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SUSQUEHANNA STEAM ELECTRIC STATION
SEMI-ANNUAL RADIOACTIVE EFFLUENT
RELEASE REPORT
PLA-2903 FILE R41-2A

Docket Nos. 50-387/NPF-14
and 50-388/NPF-22

Dear Mr. Russell:

In accordance with 10CFR50.36a(a)(2) and the Susquehanna SES Unit 1 and 2 Technical Specifications, attached is the Semi-Annual Radioactive Effluent Release Report for SSES Units 1 and 2 covering the period January 1 through June 30, 1987.

Very truly yours,

H. W. Keiser
Vice President-Nuclear Operations

Attachment

cc: NRC Document Control Desk (original)
NRC Region I
Mr. L. R. Plisco, NRC Resident Inspector
Mr. M. C. Thadani, NRC Project Manager

IE-48

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SUSQUEHANNA STEAM ELECTRIC STATION
SEMIANNUAL EFFLUENT AND WASTE DISPOSAL REPORT
REPORT PERIOD: 01/01/87 - 06/30/87

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SECTION 1

INTRODUCTION AND SUPPLEMENTAL INFORMATION

INTRODUCTION

The Susquehanna Steam Electric Station (SSES) is located in Salem Township, Luzerne County, Pennsylvania. It is on the west bank of the Susquehanna River, 8 km northeast of Berwick. The Station consists of two boiling water reactor generating units, each with 1,050 MW net electrical capacity. The reactor and generating units were supplied by General Electric, while the Bechtel Corporation served as architect-engineer and constructor.

Construction of the Station began in the early 1970s. Fuel load began in Unit 1 in July of 1982. Initial criticality was achieved in the Unit 1 reactor on September 10, 1982. The reactor reached 100% power for the first time on February 4, 1983. Commercial operation of Unit 1 was declared on June 8, 1983. Initial criticality of Unit 2 occurred on May 8, 1984. Unit 2 was declared commercial on February 12, 1985.

Airborne effluents are released from the Susquehanna Station via five rooftop vents on the reactor building (see Figure 1). Each vent is continuously monitored, and a program of periodic sampling and analysis is conducted as specified in the plant Technical Specifications. All waterborne effluents are released in batch mode and are sampled and analyzed prior to release. Waterborne effluents from the site are released into the cooling tower blowdown line for dilution prior to release to the Susquehanna River (See Figure 2). Blowdown line flow rates are at least 5,000 gpm during periods of liquid radwaste release. The diluted effluent is introduced to the river by way of a perforated diffuser pipe placed on the river bed. The diffuser serves to rapidly and uniformly mix the the station discharge with the main flow of the river.

This report presents a summary of the quantities of radioactive materials which were released from the Susquehanna Steam Electric Station during the period from January 1, 1987 to June 30, 1987. In addition, this report serves as a medium for notifying the US Nuclear Regulatory Commission staff of changes to PP&L's Offsite Dose Calculation Manual (ODCM) and Solid Waste Process Control Program (PCP) and documentation of any exceptions to the SSES effluent monitoring program which must be reported per Technical Specifications 3.3.7.10 and 3.3.7.11.

Table 1 contains supplemental information pertaining to effluents from the Susquehanna plant. Included are regulatory limits, sampling and analysis methods, and characterization of the number and duration of batch and abnormal releases, if any.

Table 2 contains a summation of all airborne releases, grouped into the radionuclide categories of gases, particulates, iodines, and tritium. Average release rates are presented and compared to the applicable limits. Table 3 presents the totals of specific radionuclides in airborne effluents.

Waterborne effluents are summarized in Table 4. Average diluted concentrations are presented and compared to the applicable limits. Table 5 presents the release quantities of specific radionuclides in waterborne effluents over the report period.

Tables 6 through 9 present a characterization of the solid radioactive waste shipped off site during the report period. Included are the volumes and curie contents associated with each type of solid waste. An estimate of major nuclide composition is presented for each waste type, as well as the number of waste shipments from the site, how they were transported, and their final destination.

Table 10 contains estimates of the errors associated with the measurements involved in quantifying effluents. Errors associated with sampling, counting, flow rate and volume determination all contribute to the total error of the effluent measurements. Error estimates are presented for each category of radionuclides detected in airborne and waterborne effluents and solid wastes during the report period.

Table 11 presents effluent data from previous report periods which was not available at preparation time for the associated semiannual report.

