Radioactive Materials Released from Nuclear Power Plants

Annual Report 1978

Prepared by J. Tichler, C. Benkovitz

Brookhaven National Laboratory

Prepared for
U.S. Nuclear Regulatory
Commission

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ABSTRACT

Releases of radioactive materials in airborne and liquid effluents from commercial light water reactors during 1978 have been compiled and reported. Data on solid waste shipments as well as selected operating information have been included. This report supplements earlier annual reports issued by the former Atomic Energy Commission and the Nuclear Regulatory Commission. The 1978 release data are compared with previous years releases in tabular form. Data covering specific radionuclides are summarized.

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1.0 Introduction

1.1 Purpose

This report, prepared annually by the staff of the U. S. Nuclear Regulatory Commission, presents measured data on radioactive materials in effluents from licensed commercial light water reactor power plants. These data were reported by licensees for plant operations during 1978. This information supplements earlier annual reports issued by the former Atomic Energy Commission and Nuclear Regulatory Commission.¹

1.2 Scope

Releases of radioactive materials are governed by 10 CFR Part 20 and 50 and by limits established in the Technical Specifications for each facility. The requirement for reporting effluent releases by nuclear power plant operators is described in 10 CFR 50.36a. Through its Office of Inspection and Enforcement, the Nuclear Regulatory Commission maintains a knowledge of radioactive releases from licensed nuclear reactors to ensure that they are within regulatory requirements. This report summarizes data from the 65 licensed nuclear power plants that were declared by the utilities to be in commercial operation as of December 13, 1977.

1.3 Source of Data

The information included in this report was obtained from data reported by the licensees. Individual licensee reports are available in the NRC Public Document Room, 1717 H Street, NW, Washington, D. C. 20555 and in local Public Document Rooms located near each licensed facility. Licensee

reports varied in the format and extent of information provided. This variability will diminish as changes in the Technical Specification for each plant will require adoption of the reporting format of Regulatory Guide 1.21, "Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light Water Cooled Nuclear Power Plants", June 1974.

Data from prior years used in the comparison tables were obtained from the six previous annual summaries.¹

2.0 Tabulated Data

2.1 Airborne and Liquid Effluents

Tables 1 through 4 list for each reactor, the measured quantities of total noble gases and of I-131 and particulates (with half lives greater than 8 days) released in effluents to the atmosphere during each of the years 1970 through 1978. Tables 5 through 8 list the total measured quantities of tritium and of mixed fission and activation products released in liquid effluents in each of the years.

¹"Report on Releases of Radioactivity in Effluents and Solid Wastes from Nuclear Power Plants for 1972", Directorate of Regulatory Operations, August 1973. "Summary of Radioactivity Releases in Effluents from Nuclear Power Plants During 1974", NUREG-75/001, January 1975. "Radioactive Materials Released from Nuclear Power Plants 1974", NUREG-0077, June 1974. "Radioactive Materials Released from Nuclear Power Plants 1975", NUREG-0218, March 1977. "Radioactive Materials Released from Nuclear Power Plants, 1976", NUREG-0367, March 1978. "Radioactive Materials Released from Nuclear Power Plants, 1977", NUREG-0521, January 1979.

2.2 Solid Waste

The total volumes, activity and the number of shipments of solid waste for each plant during 1978 are summarized in Table 9 and 10. A comparison for the years 1972 through 1978 is made in Tables 11 and 12.

2.3 Individual Plant Summaries

Individual plant summaries are presented in alphabetical order. The summaries include general plant information, power production, effluent and solid waste data, and a summary of specific radionuclides measured in effluents. The summaries are presented in the format of Regulatory Guide 1.21 even though not all licensees are required to report in this format. Where licensees have not reported in strict accordance with Regulatory Guide 1.21, there may appear blank areas in individual plant summaries.

2.4 Notation

The following notation is used:

$$1.86\text{E}+06 = 1.86 \times 10^6$$

$$1.86\text{E}-03 = 1.86 \times 10^{-3}$$

NR = Not Reported

ND = Not Detected

< = Value is less than the ability of the measuring instrumentation to detect. Value shown is the instrument detection limit.

3.0 Summary

At present, it is difficult to compare effluent releases with those of previous years due to, among other contributors, variability in reporting structure and release requirements. Comparisons with respect to power generation are similarly difficult due to factors which strongly affect the releases such as level of fuel cladding defects, design features of plant radioactive waste treatment systems, operational occurrences and equipment performance. In all cases, the total releases were below the limits set forth in applicable regulations and in technical specifications for each plant.

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TABLE 1

AIRBORNE EFFLUENTS COMPARISON BY YEAR

BOILING WATER REACTORS		FISSION AND ACTIVATION GASES (TOTAL Curies)							
FACILITY	1970	1971	1972	1973	1974	1975	1976	1977	1978
BIG ROCK POINT	2.80E+05	2.84E+05	2.58E+05	2.30E+05	1.88E+05	5.06E+04	1.52E+04	1.34E+04	1.89E+04
BROWN'S FERRY	-	-	-	-	6.40E+04	9.24E+04	<8.05E+04	<1.66E+05	1.57E+05
BRUNSWICK	-	-	-	-	-	1.90E+02	1.90E+04	2.46E+05	9.14E+04
COOPER	-	-	-	-	2.00E+03	1.98E+04	3.80E+04	1.27E+03	4.09E+03
DRESDEN 1	9.00E+05	7.53E+05	8.77E+05	8.40E+05	9.80E+04	5.20E+05	4.52E+05	5.20E+05	8.50E+05
DRESDEN 2-3	-	5.80E+05	4.29E+05	8.80E+05	6.27E+05	3.69E+05	3.23E+04	3.13E+05	4.06E+04
DUANE ARNOLD	-	-	-	-	-	1.58E+03	5.26E+03	3.87E+03	1.56E+03
EDWIN I. HATCH	-	-	-	-	-	2.70E+02	2.80E+03	1.90E+03	1.62E+03
HUMBOLDT BAY	5.40E+05	5.14E+05	4.30E+05	3.50E+05	5.72E+05	2.97E+05	9.30E+04	4.40E+05	4.40E+05
JAMES A. FITZPATRICK	-	-	-	-	-	4.08E+03	4.41E+04	2.33E+04	5.88E+03
LACROSSE	1.00E+03	1.00E+03	3.10E+04	9.10E+04	4.90E+04	5.71E+04	1.24E+05	4.25E+04	8.45E+03
MILLSTONE POINT 1	-	2.76E+05	7.26E+05	7.90E+04	9.12E+05	2.97E+06	5.07E+05	6.20E+05	5.66E+05
MONTICELLO	-	7.60E+04	7.51E+05	8.70E+05	1.57E+06	1.55E+05	1.14E+04	6.87E+03	6.42E+03
NINE MILE POINT	1.00E+04	2.53E+05	5.17E+05	8.72E+05	5.58E+05	1.30E+06	1.76E+05	3.53E+03	3.02E+03
OYSTER CREEK	1.10E+05	5.16E+05	8.66E+05	8.10E+05	2.79E+05	2.06E+05	1.67E+05	1.77E+05	9.98E+05
PEACH BOTTOM	-	-	-	<1.00E+03	<1.00E+00	1.30E+04	2.09E+05	7.11E+04	3.85E+04
PILGRIM	-	-	1.80E+04	2.30E+05	5.46E+05	4.60E+04	1.83E+05	4.13E+05	3.27E+04
QUAD-CITIES	-	-	1.32E+05	9.00E+05	9.50E+05	1.10E+05	3.36E+04	2.56E+04	3.24E+04
VERMONT YANKEE	-	-	5.50E+04	1.80E+05	6.40E+04	4.08E+03	3.03E+03	3.35E+03	4.94E+03

