

BRUNSWICK STEAM ELECTRIC PLANT
SEMIANNUAL ENVIROMENTAL AND EFFLUENT
RELEASE REPORT

January 1 to June 30, 1983

Attachments

1. Effluent, Waste Disposal, Potential Doses .
2. Meteorological Data
3. Technical Specification Changes
4. Ocean Outfall Thermal Monitoring
5. Maintenance Dredging in the Intake Canal
6. Milk Usage Survey (Sample Station 35)

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Facility: Brunswick Steam Electric Plant

License: Carolina Power and Light Company

1. Regulatory Limits

a. Fission & activation gases:

(1) Quarterly reporting average

$$\sum_{i=1}^n DAB_i [(2.0 \times 10^2) Q_{si} + (8.0 \times 10^4) Q_{vi}] \leq 1$$

$$\sum_{i=1}^n [DETA_i (9.3 \times 10^4) Q_{si} + DAG_i (1.6 \times 10^5) Q_{vi}] \leq 1$$

(2) 12 month average

$$\sum_{i=1}^n DAB_i [(4.0 \times 10^2) Q_{si} + (1.6 \times 10^5) Q_{vi}] \leq 1$$

$$\sum_{i=1}^n [DETA_i (1.9 \times 10^5) Q_{si} + DAG_i (3.2 \times 10^5) Q_{vi}] \leq 1$$

2. Maximum instantaneous release rates (10CFR20)

a. Fission and activation gases

n

$$\sum_{n=1} [DTB_i (8.0 \times 10^3) Q_{si} + DTB_i (1.3 \times 10^4) Q_{vi}] \leq 1$$

n=1

(see 1.a above for dose factors)

b. I-131 and particulates with half-lives greater than eight days

$$[3.7 \times 10^4] Q_s + [5.8 \times 10^6] Q_v \leq 1$$

c. Liquid effluents

Values specified in 10CFR20, Appendix B, Table II, Column 2 for unrestricted areas

3. Measurements and Approximations of Total Radioactivity

a. Fission and activation gases

Analysis for specific radionuclides in representative grab samples by . and particulate filter, 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. Liquid effluents

Analysis for specific radionuclides by individual releases and composite sample, by gamma spectroscopy.

ISOTOPE	DET _B	DT _B	DAB	DETA	DAG
	mrem/Ci	$\frac{\text{mrem-m}^3}{\text{pCi-yr}}$	$\frac{\text{mrad-m}^3}{\text{pCi-yr}}$		$\frac{\text{mrad-m}^3}{\text{pCi-yr}}$
Kr-83m	1.0×10^{-9}	7.6×10^{-8}	2.9×10^{-4}	6.0×10^{-8}	1.9×10^{-5}
Kr-85	6.0×10^{-7}	1.6×10^{-5}	2.0×10^{-3}	7.5×10^{-7}	1.7×10^{-5}
Kr-85m	4.5×10^{-5}	1.2×10^{-3}	2.0×10^{-3}	4.5×10^{-5}	1.2×10^{-3}
Kr-87	2.0×10^{-4}	5.9×10^{-3}	1.0×10^{-2}	2.0×10^{-4}	6.2×10^{-3}
Kr-88	6.0×10^{-4}	1.5×10^{-2}	2.9×10^{-3}	6.0×10^{-4}	1.5×10^{-2}
Kr-89	2.7×10^{-4}	1.7×10^{-2}	1.1×10^{-2}	2.7×10^{-4}	1.7×10^{-2}
Kr-90	2.7×10^{-4}	1.6×10^{-2}	7.8×10^{-3}	2.7×10^{-4}	1.6×10^{-2}
Xe-131m	1.1×10^{-5}	9.1×10^{-5}	1.1×10^{-3}	1.2×10^{-5}	1.6×10^{-4}
Xe-133	9.0×10^{-6}	2.9×10^{-4}	1.0×10^{-3}	1.0×10^{-5}	3.5×10^{-4}
Xe-133m	8.2×10^{-6}	2.5×10^{-4}	1.5×10^{-3}	9.5×10^{-6}	3.3×10^{-4}
Xe-135	7.0×10^{-5}	1.8×10^{-3}	2.5×10^{-3}	8.0×10^{-5}	1.9×10^{-3}
Xe-135m	1.1×10^{-4}	3.1×10^{-3}	7.4×10^{-4}	1.3×10^{-4}	3.4×10^{-3}
Xe-137	3.5×10^{-5}	1.4×10^{-3}	1.3×10^{-2}	3.5×10^{-5}	1.5×10^{-3}
Xe-138	3.0×10^{-4}	8.8×10^{-3}	4.8×10^{-3}	3.3×10^{-4}	9.2×10^{-3}
Ar-41	3.7×10^{-4}	8.8×10^{-3}	3.3×10^{-3}	4.0×10^{-4}	9.3×10^{-3}

b. I-131 and particulates with half-lives of greater than eight days.