Section 3 of this report is reserved for documentation of changes (if any) to the Offsite Dose Calculation Manual and the Solid Waste Process Control Program.

Section 4 presents a listing of cases (if any) in which airborne or waterborne effluent monitoring instrumentation was declared inoperable and was not restored to operability within the time period specified in Technical Specification Table 3.3.7.10-1 or 3.3.7.11-1 Action Statements.

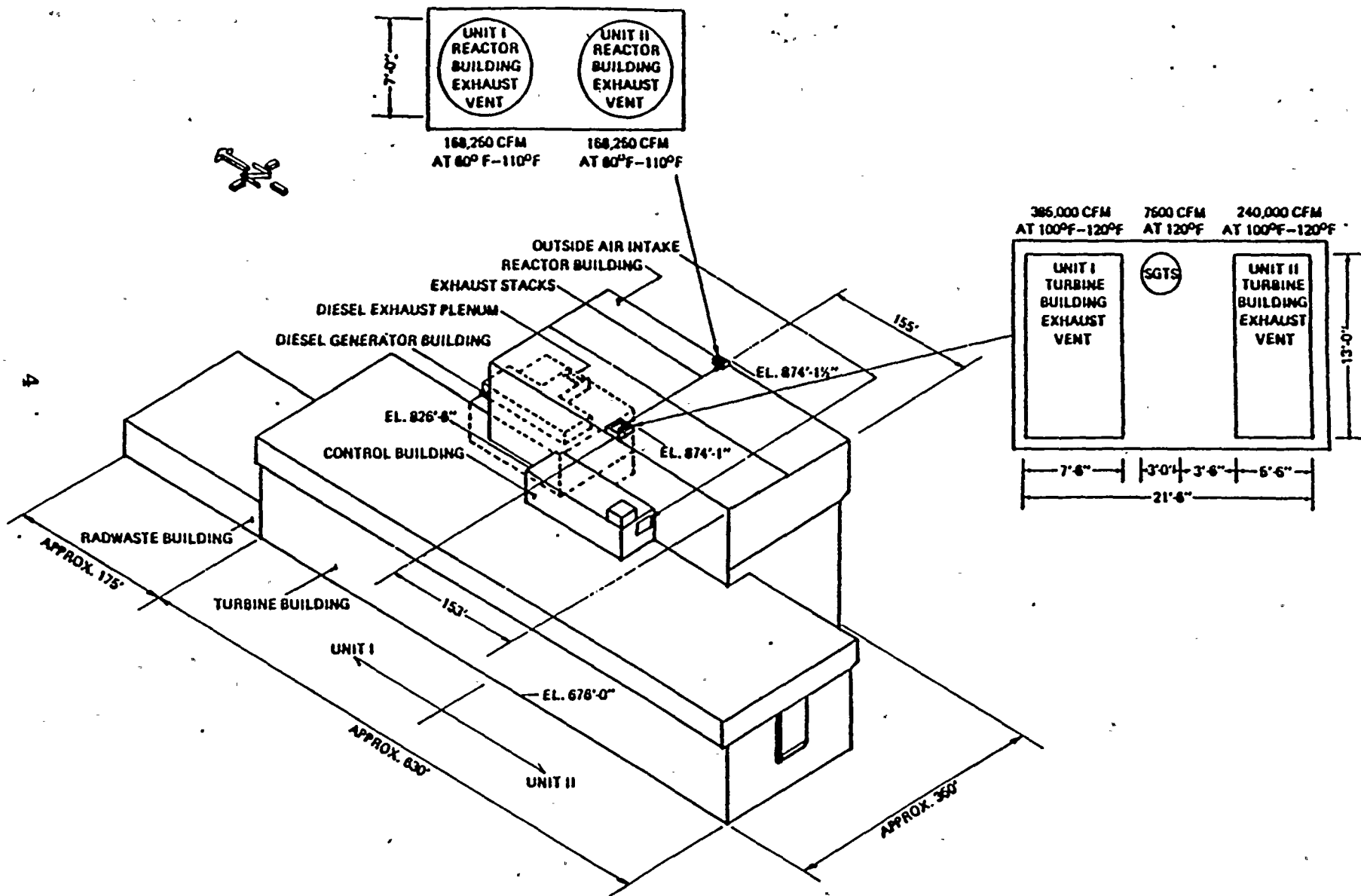


FIGURE 1 AIRBORNE EFFLUENT RELEASE POINTS: LOCATION AND DETAIL

FIGURE 2 SSES WATERBORNE EFFLUENTS:
RELEASE PATHWAY

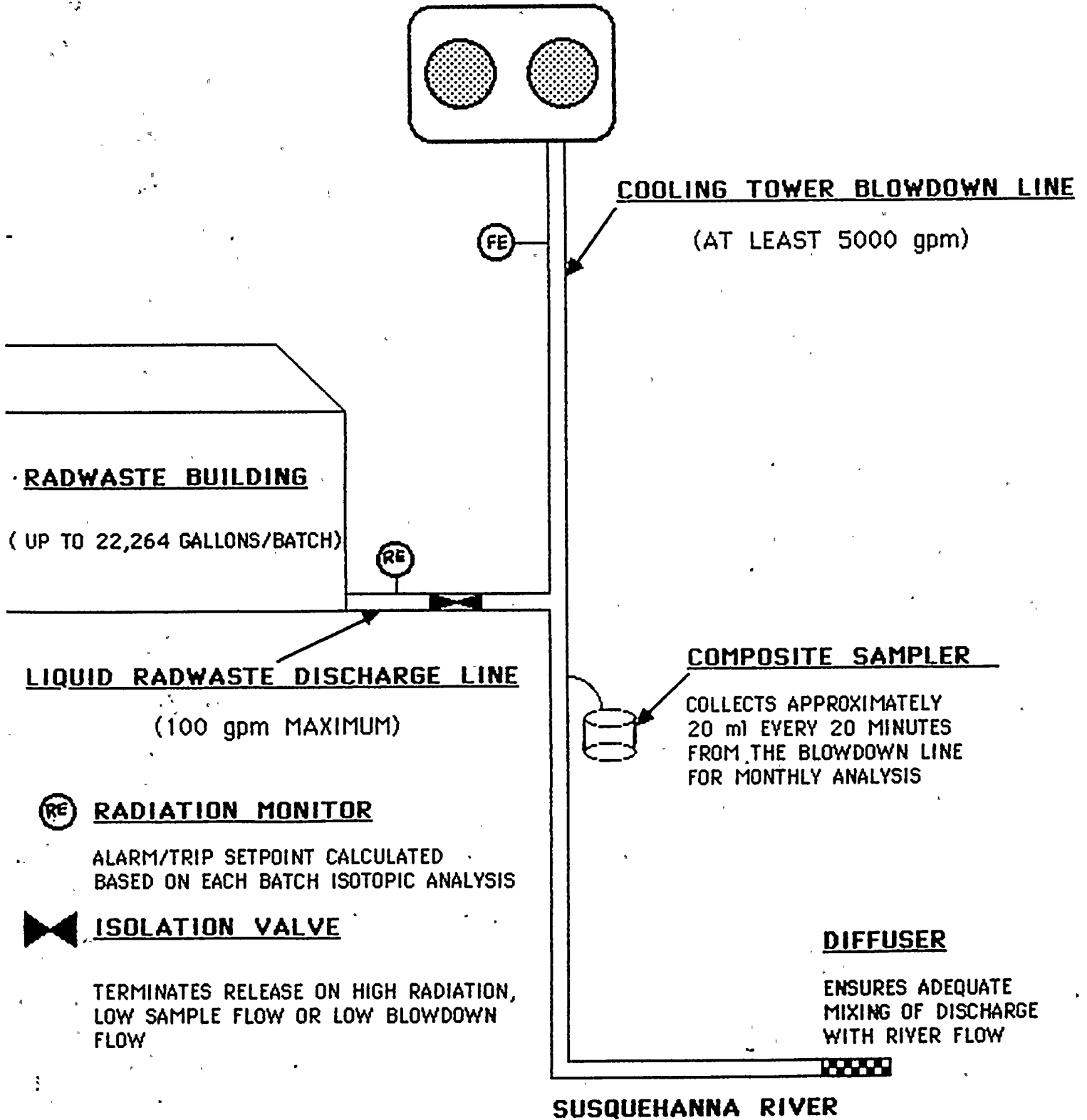


TABLE 1
SEMIANNUAL EFFLUENT & WASTE DISPOSAL REPORT
DATA PERIOD: JANUARY - JUNE 1987
SUPPLEMENTAL INFORMATION

1. Regulatory Limits

- a. Fission and Activation Gases: 0.851 Ci/minute (Release rate limit based on Technical Specification dose rate limit of 500 mrem/yr from noble gases). This number is calculated based on the expected mix of noble gas radionuclides presented in Table 4.4 of the SSES Final Environmental Statement, NUREG-0564.
- b. Iodine-131: 141 microcuries/minute (Release rate limit based on Technical Specification dose rate limit of 1500 mrem/yr from iodine-131, tritium, and particulates with half-lives greater than eight days).
- c. Particulates: 772 microcuries/minute (Release rate limit based on Technical Specification dose rate limit of 1500 mrem/yr from iodine-131, tritium, and particulates with half-lives greater than eight days. This number is calculated based on the expected mix of particulate radionuclides presented in Table 4.4 of the SSES Final Environmental Statement, NUREG-0564.

2. Maximum Permissible Concentrations

The concentrations of radioactive materials in waterborne effluents are limited to the concentrations specified in 10CFR Part 20 Appendix B Table II, Column 2, for radionuclides other than dissolved or entrained noble gases.