N/R=NOT REPORTED

TABLE 2

AIRBORNE EFFLUENTS COMPARISON BY YEAR

PRESSURIZED WATER REACTORS		FISSION AND ACTIVATION GASES (TOTAL CURIES)							
FACILITY	1970	1971	1972	1973	1974	1975	1976	1977	1978
ARKANSAS ONE	-	-	-	-	1.96E+02	1.03E+03	5.69E+03	1.39E+04	7.50E+03
BEAVER VALLEY	-	-	-	-	-	-	1.07E+00	4.73E+01	3.90E+02
CALVERT CLIFFS	-	-	-	-	-	7.72E+03	9.40E+03	2.23E+04	2.76E+04
CRYSTAL RIVER	-	-	-	-	-	-	-	3.35E+03	6.86E+03
DAVIS-BESSE	-	-	-	-	-	-	-	1.27E+03	2.10E+03
DONALD C. COOK	-	-	-	-	-	2.64E+00	9.75E+02	3.80E+03	4.85E+04
FORT CALHOUN	-	-	-	6.70E+01	3.03E+02	4.29E+02	1.94E+03	3.81E+03	1.36E+03
HADDAM NECK	1.00E+00	3.00E+00	1.00E+00	3.20E+01	7.00E+00	4.80E+02	4.52E+02	3.12E+03	2.14E+03
H.B.ROBINSON	-	1.00E+00	<1.00E+00	3.10E+03	2.31E+03	1.17E+03	6.40E+02	4.76E+02	8.84E+02
INDIAN POINT	-	-	-	1.50E+01	5.58E+03	8.20E+03	1.16E+04	1.60E+04	1.41E+04
INDIAN POINT 3	-	-	-	-	-	-	SHOWN W/	OTHER UNIT	8.09E+02
JOSEPH M. FARLEY	-	-	-	-	-	-	-	-	3.53E+03
KEWAUNEE	-	-	-	-	3.35E+03	2.45E+03	1.40E+03	2.43E+03	4.44E+02
MAINE YANKEE	-	-	<1.00E+00	1.61E+02	6.36E+03	4.09E+03	1.30E+03	2.86E+02	1.43E+03
MILLSTONE POINT 2	-	-	-	-	-	-	1.57E+03	2.28E+03	7.64E+02
NORTH ANNA	-	-	-	-	-	-	-	-	1.51E+04
OCONEE	-	-	-	9.30E+03	1.94E+04	1.51E+04	4.39E+04	3.56E+04	4.33E+04
PALISADES	-	-	1.00E+00	4.54E+02	<1.00E+00	2.61E+03	2.99E+01	5.99E+01	3.23E+02
POINT BEACH	-	<1.00E+00	3.00E+00	5.75E+03	-	4.45E+04	1.91E+03	1.13E+03	5.16E+02
PRAIRIE ISLAND	-	-	-	8.72E+00	-	2.17E+03	1.74E+03	6.73E+02	1.26E+03
RANCHO SECO	-	-	-	-	-	1.18E+02	1.27E+02	2.00E+03	7.10E+03
R.E.GINNA	1.00E+01	3.20E+01	1.20E+01	5.76E+02	7.57E+02	1.04E+04	5.52E+03	3.20E+03	9.72E+02
SALEM	-	-	-	-	-	-	<1.00E-02	1.96E+01	1.02E+01
SAN ONOFRE	<1.00E+00	8.00E+00	1.90E+01	1.10E+04	1.78E+03	1.11E+03	4.16E+02	1.54E+02	1.81E+03
ST. LUCIE	-	-	-	-	-	-	1.72E+03	2.54E+04	2.93E+04
SURRY	-	-	<1.00E+00	8.66E+02	6.86E+03	8.04E+03	1.91E+04	1.90E+04	4.36E+03
THREE MILE ISLAND	-	-	-	-	9.16E+02	3.63E+03	2.76E+03	1.66E+04	1.57E+04
THREE MILE ISLAND 2	-	-	-	-	-	-	-	-	8.73E+00
TROJAN	-	-	-	-	-	-	6.66E+02	3.07E+03	3.05E+02
TURKEY POINT	-	-	-	5.30E+02	4.66E+03	1.34E+04	1.56E+04	2.33E+04	2.35E+04
YANKEE ROWE	<1.00E+00	<1.00E+00	<1.00E+00	3.50E+01	4.00E+01	2.24E+01	2.57E+01	1.25E+02	6.56E+02
ZION	-	-	-	4.00E+00	2.99E+03	4.88E+04	1.14E+05	3.22E+04	6.77E+04

N/R=NOT REPORTED

TABLE 3

AIRBORNE EFFLUENTS COMPARISON BY YEAR (CURIES)

I-131 AND PARTICULATES

BOLING WATER REACTORS

(HALF-LIFE EQUAL TO OR GREATER THAN 8 DAYS)

FACILITY	1970	1971	1972	1973	1974	1975	1976	1977	1978
BIG ROCK POINT	1.30E-01	6.10E-01	1.50E-01	4.60E+00	1.60E-01	1.20E-01	5.00E-02	1.00E-02	2.87E-03
BROWN'S FERRY	-	-	-	-	1.20E-01	2.70E-01	<7.00E-02	1.04E-01	1.28E-01
BRUNSWICK	-	-	-	-	-	<1.00E-02	4.60E-01	9.32E-01	2.95E-01
COOPER	-	-	-	-	2.40E-01	5.00E-02	<4.00E-02	<1.91E-02	3.20E-03
DRESDEN 1	3.30E+00	6.70E-01	2.75E+00	4.00E-02	6.80E-01	9.60E-01	8.40E-01	4.93E+00	1.22E+00
DRESDEN 2-3	1.60E+00	8.68E+00	5.89E+00	6.70E+00	6.50E+00	4.31E+00	5.49E+00	6.86E+00	7.09E-01
DUANE ARNOLD	-	-	-	-	-	1.10E-03	8.18E-02	2.29E-02	1.20E-02
EDWIN I. HATCH	-	-	-	-	-	<1.00E-02	<1.00E-02	5.67E-03	1.60E-03
HUMBOLDT BAY	3.50E-01	3.00E-01	4.80E-01	2.90E-01	8.40E-01	1.06E+00	8.36E-02	4.04E-03	8.00E-06
JAMES A. FITZPATRICK	-	-	-	-	-	<4.00E-02	6.80E-01	1.73E-01	2.22E-01
LACROSSE	<6.00E-02	<1.00E-02	7.10E-01	2.00E-01	4.00E-02	1.00E-01	<7.06E-02	1.67E-01	2.47E-02
MILLSTONE POINT 1	-	4.00E+00	1.32E+00	2.00E-01	3.26E+00	9.98E+00	2.33E+00	4.86E+00	3.19E+00
MONTICELLO	-	3.60E-02	5.78E-01	1.20E+00	5.70E+00	3.71E+00	1.71E-01	8.51E-02	4.12E-02
NINE MILE POINT	<1.00E-02	6.00E-02	9.70E-01	1.98E+00	8.90E-01	2.78E+00	2.20E+00	1.99E-01	1.06E-01
OYSTER CREEK	3.20E-01	2.14E+00	6.48E+00	7.02E+00	3.51E+00	5.64E+00	6.39E+00	9.05E+00	1.01E+01
PEACH BOTTOM	-	-	-	<1.00E-02	1.00E-02	4.00E-02	9.75E-01	2.73E-01	8.39E-02
PILGRIM	-	-	3.00E-02	4.70E-01	1.45E+00	2.58E+00	6.74E-01	6.90E-01	1.24E-01
QUAD-CITIES	-	-	7.50E-01	5.50E+00	8.88E+00	1.31E+00	1.33E+00	1.69E+00	1.03E+00
VERMONT YANKEE	-	-	1.70E-01	7.00E-02	3.60E-01	1.00E-02	<1.00E-02	1.44E-02	2.12E-01

N/R=NOT REPORTED

TABLE 4

AIRBORNE EFFLUENTS COMPARISON BY YEAR (CURIES)

I-131 AND PARTICULATES

PRESSURIZED WATER REACTORS

(HALF-LIFE EQUAL TO OR GREATER THAN 8 DAYS)