$$[3.26 \times 10^6] Q_s + [3.74 \times 10^7] Q_v \leq 1 \text{ quarter average}$$

$$[6.56 \times 10^6] Q_s + [7.46 \times 10^7] Q_v \leq 1 \text{ 12 month average}$$

c. Liquid effluents

20 curies per calendar quarter

40 curies per 12 consecutive months

Relative variance for each measurement used in calculating activity values were combined using the additive property of variance. The square root of the combined variance was extracted to obtain an estimate of the standard deviation of the multistep process. The standard deviation was used to evaluate the error in the calculated activities at the 95% confidence level.

4. Batch Releases

a. Liquid

1. Number of batch releases: $3.70\text{E}+02$
2. Total time period for batch releases: $7.94\text{E}+04$ Minutes
3. Maximum time period for a batch release: $2.80\text{E}+03$ Minutes
4. Average time period for batch release: $2.15\text{E}+02$ Minutes
5. Minimum time period for a batch release: $5.00\text{E}-01$ Minutes
6. Average stream flow during periods of release of effluent into a flowing stream: Not applicable

b. Gaseous

1. Number of batch releases: None
2. Total time period for a batch release: $0.00\text{E}+00$ Minutes
3. Maximum time period for a batch release: $0.00\text{E}+00$ Minutes
4. Average time period for a batch release: $0.00\text{E}+00$ Minutes
5. Minimum time period for a batch release: $0.00\text{E}+00$ Minutes

5. Abnormal Releases

a. Liquid

1. Number of releases: None
2. Total activity released: None

b. Gaseous

1. Number of releases: None
2. Total activity released: None

ATTACHMENT 1

EFFLUENT, WASTE DISPOSAL, AND POTENTIAL DOSES SEMIANNUAL REPORT

January 1 to June 30, 1983

Brunswick Steam Electric Plant

Table 1A: Gaseous Effluents - Summation of All Releases

Table 1B: Gaseous Effluents - Elevated Releases

Table 1C: Gaseous Effluents - Ground Level Releases

Table 2A: Liquid Effluents - Summation of All Releases

Minimum Detectable Activities

Table 3: Solid Waste and Irradiated Fuel Shipments

Potential Doses

Table 1A
Effluent and Waste Disposal Semiannual Report Year 83
Gaseous Effluents - Summation of All Releases

	Unit	Quarter I	Quarter II	Est. Total Error, %
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A. Fission and activation gases

1. Total release	Ci	1.18E+05	1.16E+05	7.69E+00
2. Average release rate for period	μCi/sec	1.57E+04	1.36E+04	
3. Percent of technical specification limit	%	4.04E+01	3.99E+01	

B. Iodines

1. Total iodine-131 (gaseous and particulate)	Ci	1.28E+00	5.78E-01	5.88E+00
2. Average release rate for period	μCi/sec	1.70E-01	6.76E-02	
3. I-131 contribution to percent of technical specification limit	%	5.83E+01	2.36E+01	

C. Particulates

1. Particulates with half-lives of greater than eight days	Ci	1.38E+00	6.18E-01	1.49E+01
2. Average release rate for period	μCi/sec	1.84E-01	7.23E-02	
3. Percent of technical specification limit	%	8.01E+01	2.77E+01	
4. Gross alpha radioactivity	Ci	2.99E-07	83E-07	

D. Tritium

1. Total release	Ci	1.44E+00	1.76E+00	7.94E+00
2. Average release rate for period	μCi/sec	1.92E-01	2.06E-01	
*3. Percent of technical specification limit	%	4.16E-03	5.43E-03	

*Based on 10CFR20, Appendix B, limit of 4E-05 μCi/ml for H₃ submersion in an unrestricted area.