For dissolved or entrained noble gases, the concentrations are limited to the following values, as stated in the applicable Technical Specification:

<u>Nuclide</u>	<u>MPC (uCi/ml)</u>
⁸⁵ Kr m	2 E-4
⁸⁵ Kr	5 E-4
⁸⁷ Kr	4 E-5
⁸⁸ Kr	9 E-5
⁴¹ Ar	7 E-5
¹³³ Xe m	5 E-4
¹³³ Xe	6 E-4
¹³⁵ Xe m	2 E-4
¹³⁵ Xe	2 E-4

These values are calculated using Equation 20 of ICRP Publication 2 (1959), adjusted for infinite cloud submersion in water.

3. Methods of Quantifying Effluents

- a. Fission and Activation Gases: Gas samples are routinely collected monthly and analyzed with a Ge(Li) detector system which incorporates a data reduction program to determine radionuclide composition in

terms of specific activity. Data tapes from the continuous vent monitors are used to determine the average concentration of noble gases. The Ge(Li) isotopic scan is used to convert the continuous vent monitor activity to actual activity based on the determined nuclide mixture. The vent and sample flow rates are continuously monitored, and the average flow rates for each vent are used to calculate the total activity released in a given time period. When the continuous monitors are out of service, manual grab samples are taken from each vent once each eight hours (once each four hours for the standby gas treatment vent).

- b. Iodines: Iodine is continuously collected via an isokinetic sampling assembly in each vent. Filters are normally exchanged once per week and analyzed on a Ge(Li) system. The daily average flow rates for the vents and sample pumps are averaged for the duration of the sampling period, and a ratio of vent flow rate to sample flow rate is determined. The ratio is used to determine the total activity of each isotope