FACILITY	1970	1971	1972	1973	1974	1975	1976	1977	1978
ARKANSAS ONE	-	-	-	-	5.00E-02	7.40E-01	5.73E-02	9.04E-03	3.19E-03
BEAVER VALLEY	-	-	-	-	-	-	<1.00E-02*	1.52E-04	7.20E-02
CALVERT CLIFFS	-	-	-	-	-	7.00E-02	1.38E-01	3.07E-01	1.22E-01
CRYSTAL RIVER	-	-	-	-	-	-	-	2.53E-03	1.04E-03
DAVIS-BESSE	-	-	-	-	-	-	-	2.57E-04	2.04E-04
DONALD C. COOK	-	-	-	-	-	<1.00E-02	<1.00E-02	7.45E-02	1.23E-02
FORT CALHOUN	-	-	-	<1.00E-02	<1.00E-02	<1.00E-02	<2.04E-02	1.34E-02	8.18E-03
HADDAM NECK	<1.00E-02	-	2.00E-02	5.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	1.74E-03	3.03E-03
H.B.ROBINSON	-	-	3.00E-02	3.00E-01	5.00E-02	2.00E-02	9.96E-02	3.88E-03	5.65E-04
INDIAN POINT	-	-	-	<1.00E-02	4.30E-01	1.62E+00	2.42E-01	5.59E-02	1.66E-02
INDIAN POINT 3	-	-	-	-	-	-	SHOWN W/	OTHER UNIT	4.36E-03
JOSEPH M. FARLEY	-	-	-	-	-	-	-	-	3.43E-05
KEWAUNEE	-	-	-	-	2.00E-02	6.60E-01	<1.00E-02	2.40E-02	3.84E-03
MAINE YANKEE	-	-	<1.00E-02	9.40E-01	5.00E-02	<1.00E-02	<1.00E-02	5.05E-03	1.80E-03
MILLSTONE POINT 2	-	-	-	-	-	1.00E-02	1.25E-02	4.47E-03	2.19E-03
NORTH ANNA	-	-	-	-	-	-	-	-	3.09E-02
OCONEE	-	-	-	1.00E-02	3.00E-02	1.00E-02	2.72E-01	5.35E-01	1.71E-01
PALISADES	-	-	<1.00E-02	3.10E-01	1.00E-02	3.80E-01	4.16E-02	1.63E-02	1.52E-02
POINT BEACH	-	<1.00E-02	3.00E-02	5.50E-01	1.60E-01	7.00E-02	1.85E-02	5.02E-03	1.88E-02
PRAIRIE ISLAND	-	-	-	<1.00E-02	<1.00E-02	2.12E-02	1.14E-02	7.56E-03	8.58E-04
RANCHO SECO	-	-	-	-	-	<1.00E-02	<1.00E-02	5.02E-03	1.80E-02
R.E.GINNA	5.00E-02	1.70E-01	4.00E-02	<1.00E-02	<1.00E-02	2.00E-02	3.17E-02	2.55E-02	1.02E-02
SALEM	-	-	-	-	-	-	ND	2.34E-07	5.29E-03
SAN ONOFRE	<1.00E-02	<1.00E-02	<1.00E-02	1.61E+00	<1.00E-02	4.00E-02	<1.00E-02	1.86E-04	2.11E-04
ST. LUCIE	-	-	-	-	-	-	<1.00E-02	1.48E-01	2.56E-01
SURRY	-	-	<1.00E-02	4.00E-02	1.40E-01	5.00E-02	3.46E-01	1.20E-01	6.14E-02
THREE MILE ISLAND	-	-	-	-	<1.00E-02	<1.00E-02	1.07E-02	3.39E-02	2.71E-02
THREE MILE ISLAND 2	-	-	-	-	-	-	-	-	1.70E-05
TROJAN	-	-	-	-	-	-	1.64E-02	5.05E-02	3.77E-03
TURKEY POINT	-	-	-	6.00E-02	3.63E+00	4.30E-01	4.22E-01	1.04E+00	3.81E-01
YANKEE ROWE	<1.00E-02	<1.00E-02	<1.00E-02	1.90E-01	5.30E-01	1.00E-02	<1.00E-02	8.70E-05	1.57E-04
ZION	-	-	-	<1.00E-02	1.00E-02	1.40E-01	9.00E-02	5.38E-02	4.62E-02

N/R=NOT REPORTED

TABLE 5
LIQUID EFFLUENTS COMPARISON BY YEAR (CURIES)

BOLING WATER REACTORS		TRITIUM								
FACILITY	1970	1971	1972	1973	1974	1975	1976	1977	1978	
BIG ROCK POINT	5.40E+01	1.03E+01	1.04E+01	1.97E+01	5.10E+00	5.73E+00	2.41E+00	8.83E+00	4.05E+00	
BROWN'S FERRY	-	-	-	-	2.80E+00	1.04E+01	<4.02E+00	2.40E+01	3.08E+01	
BRUNSWICK	-	-	-	-	-	3.20E+00	5.90E+00	8.93E+00	1.41E+01	
COOPER	-	-	-	-	1.70E+00	8.25E+00	8.43E+00	9.04E+00	7.51E+00	
DRESDEN 1	5.00E+00	8.70E+00	4.33E+01	1.85E+01	1.88E+01	2.70E-01	2.00E-02	8.90E-02	1.31E+01	
DRESDEN 2-3	3.10E+01	3.85E-01	2.59E+01	2.58E+01	2.26E+01	5.40E+01	1.97E+01	5.00E+00	1.92E+01	
DUANE ARNOLD	-	-	-	-	-	3.30E-01	3.40E-01	2.13E-01	1.19E+02	
EDWIN I. HATCH	-	-	-	-	-	6.12E+00	8.98E+00	1.20E+01	9.00E+00	
HUMBOLDT BAY	7.00E+00	7.50E-00	1.30E+01	5.13E+01	3.17E+01	2.01E+01	1.30E+01	5.26E-01	3.63E-02	
JAMES A. FITZPATRICK	-	-	-	-	-	5.03E+00	4.20E+00	3.35E+00	1.90E+00	
LACROSSE	2.03E+01	9.14E+01	1.20E+02	1.03E+02	1.15E+02	1.27E+02	4.10E+01	4.86E+01	4.72E+01	
MILLSTONE POINT 1	-	1.27E+01	2.09E+01	3.70E+00	2.41E+01	8.03E+01	2.01E+01	4.41E+00	3.20E+00	
MONTICELLO	-	5.92E-01	<1.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.	
NINE MILE POINT	2.00E+01	1.24E+01	2.78E+01	4.65E+01	1.87E+01	2.81E+01	2.46E+00	2.49E+00	0.00	
OYSTER CREEK	2.20E+01	2.15E+01	6.16E+01	3.59E+01	1.41E+01	1.79E+01	3.86E+01	1.88E+01	1.96E+01	
PEACH BOTTOM	-	-	-	<1.00E-01	1.00E+01	3.08E+01	7.37E+01	7.09E+01	3.24E+01	
PILGRIM	-	-	4.20E+00	4.00E-01	1.05E+01	1.82E+01	4.67E+01	3.27E+01	2.98E+00	
QUAD-CITIES	-	-	4.70E+00	2.45E+01	3.40E+01	5.37E+01	4.98E+01	2.64E+01	1.72E+01	
VERMONT YANKEE	-	-	-	1.00E-01	0.00E+00	0.00E+00	1.60E+00	8.44E-01	N/R	

N/R=NOT REPORTED

TABLE 6
LIQUID EFFLUENTS COMPARISON BY YEAR (CURIES)