Table 1B
Effluent and Waste Disposal Semiannual Report Year 83
Gaseous Effluents - Elevated Release

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter I	Quarter II	Quarter	Quarter

1. Fission gases

argon-41	Ci	3.21E+01	1.38E+01		
krypton-85m	Ci	3.38E+03	3.48E+03		
xenon - 137	Ci	3.08E+02	9.80E+03		
krypton-87	Ci	1.28E+04	9.48E+03		
krypton-88	Ci	9.82E+03	7.56E+03		
xenon- 131m	Ci	2.22E+03	<MDA		
xenon-133	Ci	4.23E+03	3.47E+03		
xenon-135m	Ci	1.57E+04	1.52E+04		
xenon 135	Ci	1.70E+04	1.29E+04		
xenon-138	Ci	4.88E+04	4.79E+04		
unidentified	Ci	1.23E+03	1.29E+03		
Total for period	Ci	1.15E+05	1.10E+05		

2. Gaseous Iodines

iodine-131	Ci	1.28E+00	5.74E-01		
iodine 132	Ci	2.67E-01	7.85E-01		
iodine 133	Ci	1.00E+01	3.06E+00		
iodine-134	Ci	9.66E-02	1.99E-01		
iodine-135	Ci	3.06E+00	4.45E+00		
Total for period	Ci	1.47E+01	9.07E+00		

3. Particulates

strontium-89	Ci	1.71E-03	5.16E-03		
strontium-90	Ci	2.03E-06	2.60E-06		
cesium-134	Ci	4.94E-06	3.08E-06		
cesium-137	Ci	6.14E-05	1.25E-04		
barium-lanthanum-140	Ci	1.98E-03	1.31E-04		
cobalt-58	Ci	4.12E-04	1.28E-03		
cobalt-60	Ci	8.08E-04	6.62E-04		
chromium-51	Ci	2.77E-04	2.45E-04		
tellurium-129m	Ci	<MDA	3.64E-05		
zinc-65	Ci	<MDA	1.57E-05		
cerium-144	Ci	2.03E-04	1.96E-04		
yttrium - 91	Ci	3.88E-02	1.68E-02		
manganese-54	Ci	2.41E-04	1.30E-03		
iodine-131	Ci	1.28E+00	5.74E-01		
unidentified	Ci	1.59E-02	7.91E-03		
Total for period	Ci	1.34E+00	6.08E-01		

4.0 Tritium

hydrogen-3	Ci	1.97E-01	4.82E-01		
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Table 1C
Effluent and Waste Disposal Semiannual Report Year 83
Gaseous Effluents - Ground Level Releases

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter 1	Quarter II	Quarter	Quarter

1. Fission gases

argon-41	Ci	<MDA	<MDA		
krypton-85m	Ci	2.84E+00	1.09E+01		
krypton-85	Ci	<MDA	<MDA		
krypton-87	Ci	<MDA	<MDA		
krypton-88	Ci	1.35E+01	5.18E+01		
xenon-133m	Ci	1.15E+02	1.30E+02		
xenon-133	Ci	2.16E+03	3.97E+03		
xenon-135m	Ci	1.26E+01	4.84E+01		
xenon 135	Ci	5.62E+02	2.10E+03		
xenon-138	Ci	<MDA	<MDA		
unidentified	Ci	3.53E+02	1.52E+02		
Total for period	Ci	3.22E+03	6.45E+03		

2. Gaseous Iodines

iodine-131	Ci	5.93E-03	3.91E-03		
iodine 132	Ci	6.44E-03	7.90E-03		
iodine 133	Ci	3.14E-02	1.02E-02		
iodine-134	Ci	6.01E-03	<MDA		
iodine-135	Ci	4.11E-02	1.27E-02		
Total for period	Ci	9.09E-02	3.47E-02		

3. Particulates

strontium-89	Ci	4.55E-05	1.96E-05		
strontium-90	Ci	1.11E-06	3.58E-07		
cesium-134	Ci	6.04E-05	1.92E-05		
cesium-137	Ci	2.26E-04	6.04E-05		
barium-lanthanum-140	Ci	2.59E-04	3.56E-05		
cobalt-58	Ci	4.27E-05	6.96E-06		
cobalt-60	Ci	1.72E-03	8.13E-04		
chromium-51	Ci	3.32E-02	4.17E-03		
zirconium-niobium-95	Ci	<MDA	<MDA		
zinc-65	Ci	<MDA	<MDA		
iron-59	Ci	1.78E-05	<MDA		
manganese-54	Ci	8.64E-04	4.05E-04		
iodine-131	Ci	5.93E-03	3.91E-03		
cerium-141	Ci	<MDA	<MDA		
cerium-144	Ci	<MDA	<MDA		
cobalt - 57	Ci	<MDA	<MDA		
ruthenium - 103	Ci	3.30E-07	<MDA		
silver-111	Ci	<MDA	<MDA		
unidentified	Ci	1.72E-03	8.86E-04		
Total for period	Ci	4.41E-02	1.03E-02		