released during the time period in question. When the continuous monitors are out of service, iodine is continuously collected on charcoal cartridges attached to air samplers which draw directly from the affected rooftop vent(s) or from alternate sampling ports available on the sample lines.
- c. Particulates: Particulates are continuously collected via an isokinetic sampling assembly in each vent. Filters are normally exchanged once per week and analyzed on a Ge(Li) system. Flow rate corrections are performed as for iodines. When the continuous vent monitors are out of service, particulates are continuously sampled directly from the affected rooftop vent(s) or from alternate sampling ports available on the sample lines.
- d. Waterborne Effluents: Each tank of liquid radwaste is sampled and analyzed for principle gamma emitters prior to release. Each sample tank is recirculated for a sufficient amount of time prior to sampling to ensure that a representative sample is obtained. Samples are analyzed on a Ge(Li) system and release permits are generated based on the values obtained from the isotopic analysis and the most recent values for tritium, gross alpha, iron-55, and strontium-89 and -90. An aliquot based on release volume is saved and added to monthly and quarterly composite containers. The monthly tritium analysis is done in-house. The quarterly composite is sent to a vendor laboratory for iron-55, strontium-89 and -90, and gross alpha analyses.

The concentration of each radionuclide in each batch is decayed from the time of counting to the midpoint of the release period, and is then multiplied by the volume of the batch to determine the total quantity of each nuclide released in each batch. The isotopic totals for each are summed to determine the total source term for the report period.

