



Carolina Power & Light Company  
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United States Nuclear Regulatory Commission  
ATTENTION: Document Control Desk  
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-325 & 50-324/LICENSE NOS. DPR-71 & DPR-62  
SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

Gentlemen:

Enclosed is the Semi-Annual Radioactive Effluent Release Report for the Brunswick Steam Electric Plant, Units 1 and 2 covering the period from January 1, 1996 through June 30, 1996.

This report is submitted for the Brunswick Steam Electric Plant in accordance with Technical Specification 6.9.1.8.

Please refer any questions regarding this letter to Mr. Ralph Schlichter at (910) 457-2235.

Sincerely,

W. Levis - Director Site Operations  
Brunswick Steam Electric Plant

WGR/gmt

Enclosure:

1. Report
2. List of Regulatory Commitments

cc: Mr. S. D. Ebnetter, NRC Regional Administrator, Region II  
Mr. C. A. Patterson, NRC Senior Resident Inspector - Brunswick Plant  
Mr. D. C. Trimble, Jr., NRR Project Manager - Brunswick Plant  
The Honorable H. Wells, Chairman - North Carolina Utilities Commission

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ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2  
NRC DOCKET NOS. 50-325 & 50-324  
OPERATING LICENSE NOS. DPR-71 & DPR-62

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

Brunswick Nuclear Plant  
Semiannual Radioactive Effluent Report  
January 1, to June 30, 1996

ATTACHMENTS:

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ATTACHMENT 1

Supplemental Information

January 1, to June 30, 1996

EFFLUENT WASTE DISPOSAL SEMIANNUAL REPORT  
Supplemental Information

Facility: Brunswick Nuclear Plant  
Licensee: Carolina Power and Light Company

1. Regulatory Limits

A. Fission and activation gases (Technical Spec. 3.11.2.2)

- \*(1) Calendar Quarter
  - (a) 10 mrad gamma
  - (b) 20 mrad beta

(2) Calendar Year

- (a) 20 mrad gamma
- (b) 40 mrad beta

B. Iodine-131, Iodine-133, tritium, and particulates with half lives greater than eight days (Technical Spec. 3.11.2.3)

- \*(1) Calendar Quarter
  - (a) 15 mrem to any organ

(2) Calendar Year

- (a) 30 mrem to any organ

\*(3) Calendar Quarter for Burning Contaminated Oil

- (a) 436 uCi

(4) Calendar Year for Burning Contaminated Oil

- (a) 872 uCi

C. Liquid effluents (Technical Specification 3.11.1.2)

\*\* (1) Calendar Quarter

- (a) 3 mrem to total body
- (b) 10 mrem to any organ

(2) Calendar Year

- (a) 6 mrem to total body
- (b) 20 mrem to any organ

NOTE: Dose calculations are determined in accordance with the Off-Site Dose Calculation Manual (ODCM)

\* Used for percent of Technical Specification limit determinations in Table 1A.

\*\* Used for percent of Technical Specification limit determinations in Table 2A.

2. Maximum permissible concentrations and dose rates which determine maximum instantaneous release rates.

A. Fission and activation gases (Technical Specification 3.11.2.1.a)

- (1) 500 mrem/year to total body
- (2) 3000 mrem/year to the skin

B. Iodine-131, iodine-133, tritium, and particulates with half-lives greater than eight days (Technical Specification 3.11.2.1.b)

- (1) 1500 mrem/year to any organ

C. Liquid effluents (Technical Specification 3.11.1.1)  
The concentration of radioactive material released in liquid effluents to unrestricted areas after dilution in the discharge canal shall be limited to the concentrations specified in 10CFR20, Appendix B, for radionuclides other than noble gases.

\*\* (1) Tritium: limit =  $1 \text{ E-03 uCi/ml}$  and

\*\* (2) Dissolved and entrained gases: limit =  $2 \text{ E-04 uCi/ml}$

3. Measurements and Approximations of Total Radioactivity

A. Fission and activation gases

Analysis for specific radionuclides in representative grab samples by gamma spectroscopy.