4.0 Tritium

hydrogen-3	Ci	1.24E+00	1.28E+00		
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Table 2A
Effluent and Waste Disposal Semiannual Report Year 83
Liquid Effluents - Summation of All Releases

	Unit	Quarter I	Quarter II	Est. Total Error, %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	5.04E-01	2.69E-01	1.37E+01
2. Average diluted concentration during period	µCi/ml	1.07E-08	1.31E-08	
3. Percent of applicable limit	%	2.52E+00	1.35E+00	
B. Tritium				
1. Total release	Ci	6.40E+01	1.15E+01	1.01E+01
2. Average diluted concentration during period	µCi/ml	1.36E-06	5.59E-07	
3. Percent of applicable limit	%	4.53E-02	1.86E-02	
C. Dissolved and entrained gases				
1. Total release	Ci	3.32E-01	1.23E-01	8.71E+00
2. Average diluted concentration during period	µCi/ml	7.05E-09	5.99E-09	
3. Percent of applicable limit	%	2.34E-01	2.00E-01	
D. Gross alpha radioactivity				
1. Total release	Ci	<MDA	<MDA	N/A
E. Volume of waste released (prior to dilution)				
	liters	1.32E+08	7.60E+06	5.66E+00
F. Volume of dilution water used during period				
	liters	4.71E+10	2.06E+10	1.10E+01

Table 2E
Effluent and Waste Disposal Semiannual Report Year 83
Liquid Effluents

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter	Quarter	Quarter I	Quarter II
iodine-133	Ci			2.10E-03	2.59E-04
iodine 132	Ci			<MDA	<MDA
technetium - 104	Ci			1.16E-03	6.98E-05
antimony-124	Ci			<MDA	<MDA
cobalt-57	Ci			3.14E-06	<MDA
niobium- 95m	Ci			1.72E-04	2.57E-05
	Ci				
rhodium - 105	Ci			6.68E-02	3.19E-03
ruthenium-105	Ci			5.96E-04	1.44E-03
cesium-136	Ci			<MDA	<MDA
cesium-138	Ci			1.19E-04	2.80E-05
cerium-144	Ci			3.53E-05	<MDA
yttrium-91m	Ci			2.16E-03	7.52E-04
arsenic-76	Ci			<MDA	9.07E-04
rubidium-88	Ci			<MDA	6.92E-04
barium-139	Ci			5.65E-04	<MDA
ruthenium-103	Ci			<MDA	7.18E-05
strontium-91	Ci			5.73E-04	4.82E-05
technetium-101	Ci			5.92E-04	7.19E-04
tellurium-132	Ci			1.53E-04	4.16E-05
tungsten	Ci			<MDA	<MDA
cobalt-58	Ci			4.13E-03	2.64E-03
cobalt-60	Ci			1.00E-01	7.83E-02
iron-59	Ci			4.22E-04	1.49E-03
zinc-65	Ci			1.31E-04	4.39E-04
manganese-54	Ci			5.19E-02	1.79E-02
chromium-51	Ci			1.61E-01	1.21E-01
zirconium-niobium-95	Ci			2.91E-05	6.85E-06
molybdenum-99	Ci			1.01E-03	<MDA
technetium-99m	Ci			2.11E-03	1.31E-03
barium-lanthanum-140	Ci			7.15E-03	5.85E-03
cerium-141	Ci			2.17E-05	4.47E-05
fluorine-18	Ci			1.62E-02	1.80E-04
sodium-24	Ci			8.76E-04	1.77E-04
manganese-56	Ci			<MDA	<MDA
	Ci				
yttrium-92	Ci			<MDA	8.14E-04
niobium-97	Ci			4.56E-03	6.94E-03
	Ci				
neptunium-239	Ci			1.35E-03	3.51E-04
strontium-92	Ci			1.09E-03	1.35E-03
silver-111	Ci			1.48E-04	2.28E-04
silver-110m	Ci			2.32E-03	2.95E-03
strontium-89	Ci			2.33E-02	1.66E-04
strontium-90	Ci			2.31E-03	2.64E-05
cesium-134	Ci			6.39E-03	2.97E-03