4. Batch Releases

a. Waterborne

1. Number of Batch Releases: 152
2. Total Time Period for Batch Releases: 3.29E+04 minutes
3. Maximum Time Period for a Batch Release: 3.84E+02 minutes
4. Average Time Period for a Batch Release: 2.17E+02 minutes
5. Minimum Time Period for a Batch Release: 2.00E+01 minutes
6. Average Stream Flow During Period of Release of Effluent into a Flowing Stream: >5.76E+03 gpm (cooling tower blowdown)
6.74E+06 gpm (Susq. River)

b. Airborne

1. Number of Batch Releases: 0
2. Total Time Period for Batch Releases: NA
3. Maximum Time Period for a Batch Release: NA
4. Average Time Period for a Batch Release: NA
5. Minimum Time Period for a Batch Release: NA

5. Abnormal Releases

a. Waterborne

1. Number of Releases: 0
2. Volume Released: NA
3. Total Activity Released: NA

b. Airborne

1. Number of Releases: 0
2. Total Activity Released: NA

SECTION 2

EFFLUENT AND WASTE DISPOSAL DATA

TABLE 2
SEMIANNUAL EFFLUENT AND WASTE DISPOSAL REPORT - 1987
AIRBORNE EFFLUENTS - SUMMATION OF ALL RELEASES

Nuclide Category	Unit	First Quarter		Second Quarter	
A. Fission and Activation Gases					
1. Total Release	Ci	5.18E+01		3.41E+01	
2. Average Release Rate for Period	uCi/sec	6.66E+00		4.34E+00	
3. Percent of Applicable Limit ²	%	4.69E-02		3.05E-02	
B. Iodine-131					
1. Total Release	Ci	>3.26E-06	<1.99E-04	<1.99E-04	
2. Average Release Rate for Period	uCi/sec	>4.19E-07	<2.56E-05	<2.53E-05	
3. Percent of Applicable limit ²	%	>1.78E-05	<1.09E-03	<1.08E-03	
C. Particulates					
1. Particulates with Half-lives >8 Days Released	Ci	≥5.76E-03	<7.25E-03	≥5.08E-05	<1.10E-03
2. Average Release Rate for Period	uCi/sec	≥7.41E-04	<9.32E-04	≥6.46E-06	<1.40E-04
3. Percent of Applicable Limit ²	%	≥5.74E-03	<7.23E-03	≥5.01E-05	<1.08E-03
4. Gross Alpha Activity Released	Ci	<1.53E-06		<1.44E-06	
D. Tritium					
1. Total Release	Ci	≥8.83E+00	<1.64E+01	≥1.50E+01	<2.25E+01
2. Average Release Rate for Period	uCi/sec	≥1.14E+00	<2.11E+00	≥1.91E+00	<2.86E+00
3. Percent of Applicable Limit ³	%	≥2.33E-02	<4.32E-02	≥3.91E-02	<5.86E-02

¹Notation: The first value presented (≥) includes only activity positively detected at the 95% confidence level. The second value (<) includes detected activity plus the Lower Limit of Detection values of any samples in which activity was not detected at the 95% CL.

²Based on release rate limit derived from dose rate Technical Specification.

³Based on a release rate (4.88E+03 uCi/sec) corresponding to the ³H Maximum Permissible Concentration (2.0E-07 uCi/cc) in unrestricted areas. A relative concentration of 4.1E-05 sec/m³ is assumed.

TABLE 3
SEMIANNUAL EFFLUENT AND WASTE DISPOSAL REPORT - 1987
AIRBORNE EFFLUENTS (Curies)¹

Nuclide	First Quarter		Second Quarter	
A. Gases				
¹³³ Xe	5.18E+01		3.41E+01	
Total	5.18E+01		3.41E+01	
B. Iodines				
¹³¹ I	>3.26E-06	<1.99E-04		<1.99E-04
¹³³ I	1.67E-05		4.82E-05	
C. Particulates with Half-lives > 8 d				
⁵¹ Cr	5.05E-03		4.46E-05	
⁵⁴ Mn	≥5.10E-04	<6.13E-04		<9.43E-05
⁵⁹ Fe	≥8.25E-06	<2.16E-04		<1.50E-04
⁵⁸ Co	≥6.03E-05	<1.35E-04		<6.70E-05
⁶⁰ Co	≥1.00E-04	<2.43E-04	≥5.70E-06	<1.31E-04
⁶⁵ Zn	≥8.68E-06	<2.60E-04		<1.80E-04
⁸⁹ Sr	≥2.03E-08	<2.52E-06	≥5.16E-07	<2.39E-06
⁹⁰ Sr		<5.25E-07		<4.74E-07
¹³⁴ Cs		<1.37E-04		<6.34E-05
¹³⁷ Cs	≥2.16E-05	<1.14E-04		<6.68E-05
¹⁴¹ Ce		<1.01E-04		<6.08E-05
¹⁴⁴ Ce		<3.77E-04		<2.39E-04
Total	≥5.76E-03	<7.25E-03	≥5.08E-05	<1.10E-03