B. Iodines

Analysis for specific radionuclides collected on charcoal cartridges by gamma spectroscopy.

C. Particulates

Analysis for specific radionuclides collected on filter papers by gamma spectroscopy.

D. Particulates for Burning Oil

Analysis for specific radionuclides by grab samples of each batch of oil to be burned.

E. Liquids Effluents

Analysis for specific radionuclides of individual releases by gamma spectroscopy.

\*\* Used as applicable limits for Table 2A.

Nuclear counting statistics are reported utilizing 1-sigma error. Total error where reported represents a best effort to approximate the total of all individual and sampling errors.

#### 4. Batch Releases

##### A. Liquid

(1) Number of batch releases:	1.41E+02
(2) Total time period for batch releases:	1.78E+04 Minutes
(3) Maximum time period for a batch release:	2.11E+02 Minutes
(4) Average time period for a batch release:	1.26E+02 Minutes
(5) Minimum time period for a batch release:	1.00E+00 Minutes
(6) Average stream flow during periods of release of effluent into a flowing stream :	5.14E+05 GPM

##### B. Gaseous

(1) Number of batch releases:	0.00E 00 Minutes
(2) Total time period for a batch release:	0.00E 00 Minutes
(3) Maximum time period for a batch release:	0.00E 00 Minutes
(4) Average time period for a batch release:	0.00E 00 Minutes
for a batch release:	0.00E 00 Minutes

0.00E+00  
0.00E+00  
Curies

0.00E+00  
0.00E+00  
Curies

See 10CFR50 limits. See



Nuclear counting statistics are reported utilizing 1-sigma error. Total error where reported represents a best effort to approximate the total of all individual and sampling errors.

#### 4. Batch Releases

##### A. Liquid

(1) Number of batch releases:	1.41E+02
(2) Total time period for batch releases:	1.78E+04 Minutes
(3) Maximum time period for a batch release:	2.11E+02 Minutes
(4) Average time period for a batch release:	1.26E+02 Minutes
(5) Minimum time period for a batch release:	1.00E+00 Minutes
(6) Average stream flow during periods of release of effluent into a flowing stream :	5.14E+05 GPM

##### B. Gaseous

(1) Number of batch releases:	0.00E 00 Minutes
(2) Total time period for a batch release:	0.00E 00 Minutes
(3) Maximum time period for a batch release:	0.00E 00 Minutes
(4) Average time period for a batch release:	0.00E 00 Minutes
(5) Minimum time period for a batch release:	0.00E 00 Minutes

#### 5. Abnormal releases \*

##### A. Liquid

(1) Number of releases:	0.00E+00
(2) Total activity released:	0.00E+00 Curies

##### B. Gaseous

(1) Number of releases:	0.00E+00
(2) Total activity released:	0.00E+00 Curies

\* There were no abnormal releases that exceeded 10CFR20 or 10CFR50 limits. See page 6 for a discussion of release events that occurred.



## Discussion of Tritium in the Storm Drain Collection Pond

Approximately  $1.79\text{E}+07$  gallons containing  $1.50\text{E}+01$  curies of tritium were released from the Storm Drain Collection Pond (SDCP) to the Intake Canal during this reporting period. The SDCP is a permitted release point.

NOTE 1: Curie totals are included in the quarterly summaries in Table 2A and 2B.

NOTE 2: The quantity of rainwater released from the Storm Drain Collection Basin and/or the Storm Drain Collection Pond is not included in VOLUME OF WASTE on Table 2A.

ATTACHMENT 2

Effluent and Waste Disposal Data

Brunswick Nuclear Plant

January 1, to June 30, 1996

Table 1A: Gaseous Effluents - Summation of all Releases

Table 1B: Gaseous Effluents - Elevated Releases

Table 1C: Gaseous Effluents - Ground Level Releases

Table 1D: Gaseous Effluents - Ground Level Releases for  
Burning Contaminated Oil.