Table 2B (Cont'd)

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter	Quarter	Quarter I	Quarter II
cesium-137	Ci			1.30E-02	5.87E-03
iodine-131	Ci			2.68E-03	5.40E-04
unidentified	Ci			2.58E-02	9.26E-03
Total for period	Ci			5.04E-01	2.69E-01

Dissolved and Entrained Gases

argon-41	Ci			2.57E-05	1.79E-04
krypton-85m	Ci			< MDA	1.63E-04
krypton-85	Ci			< MDA	< MDA
xenon-131m	Ci			< MDA	1.56E-03
xenon-133m	Ci			3.66E-03	1.33E-03
xenon-133	Ci			1.17E-01	5.32E-02
xenon-135m	Ci			< MDA	< MDA
xenon-135	Ci			2.12E-01	6.68E-02
Total for period	Ci			3.32E-01	1.23E-01

MINIMUM DETECTABLE ACTIVITIES

(uCi/ml)

1. For Liquid Releases (1)

I-132	7.45E-08
Sb-124	4.74E-08
Cs-136	7.44E-08
Te-129m	5.04E-07
W-187	1.61E-07
Mn-56	1.87E-07
Y-92	2.53E-07
As-76	3.19E-07
Ru-103	2.89E-07
Co-57	2.03E-07
Mo-99	2.96E-07
Ba-140	1.80E-07
Ce-144	3.61E-07
La-139	3.14E-07
Kr-85m	3.47E-08
Kr-85	7.54E-06
Xe-131m	1.38E-06
Xe-135m	7.29E-07

Iodines and Particulates (3)

Zr-95	2.83E-14
Nb-95	4.17E-14
Zn-65	7.70E-14
Fe-59	6.82E-14
Ce-144	1.90E-13
Ce-141	4.28E-14
Co-57	2.33E-14
Ru-103	3.86E-13
I-134	6.53E-13
Te-129m	5.65E-13

2. For Gaseous Releases (2)

Ar-41	2.64E-08
Kr-85	3.58E-06
Kr-87	3.80E-08
Xe-138	9.16E-07
Xe-131m	3.75E-07

- (1) MDA determined for liquids using 500 ml Marinelli beakers and a 5000 second count
- (2) MDA determined for gases using 1260 cc marinelli beaker and a 7000 second count
- (3) MDA determined for iodine and particulates using iodine and particulate cartridges and a 1000 second count

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. Solid Waste Shipped Offsite for Burial or Disposal (Not irradiated fuel)

1. Type of Waste	Unit	6-month period	Est. Total Error, %
a. Spent resins, filter sludges, evaporated bottoms, etc.	m ³	5.38E+02	1.50E+01
	Ci	2.02E+03	
b. Dry compressible waste, contaminated equip., etc.	m ³	1.52E+03	
	Ci	4.91E+01	2.00E+01
c. Irradiated components, control rods, etc.	m ³	1.70E+00	
	Ci	1.03E+03	2.00E+01
d. Other (describe)	m ³	0.00-01	
	Ci	0.00E-01	0.00E-01

2. Estimate of major nuclide composition (by type of waste)

A + B	%	
Cr-51	%	1.44E+01
Mn-54	%	1.53E+01
Fe-59	%	6.00E-01
Co-58	%	3.80E+00
Co-60	%	5.33E+01
Zn-65	%	4.00E-01
I-131	%	1.40E+00
Cs-134	%	3.30E+00
Cs-137	%	4.90E+00
La-140	%	1.50E+00
Ba-140	%	1.10E+00
	%	
C	Cr-51	% 9.60E+00
	Mn-54	% 1.61E+01
	Fe-59	% 5.00E-01
	Co-58	% 2.20E+00
	Co-60	% 3.28E+01
	Zn-65	% 7.00E-01
	Cs-134	% 1.68E+01
	Cs-137	% 2.13E+01

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
121	Sole Use Vehicle	Chem Nuclear Systems, In Barnwell, SC
14	Sole Use Vehicle	US Ecology Richland, WASH

B. Irradiated Fuel Shipments (Disposition)

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

P O T E N T I A L D O S E S

 * CAROLINA RUBBER AND LOGS *

SPONSORING STEAM ELECTRIC PLANT
 11 AUG 1963 11 13 53 AM

	1-101 DOSE DUE TO DRINKING MILK			MEMBER PERIOD *		
	INFANT	CHILD	TEEN	TEEN	ADULT	ADULT
BONE	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03
LIVER	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03
T. SOOV	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03
THYROID	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03
KIDNEY	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03
LUNG	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03
GI-LLI	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03	0 88E-03

