solid waste shipped from the St. Lucie Plant, Units 1 & 2 are determined using a combination of qualitative and quantitative techniques. In general, the St. Lucie Plant follows the guidelines outlined in the Low Level Waste Licensing Branch Technical Position (BTP) on Radioactive Waste Classification (5/11/83) for these determinations.

The most frequently used techniques for determining the total curie quantity in a package are the dose to curie methods and the (concentration) x (volume or mass) calculations. Where appropriate, engineering type activation analyses may be applied. Since each of the above methodologies involves to some extent qualitative parameters, the total curie quantity is considered to be an estimate.

The composition of radionuclides in the waste is determined by both on-site analyses for principal gamma emitters and periodic off-site analyses for other radionuclides. The on site analyses are performed either on a batch basis or on a routine basis using reasonably representative samples as appropriate for the waste type. Off-site analyses are used to establish scaling factors or other estimates for radionuclides such as ^3H , ^{14}C , ^{99}Tc , ^{129}I , TRU , ^{241}Pu , ^{242}Cm , ^{63}Ni , ^{55}Fe , and ^{90}Sr .

Note 2: "Principal Radionuclides" refer to those radionuclides contained in the waste in concentrations greater than .01 times the concentration of the nuclides listed in Table 1 or .01 times the smallest concentration of the nuclides listed in Table 2 of 10 CFR 61.

Note 3: "Type of Waste" is generally specified as described in NUREG 0782, Draft Environment Impact Statement on 10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste".

Note 4: "Type of Container" refers to the transport package.

Note 5: The volume and activity listed for Dry Compressible Waste represent the quantity of material that to date has been sent to the Barnwell, South Carolina burial facility. These totals include material that was shipped directly from the St. Lucie Plant (194.1 cubic feet, 8.6 Curies, NRC Certified ISA > Type A package) and material that was shipped by a contracted vendor from their "Super-Compaction" facility (6736 cubic feet, 2.15 Curies). During the reporting period, 14 shipments of Dry Compressible Waste (15088 cubic feet, 3.38 Curies) were made from the St. Lucie Plant to the volume reduction facility. This material was shipped via "Sole Use Truck" in non-specification strong tight packages.

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UNITS 1 AND 2 TABLE 3.9 (CON'T)
SOLID WASTE SUPPLEMENT

Note 6: The volume and activity listed for non-compressible metal represent the quantity of material that during the reporting period could not be recycled by the contracted vendor and required disposal. None of this material was shipped to the vendor during the reporting period.