Table 2A: Liquid Effluents - Summation of all Releases

Table 2B: Liquid Effluents - Batch Mode

Lower Limits of Detection

Table 3A: Solid Waste and Irradiated Fuel Shipments - Waste  
Class A

Table 3B: Solid Waste and Irradiated Fuel Shipments - Waste  
Class B

Table 3C: Solid Waste and Irradiated Fuel Shipments - Waste  
Class C

Combustion of Waste Oil

TABLE 1A  
Effluent and Waste Disposal Semiannual Report for Year 1996  
Gaseous Effluents - Summation of all Releases

	Unit	Qtr 1	Qtr 2	Est. Tot. Error %
A. <u>FISSION AND ACTIVATION GASES</u>				
1. Total release	Ci	4.03E+02	7.40E+01	4.50E+01
2. Average release rate for period	uCi/sec	5.13E+01	9.41E+00	
3. Percent of technical specification limit	%	4.54E-02	1.61E-02	
B. <u>IODINES</u>				
1. Total I-131	Ci	1.30E-02	1.71E-03	3.50E+01
2. Average release rate for period	uCi/sec	1.65E-03	2.17E-04	
C. <u>PARTICULATES</u> NOTE 1				
1. Total release	Ci	3.98E-03	8.72E-04	3.50E+01
2. Average release rate for period	uCi/sec	5.06E-04	1.11E-04	
3. Gross alpha	Ci	9.48E-06	4.16E-07	
D. <u>TRITIUM</u>				
1. Total release	Ci	6.81E+00	4.60E+00	3.00E+01
2. Average release rate for period	uCi/sec	8.66E-01	5.85E-01	
E. <u>IODINE-131, IODINE-133, TRITIUM AND PARTICULATES</u> NOTE 1				
1. Total Release	Ci	6.84E+00	4.62E+00	
2. Average release rate for period	uCi/sec	8.70E-01	5.87E-01	
3. Percent of technical specification limit	%	5.09E-01	5.89E-02	
F. <u>PARTICULATES VIA BURNING CONTAMINATED OIL</u>				
1. Total Release	Ci	7.07E-05	0.00E+00	
2. Average release rate for period	uCi/sec	8.99E-06	0.00E+00	
3. Percent of technical specification limit	%	1.62E+01	0.00E+00	

NOTE 1: This includes the number of curies released via incineration.

TABLE 1B  
Effluent and Waste Disposal Semiannual Report for Year 1996  
Gaseous Effluents - Elevated Releases  
Continuous Release

<u>Nuclides Released</u>	<u>Unit</u>	<u>Qtr 1</u>	<u>Qtr 2</u>
<u>1. FISSION GASES</u>			
argon-41	Ci	3.26E-01	< LLD
krypton-85m	Ci	3.10E+01	3.13E+00
krypton-87	Ci	2.28E+01	< LLD
krypton-88	Ci	3.47E+01	1.92E+00
xenon-133m	Ci	9.36E-02	< LLD
xenon-133	Ci	1.74E+02	4.76E+00
xenon-135m	Ci	1.36E+01	2.65E+01
xenon-135	Ci	5.44E+01	7.60E+00
xenon-137	Ci	2.77E+01	3.71E+00
<u>xenon-138</u>	<u>Ci</u>	<u>2.21E+01</u>	<u>2.42E+01</u>
total for period	Ci	3.81E+02	7.18E+01
<u>2. IODINES</u>			
iodine-131	Ci	1.71E-03	1.66E-03
iodine-132	Ci	1.88E-02	7.70E-03
iodine-133	Ci	1.04E-02	8.75E-03
iodine-134	Ci	< LLD	2.38E-03
<u>iodine-135</u>	<u>Ci</u>	<u>1.60E-02</u>	<u>1.34E-02</u>
total for period	Ci	4.69E-02	3.38E-02
<u>3. PARTICULATES</u>			
manganese-54	Ci	1.31E-05	< LLD
cobalt-58	Ci	1.20E-05	< LLD
cobalt-60	Ci	1.43E-04	< LLD
strontium-89	Ci	5.79E-05	1.65E-04
strontium-90	Ci	3.94E-07	5.67E-07
cesium-137	Ci	3.71E-06	< LLD
barium-140	Ci	4.87E-05	1.82E-04
<u>lanthanum-140</u>	<u>Ci</u>	<u>7.52E-05</u>	<u>3.56E-04</u>
total for period	Ci	3.54E-04	7.04E-04
<u>4. TRITIUM</u>			
hydrogen-3	Ci	1.22E+00	1.71E+00