	TOTAL DOSE DUE TO DRINKING MILK			MEMBER PERIOD *		
	INFANT	CHILD	TEEN	TEEN	ADULT	ADULT
BONE	1 08E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03
LIVER	0 88E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03
T. SOOV	0 88E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03
THYROID	0 88E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03
KIDNEY	0 88E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03
LUNG	0 88E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03
GI-LLI	0 88E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03

	1-101 INHALATION DOSE AT WREST			POINT ON SITE BOUNDARY			MEMBER PERIOD		
	INFANT	CHILD	TEEN	TEEN	ADULT	ADULT	TEEN	ADULT	ADULT
BONE	4 48E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03
LIVER	4 48E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03
T. SOOV	4 48E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03
THYROID	4 48E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03
KIDNEY	4 48E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03
LUNG	4 48E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03
GI-LLI	4 48E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03	0 45E-03

	TOTAL INHALATION DOSE AT WREST			SITE BOUNDARY			MEMBER PERIOD		
	INFANT	CHILD	TEEN	TEEN	ADULT	ADULT	TEEN	ADULT	ADULT
BONE	2 07E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04
LIVER	2 07E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04
T. SOOV	2 07E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04
THYROID	2 07E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04
KIDNEY	2 07E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04
LUNG	2 07E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04
GI-LLI	2 07E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04	0 45E-04

*The doses noted were calculated solely for Sample Station 35. As indicated by Attachment 6, no infant, child, teen, or adult is consuming milk at this point. The doses projected are therefore potential, but not actual.

[illegible]

 * CAROLINA POWER AND LIGHT *

BRUNSWICK STEAM ELECTRIC PLANT
 11 AUG 1983 12 29 20 PM

DOSE FROM NOBLE GAS RELEASES - T BODY
 BASE PERIOD

	RADIAL DISTANCE, MILES				
	0.5	1.0	1.5	2.0	2.5
N	1.07E-00	5.10E-01	4.87E-01	3.70E-01	2.91E-01
NEW	8.30E-01	5.10E-01	7.84E-01	8.16E-01	4.84E-01
EW	1.20E-00	8.88E-01	7.16E-01	3.61E-01	4.49E-01
WSW	1.00E-00	8.10E-01	4.81E-01	3.87E-01	2.16E-01
W	1.14E-00	3.78E-01	4.10E-01	2.20E-01	2.06E-01
WNW	7.89E-01	3.00E-01	8.86E-01	8.20E-01	1.88E-01
NW	8.46E-01	4.66E-01	8.86E-01	2.10E-01	2.06E-01
NNW	6.46E-01	4.87E-01	3.98E-01	3.30E-01	2.78E-01
N	1.00E-00	8.82E-01	6.00E-01	4.81E-01	3.89E-01
NNE	1.16E-00	9.06E-01	7.68E-01	3.78E-01	4.33E-01
NE	1.60E-00	1.10E-00	8.01E-01	6.78E-01	3.30E-01
ENE	8.80E-01	3.90E-01	3.16E-01	4.20E-01	2.44E-01
E	6.80E-01	4.20E-01	3.70E-01	2.04E-01	2.48E-01
ESE	8.70E-01	4.37E-01	3.06E-01	2.84E-01	2.31E-01
SE	1.27E-00	8.61E-01	3.24E-01	1.11E-01	2.30E-01
SSE	1.84E-00	8.34E-01	6.37E-01	4.86E-01	3.82E-01

