ENCLOSURE 1

SEMI-ANNUAL EFFLUENT RELEASE REPORT

FOR THE PERIOD OF JULY 1 TO DECEMBER 31, 1991

(S52 920214 088)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
SUPPLEMENTAL INFORMATION
2nd HALF 1991

1. REGULATORY LIMITS

A. Gaseous Effluents

1. Dose rates due to radioactivity released in gaseous effluents from the site to areas at and beyond the site boundary shall be limited to the following:

a. Noble gases:- Less than or equal to 500 mrem/year to the total body.

- Less than or equal to 3000 mrem/year to the skin.

b. Iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days:

- Less than or equal to 1500 mrem/year to any organ.

2. Air dose due to noble gases released in gaseous effluents to areas at and beyond the site boundary shall be limited to the following:

*a. Less than or equal 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation during any calendar quarter.

b. Less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation during any calendar year.

3. Dose to a member of the public from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than eight days in gaseous effluents released to areas at and beyond the site boundary shall be limited to the following:

*a. Less than or equal to 7.5 mrem to any organ during any calendar quarter.

b. Less than or equal to 15 mrem to any organ during any calendar year.

B. Liquid Effluents

1. The concentration of radioactivity released in liquid effluents to unrestricted areas shall be limited to the concentrations specified in Title 10 of the Code of Federal Regulations, Part 20 (Standards for Protection Against Radiation), 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 2.0E-04 microcurie/milliliter (uCi/ml) total activity.

*These values are used as applicable limits for gaseous releases.

2. The dose or dose commitment to a member of the public from radioactivity in liquid effluents released to unrestricted areas shall be limited to:

**a. Less than or equal to 1.5 mrem to the total body and less than or equal to 5 mrem to any organ during any calendar quarter.

b. Less than or equal to 3 mrem to the total body and less than or equal to 10 mrem to any organ during any calendar year.

2. MAXIMUM PERMISSIBLE CONENTRATION

A. Liquids

1. The maximum permissible concentrations (MPC) for liquids are those listed in 10 CFR 20, Appendix B, Table II, Column 2, with the most restrictive MPC being used in all cases. For dissolved and entrained gases the MPC of 2.0E-04 uCi/ml is applied. This MPC is based on the Xe-135 MPC in air (submersion dose) converted to an equivalent concentration in water as discussed in the International Commission on Radiological Protection (ICRP), Publication 2.

B. Gaseous

1. The maximum permissible dose rates for gaseous releases are defined in plant Offsite Dose Calculation Manual (ODCM).

a. Noble gas dose rate at the site boundary:

- Less than or equal to 500 mrem/year to the total body,
- Less than or equal to 3000 mrem/year to skin.

b. Iodine-131, iodine-133, tritium, and particulates with half-lives greater than eight days dose rate at the site boundary:

- Less than or equal to 1500 mrem/year to any organ.

3. AVERAGE ENERGY

Sequoyah's ODCM limit the dose equivalent rates due to the release of fission and activation products to less than or equal to 500 mrem/year to the total body and less than or equal to 3000 mrem/year to the skin. Therefore, the average beta and gamma energies (E) for gaseous effluents as described in Regulatory Guide 1.21, "Measuring, Evaluation, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," are not applicable.

**These values are used as applicable limits for liquid effluents.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
SUPPLEMENTAL INFORMATION
2nd HALF 1991

4. Measurements and Approximations of Total Radioactivity

NOTE: Every effort is made to ensure that all effluents from Sequoyah are conducted such that all Offsite Dose Calculation Manual (ODCM) Lower Limits of Detection (LLDs) are met. Whenever an analysis does not identify a radioisotope, a "0.00E-01 Ci" is recorded for the release. This does not necessarily mean that no activity was released for that particular radionuclide, but that the concentration was below the ODCM and analysis LLDs. Refer to Tables A and B for estimates of these typical LLD values.

a. Fission and Activation Gases

Airborne effluent gaseous activity is continuously monitored and recorded. Additional grab samples from the shield building, auxiliary building, service building, and condenser vacuum exhausts are taken and analyzed at least monthly to determine the quantity of noble gas activity released for the month based on the average vent flowrates recorded for the sample period. Also, noble gas samples are collected and evaluated for the shield and auxiliary buildings following startup, shutdown, or rated thermal power change exceeding 15 percent within one hour (sampling only required if dose equivalent I-131 concentration in the primary coolant has increased more than a factor of 3 and the noble gas activity monitor shows that the containment activity has increased more than a factor of 3).