TABLE 1C  
Effluent and Waste Disposal Semiannual Report for Year 1996  
Caseous Effluents - Ground Level Releases  
Continuous Release

<u>Nuclides Released</u>	<u>Unit</u>	<u>Qtr 1</u>	<u>Qtr 2</u>
<u>1. FISSION GASES</u>			
krypton-85m	Ci	3.15E-01	< LLD
xenon-133	Ci	1.38E+01	< LLD
<u>xenon-135</u>	<u>Ci</u>	<u>7.61E+00</u>	<u>2.22E+00</u>
total for period	Ci	2.17E+01	2.22E+00
<u>2. IODINES</u>			
iodine-131	Ci	1.12E-02	5.69E-05
iodine-132	Ci	6.34E-03	< LLD
iodine-133	Ci	3.96E-03	3.14E-04
<u>iodine-135</u>	<u>Ci</u>	<u>4.08E-03</u>	<u>&lt; LLD</u>
total for period	Ci	2.56E-02	3.71E-04
<u>3. PARTICULATES</u> NOTE 1			
chromium-51	Ci	2.63E-04	7.62E-06
manganese-54	Ci	2.97E-04	3.66E-06
cobalt-58	Ci	1.69E-04	4.34E-06
iron-59	Ci	8.41E-05	< LLD
cobalt-60	Ci	2.00E-03	1.24E-04
strontium-89	Ci	3.98E-05	1.18E-06
strontium-90	Ci	2.15E-06	3.37E-07
niobium-95	Ci	3.60E-05	< LLD
zirconium-95	Ci	2.00E-05	< LLD
ruthenium-103	Ci	1.23E-05	< LLD
cesium-134	Ci	2.05E-04	1.03E-05
cesium-137	Ci	1.80E-04	1.65E-05
barium-140	Ci	1.06E-04	< LLD
lanthanum-140	Ci	1.80E-04	< LLD
cerium-141	Ci	5.30E-06	< LLD
cerium-144	Ci	2.93E-05	< LLD
hafnium-181	Ci	4.03E-08	< LLD
<u>americium-241</u>	<u>Ci</u>	<u>4.61E-06</u>	<u>&lt; LLD</u>
total for period	Ci	3.63E-03	1.68E-04
<u>4. TRITIUM</u>			
hydrogen-3	Ci	5.60E+00	2.90E+00

NOTE 1: This includes the number of curies released via incineration.

TABLE 1D  
Effluent and Waste Disposal Semiannual Report for Year 1996  
Gaseous Effluents - Ground Level Releases  
For Burning Contaminated Oil

<u>Nuclides Released</u>	<u>Unit</u>	<u>Qtr 1</u>	<u>Qtr 2</u>
1. <u>PARTICULATES</u>			
manganese-54	Ci	6.12E-07	0.00E+00
cobalt-60	Ci	6.21E-05	0.00E+00
cesium-137	Ci	7.99E-06	0.00E+00
<u>hafnium-181</u>	<u>Ci</u>	<u>4.03E-08</u>	<u>0.00E+00</u>
total	Ci	7.07E-05	0.00E+00

TABLE 2A  
Effluent and Waste Disposal Semiannual Report for Year 1996  
Liquid Effluents - Summation of all Releases