DOSE FROM NOBLE GAS RELEASES - T BODY

	RADIAL DISTANCE, MILES				
	7.5	10.0	25.0	50.0	50.0
N	1.71E-01	7.09E-02	4.18E-02	2.72E-02	6.86E-02
NEW	2.80E-01	1.19E-01	8.10E-02	3.90E-02	2.86E-02
EW	2.78E-01	1.28E-01	7.88E-02	4.88E-02	3.08E-02
WSW	2.81E-01	9.99E-02	3.77E-02	3.97E-02	2.98E-02
W	1.02E-01	7.81E-02	3.88E-02	2.81E-02	1.91E-02
WNW	1.14E-01	3.88E-02	3.20E-02	2.81E-02	1.84E-02
NW	1.60E-01	8.11E-02	4.76E-02	2.29E-02	2.47E-02
NNW	1.80E-01	5.01E-02	3.21E-02	3.38E-02	2.78E-02
N	2.42E-01	1.16E-01	6.04E-02	4.44E-02	3.29E-02
NNE	2.62E-01	1.10E-01	8.14E-02	4.88E-02	2.98E-02
NE	3.10E-01	1.41E-01	7.87E-02	3.10E-02	3.71E-02
ENE	2.28E-01	1.08E-01	8.10E-02	4.20E-02	2.14E-02
E	1.04E-01	7.37E-02	4.18E-02	2.86E-02	2.16E-02
ESE	1.43E-01	8.84E-02	3.84E-02	2.09E-02	1.90E-02
SE	1.99E-01	9.16E-02	3.81E-02	3.10E-02	2.42E-02
SSE	2.20E-01	9.80E-02	3.88E-02	3.46E-02	2.42E-02

 * CAROLINA POWER AND LIGHT *

BRUNSWICK STEAM ELECTRIC PLANT
 11 AUG 1983 12 46 00 PM

POPULATION INTEGRATED WHOLE BODY DOSE, MAN-REM/PERIOD

	RADIAL DISTANCE, MILES				
	0.0	1.0	2.0	3.0	4.0
S	0.00E+00	1.00E-02	3.00E-01	8.00E-01	4.00E-01
SSW	0.00E-01	1.07E-01	1.61E-00	0.00E-01	4.81E-00
SW	4.00E-02	0.67E-02	0.00E-01	4.49E-02	0.00E-01
WSW	0.00E-01	4.78E-02	3.81E-02	1.24E-02	1.03E-02
W	9.10E-03	1.91E-02	6.64E-03	0.00E-01	0.00E-01
WNW	1.26E-02	2.84E-03	0.00E-01	0.00E-01	0.00E-01
NW	6.76E-02	0.00E-01	0.00E-01	0.00E-01	0.00E-01
NNW	0.19E-03	0.00E-01	0.00E-01	0.00E-01	0.00E-01
N	2.06E-02	0.00E-01	0.00E-01	0.00E-01	0.00E-01
NNE	0.00E-01	1.73E-02	0.00E-01	0.00E-01	0.00E-01
NE	0.00E-01	2.20E-02	0.00E-01	0.00E-01	0.00E-01
ENE	0.00E-01	7.14E-03	0.00E-01	0.00E-01	0.00E-01
E	0.00E-01	6.80E-03	0.00E-01	0.00E-01	0.00E-01
ESE	0.00E-01	0.00E-01	0.00E-01	0.00E-01	0.00E-01
SE	4.00E-02	7.91E-03	0.00E-01	0.00E-01	0.00E-01
SSE	0.00E-01	3.36E-02	0.00E-01	0.00E-01	0.00E-01

POPULATION INTEGRATED WHOLE BODY DOSE, MAN-REM/PERIOD

	RADIAL DISTANCE, MILES				
	0.0	10.0	20.0	30.0	40.0
S	0.00E-01	0.00E-01	0.00E-01	0.00E-01	0.00E-01
SSW	0.00E-01	0.00E-01	0.00E-01	0.00E-01	0.00E-01
SW	0.00E-01	0.00E-01	0.00E-01	0.00E-01	0.00E-01
WSW	3.47E-02	0.00E-01	0.00E-01	4.27E-02	6.74E-02
W	7.74E-03	8.86E-02	1.04E-01	1.71E-01	1.32E-01
WNW	1.41E-02	7.60E-02	0.60E-02	7.97E-02	2.34E-01
NW	2.02E-02	1.62E-01	1.10E-01	1.13E-01	1.40E-01
NNW	2.70E-02	1.06E-01	1.86E-01	9.01E-02	9.27E-02
N	2.21E-02	1.10E-00	6.60E-01	1.60E-01	2.10E-01
NNE	7.19E-02	0.96E-00	1.41E-00	1.18E-01	0.80E-02
NE	6.80E-01	0.00E-01	0.00E-01	6.22E-02	9.18E-02
ENE	1.74E-01	0.00E-01	0.00E-01	0.00E-01	0.00E-01
E	0.00E-01	0.00E-01	0.00E-01	0.00E-01	0.00E-01
ESE	0.00E-01	0.00E-01	0.00E-01	0.00E-01	0.00E-01
SE	0.00E-01	0.00E-01	0.00E-01	0.00E-01	0.00E-01
SSE	0.00E-01	0.00E-01	0.00E-01	0.00E-01	0.00E-01