¹Notation: The first value presented (≥) includes only activity positively detected at the 95% confidence level. The second value (<) includes detected activity plus the Lower Limit of Detection values of any samples in which activity was not detected at the 95% CL.

TABLE 4
SEMIANNUAL EFFLUENT AND WASTE DISPOSAL REPORT - 1987
WATERBORNE EFFLUENTS - SUMMATION OF ALL RELEASES

Nuclide Category	Unit	First Quarter		Second Quarter	
A. Fission & Activation Products					
1. Total Release ¹	Ci	≥4.59E-02	<6.75E-02	≥2.05E-01	<2.21E-01
2. Average Diluted Concentration	uCi/ml	≥1.65E-07	<2.43E-07	≥4.66E-07	<5.02E-07
3. Percent of Applicable Limit ²	%	6.49E-03		2.19E-02	
B. Tritium					
1. Total Release	Ci	4.42E+00		6.17E+00	
2. Average Diluted Concentration	uCi/ml	1.59E-05		1.40E-05	
3. Percent of Applicable limit ³	%	5.30E-01		4.67E-01	
C. Dissolved and Entrained Gases					
1. Total Release	Ci	≥7.37E-04	<9.13E-02	≥7.77E-04	<1.64E-01
2. Average Diluted Concentration	uCi/ml	≥2.65E-09	<3.28E-07	≥1.77E-09	<3.73E-07
3. Percent of Applicable Limit ⁴	%	≥6.63E-03	<8.21E-01	≥4.43E-03	<9.33E-01
D. Gross Alpha Radioactivity Released					
	Ci		<1.64E-04		<3.71E-04
E. Volume of Waste Released (Prior to Dilution)					
	gal.		1.12E+06		1.49E+06
	liters		4.24E+06		5.66E+06
F. Volume of Dilution Water Used					
1. During Periods of Release	gal. liters		>7.24E+07 >2.74E+08		>1.15E+08 >4.34E+08
2. Over Entire Period	gal. liters		>6.75E+08 >2.55E+09		>7.87E+08 >2.98E+09

¹Notation: The first value presented (≥) includes only activity positively detected at the 95% confidence level. The second value (<) includes detected activity plus the Lower Limit of Detection values of any samples in which activity was not detected at the 95% CL.

²Based on quarterly dose limits from liquid effluents.

³Based on the Maximum Permissible Concentration for ³H in effluents to unrestricted areas (3.0 E-03 uCi/cc).

⁴Based on the most restrictive Maximum Permissible Concentration for a noble for a gas, 4.0 E-05 uCi/cc (⁸⁷Kr) from SSES Tech Spec Table 3.11.1.1-1.