The quantity of noble gases released through the shield and auxiliary building exhausts due to purging or venting of containment and releases of waste gas decay tanks are also determined.

The total noble gas activity released for the month is then determined by summing all of the activity released from each vent for all sampling periods, the activity released from purging or venting of containment, and the activity released from waste gas decay tank(s).

b. Iodines and Particulates

Iodine and particulate activity is continuously sampled. Charcoal and particulate samples are taken from the shield and auxiliary building exhausts and analyzed at least weekly to determine the total activity released from the plant based on the average vent flowrates recorded for sampling period.

Also, particulate and charcoal samples are taken from the auxiliary and shield building exhausts once per 24 hours for 2 days following startup, shutdown, or a rated thermal power change exceeding 15 percent within one hour. The quantity of iodine and particulate released from each vent during each sampling period is then determined using the average vent flowrates recorded for the sampling period and activity concentration.

The total particulate and iodine activity released for the month is then determined by summing all of the activity released from the shield and auxiliary building exhausts for all sampling periods.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
SUPPLEMENTAL INFORMATION
2nd HALF 1991

4. Measurements and Approximation of Total Radioactivity (continued)

c. Liquid Effluents

(1) Batch (Radwaste and condensate regenerants to cooling tower blowdown)

Total gamma isotopic activity concentrations are determined on each batch of liquid effluent prior to release. The total activity of a released batch is determined by summing each nuclide's concentration and multiplying by the total volume discharged. The total activity released during a month is then determined by summing the activity content of each batch discharged during the month.

(2) Continuous Releases and Periodic Continuous Releases (Condensate regenerants, turbine building sump and steam generator blowdown)

Total gamma isotopic activity concentration is determined daily on a composite sample from the condensate system and turbine building sump and weekly for steam generator blowdown. The total activity of the continuous release is determined by summing each nuclide's concentration and multiplying by the total volume discharged. The total activity released during the month is then determined by summing the activity content of each daily and weekly composite for the month.

5. Batch	Value		Units
	Quarter 3rd	Quarter 4th	
a. Liquid			
1. Number of batches released (Radwaste only)	131	100	Each
2. Total time period for batch releases	18,871	13,819	Minutes
3. Maximum time period for a batch release	200	172	Minutes
4. Average time period for batch releases	144	138	Minutes
5. Minimum stream flow during periods of effluent into a flowing stream:	N/A	N/A	
b. Gaseous			
1. Number of batches released	206	127	Each
2. Total time period for batch releases	19,327	26,409	Minutes
3. Maximum time period for a batch release	1,174	6,576	Minutes
4. Average time period for batch releases	94	208	Minutes
5. Minimum time period for a batch release	14	19	Minutes

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
SUPPLEMENTAL INFORMATION
2nd HALF 1991

6. Abnormal Releases	Value Quarter 3rd	Value Quarter 4th	Units
a. Liquid			
(1) Number of Releases	0	0	
(2) Total Activity Released	0.00E-01	0.00E-01	Ci
b. Gaseous			
(1) Number of Releases	0	0	
(2) Total Activity Released	0.00E-01	0.00E-01	Ci

7. Offsite Dose Calculation Manual (ODCM)

Were any changes made to the ODCM during the reporting period?
_____ Yes __X__ No.

INOPERABLE INSTRUMENTATION

Pursuant to ODCM Section 1.3.1, the following information is provided concerning radioactive effluent monitoring instrumentation which was inoperable for greater than 30 consecutive days during the period July 1, 1991 through December 31, 1991.

Unit 2 shield building radiation monitor 2-RE-90-400 was inoperable from 7/8/91 to 8/28/91. In January 1991 TVA changed out its post accident shield building radiation monitors with Sorrento Electronics wide range gas monitors. In order to complete the radiation monitor modification the new radiation monitors had to be removed from service for the removal of the old radiation monitors. The physical work was completed in a timely manner and the radiation monitors returned to service. The required documentation and review extended the completion of the Work Plan and Unit 2 radiation monitor was not considered operable within the scheduled 30-day reporting limit.