PRESSURIZED WATER REACTORS		TRITIUM							
FACILITY	1970	1971	1972	1973	1974	1975	1976	1977	1978
ARKANSAS ONE	-	-	-	-	2.56E+01	4.60E+02	2.12E+02	2.45E+02	2.94E+02
BEAVER VALLEY	-	-	-	-	-	-	8.60E+00	1.08E+02	3.49E+02
CALVERT CLIFFS	-	-	-	-	-	2.63E+02	2.74E+02	5.75E+02	4.56E+02
CRYSTAL RIVER	-	-	-	-	-	-	-	1.66E+02	1.54E+02
DAVIS-BESSE	-	-	-	-	-	-	-	9.01E+00	2.15E+02
DONALD C. COOK	-	-	-	-	-	5.64E+01	1.92E+02	2.86E+02	6.24E+02
FORT CALHOUN	-	-	-	1.58E+01	1.24E+02	1.11E+02	1.22E+02	1.57E+02	1.50E+02
HADDAM NECK	7.40E+03	5.83E+03	5.89E+03	3.90E+03	2.24E+03	5.67E+03	4.85E+03	6.67E+03	3.94E+03
H.B.ROBINSON	-	1.18E+02	4.05E+02	4.32E+02	4.49E+02	6.24E+02	9.80E+02	6.85E+02	4.73E+02
INDIAN POINT	-	-	-	2.75E+01	4.79E+01	7.94E+01	3.32E+02	3.71E+02	5.12E+02
INDIAN POINT 3	-	-	-	-	-	-	SHOWN W/	OTHER UNIT	2.56E+02
JOSEPH M. FARLEY	-	-	-	-	-	-	-	-	5.91E+01
KEWAUNEE	-	-	-	-	9.24E+01	2.77E+02	1.80E+02	2.95E+02	2.96E+02
MAINE YANKEE	-	-	9.20E+00	1.54E+02	2.19E+02	1.77E+02	3.67E+02	1.53E+02	3.15E+02
MILLSTONE POINT 2	-	-	-	-	-	7.60E+00	2.77E+02	2.11E+02	2.01E+02
NORTH ANNA	-	-	-	-	-	-	-	-	2.82E+02
OCCONEE	-	-	-	7.07E+01	3.50E+02	3.55E+03	2.19E+03	1.92E+03	1.17E+03
PALISADES	-	-	2.08E+02	1.85E+02	8.10E+00	4.16E+01	9.63E+00	5.58E+01	1.01E+02
POINT BEACH	-	2.66E+02	5.63E+02	5.56E+02	8.33E+02	8.85E+02	6.94E+02	9.99E+02	1.29E+03
PRAIRIE ISLAND	-	-	-	<1.00E-01	1.42E+02	4.54E-01	1.00E-01	1.35E+03	5.51E+02
RANCHO SECO	-	-	-	-	-	1.32E+02	0.00E+00	8.55E-02	N/R
R.E.GINNA	1.10E+02	1.54E+02	1.19E+02	2.86E+02	1.95E+02	2.60E+02	2.42E+02	1.19E+02	2.42E+02
SALEM	-	-	-	-	-	-	4.00E-02	2.96E+02	4.46E+02
SAN ONOFRE	4.60E+03	4.57E+03	3.48E+03	4.07E+03	3.81E+03	4.00E+03	3.39E+03	1.79E+03	2.50E+03
ST. LUCIE	-	-	-	-	-	-	1.33E+01	2.42E+02	1.28E+02
SURRY	-	-	5.00E+00	4.88E+02	2.45E+02	4.42E+02	7.82E+02	4.08E+02	7.47E+02
THREE MILE ISLAND	-	-	-	-	1.30E+02	4.63E+02	1.89E+02	1.92E+02	1.55E+02
THREE MILE ISLAND 2	-	-	-	-	-	-	-	-	3.83E+01
TROJAN	-	-	-	-	-	-	3.60E+01	3.11E+02	1.59E+02
TURKEY POINT	-	-	-	3.29E+02	5.80E+02	7.97E+02	7.71E+02	9.24E+02	1.17E+03
YANKEE ROWE	1.50E+03	1.68E+03	8.03E+02	6.94E+02	3.14E+02	2.47E+02	1.56E+02	1.39E+02	1.96E+02
ZION	-	-	-	1.00E-01	2.74E+02	1.03E+03	7.47E+02	7.24E+02	7.25E+02

N/R=NOT REPORTED

TABLE 7
LIQUID EFFLUENTS COMPARISON BY YEAR (CURIES)

BOILING WATER REACTORS		MIXED FISSION AND ACTIVATION PRODUCTS							
FACILITY	1970	1971	1972	1973	1974	1975	1976	1977	1978
BIG ROCK POINT	4.70E+00	3.50E+00	1.10E+00	2.70E+00	1.10E+00	2.02E+00	7.70E-01	3.92E-01	2.74E-01
BROWN'S FERRY	-	-	-	-	8.00E-01	2.70E+00	<3.95E+00	1.19E+00	1.32E+01
BRUNSWICK	-	-	-	-	-	1.89E+00	3.29E+00	6.22E+00	3.48E+00
COOPER	-	-	-	-	1.40E+00	1.74E+00	7.00E-02	7.50E-01	3.05E+00
DRESDEN 1	8.20E+00	6.20E+00	6.80E+00	9.20E+00	6.90E+00	8.40E-01	3.60E-01	6.00E-01	3.26E-01
DRESDEN 2-3	-	2.30E+01	2.20E+01	2.59E+01	3.31E+01	8.10E-01	1.21E+00	4.40E-01	3.99E-01
DUANE ARNOLD	-	-	-	-	-	<1.00E-02	<1.00E-02	2.32E-03	2.73E-01
EDWIN I. HATCH	-	-	-	-	-	6.00E-02	4.00E-02	2.50E+01	4.03E-02
HUMBOLDT BAY	2.40E+00	1.80E+00	1.40E+00	2.40E+00	4.40E+00	3.79E+00	9.90E-01	9.17E-01	1.95E-01
JAMES A. FITZPATRICK	-	-	-	-	-	5.32E+00	6.01E+00	8.85E-01	1.58E+00
LACROSSE	6.40E+00	1.71E+01	4.85E+01	3.59E+01	1.31E+01	1.42E+01	<5.78E+00	2.13E+01	8.86E+00
MILLSTONE POINT 1	-	1.97E+01	5.15E+01	3.34E+01	1.98E+02	1.99E+02	9.65E+00	5.27E-01	1.75E-01
MONTICELLO	-	<1.00E-01	<1.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NINE MILE POINT	2.80E+01	3.22E+01	3.46E+01	4.08E+01	2.56E+01	2.10E+01	2.14E+00	3.03E-01	0.00
OYSTER CREEK	1.85E+01	1.20E+01	1.00E+01	4.20E+00	7.00E-01	4.10E-01	2.20E-01	9.81E-02	1.53E-02
PEACH BOTTOM	-	-	-	<1.00E-01	9.00E-01	9.30E-01	3.38E+00	2.23E+00	5.11E+00
PILGRIM	-	-	1.50E+00	9.00E-01	4.20E+00	8.01E+00	2.33E+00	3.41E+00	1.77E+00
QUAD-CITIES	-	-	2.40E+00	2.14E+01	3.88E+01	1.71E+01	6.99E+00	1.34E+00	2.24E+00
VERMONT YANKEE	-	-	-	<1.00E-01	0.00E+00	<1.00E-02	<1.00E-02	1.55E-01	N/R

N/R=NOT REPORTED

TABLE 8

LIQUID EFFLUENTS COMPARISON BY YEAR (CURIES)