TOTAL POPULATION INTEGRATED WHOLE BODY DOSE - 1.07E-01 MAN-REM/PERIOD

 * CAROLINA POWER AND LIGHT *

BRUNSWICK STEAM ELECTRIC PLANT
 11 AUG 1960 12 41 37 PM

POPULATION INTEGRATED INHALATION DOSE
 MAN-REM PERIOD OF PHYSIC MAN-REM PERIOD

	INFANT	CHILD	TEEN	ADULT
WHOLE BODY	2 42E-04	4 09E-03	3 47E-03	2 20E-03
HAIR-01	2 42E-03	4 09E-01	3 47E-01	2 20E-01

ATTACHMENT 3

ENVIROMENTAL TECHNICAL SPECIFICATION CHANGES

January - June 1983

Brunswick Steam Electric Plant

On March 11, 1983, Amendment Nos. 54 and 79 to Facility Operating License Nos. DPR-71 and DPR-62 for Brunswick Steam Electric Plant, Units Nos. 1 and 2, respectively, were issued. These changes revise Appendix B, Enviromental Technical Specifications, to delete the water quality limits and monitoring programs which are now under the jurisdiction of the Enviromental Protection Agency (EPA).

ATTACHMENT 4

OCEAN OUTFALL THERMAL MONITORING DATA

January - June 1983

Brunswick Steam Electric Plant

No thermal plume monitoring was conducted during the period January 1, 1983 to June 30, 1983.

ATTACHMENT 5

MAINTENANCE DREDGING IN INTAKE CANAL

January - June 1983

Brunswick Steam Electric Plant -

No maintenance dredging was performed in the intake canal or discharge canal during the period January - June 1983.

ATTACHMENT 6

MILK USAGE SURVEY

January - June 1983

Brunswick Steam Electric Plant

In accordance with Enviromental Technical Specification 4.2.7, surveys were performed February 10, 1983, and on May 11, 1983, to determine the presence of an infant, child, or teen consuming milk from the cow at Sample Station No. 35. These surveys indicated that no infant, child, or teen was consuming milk at this location.

NOTE:
Semi-Annals for whole year 1987
striped together here 24

Docket
CP&L

Carolina Power & Light Company

05 SEP 8 A9:37

Brunswick Steam Electric Plant
P. O. Box 10429
Southport, NC 28461-0429
August 22, 1983

FILE: B09-13510C
SERIAL: BSEP/83-2590

Mr. James P. O'Reilly, Administrator
U. S. Nuclear Regulatory Commission
Region II, Suite 3100
101 Marietta Street N.W.
Atlanta, GA 30303

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324
LICENSE NOS. DPR-71 AND DPR-62
SEMIANNUAL ENVIRONMENTAL AND EFFLUENT REPORT

Dear Mr. O'Reilly:

Enclosed is the Semiannual Environmental and Effluent Report for Brunswick Steam Electric Plant covering the period from January 1, 1983, through June 30, 1983.

This report is submitted in accordance with Section 5.4.1.1, Appendix B, of the technical specifications for Brunswick Steam Electric Plant.

Very truly yours,

C. R. Dietz

C. R. Dietz, General Manager
Brunswick Steam Electric Plant

JAZ/mcg/LETCG1

Enclosure

cc: Mr. R. C. DeYoung
NRC Document Control Desk

DESIGNATED ORIGINAL

Certified By *[Signature]*

OFFICIAL COPY

83-50

IE2511

Mr. James P. O'Reilly, Director

-2-

bcc: Mr. D. L. Bensinger

Mr. R. M. Coats

Mr. A. E. Cutter

Mr. J. S. Dietrich/File: B-X-545

Dr. T. S. Elleman

Mr. B. J. Furr

Mr. W. P. Guarino

Mr. R. E. Helme

Mr. L. P. Hewlett

Mr. P. W. Howe

Dr. J. D. E. Jeffries

INPO

Mr. I. A. Johnson

Mr. L. E. Jones

Mr. L. H. Martin

Mr. C. H. Moseley

Mr. D. O. Myers

Mr. B. E. Parks

Mr. J. J. Sheppard/File: BC/A-4

Mr. R. B. Starkey, Jr.

Mr. L. V. Wagoner

Mr. J. L. Willis

Ms. M. S. Wingo