TABLE 5
SEMIANNUAL EFFLUENT AND WASTE DISPOSAL REPORT - 1987
WATERBORNE EFFLUENTS (Curies)¹

Nuclide	First Quarter		Second Quarter	
A. Tritium	4.42E+00		6.17E+00	
B. Fission and Activation Products				
²⁴ Na	6.46E-06			
⁵¹ Cr	3.74E-02		1.71E-01	
⁵⁴ Mn	≥3.78E-03	<3.89E-03	≥6.91E-03	<7.06E-03
⁵⁵ Fe	<3.82E-03		1.13E-02	
⁵⁹ Fe	≥4.06E-05	<9.26E-03	≥3.40E-03	<4.63E-03
⁵⁸ Co	≥3.50E-04	<6.89E-04	≥1.96E-03	<2.36E-03
⁶⁰ Co	≥2.99E-03	<3.21E-03	≥4.33E-03	<4.71E-03
⁶⁵ Zn	≥1.48E-04	<1.20E-03	≥3.65E-03	<4.94E-03
⁷⁶ As	4.71E-04		1.42E-04	
⁸⁹ Sr	<2.12E-04		<1.70E-04	
⁹⁰ Sr	<3.82E-05		<5.09E-05	
⁹⁹ Mo	<2.52E-03		<4.68E-03	
⁹⁹ Tc m			4.25E-06	
¹¹⁰ Ag m	6.82E-04		2.12E-03	
¹³¹ I	<3.65E-04		<5.29E-04	
¹³⁴ Cs	<4.12E-04		<7.32E-04	
¹³⁷ Cs	<5.62E-04		<1.06E-03	
¹⁴¹ Ce	<5.12E-04		<1.01E-03	
¹⁴⁴ Ce	<2.24E-03		<4.24E-03	
Total	≥4.59E-02	<6.75E-02	≥2.05E-01	<2.21E-01
C. Dissolved and Entrained Gases				
⁴¹ Ar	<2.46E-05		<6.32E-05	
⁸⁵ Kr m	<9.66E-05		<2.03E-04	
⁸⁵ Kr	<8.72E-02		<1.57E-01	
⁸⁷ Kr	<1.50E-05		<3.40E-05	
⁸⁸ Kr	<1.29E-04		<3.02E-04	
¹³³ Xe m	<2.26E-03		<4.18E-03	
¹³³ Xe	≥3.12E-04	<1.12E-03	≥3.17E-04	<1.86E-03
¹³⁵ Xe m	<4.40E-09		<1.54E-08	
¹³⁵ Xe	≥4.25E-04	<4.75E-04	≥4.60E-04	<6.49E-04
Total	≥7.37E-04	<9.13E-02	≥7.77E-04	<1.64E-01

¹Notation: The first value presented (≥) includes only activity positively detected at the 95% confidence level. The second value (<) includes detected activity plus the Lower Limit of Detection values of any samples in which activity was not detected at the 95% CL.

TABLE 6

SEMIANNUAL EFFLUENT AND WASTE DISPOSAL REPORT
 SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
 Data Period: January 1, 1987 - June 30, 1987

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
40	Truck	Barnwell, SC

B. IRRADIATED FUEL SHIPMENTS

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
NONE	NOT APPLICABLE	NOT APPLICABLE

TABLE 7
SEMIANNUAL EFFLUENT AND WASTE DISPOSAL REPORT
SOLID RADIOACTIVE WASTE- CLASS A*
Data Period: January 1, 1987 - June 30, 1987

Source of Waste and Processing Employed (Waste Stream)	Condensate Demineralizer (Bead Resin)	Condensate Demineralizer (Bead Resin)	Reactor Water, Fuel Pool Clean-up (Powdex)	Condensate Demineralizer Regeneration (Evaporator Concentrates)
Container Volume (ft ³)	1949.2	1240.4	135	1423
Total Activity Content (Ci)	44.68	138.51	395	0.295
Above Determined By: a) measurement b) estimation c) measurement and correlation factors	C	C	C	C
Principle Radionuclides (Identity and Percent Composition)	Mn-54 25 % Co-60 21 % Cr-51 19 % Fe-55 16 % Co-58 9 % Zn-65 8 % C-14 2 %	Mn-54 29 % Co-60 24 % Fe-55 19 % Co-58 13 % Zn-65 7 % Cr-51 3 % C-14 3 % Ni-63 2 %	Fe-55 32 % Mn-54 21 % Cr-51 19 % Co-60 17 % Zn-65 5 % Co-58 4 % Fe-59 2 %	Fe-55 62 % Mn-54 12 % Co-60 10 % Ni-63 7 % Cr-51 4 % H-3 3 % Zn-65 2 %
Above Determined by: a) measurement b) estimation c) measurement and correlation factors	C	C	C	C
Type of Container	Carbon Steel Liner	Carbon Steel Liner	High Integrity Container	Carbon Steel Liner
Solidification Agent or Absorbent	Dewatered	Portland Cement	Dewatered	Portland Cement

* As defined in 10CFR Part 61.