PRESSURIZED WATER REACTORS

MIXED FISSION AND ACTIVATION PRODUCTS

FACILITY	1970	1971	1972	1973	1974	1975	1976	1977	1978
ARKANSAS ONE	-	-	-	-	6.50E+00	3.11E+00	1.31E+01	4.50E+00	6.05E+00
BEAVER VALLEY	-	-	-	-	-	-	1.70E-01	6.52E-01	2.63E-01
CALVERT CLIFFS	-	-	-	-	-	1.44E+00	1.18E+00	3.48E+00	6.13E+00
CRYSTAL RIVER	-	-	-	-	-	-	-	1.54E-02	2.96E-02
DAVIS-BESSE	-	-	-	-	-	-	-	2.60E-02	9.01E-02
DONALD C. COOK	-	-	-	-	-	2.60E-01	1.87E+00	1.52E+00	1.48E+00
FORT CALHOUN	-	-	-	<1.00E-01	2.30E+00	3.60E-01	5.50E-01	3.63E-01	5.95E-01
HADDAM NECK	6.70E+00	5.90E+00	4.80E+00	3.00E+00	2.20E+00	1.20E+00	1.30E-01	1.71E+00	9.50E-01
H.B.ROBINSON	-	7.00E-01	8.00E-01	6.00E-01	2.50E+00	4.50E-01	3.80E-01	3.29E-01	1.78E-01
INDIAN POINT	-	-	-	2.20E+00	4.20E+00	4.93E+00	<4.98E+00	3.02E+00	1.99E+00
INDIAN POINT 3	-	-	-	-	-	-	SHOWN W/	OTHER UNIT	1.03E+00
JOSEPH M. FARLEY	-	-	-	-	-	-	-	-	1.03E-01
KEWAUNEE	-	-	-	-	4.00E-01	7.20E-01	2.83E+00	1.26E+00	6.99E-01
MAINE YANKEE	-	-	<1.00E-01	<1.00E-01	4.00E+00	3.21E+00	<2.84E+00	4.42E-01	1.04E-01
MILLSTONE POINT 2	-	-	-	-	-	2.00E-02	2.60E-01	1.56E+00	2.79E+00
NORTH ANNA	-	-	-	-	-	-	-	-	2.68E-01
OCONEE	-	-	-	2.80E+00	1.90E+00	5.05E+00	7.93E+00	3.62E+01	6.51E+00
PALISADES	-	-	6.80E+00	2.78E+01	5.90E+00	3.45E+00	4.40E-01	9.29E-02	9.65E-02
POINT BEACH	-	1.00E-01	1.50E+00	8.00E-01	2.00E-01	2.34E+00	3.24E+00	1.50E+00	6.86E-01
PRAIRIE ISLAND	-	-	-	<1.00E-01	<1.00E-01	4.50E-01	1.00E-01	1.33E-02	4.94E-03
RANCHO SECO	-	-	-	-	-	<1.00E-02	0.00E+00	0.00E+00	N/R
R.E.GINNA	1.00E+01	9.00E-01	3.00E-01	1.00E-01	1.00E-01	4.20E-01	6.90E-01	6.47E-02	6.07E-02
SALEM	-	-	-	-	-	-	<1.00E-02	2.88E+00	4.02E+00
SAN ONOFRE	7.60E+00	1.50E+00	3.03E+01	1.60E+01	5.00E+00	1.22E+00	7.43E+00	9.84E+00	1.18E+01
ST. LUCIE	-	-	-	-	-	-	8.00E-02	5.80E+00	2.80E+00
SURRY	-	-	2.00E-01	1.00E-01	3.80E+00	9.27E+00	3.37E+01	6.55E+01	2.41E+00
THREE MILE ISLAND	-	-	-	-	1.30E+00	7.00E-02	1.00E-01	1.94E-01	6.14E-01
THREE MILE ISLAND 2	-	-	-	-	-	-	-	-	3.92E-01
TROJAN	-	-	-	-	-	-	2.77E+00	4.19E+00	7.07E-01
TURKEY POINT	-	-	-	<1.00E-01	1.60E+00	3.07E+00	<8.65E+00	8.90E+00	4.58E+02
YANKEE ROWE	<1.00E-01	<1.00E-01	<1.00E-01	<1.00E-01	<1.00E-01	2.00E-02	<1.00E-02	1.80E-02	8.14E-02
ZION	-	-	-	<1.00E-01	<1.00E-01	<1.00E-02	1.60E-01	9.50E-01	9.51E-01

N/R=NOT REPORTED

TABLE 9

BOILING WATER REACTORS

SOLID WASTE SUMMARY 1978

FACILITY	VOLUME (CUBIC METERS)	ACTIVITY (CURIES)	NO. OF SHIPMENTS
BIG ROCK POINT	3.10E+01	2.56E+01	5
BROWN'S FERRY	2.90E+03	1.33E+03	95
BRUNSWICK	2.02E+03	2.14E+03	300
COOPER	3.29E+02	3.84E+02	48
DRESDEN 1	SEE UNIT 2+3	SEE UNIT 2+3	SEE UNIT 2+3
DRESDEN 2-3	1.77E+03	1.88E+03	287
DUANE ARNOLD	1.10E+03	1.86E+03	90
EDWIN I. HATCH	7.50E+02	1.09E+04	66
HUMBOLDT BAY	1.78E+02	7.91E-01	6
JAMES A. FITZPATRICK	8.70E+02	3.19E+02	33
LACROSSE	3.80E+01	6.18E+01	4
MILLSTONE POINT 1	2.00E+03	8.15E+04	179
MONTICELLO	4.99E+02	6.35E+04	55
NINE MILE POINT	3.85E+02	2.24E+04	47
OYSTER CREEK	1.54E+03	1.15E+03	130
PEACH BOTTOM	1.96E+03	4.97E+03	275
PILGRIM	1.97E+03	4.92E+04	162
QUAD-CITIES	1.34E+03	3.27E+03	172
VERMONT YANKEE	3.99E+02	5.39E+04	35

TABLE 10

PRESSURIZED WATER REACTORS

SOLID WASTE SUMMARY 1978

FACILITY	VOLUME CUBIC METERS)	ACTIVITY (CURIES)	NO. OF SHIPMENTS
ARKANSAS ONE	N/R	N/R	N/R
BEAVER VALLEY	4.39E+02	2.25E+02	29
CALVERT CLIFFS	6.03E+02	1.12E+03	36
CRYSTAL RIVER	6.87E+02	2.72E+04	75
DAVIS-BESSE	3.40E+02	3.30E+00	20
DONALD C. COOK	1.28E+03	2.25E+02	78
FORT CALHOUN	5.84E+02	1.06E+02	41
HADDAM NECK	2.29E+02	1.44E+02	13
H.B.ROBINSON	8.22E+02	2.83E+07	70
INDIAN POINT	8.43E+03	2.37E+03	114
INDIAN POINT 3	5.94E+02	6.49E+01	17
JOSEPH M. FARLEY	2.69E+02	5.72E+00	14
KEWAUNEE	7.98E+01	1.50E+03	19
MAINE YANKEE	5.81E+02	4.14E+03	45
MILLSTONE POINT 2	1.55E+02	1.70E+01	13
NORTH ANNA	2.14E+01	3.59E+00	2
OCONEE	1.58E+03	5.93E+03	230
PALISADES	7.17E+02	3.40E+03	45
POINT BEACH	1.61E+02	1.51E+03	22
PRAIRIE ISLAND	1.95E+02	1.53E+02	9
RANCHO SECO	1.29E+02	1.27E+03	13
R.E.GINNA	5.96E+01	6.27E+02	16
SALEM	2.27E+02	1.94E+02	21
SAN ONOFRE	1.31E+02	7.17E+00	4
ST. LUCIE	3.58E+02	1.26E+04	15
SURRY	6.03E+02	5.66E+02	62
THREE MILE ISLAND	3.89E+02	2.34E+02	42
THREE MILE ISLAND 2	SHOWN W/OTHER UNIT	SHOWN W/OTHER UNIT	SHOWN W/OTHER UNIT
TROJAN	2.26E+02	4.48E+02	18
TURKEY POINT	1.75E+03	1.72E+03	106
YANKEE ROWE	2.60E+02	9.75E+00	15
ZION	1.63E+03	1.86E+03	N/R

N/R=NOT REPORTED

TABLE 11

SOLID WASTE COMPARISON BY YEAR

BOILING WATER REACTORS

VOLUME(CUBIC METERS) - ACTIVITY(CURIES)