In December 1991 during the performance of SI-198.3 it was determined that the flow instrumentation for the auxiliary building exhaust was out of calibration. The instrumentation was not out of service (inoperable) but ≈ 18% low. Since this instrumentation is used to evaluate monthly offsite dose for the auxiliary building the 18% error would result in the following potential offsite dose errors:

Total Gamma Dose - 2.6%
Total Beta Dose - 2.6%
Max. Organ Dose - 18%

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1991
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

			3rd Qtr	%Error	4th Qtr	%Error
A.	Fission and Activation Products	Unit				
	1. Total Released	Curies	2.67E-01	±1.8E+01	8.09E-01	±1.8E+01
	2. Average Diluted Conc. During Period of All Identified Isotopes	uCi/ml	1.40E-07		6.55E-07	
	3. Percent of Applicable Limit (Total Body Dose)	%	8.00E-01		1.07E+00	
B.	Tritium					
	1. Total Released	Curies	4.41E+02	±1.8E+01	3.97E+02	±1.8E+01
	2. Average Diluted Conc. During Period	uCi/ml	2.31E-04		3.22E-04	
	3. Percent of Applicable Limit (3.0E-03 uCi/ml)	%	7.70E+00		1.07E+01	
C.	Dissolved and Entrained Gases					
	1. Total Released	Curies	1.40E+00	±3.9E+01	1.38E-01	±3.9E+01
	2. Average Diluted Conc. During Period	uCi/ml	7.35E-07		1.12E-07	
	3. Percent of Applicable Limit (2.0E-04 uCi/ml)	%	3.67E-01		5.58E-02	
D.	Gross Alpha Radioactivity					
	1. Total Released	Curies	0.00E-01	±2.0E+01	0.00E-01	±2.0E+01
E.	Volume of Waste Released					
	(Before Dilution)	Liters	3.01E+07	±4.0E+00	2.61E+07	±4.0E+00
F.	Volume of Dilution Water for Period	Liters	1.88E+09	±1.1E+01	1.21E+09	±1.1E+01

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1991
LIQUID EFFLUENTS - TOTAL PLANT DISCHARGE

G. Isotope Summary (Note: Refer to Table A for ODCM nuclides reported as 0.00E-01)

Required by ODCM/Others

Fission and Activation Products

Nuclide	Unit	Continuous Mode		Batch Mode	
		Quarter 3rd	Quarter 4th	Quarter 3rd	Quarter 4th
1. Strontium-89	Ci	0.00E-01	0.00E-01	0.00E-01	2.93E-04
2. Strontium-90	Ci	0.00E-01	0.00E-01	0.00E-01	2.96E-04
3. Iron-55	Ci	0.00E-01	0.00E-01	5.06E-02	2.88E-02
4. Manganese-54	Ci	0.00E-01	0.00E-01	4.49E-03	1.56E-02
5. Cobalt-58	Ci	2.90E-06	2.63E-07	6.34E-02	3.75E-01
6. Iron-59	Ci	0.00E-01	0.00E-01	0.00E-01	4.90E-03
7. Cobalt-60	Ci	1.80E-05	6.92E-07	7.25E-02	4.27E-02
8. Zinc-65	Ci	0.00E-01	0.00E-01	1.36E-04	1.86E-05
9. Molybdenum-99	Ci	0.00E-01	0.00E-01	1.64E-04	1.21E-03
10. Iodine-131	Ci	3.91E-06	1.42E-05	5.77E-03	4.25E-03
11. Cesium-134	Ci	0.00E-01	3.77E-04	1.65E-02	4.41E-02
12. Cesium-137	Ci	2.66E-05	3.78E-04	2.05E-02	3.66E-02
13. Cerium-141	Ci	0.00E-01	0.00E-01	6.09E-05	2.67E-03
14. Cerium-144	Ci	9.67E-06	0.00E-01	7.26E-04	8.00E-03
15. Antimony-125	Ci	0.00E-01	0.00E-01	2.05E-02	6.56E-02
16. Cobalt-57	Ci	0.00E-01	0.00E-01	1.02E-03	1.57E-03
17. Chromium-51	Ci	0.00E-01	0.00E-01	3.14E-03	7.42E-02
18. Niobium-95	Ci	0.00E-01	0.00E-01	3.66E-03	2.14E-02

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1991
LIQUID EFFLUENTS - TOTAL PLANT DISCHARGE
(CONTINUED)