	<u>Unit</u>	<u>Qtr 1</u>	<u>Qtr 2</u>	<u>Est Tot</u> <u>% Error</u>
A. <u>FISSION AND ACTIVATION</u> <u>PRODUCTS</u> NOTE 1				
1. Total release (excluding tritium, gases, & alpha)	Ci	3.26E-02	2.59E-03	4.00E 01
NOTE 2				
2. Avg. diluted conc.	uCi/ml	1.11E-09	4.82E-10	
3. Percent limit	%	9.19E-02	3.38E-03	
B. <u>TRITIUM</u> NOTE 1				
1. Total release	Ci	2.99E+01	3.49E+00	4.50E 01
NOTE 2				
2. Avg. diluted conc.	uCi/ml	1.02E-06	6.49E-07	
3. Percent limit	%	1.02E-01	6.49E-02	
C. <u>DISSOLVED AND ENTRAINED GASES</u> NOTE 1				
1. Total release	Ci	7.54E-03	6.82E-04	4.00E 01
NOTE 2				
2. Avg. diluted conc.	uCi/ml	2.57E-10	1.27E-10	
3. Percent limit	%	1.29E-04	6.34E-05	
D. <u>GROSS ALPHA RADIOACTIVITY</u>				
1. Total release	Ci	< LLD	< LLD	4.00E 01
E. <u>VOLUME OF WASTE</u> NOTE 2				
	liters	8.46E+06	7.74E+05	1.50E 01
F. <u>TOTAL OF DILUTION WATER</u> <u>(used during release</u> <u>for average dil. conc.)</u>				
	liters	2.93E+10	5.37E+09	1.30E 01
G. <u>VOLUME OF COOLING WATER</u> <u>DISCHARGE FROM PLANT</u>				
	liters	2.55E+11	4.81E+11	

NOTE 1: Includes radionuclides released via abnormal and/or nonroutine releases.

NOTE 2: Does not include rainwater released (i.e. Storm Drain Collection Basin and/or Storm Drain Collection Pond.)



TABLE 2B  
Effluent and Waste Disposal Semiannual Report for Year 1996  
Liquid Effluents - Batch Mode

<u>Nuclides Released</u>	<u>Unit</u>	<u>Qtr 1</u>	<u>Qtr 2</u>
<u>1. FISSION AND ACTIVATION PRODUCTS</u>			
chromium-51	Ci	1.11E-03	1.34E-04
manganese-54	Ci	7.65E-04	2.82E-05
iron-55	Ci	3.03E-03	4.95E-05
cobalt-58	Ci	3.31E-04	7.18E-06
cobalt-60	Ci	2.66E-02	1.94E-03
technetium-99m	Ci	6.91E-06	< LLD
ruthenium-106	Ci	2.64E-05	< LLD
iodine-131	Ci	2.43E-04	4.69E-05
tellurium-132	Ci	4.39E-06	3.61E-06
iodine-133	Ci	3.32E-05	6.41E-05
cesium-134	Ci	1.42E-04	3.11E-05
cesium-137	Ci	3.13E-04	2.81E-04
lanthanum-140	Ci	1.90E-05	< LLD
cerium-141	Ci	1.18E-05	< LLD
<u>hafnium-181</u>	<u>Ci</u>	<u>2.64E-05</u>	<u>&lt; LLD</u>
total for period	Ci	3.26E-02	2.59E-03
<u>2. DISSOLVED AND ENTRAINED GASES</u>			
xenon-133	Ci	4.64E-03	1.72E-04
<u>xenon-135</u>	<u>Ci</u>	<u>2.90E-03</u>	<u>5.10E-04</u>
total for period	Ci	7.54E-03	6.82E-04