FACILITY	1974		1975		1976		1977		1978	
BIG ROCK POINT	-	1.99E+02	NR	3.00E+03	2.88E+01	3.69E+00	7.22E+01	9.68E+02	3.10E+01	2.56E+01
BROWN'S FERRY	2.65E+02	8.29E+01	3.63E+02	1.26E+03	3.20E+02	1.03E+02	1.82E+03	1.10E+04	2.90E+03	1.33E+03
BRUNSWICK	-	-	4.11E+02	4.74E+01	1.79E+03	6.46E+02	2.47E+03	3.24E+03	2.02E+03	2.14E+03
COOPER	3.78E+02	1.72E+01	2.90E+02	2.66E+02	3.01E+02	3.20E+02	2.83E+02	2.85E+02	3.29E+02	3.84E+02
DRESDEN 1	2.19E+03	5.05E+03	SHOWN W/OTHER UNIT		SHOWN W/OTHER UNIT		SHOWN W/OTHER UNIT		SHOWN W/OTHER UNIT	
DRESDEN 2-3	SHOWN W/OTHER UNIT		5.85E+03	7.74E+03	7.12E+03	4.33E+03	2.25E+03	1.13E+04	1.77E+03	1.88E+03
DUANE ARNOLD	-	-	2.62E+02	7.90E+01	5.95E+02	1.87E+02	5.45E+02	4.98E+02	1.10E+03	1.86E+03
EDWIN I. HATCH	-	-	5.84E+02	2.71E+02	4.12E+02	2.91E+02	5.39E+02	3.81E+02	7.50E+02	1.09E+04
HUMBOLDT BAY	7.81E+01	1.26E+01	1.27E+02	4.31E+01	8.49E+01	4.09E+00	3.77E+02	2.00E+01	1.78E+02	7.91E-01
JAMES A. FITZPATRICK	-	-	5.10E+02	1.32E+02	6.19E+02	3.41E+02	1.23E+03	6.17E+03	8.70E+02	3.19E+02
LACROSSE	4.19E+01	4.71E+02	NR	NR	NR	NR	4.65E+00	5.88E+02	3.80E+01	6.18E+01
MILLSTONE POINT 1	1.26E+03	2.57E+03	1.78E+03	2.58E+03	1.33E+03	1.70E+03	1.77E+03	3.03E+03	2.00E+03	8.15E+04
MONTICELLO	2.68E+02	2.48E+03	3.81E+02	5.43E+03	2.85E+02	3.79E+03	5.73E+02	2.91E+04	4.99E+02	6.35E+04
NINE MILE POINT	4.52E+02	1.93E+03	4.89E+02	3.26E+03	5.38E+02	2.51E+03	6.65E+02	2.51E+04	3.85E+02	2.24E+04
OYSTER CREEK	1.21E+03	1.57E+03	3.43E+04	6.72E+02	1.20E+03	1.29E+03	1.74E+03	2.73E+02	1.54E+03	1.15E+03
PEACH BOTTOM	5.10E+02	6.38E+01	5.82E+02	2.17E+02	1.20E+03	5.85E+02	2.52E+03	1.82E+03	1.96E+03	4.97E+03
PILGRIM	4.06E+02	1.47E+01	4.56E+02	3.14E+03	9.12E+02	3.69E+04	5.84E+02	5.70E+03	1.97E+03	4.92E+04
QUAD-CITIES	5.61E+02	7.35E+02	1.39E+03	2.25E+03	1.00E+03	2.35E+03	1.20E+03	7.53E+03	1.34E+03	3.27E+03
VERMONT YANKEE	1.83E+02	1.02E+02	3.08E+02	2.25E+01	2.38E+02	2.93E+01	1.08E+02	1.76E+02	3.99E+02	5.39E+04

N/R=NOT REPORTED

TABLE 12

SOLID WASTE COMPARISON BY YEAR

PRESSURIZED WATER REACTORS

VOLUME(CUBIC METERS) - ACTIVITY(CURIES)

FACILITY	1974		1975		1976		1977		1978	
ARKANSAS ONE	0.00E+00	0.00E+00	NR	NR	NR	NR	3.17E+02	1.26E+02	N/R	N/R
BEAVER VALLEY	-	-	-	-	4.30E+01	4.26E-02	2.67E+02	8.18E+00	4.39E+02	2.25E+02
CALVERT CLIFFS	-	-	NR	NR	1.18E+02	1.22E+02	3.09E+02	9.83E+02	6.03E+02	1.12E+03
CRYSTAL RIVER	-	-	-	-	-	-	4.48E+02	3.48E+00	6.87E+02	2.72E+04
DAVIS-BESSE	-	-	-	-	-	-	0.00E+00	0.00E+00	3.40E+02	3.30E+00
DONALD C. COOK	-	-	1.72E+02	6.37E-01	1.69E+02	2.62E-01	6.84E+02	8.28E+01	1.28E+03	2.25E+02
FORT CALHOUN	3.23E+02	1.00E+01	5.37E+02	5.61E+01	7.57E+02	1.27E+02	5.97E+02	6.46E+02	5.84E+02	1.06E+02
HADDAM NECK	2.05E+02	9.42E+02	6.24E+02	1.32E+03	7.67E+02	7.46E+02	1.68E+03	8.41E+02	2.29E+02	1.44E+02
H.B.ROBINSON	-	-	-	-	3.16E+02	6.29E+01	2.59E+02	1.24E+03	8.22E+02	2.83E+07
INDIAN POINT	4.29E+02	6.19E+01	6.22E+02	2.00E+03	9.19E+02	9.46E+02	1.06E+03	1.45E+03	8.43E+03	2.37E+03
INDIAN POINT 3	-	-	-	-	-	-	-	-	5.94E+02	6.49E+01
JOSEPH M. FARLEY	-	-	-	-	-	-	-	-	2.69E+02	5.72E+00
KEWAUNEE	NR	NR	1.59E+01	2.12E+00	5.94E+02	4.94E+01	3.37E+01	3.66E+02	7.98E+01	1.50E+03
MAINE YANKEE	3.00E+01	-	-	-	1.84E+02	5.04E+02	1.84E+02	1.53E+04	5.81E+02	4.14E+03
MILLSTONE POINT 2	-	-	0.00E+00	0.00E+00	2.80E+02	1.80E+00	9.35E+01	5.80E+01	1.55E+02	1.70E+01
NORTH ANNA	-	-	-	-	-	-	-	-	2.14E+01	3.59E+00
OCONEE	5.99E+02	2.18E+02	NR	NR	2.22E+03	7.83E+02	1.07E+03	7.37E+03	1.58E+03	5.93E+03
PALISADES	4.03E+02	4.98E+03	7.86E+02	2.21E+02	6.81E+01	9.58E+01	4.43E+02	8.71E+01	7.17E+02	3.40E+03
POINT BEACH	1.32E+02	2.12E+03	4.08E+02	8.23E+03	1.99E+02	3.04E+02	6.84E+03	5.68E+02	1.61E+02	1.51E+03
PRAIRIE ISLAND	1.35E+02	7.60E+00	1.50E+02	3.47E+01	1.52E+02	6.53E+01	6.43E+02	2.46E+02	1.95E+02	1.53E+02
RANCHO SECO	-	-	1.10E-02	1.15E-01	1.11E+02	2.80E+01	5.06E+01	1.21E+03	1.29E+02	1.27E+03
R.E.GINNA	2.75E+02	6.14E+02	2.77E+02	1.07E+02	2.80E+02	9.78E+01	3.49E+02	6.90E+02	5.96E+01	6.27E+02
SALEM	-	-	-	-	0.00E+00	0.00E+00	4.25E+02	2.20E+00	2.27E+02	1.94E+02
SAN ONOFRE	6.82E+01	2.30E+02	7.96E+01	2.60E+01	1.45E+02	6.98E+02	3.68E+02	6.02E+01	1.31E+02	7.17E+00
ST. LUCIE	-	-	-	-	8.68E+01	1.57E+00	3.85E+02	3.27E+03	3.58E+02	1.26E+04
SURRY	1.21E+03	5.06E+01	9.21E+03	2.64E+03	7.00E+02	6.17E+02	7.93E+02	6.10E+02	6.03E+02	5.66E+02
THREE MILE ISLAND	2.00E+02	6.06E+01	4.58E+02	2.57E+02	4.06E+02	1.85E+02	2.18E+02	4.73E+01	3.89E+02	2.34E+02
THREE MILE ISLAND 2	-	-	-	-	-	-	-	-	SHOWN W/OTHER UNIT	
TROJAN	-	-	-	-	4.37E+01	4.32E+00	1.01E+02	8.31E+01	2.26E+02	4.48E+02
TURKEY POINT	4.23E+02	4.90E+00	9.37E+02	1.07E+02	1.44E+03	4.77E+02	1.07E+03	4.26E+02	1.75E+03	1.72E+03
YANKEE ROWE	2.18E+02	1.27E+02	2.62E+02	3.33E+00	3.60E+02	2.65E+01	2.81E+02	3.54E+00	2.60E+02	9.75E+00
ZION	2.70E+03	4.65E+02	1.50E+03	1.55E+01	2.06E+03	6.82E+01	1.97E+03	2.25E+02	1.63E+03	1.86E+03