Nuclide		Unit	Continuous Mode		Batch Mode	
			Quarter 3rd	Quarter 4th	Quarter 3rd	Quarter 4th
19.	Iodine-133	Ci	0.00E-01	7.19E-06	8.19E-04	8.64E-05
20.	Zirconium-95	Ci	0.00E-01	0.00E-01	1.63E-03	1.36E-02
21.	Technetium-99m	Ci	0.00E-01	0.00E-01	1.64E-04	1.21E-03
22.	Ruthenium-103	Ci	0.00E-01	0.00E-01	1.49E-04	5.98E-03
23.	Tellurium-132	Ci	0.00E-01	0.00E-01	4.74E-06	1.86E-03
24.	Antimony-124	Ci	0.00E-01	0.00E-01	2.05E-04	9.34E-03
25.	Lanthanum-140	Ci	0.00E-01	0.00E-01	2.39E-04	3.11E-03
26.	Cesium-136	Ci	0.00E-01	0.00E-01	1.12E-04	2.09E-03
27.	Sodium-24	Ci	0.00E-01	0.00E-01	1.99E-05	8.11E-05
28.	Iodine-135	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
29.	Strontium-92	Ci	0.00E-01	0.00E-01	2.03E-05	1.49E-04
30.	Yttrium-91	Ci	0.00E-01	0.00E-01	0.00E-01	1.27E-03
31	Iodine-132	Ci	0.00E-01	0.00E-01	0.00E-01	2.37E-03
32	Zinc-69M	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
33	Cerium-143	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
34	Silver-110m	Ci	0.00E-01	0.00E-01	5.73E-05	2.41E-04
35	Argon-41	Ci	0.00E-01	0.00E-01	4.20E-06	0.00E-01
36	Barium-140	Ci	0.00E-01	0.00E-01	2.02E-05	4.20E-04
37	Copper-64	Ci	0.00E-01	0.00E-01	6.64E-04	0.00E-01
38	Niobium-97	Ci	0.00E-01	0.00E-01	7.61E-05	2.44E-04
39	Ruthenium-105	Ci	0.00E-01	0.00E-01	3.[illegible]E-05	0.00E-01

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1991
LIQUID EFFLUENTS - TOTAL PLANT DISCHARGE
(CONTINUED)

Nuclide		Unit	Continuous Mode		Batch Mode	
			Quarter 3rd	Quarter 4th	Quarter 3rd	Quarter 4th
40	Tellurium-129m	Ci	0.00E-01	0.00E-01	6.99E-05	1.41E-02
41	Strontium-91	Ci	0.00E-01	0.00E-01	2.13E-05	0.00E-01
42	Tungsten-107	Ci	0.00E-01	0.00E-01	1.29E-05	0.00E-01
43	Yttrium-91m	Ci	0.00E-01	0.00E-01	0.00E-01	4.70E-05
44	Nickel-65		0.00E-01	0.00E-01	0.00E-01	2.77E-05
45	Neptanium-239	Ci	0.00E-01	0.00E-01	0.00E-01	2.47E-02
46	Tellurium-131m	Ci	0.00E-01	0.00E-01	0.00E-01	2.15E-04
Total for Period		Ci	6.11E-05	7.77E-04	2.67E-01	8.08E-01

G. Isotope Summary (NOTE: Refer to Table A for ODCM nuclides reported as 0.00E-01)

Required by ODCM/Others

Dissolved and Entrained Noble Gases

Nuclide		Unit	Continuous Mode		Batch Mode	
			Quarter 3rd	Quarter 4th	Quarter 3rd	Quarter 4th
1.	Krypton-87	Ci	0.00E-01	0.00E-01	1.14E-05	0.00E-01
2.	Krypton-88	Ci	0.00E-01	0.00E-01	3.54E-05	0.00E-01
3.	Xenon-133	Ci	4.65E-05	0.00E-01	1.35E+00	1.30E-01
4.	Xenon-133m	Ci	0.00E-01	0.00E-01	1.67E-02	1.15E-03
5.	Xenon-135	Ci	0.00E-01	0.00E-01	1.86E-02	3.67E-03
6.	Xenon-138	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
7.	Krypton-85m	Ci	3.23E-06	0.00E-01	6.72E-06	0.00E-01
8.	Xenon-131m	Ci	0.00E-01	0.00E-01	1.23E-02	3.03E-03
9.	Xenon-135m	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
10	Kr-85	Ci	0.00E-01	0.00E-01	1.27E-03	0.00E-01
Total for Period		Ci	4.97E-05	0.00E-01	1.40E+00	1.38E-01