# Lower Limits of Detection

January 1, to June 30, 1996

$\mu\text{Ci/ml}$

## 1. Liquid Releases

Mn-54	2.14E-08
Fe-55	5.15E-08
Co-58	2.34E-08
Fe-59	4.04E-08
Co-60	2.42E-08
Zn-65	4.26E-08
Mo-99	1.24E-07
Tc-99m	9.81E-09
Ru-106	1.50E-07
I-131	8.48E-09
Cs-134	1.14E-08
Cs-137	1.37E-08
La-140	2.41E-08
Ce-141	2.23E-08
Ce-144	7.82E-08
Hf-181	1.68E-08
Sr-89	2.35E-08
Sr-90	1.15E-08
Alpha	3.22E-08
Kr-87	3.73E-08
Kr-88	5.02E-08
Xe-133	3.77E-08
Xe-133m	1.12E-07
Xe-135	1.34E-08
Xe-138	1.37E-07

## 2. Gaseous Releases

Ar-41	1.55E-08
Kr-85m	5.66E-09
Kr-87	2.67E-08
Kr-88	2.43E-08
Xe-133	1.48E-08
Xe-133m	4.65E-08
Xe-135	6.40E-09
Xe-138	2.12E-07

## 3. Iodines and Particulates

Alpha	1.70E-15
Mn-54	5.82E-14
Co-58	4.37E-14
Fe-59	1.27E-13
Co-60	6.20E-14
Zn-65	8.23E-14
Sr-89	3.30E-15
Sr-90	1.20E-15
Nb-95	3.90E-14
Zr-95	7.35E-14
Mo-99	3.37E-13
Ru-103	5.71E-15
I-131	2.96E-14
I-132	4.17E-13
I-133	1.01E-13
I-134	2.58E-11
I-135	6.10E-13
Cs-134	3.52E-14
Cs-137	2.95E-14
Ba-140	1.49E-13
La-140	4.69E-14
Ce-141	3.38E-14
Ce-144	1.55E-13
Hf-181	3.15E-14
Am-241	1.54E-13

## NOTES

- 1: The above values represent typical "a priori" LLDs for isotopes where values of "<LLD" are indicated in Tables 1A, 1B, 1C, 2A, and 2B. Also included are isotopes specified in Technical Specifications.
- 2: Where activity for any nuclide is reported as "Less than LLD", that nuclide is considered not present and the LLD activity listed is not considered in summary data.

TABLE 3A  
Effluent and Waste Disposal Semiannual Report for Year 1996  
Solid Waste and Irradiated Fuel Shipments

<u>Waste Class A</u>		<u>January through June</u>		
1.	<u>Total volume shipped</u> (cubic meters)		0.00E+00	
	Total Curie quantity (estimated)		0.00E+00	
2.	<u>Type of Waste</u>	<u>Units</u>	<u>Six-month Period</u>	<u>Est.Total % Error</u>
a.	Spent resins,filter sludges	meters <sup>3</sup>	0.00E+00	
		Curies	0.00E+00	N/A
b.	Dry active waste,compacted	meters <sup>3</sup>	0.00E+00	
	noncompacted	Curies	0.00E+00	N/A
c.	Irradiated components	meters <sup>3</sup>	0.00E+00	
		Curies	0.00E+00	N/A
d.	Others	meters <sup>3</sup>	0.00E+00	
		Curies	0.00E+00	N/A
3.	<u>Estimate of major radionuclide composition</u>			
a.	N/A			
b.	N/A			
c.	N/A			
d.	N/A			

NOTE:

Solid Radioactive Waste was shipped for processing, however, not for final disposal during the report period. Access to the burial facility at Barnwell, South Carolina was not available.

Table 3A (cont.)  
Effluent and Waste Disposal Semiannual Report for Year 1996  
Solid Waste and Irradiated Fuel Shipments

4. Cross reference table, waste stream, form, and container type.

<u>Stream</u>	<u>Form</u>	<u>Container type</u>	<u>No. of shipments</u>
		Type A/Type B	
a. Resin	Dewatered & Solidified*	N/A	N/A
b. Dry active waste	Compacted/ Noncompacted waste	N/A	N/A
c. Irradiated components		N/A	N/A
d. Other		N/A	N/A

\*solidification agent or absorbent  
(e.g., cement, urea formaldehyde)