N/R=NOT REPORTED

APPENDIX A
INDIVIDUAL PLANT SUMMARIES

INSTALLATION ARKANSAS ONE

LOCATION 6 MI WNW RUSSELLVILLE AR

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE ARKANSAS POWER & LIGHT

TYPE PWR

LICENSED POWER (MWT) 2568.0

DOCKET NO. 50-313

INITIAL CRITICALITY 08/06/74

COOLING WATER SOURCE DARDANELLE RESERVOIR

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY N/R

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION ARKANSAS ONE

LOCATION 6 MI WNW RUSSELLVILLE AR

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		
QUARTER	QUARTER	QUARTER	GAMMA
1	2	1	2

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION ARKANSAS ONE

LOCATION 6 MI WNW RUSSELLVILLE AR

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4

BATCH RELEASES

QUARTER	QUARTER
3	4

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.33E 03	3.88E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
B. IODINES				
1. TOTAL IODINE-131	CI	3.00E-03	5.21E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI			
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	2.03E-02	N/D	
D. TRITIUM				
1. TOTAL RELEASE	CI	6.88E-01	1.30E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.20E 03	1.09E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
B. IODINES				
1. TOTAL IODINE-131	CI	3.42E-05	9.91E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI			
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	3.79E-01	N/D	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.79E 00	2.11E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AG-110M	CI	N/D	3.84E-06		
AR-41	CI	3.28E-01	1.88E-01		
BA-133	CI	N/D	N/D		
BA-139	CI	N/D	N/D		
BE-7	CI	N/D	3.14E-06		
BI-214	CI	N/D	9.86E-06		
BR-84	CI	N/D	N/D		
CD-109	CI	N/D	N/D		
CD-113M	CI	N/D	N/D		
CE-139	CI	N/D	N/D		
CE-144	CI	N/D	N/D		
CO-57	CI	4.25E-05	N/D		
CO-58	CI	3.05E-04	4.78E-06		
CO-60	CI	5.54E-06	2.31E-06		
CR-51	CI	5.02E-06	N/D		
CS-136	CI	N/D	2.29E-07		
CS-138	CI	N/D	N/D		
CU-64	CI	N/D	N/D		
EU-152	CI	N/D	N/D		
FE-59	CI	N/D	N/D		
F-18	CI	N/D	N/D		
HG-203	CI	N/D	6.68E-07		
I-132	CI	N/D	N/D		
I-134	CI	N/D	N/D		
KR-85	CI	8.30E-01	6.99E-01		
KR-85M	CI	9.08E-00	6.51E-01		
KR-87	CI	N/D	N/D		
KR-88	CI	7.79E-01	4.65E-00		
K-40	CI	3.28E-07	N/D		
MN-54	CI	N/D	N/D		
MN-56	CI	N/D	N/D		
MO-99	CI	N/D	N/D		
NA-24	CI	N/D	N/D		
NB-94	CI	N/D	N/D		
NB-95	CI	N/D	N/D		
NB-97	CI	N/D	N/D		
NI-65	CI	N/D	N/D		
NP-239	CI	N/D	N/D		
PB-212	CI	N/D	N/D		
PB-214	CI	N/D	N/D		
RA-226	CI	N/D	2.03E-06		
RB-88	CI	N/D	1.09E-04		
RB-89	CI	N/D	N/D		
RU-103	CI	N/D	3.35E-07		
RU-106	CI	N/D	N/D		
SB-122	CI	N/D	N/D		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
SB-124	CI	N/D	N/D		
SB-125	CI	N/D	N/D		
SE-75	CI	N/D	N/D		
SN-113	CI	N/D	N/D		
SR-85	CI	1.34E-09	N/D		
SR-91	CI	N/D	N/D		
SR-92	CI	N/D	N/D		
TC-99M	CI	N/D	N/D		
TE-132	CI	N/D	N/D		
TH-228	CI	N/D	N/D		
U-235	CI	N/D	N/D		
W-187	CI	N/D	N/D		
XE-131M	CI	9.18E 00	1.95E 03		
XE-133	CI	1.13E 03	1.71E 03		
XE-133M	CI	2.01E 00	8.91E-01		
XE-135	CI	9.80E 01	2.08E 02		
XE-135M	CI	N/D	N/D		
XE-138	CI	N/D	6.07E-04		
Y-88	CI	N/D	2.67E-06		
Y-91M	CI	N/D	N/D		
Y-92	CI	N/D	N/D		
ZN-65	CI	N/D	N/D		
ZR-95	CI	1.54E-07	8.60E-07		
ZR-97	CI	N/D	N/D		
IODINES					
I-131	CI	3.00E-03	5.17E-05		
I-133	CI	4.16E-06	3.84E-07		
I-135	CI	N/D	N/D		
PARTICULATES					
BA-140	CI	N/D	N/D		
CS-134	CI	1.21E-05	3.10E-06		
CS-137	CI	1.22E-03	6.00E-06		
LA-140	CI	N/D	N/D		
SR-89	CI	5.79E-06	2.01E-05		
SR-90	CI	1.32E-07	1.32E-07		

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N/R=NOT REPORTED

INSTALLATION=ARKANSAS ONE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AG-110M	CI	N/D	N/D		
AR-41	CI	N/D	4.24E 00		
BA-133	CI	N/D	N/D		
BA-139	CI	N/D	N/D		
BE-7	CI	N/D	N/D		
BI-214	CI	N/D	N/D		
BR-84	CI	N/D	N/D		
CD-109	CI	N/D	N/D		
CD-113M	CI	N/D	N/D		
CE-139	CI	N/D	N/D		
CE-144	CI	N/D	N/D		
CO-57	CI	N/D	N/D		
CO-58	CI	9.02E-06	1.47E-06		
CO-60	CI	1.98E-06	3.95E-06		
CR-51	CI	N/D	N/D		
CS-136	CI	N/D	N/D		
CS-138	CI	N/D	N/D		
CU-64	CI	N/D	N/D		
EU-152	CI	N/D	N/D		
FE-59	CI	N/D	N/D		
F-18	CI	N/D	N/D		
HG-203	CI	N/D	N/D		
I-132	CI	N/D	N/D		
I-134	CI	N/D	N/D		
KR-85	CI	N/D	2.21E 01		
KR-85M	CI	N/D	1.46E 00		
KR-87	CI	N/D	1.15E 00		
KR-88	CI	N/D	1.85E 00		
K-40	CI	N/D	N/D		
MN-54	CI	N/D	N/D		
MN-56	CI	N/D	N/D		
MO-99	CI	N/D	N/D		
NA-24	CI	N/D	N/D		
NB-94	CI	N/D	N/D		
NB-95	CI	N/D	N/D		
NB-97	CI	N/D	N/D		
NI-65	CI	N/D	N/D		
NP-239	CI	N/D	N/D		
PB-212	CI	N/D	N/D		
PB-214	CI	N/D	N/D		
RA-226	CI	N/D	N/D		
RB-88	CI	N/D	N/D		
RB-89	CI	N/D	N/D		
RU-103	CI	N/D	N/D		
RU-106	CI	N/D	N/D		
SB-122	CI	N/D	N/D		