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1991
TABLE A
LIQUID "TYPICAL LLD" EVALUATION (1)

Nuclide	ODCM LLD	At(2) 15 min	30 min	1 hr	2 hr
Manganese-54	5.0E-07	9.12E-09	9.12E-09	9.12E-09	9.12E-09
Cobalt-58	5.0E-07	8.21E-09	8.21E-09	8.21E-09	8.21E-09
Iron-59	5.0E-07	1.62E-08	1.62E-08	1.62E-08	1.62E-08
Cobalt-60	5.0E-07	1.08E-08	1.08E-08	1.08E-08	1.08E-08
Zinc-65	5.0E-07	2.14E-08	2.14E-08	2.14E-08	2.14E-08
Molybdenum-99	5.0E-07	5.24E-08	5.25E-08	5.28E-08	5.34E-08
Cesium-134	5.0E-07	9.82E-09	9.82E-09	9.82E-09	9.82E-09
Cesium-137	5.0E-07	9.31E-09	9.31E-09	9.31E-09	9.31E-09
Cerium-141	5.0E-07	1.06E-08	1.06E-08	1.07E-08	1.07E-08
Cerium-144	5.0E-06	4.03E-08	4.03E-08	4.03E-08	4.03E-08
Iodine-131	1.0E-06	7.28E-09	7.28E-09	7.30E-09	7.32E-09
Krypton-87	1.0E-05	1.62E-08	1.85E-08	2.43E-08	4.20E-08
Krypton-88	1.0E-05	2.13E-08	2.27E-08	2.56E-08	3.27E-08
Xenon-133	1.0E-05	2.03E-08	2.04E-08	2.04E-08	2.05E-08
Xenon-133m	1.0E-05	5.05E-08	5.07E-08	5.10E-08	5.17E-08
Xenon-135	1.0E-05	5.60E-09	5.70E-09	5.93E-09	6.40E-09
Xenon-138	1.0E-05	2.82E-08	5.87E-08	2.55E-07	4.79E-06

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1991
TABLE A
LIQUID "TYPICAL LLD" EVALUATION (1)
(Continued)

Nuclide	ODCM LLD	Typical LLD
Tritium	1.0E-05	1.0E-06
Gross Alpha	1.0E-07	2.0E-08
Strontium-89	5.0E-08	2.0E-08
Strontium-90	5.0E-08	1.0E-08
Iron-55	1.0E-06	3.0E-07

NOTES: (1) LLD values are in uCi/ml. Sample analyses are performed to ensure that ODCM LLD limits are met. These are typical LLD values.

(2) Δt is the time between sample collection and counting time.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1991
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES
(GROUND LEVEL RELEASES)

Summation of All Releases	Unit	3rd Qtr	%Error	4th Qtr	%Error
A. Noble Gases					
1. Total Released	Ci	6.20E+02	±1.1E+01	2.36E+02	±1.1E+01
2. Average Release Rate of Period	uCi/sec	7.80E+01		2.97E+01	
3. Percent of Applicable Limit (Gamma)	%	1.14E+00		5.00E-01	
B. Iodines					
1. Total Iodine-131	Ci	2.87E-07	±1.3E+01	3.30E-04	±1.3E+01
2. Average Release Rate for Period	uCi/sec	2.26E-08		4.16E-05	
C. Particulates					
1. Particulates with half-lives >8 days	Ci	0.00E-01	±1.6E+01	5.92E-04	±1.6E+01
2. Average Release Rate for Period	uCi/sec	0.00E-01		7.44E-05	
3. Gross Alpha Radioactivity	Ci	0.00E-01	±2.1E+01	0.00E-01	±2.1E+01
D. Tritium					
1. Total Release	Ci	3.51E+00	±1.5E+01	1.88E+01	±1.5E+01
2. Average Release Rate for Period	uCi/sec	4.42E-01		2.36E+01	
E. I-131, I-133, H-3 and Particulates with half lifes >8 days					
1. Percent of applicable Limit. (Max. Organ-Child Thyroid)	%	4.47E-02		2.27E-01	

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1991
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES
(GROUND LEVEL RELEASES)