5. Shipment Disposition

a. Solid Waste

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	N/A	N/A

b. Irradiated Fuel

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	N/A	N/A

TABLE 3B  
Effluent and Waste Disposal Semiannual Report for Year 1996  
Solid Waste and Irradiated Fuel Shipments

<u>Waste Class B</u>		<u>January through June</u>		
1. <u>Total volume shipped</u> (cubic meters)		0.00E+00		
Total Curie quantity (estimated)		0.00E+00		
2. <u>Type of Waste</u>	<u>Units</u>	<u>Six-month Period</u>	<u>Est. Total % Error</u>	
a. Spent resins, filter sludges	meters <sup>3</sup>	0.00E+00		
	Curies	0.00E+00	N/A	
b. Dry active waste, compacted, and noncompacted	meters <sup>3</sup>	0.00E+00		
	Curies	0.00E+00	N/A	
c. Irradiated components	meters <sup>3</sup>	0.00E+00		
	Curies	0.00E+00	N/A	
d. Others (describe)	meters <sup>3</sup>	0.00E+00		
	Curies	0.00E+00	N/A	
3. <u>Estimate of major radionuclide composition</u>				
a.	N/A			
b.	N/A			
c.	N/A			
d.	N/A			

NOTE:

Solid Radioactive Waste was shipped for processing, however, not for final disposal during the report period. Access to the burial facility at Barnwell, South Carolina was not available.

TABLE 3B (cont.)  
Effluent and Waste Disposal Semiannual Report For Year 1996  
Solid Waste and Irradiated Fuel Shipments

4. Cross reference table, waste stream, form and container type

<u>Stream</u>	<u>Form</u>	<u>Container type</u>	<u>No. of shipments</u>
		Type A/Type B	
a. Resin	Dewatered & Solidified	N/A	N/A
b. Dry active waste	Compacted/ Noncompacted waste	N/A	N/A
c. Irradiated components		N/A	N/A
d. Other		N/A	N/A

\* Solidification agent or absorbent  
(e.g., cement, urea formaldehyde)

5. Shipment Disposition

a. Solid Waste

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	N/A	N/A

b. Irradiated Fuel

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	N/A	N/A

TABLE 3C  
Effluent and Waste Disposal Semiannual Report for Year 1996  
Solid Waste and Irradiated Fuel Shipments

<u>Waste Class C</u>		<u>January through June</u>		
1.	<u>Total volume shipped</u> (cubic meters)	0.00E+00		
	Total Curie quantity (estimated)	0.00E+00		
2.	<u>Type of Waste</u>	<u>Six-month</u>	<u>Est.Total</u>	
		<u>Units</u>	<u>Period</u>	<u>% Error</u>
a.	Spent resins, filter sludges	meters <sup>3</sup>	0.00E+00	
		Curies	0.00E+00	N/A
b.	Dry active waste, compacted	meters <sup>3</sup>	0.00E+00	
	and noncompacted	Curies	0.00E+00	N/A
c.	Irradiated components	meters <sup>3</sup>	0.00E+00	
		Curies	0.00E+00	N/A
d.	Others (describe)	meters <sup>3</sup>	0.00E+00	
		Curies	0.00E+00	N/A
3.	<u>Estimate of major radionuclide composition</u>			
a.	N/A			
b.	N/A			
c.	N/A			
d.	N/A			



TABLE 3C (cont.)  
Effluent and Waste Disposal Semiannual Report for Year 1996  
Solid Waste and Irradiated Fuel Shipments

4. Cross reference table, waste stream, form and container type

<u>Stream</u>	<u>Form</u>	<u>Container Type</u>	<u>No. of shipments</u>
		Type A/Type B	
a. Resin	Dewatered & Solidified *	N/A	0
b. Dry active waste	Compacted Noncompacted waste	N/A	0
c. Irradiated components		N/A	0
d. Others		N/A	0
	* Solidification agent or absorbent (e.g., cement, urea formaldehyde)		N/A

5. Shipment Disposition

a. Solid Waste

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	N/A	N/A

b. Irradiated Fuel (non-burial)

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
4	Rail Car IF-300 Cask Sole Use	CP&L/SHNPP

ATTACHMENT 2 (Cont.)