TABLE 7
SEMIANNUAL EFFLUENT AND WASTE DISPOSAL REPORT
SOLID RADIOACTIVE WASTE- CLASS A*
Data Period: January 1, 1987 - June 30, 1987

Source of Waste and Processing Employed (Waste Stream)	Liquid RW Filters (Filter Media, Sludge, Evapor. Concentrates)	Non-Compactible Trash	Compacted Trash	Oily Waste
Container Volume (ft ³)	2480.4	1031	1755	NONE
Total Activity Content (Ci)	260.14	.254	3.02	NONE
Above Determined By: a) measurement b) estimation c) measurement and correlation factors	C	B	B	
Principle Radionuclides (Identity and Percent Composition)	Fe-55 55 % Cr-51 21 % Mn-54 11 % Co-60 7 % Co-58 2 % Fe-59 2 % Zn-65 2 %	Fe-55 55 % Mn-54 17 % Co-60 17 % Fe-59 11 %	Fe-55 55 % Mn-54 17 % Co-60 17 % Fe-59 11 %	
Above Determined by: a) measurement b) estimation c) measurement and correlation factors	C	B	B	
Type of Container	Carbon Steel Liner	Strong, Tight Container	55 Gallon 17H Drums	
Solidification Agent or Absorbent	Portland Cement	N/A	N/A	

* As defined in 10CFR Part 61.

TABLE 8
 SEMIANNUAL EFFLUENT AND WASTE DISPOSAL REPORT
 SOLID RADIOACTIVE WASTE- CLASS B*
 Data Period: January 1, 1987 - June 30, 1987

Source of Waste and Processing Employed (Waste Stream)	* NO CLASS B WASTE GENERATED *			
Container Volume (ft ³)				
Total Activity Content (Ci)				
Above Determined By: a) measurement b) estimation c) measurement and correlation factors				
Principle Radionuclides (Identity and Percent Composition)				
Above Determined by: a) measurement b) estimation c) measurement and correlation factors				
Type of Container				
Solidification Agent or Absorbent				

* As defined in 10CFR Part 61.

SEMIANNUAL EFFLUENT AND WASTE DISPOSAL REPORT
 SOLID RADIOACTIVE WASTE- CLASS C*
 Data Period: January 1, 1987 - June 30, 1987

Source of Waste and Processing Employed (Waste Stream)	* NO CLASS C WASTE GENERATED *			
Container Volume (ft ³)				
Total Activity Content (Ci)				
Above Determined By: a) measurement b) estimation c) measurement and correlation factors				
Principle Radionuclides (Identity and Percent Composition)				
Above Determined by: a) measurement b) estimation c) measurement and correlation factors				
Type of Container				
Solidification Agent or Absorbent				

* As defined in 10CFR Part 61.

TABLE 10
 SEMIANNUAL EFFLUENT AND WASTE DISPOSAL REPORT
 ESTIMATED TOTAL ERRORS ASSOCIATED WITH EFFLUENT MEASUREMENTS
 Data Period: January 1, 1987 - June 30, 1987

<u>Measurement</u>	<u>Estimated Total Error</u>
1. Airborne Effluents	
a. Fission and Activation Gases	15.9 %
b. Iodines	13.3 %
c. Particulates	15.8 %
d. Tritium	5.7 %
2. Waterborne Effluents	
a. Fission and Activation Products	5.0 %
b. Tritium	3.3 %
c. Dissolved and Entrained Gases	8.4 %
3. Solid Wastes	
a. Condensate Demineralizers (Bead Resin - Dewatered)	15.1 %
b. Reactor Water Clean-up Fuel Pool Clean-up (Powdex-Dewatered)	15.1 %
c. Condensate Demineralizers Regeneration (Evaporator Concentrated - Solidified)	15.1 %
d. Liquid RW Filters (Filter Media, Sludge and Evaporator Concentrates - Solidified)	15.1 %
e. Non-Compactable Trash	25 %
f. Compacted Trash	25 %

TABLE 11
SEMIANNUAL EFFLUENT AND WASTE DISPOSAL REPORT
DATA NOT REPORTED IN PREVIOUS SEMIANNUAL REPORT

All data needed for preparation of this report and the previous report were recieved in time for incorporation into the tables. No estimated values have been used.

SECTION 3

CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL
AND THE SOLID WASTE PROCESS CONTROL PROGRAM

CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL

There were no revisions to the SSES OFFSITE DOSE CALCULATION MANUAL during the report period.

CHANGES TO THE SOLID WASTE PROCESS CONTROL PROGRAM

There were no revisions to the SOLID WASTE PROCESS CONTROL PROGRAM during the report period.

SECTION 4

REPORTS OF EXCEPTION TO THE SSES
EFFLUENT MONITORING PROGRAM

There were no instances during the report period in which airborne or waterborne effluent monitoring instrumentation was declared inoperable and was not restored to operability within the time period specified in Technical Specification Table 3.3.7.10-1 or 3.3.7.11-1 ACTION STATEMENTS.