		Unit	Continuoun Mode		Batch Mode	
			Quarter 3rd	Quarter 4th	Quarter 3rd	Quarter 4th
F.	Noble Gases					
	Required by ODCM/Others					
	1. Krypton-87	Ci	0.00E-01	0.00E-01	2.25E-03	0.00E-01
	2. Krypton-88	Ci	2.18E-01	0.00E-01	5.85E-01	9.41E-01
	3. Xenon-133	Ci	7.73E+00	3.24E+01	5.78E+02	1.80E+02
	4. Xenon-133m	Ci	0.00E-01	0.00E-01	9.82E+00	3.15E+00
	5. Xenon-135	Ci	6.42E-01	4.65E+00	1.71E+01	1.20E+01
	6. Xenon-138	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
	7. Krypton-85	Ci	0.00E-01	0.00E-01	4.44E-01	0.00E-01
	8. Argon-41	Ci	0.00E-01	0.00E-01	1.91E+00	1.82E+00
	9. Krypton-85m	Ci	4.32E-02	0.00E-01	8.83E-01	9.09E-01
	10. Xenon-131m	Ci	0.00E-01	0.00E-01	1.78E+00	1.03E-02
	11. Xenon-135m	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
	Total for Period	Ci	8.63E+00	3.71E+01	6.11E+02	1.99E+02
G.	Iodines					
	1. Iodine-131	Ci	2.87E-07	3.30E-04		
	2. Iodine-133	Ci	1.27E-07	0.00E-01		
	3. Iodine-135	Ci	0.00E-01	4.01E-06		
	4. Iodine-132	Ci	0.00E-01	1.93E-06		
	Total for Period	Ci	4.14E-07	3.36E-04		

NOTE: Refer to Table B for ODCM nuclides reported as 0.00E-01.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1991
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES
(GROUND LEVEL RELEASES)

H. Particulates

Required by ODCM/Others

Nuclide		Unit	Continuous Mode	
			Quarter 3rd	Quarter 4th
1.	Strontium-89	Ci	0.00E-01	8.59E-06
2.	Strontium-90	Ci	0.00E-01	0.00E-01
3.	Iron-59	Ci	0.00E-01	0.00E-01
4.	Cobalt-60	Ci	0.00E-01	1.65E-04
5.	Zinc-65	Ci	0.00E-01	0.00E-01
6.	Manganese-54	Ci	0.00E-01	1.21E-05
7.	Cobalt-58	Ci	0.00E-01	2.60E-04
8.	Molybdenum-99	Ci	0.00E-01	0.00E-01
9.	Cesium-134	Ci	0.00E-01	0.00E-01
10.	Cesium-137	Ci	0.00E-01	3.84E-06
11.	Cerium-141	Ci	0.00E-01	1.88E-06
12.	Cerium-144 Others (Specify)	Ci	0.00E-01	1.93E-05
13	Chrome-51	Ci	0.00E-01	5.48E-05
14	Niobium-95	Ci	0.00E-01	3.15E-05
15	Ruthenium-103	Ci	0.00E-01	2.72E-05
16	Zircomum-95	Ci	0.00E-01	7.44E-06
Total for Period		Ci	0.00E-01	5.92E-04

NOTE: Refer to Table B for ODCM nuclides reported as 0.00E-01.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1991
TABLE B
GASEOUS "TYPICAL" LLD EVALUATION (1)

Noble Gas

Nuclide	ODCM LLD	At(2) 1 hr	At(2) 1.5 hr
Krypton-87	1.0E-04	1.19E-06	2.69E-06
Krypton-88	1.0E-04	1.22E-06	1.76E-06
Xenon-133	1.0E-04	5.51E-07	5.56E-07
Xenon-133m	1.0E-04	1.99E-06	2.02E-06
Xenon-135	1.0E-04	2.59E-07	2.90E-07
Xenon-138	1.0E-04	5.38E-05	8.55E-05

Particulate Sample

		2.02 da	2.79 da	5.79 da
Manganese-54	1.0E-10	1.83E-12	7.65E-14	1.10E-14
Cobalt-58	1.0E-10	1.60E-12	4.79E-14	9.99E-15
Iron-59	1.0E-10	3.21E-12	1.36E-13	2.03E-14
Cobalt-60	1.0E-10	1.79E-12	7.46E-14	1.07E-14
Zinc-65	1.0E-10	4.08E-12	1.71E-13	2.46E-14
Molybdenum-99	1.0E-10	2.08E-12	1.05E-13	3.18E-14
Cesium-134	1.0E-10	2.03E-12	8.45E-14	1.21E-14
Cesium-137	1.0E-10	1.85E-12	7.71E-14	1.10E-14
Cerium-141	1.0E-10	2.32E-12	9.82E-14	1.50E-14
Cerium-144	1.0E-10	1.03E-12	4.28E-13	6.16E-14
Iodine-131	1.0E-10	1.85E-12	8.22E-14	1.52E-14