Combustion of Waste Oil

January 1, to June 30, 1996

During this reporting period, approximately  $3.48\text{E}3$  gallons of contaminated waste oil were incinerated in the on site oil incinerator. The total activity contained in this quantity of waste oil included  $6.21\text{E}-05$  curies of Cobalt-60,  $7.99\text{E}-06$  curies of Cesium-137,  $6.12\text{E}-07$  curies of Manganese-54, and  $4.03\text{E}-08$  curies of hafnium-181.

ATTACHMENT 3

Environmental Monitoring Program

January 1, to June 30, 1996

Enclosure 1: Milk and Vegetable Sample Locations

Enclosure 2: Land Use Census

ATTACHMENT 3 (Cont.)

ENCLOSURE 1

Milk and Vegetation Sample Locations

January 1, to June 30, 1996

No milk samples were identified during the last Land Use Census, therefore, no milk locations were available during this time period.

Vegetation sample locations remained unchanged.

ATTACHMENT 3 (Cont.)

ENCLOSURE 2

Land Use Census

January 1, to June 30, 1996

The results of the 1996 Land Use Census will be reported in the next Semiannual Radioactive Effluent Release Report.

ATTACHMENT 4

Effluent Instrumentation

January 1, to June 30, 1996

- Enclosure 1: Radioactive Liquid Effluent Monitoring Instrumentation.
- Enclosure 2: Radioactive Gaseous Effluent Monitoring
- Enclosure 3: Liquid Hold-Up Tank

ATTACHMENT 4 (Cont.)

ENCLOSURE 1

Radioactive Liquid Effluent Monitoring Instrumentation

January 1, to June 30, 1996

No Radioactive Liquid Effluent Monitoring Instrumentation was inoperable for greater than 30 days.



ATTACHMENT 4 (Cont.)

ENCLOSURE 2

Radioactive Gaseous Effluent Monitoring Instrumentation

January 1, to June 30, 1996

No Radioactive Gaseous Effluent Monitoring Instrumentation was inoperable for greater than 30 days.

ATTACHMENT 4 (Cont.)

ENCLOSURE 3

Liquid Hold-Up Tank

January 1, to June 30, 1996

No liquid hold-up tank exceeded the 10 Ci limit during this reporting period.

ATTACHMENT 5

Major Modifications to the Radioactive Waste Treatment System

January 1, to June 30, 1996

As per footnote 7 to Technical Specification 6.15, a discussion of any major modifications to the radioactive waste treatment systems will be submitted with the Final Safety Analysis Report update.

ATTACHMENT 6

Meteorological Data

January 1, to June 30, 1996

As per Technical Specification 6.9.1.10.a footnote 6, the annual summary of meteorological data collected over the calendar year will be submitted to a file and will be available for NRC review upon request.

ATTACHMENT 7

Annual Dose Assessment

January 1, to June 30, 1996

As per Technical Specification 6.9.1.10.b, an assessment of radiation doses due to the radioactive liquid and gaseous effluents released during the calendar year will be reported within 90 days after January 1 of each year. The annual dose assessment is not included with this report.

ATTACHMENT 8

Off-Site Dose Calculation Manual (ODCM) and

Process Control Program (PCP) Revisions

January 1, to June 30, 1996

There were no revisions made to the Off-Site Dose Calculation Manual or Process Control Program during this reporting period.

ENCLOSURE 2  
BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2  
NRC DOCKET NOS. 50-325 & 50-324  
OPERATING LICENSE NOS. DPR-71 & DPR-62  
SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

LIST OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by Carolina Power & Light Company in this document. Any other actions discussed in the submittal represent intended or planned actions by Carolina Power & Light Company. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Manager-Regulatory Affairs at the Brunswick Nuclear Plant of any questions regarding this document or any associated regulatory commitments.

Commitment	Committed date or outage
None	