Charcoal Sample

		2.0 da	2.5 da	5.5 da
Iodine-131	1.0E-11	2.53E-12	1.10E-13	2.00E-14

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1991
TABLE B
GASEOUS "TYPICAL" LLD EVALUATION (1)
(continued)

Nuclide	ODCM LLD	Typical LLD
Tritium	1.0E-06	1.0E-11
Gross Alpha	1.0E-11	1.5E-14
Strontium-89	1.0E-11	1.0E-14
Strontium-90	1.0E-11	1.0E-15

NOTES:

(1) LLD values are in uCi/cc.

(2) Δt for noble gases is the time from sampling to analysis. Δt for charcoal and particulate samples is the midpoint of sampling to analysis.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1991
SOLID WASTE (RADIOACTIVE SHIPMENTS)

A. Solid Waste Shipped Offsite for Burial or Disposal (not Irradiated Fuel)

1. Type of Waste	Unit	6 Month Period	Est. Tot. Error %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m^3	3.67E+1	±1.00E-1
	Ci	6.97E+2	±1.50E+1
b. Dry Active Waste, Compressible Waste Contaminated Equipment, etc.	m^3	4.60E+1	±1.00E-1
	Ci	6.01E+0	±1.50E+1
c. Irradiated Components, Control Rods, etc.	m^3	None	N/A
	Ci	None	N/A
d. Other: None	m^3	None	N/A
	Ci	None	N/A

2. Estimate of Major Nuclide Composition (by type of waste)

a. Spent resin, filter sludges, evaporator bottoms, etc. (nuclides determined by measurement)

	Curies	Percent
1. Manganese-54	2.72E+1	3.90E+0
2. Iron-55	8.19E+1	1.18E+1
3. Cobalt-58	7.73E+1	1.11E+1
4. Cobalt-60	1.38E+2	1.98E+1
5. Nickel-63	1.34E+2	1.92E+1
6. Cesium-134	1.02E+2	1.46E+1
7. Cesium-137	1.35E+2	1.93E+1

b. Dry active waste, compressible waste, contaminated equipment etc. (nuclides determined by estimate)

1. Chromium-51	5.19E-1	8.62E+0
2. Iron-55	2.53E+0	4.21E+1
3. Cobalt-58	1.59E+0	2.64E+1
4. Cobalt-60	7.74E-1	1.29E+1
5. Nickel-63	3.50E-1	5.81E+0
6. Niobium-95	1.34E-1	2.22E+0

c. Irradiated Components N/A N/A

d. Other: None N/A N/A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1991
SOLID WASTE (RADIOACTIVE SHIPMENTS)

3. Solid Waste Disposition

Number of Shipments	Type Quantity	Mode of Transportation	Destination
a) Spent resin, filter sludges, evaporator bottoms, etc.			
6	A-LSA	Motor Freight	Barnwell, SC
4	B-LSA	Motor Freight	Barnwell, SC
Number of Shipments	Type Quantity	Mode of Transportation	Destination
b) Dry active waste, compressible waste, contaminated equipment, etc.			
59	A-LSA	Motor Freight	Barnwell, SC
Number of Shipments	Type Quantity	Mode of Transportation	Destination
c) Irradiated components, control rods, etc.			
None			
Number of Shipments	Type Quantity	Mode of Transportation	Destination
d) Other: None			
None			

4. Irradiated Fuel Shipments (Disposition)

Number of Shipments	Type Quantity	Mode of Transportation	Destination
None	N/A	N/A	N/A

5. Solidification of Waste

Was solidification performed? _____ No

If yes, solidification media: N/A

6. Were any changes made to the process control program? _____ Yes __X__ No
If yes, add as an attachment at the end of report in accordance with Process Control Program Section 9.0.

7. Were any major changes made to the radioactive waste systems (liquid, gaseous or solid)? _____ Yes __X__ No. If yes, add an attachment at the end of report in accordance with Technical Specification Administration Control 6.15.