N/A=NOT APPLICABLE

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
SB-124	CI	N/D	N/D		
SB-125	CI	N/D	N/D		
SE-75	CI		N/D		
SN-113	CI	N/D	N/D		
SR-85	CI		N/D		
SR-91	CI	N/D	N/D		
SR-92	CI	N/D	N/D		
TC-99M	CI	N/D	N/D		
TE-132	CI	N/D	N/D		
TH-228	CI	N/D	N/D		
U-235	CI	N/D	N/D		
W-187	CI	N/D	N/D		
XE-131M	CI	1.91E 00	1.23E 01		
XE-133	CI	8.36E 02	1.03E 03		
XE-133M	CI	8.59E-01	5.62E 00		
XE-135	CI	3.57E 02	1.42E 01		
XE-135M	CI	N/D	3.43E-01		
XE-138	CI	N/D	N/D		
Y-88	CI		N/D		
Y-91M	CI	N/D	N/D		
Y-92	CI	N/D	N/D		
ZN-65	CI	N/D	N/D		
ZR-95	CI	N/D	N/D		
ZR-97	CI	N/D	N/D		
IODINES					
I-131	CI	3.42E-05	9.91E-05		
I-133	CI	N/D	N/D		
I-135	CI	N/D	N/D		
PARTICULATES					
BA-140	CI	N/D	N/D		
CS-134	CI	2.37E-06	2.88E-06		
CS-137	CI	1.91E-06	2.56E-06		
LA-140	CI	N/D	N/D		
SR-89	CI	9.40E-06	2.15E-11		
SR-90	CI	N/D	N/D		

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=ARKANSAS ONE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.50E 00	9.50E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.13E-08	9.92E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	1.90E 01	3.70E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.90E-07	3.45E-07	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.10E 01	7.80E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.25E-07	7.85E-08	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.59E-05	3.37E-05	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.60E 06	2.14E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.48E 11	2.93E 11	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.10E 00	2.50E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.31E-09	1.99E-08	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	1.53E 02	8.50E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.15E-06	7.40E-07	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	5.30E 00	3.30E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.08E-08	2.52E-07	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.31E-02	9.50E-05	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.12E 06	4.17E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.97E 11	3.65E 11	

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INSTALLATION=ARKANSAS ONE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-110M	CI	1.53E-02	1.19E-02		
BA-133	CI	2.39E-05	N/D		
BA-140	CI	N/D	1.05E-03		
BE-7	CI	2.47E-03	N/D		
CE-144	CI	1.59E-03	2.81E-04		
CO-57	CI	2.08E-03	1.22E-03		
CO-58	CI	7.50E-01	2.10E-01		
CO-60	CI	1.90E-01	1.20E-01		
CR-51	CI	7.00E-02	5.20E-02		
CS-134	CI	1.10E-01	1.50E-01		
CS-136	CI	4.20E-04	4.60E-05		
CS-137	CI	1.90E-01	2.40E-01		
CS-138	CI	N/D	N/D		
CU-64	CI	0.00E 00	N/D		
EU-152	CI	N/D	N/D		
FE-59	CI	1.65E-02	1.67E-02		
I-131	CI	7.84E-02	9.08E-02		
I-132	CI	N/D	N/D		
I-133	CI	6.07E-06	1.04E-03		
I-134	CI	N/D	8.75E-04		
I-135	CI	N/D	2.79E-05		
KR-85	CI	N/D	N/D		
KR-85M	CI	1.29E-03	2.38E-07		
KR-87	CI	N/D	3.36E-06		
KR-88	CI	4.64E-06	N/D		
LA-140	CI	6.38E-04	1.14E-03		
MN-54	CI	2.53E-02	1.74E-02		
MN-56	CI	N/D	2.84E-06		
MO-99	CI	1.96E-04	9.04E-03		
NA-24	CI	1.80E-04	7.22E-05		
NB-95	CI	1.12E-02	1.05E-02		
NB-97	CI	N/D	3.30E-05		
NI-65	CI	N/D	3.12E-05		
NP-239	CI	N/D	3.32E-03		
RH-106	CI	N/D	N/D		
RU-103	CI	8.75E-05	1.55E-04		
RU-106	CI	N/D	3.55E-05		
SE-75	CI	1.59E-03	1.21E-04		
SR-89	CI	1.07E-02	1.48E-03		
SR-90	CI	N/D	4.81E-04		
SR-91	CI	1.02E-05	N/D		
SR-92	CI	1.46E-05	N/D		
W-187	CI	3.98E-07	N/D		
XE-131M	CI	1.50E-01	1.49E-02		
XE-133	CI	1.10E 01	7.70E 00		
XE-133M	CI	4.35E-02	5.69E-02		
XE-135	CI	9.20E-04	7.98E-03		

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1
INSTALLATION=ARKANSAS ONE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
ZN-65	CI	7.95E-05	7.45E-05		
ZR-95	CI	3.16E-03	4.64E-03		
ZR-97	CI	6.31E-05	4.74E-05		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI	7.97E-03	4.54E-03		
BA-133	CI	8.92E-05	N/D		
BA-140	CI	9.81E-05	N/D		
BE-7	CI	1.14E-03	3.52E-03		
CE-144	CI	9.79E-05	1.18E-04		
CO-57	CI	1.06E-03	1.60E-03		
CO-58	CI	2.20E-01	9.50E-01		
CO-60	CI	2.00E-01	2.60E-01		
CR-51	CI	4.28E-02	2.60E-01		
CS-134	CI	1.80E-01	2.10E-01		
CS-136	CI	N/D	1.81E-04		
CS-137	CI	2.80E-01	3.20E-01		
CS-138	CI	N/D	4.00E-04		
CU-64	CI	N/D	N/D		
EU-152	CI	N/D	7.82E-06		
FE-59	CI	1.33E-03	3.15E-03		
I-131	CI	1.10E-01	3.70E-01		
I-132	CI	N/D	3.48E-05		
I-133	CI	9.88E-07	8.14E-03		
I-134	CI	1.43E-04	N/D		
I-135	CI	N/D	N/D		
KR-85	CI	7.06E-04	N/D		
KR-85M	CI	5.88E-05	1.51E-03		
KR-87	CI	N/D	N/D		
KR-88	CI	N/D	2.20E-04		
LA-140	CI	3.55E-04	4.02E-04		
MN-54	CI	2.58E-02	2.72E-02		
MN-56	CI	N/D	N/D		
MO-99	CI	7.92E-05	1.84E-03		
NA-24	CI	2.25E-05	2.54E-04		
NB-95	CI	7.44E-03	1.79E-02		
NB-97	CI	2.94E-04	1.07E-04		
NI-65	CI	N/D	N/D		
NP-239	CI	N/D	1.42E-03		
RU-103	CI	4.40E-04	2.72E-03		
RU-106	CI	N/D	N/D		
SE-75	CI	1.28E-04	1.16E-04		
SR-89	CI	N/D	8.34E-04		
SR-90	CI	4.64E-04	N/D		
SR-91	CI	N/D	N/D		
SR-92	CI	1.27E-04	1.01E-04		
W-187	CI	N/D	N/D		
XE-131M	CI	4.56E-02	5.81E-02		
XE-133	CI	5.20E 00	3.30E 01		
XE-133M	CI	1.95E-02	2.30E-01		
XE-135	CI	3.10E-03	5.52E-02		
ZN-65	CI	5.51E-05	3.52E-04		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
ZR-95	CI	3.83E-03	1.27E-02		
ZR-97	CI	N/D	9.51E-05		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS N/R

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, EVAPORATOR BOTTOMS, ETC.	M3 C1		
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 C1		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 C1		
D. OTHER (DESCRIBE)	M3 C1		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS N/R

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, EVAPORATOR BOTTOMS, ETC.	M3 CI		
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 CI		
D. OTHER (DESCRIBE)	M3 CI		

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INSTALLATION BEAVER VALLEY

LOCATION SHIPPINGPORT, PA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE DUQUESNE LIGHT & OHIO EDISON

TYPE PWR

LICENSED POWER (MWT) 2652.0

DOCKET NO. 50-334

INITIAL CRITICALITY 05/10/76

COOLING WATER SOURCE OHIO RIVER

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

GELI GAMMA SPECTROMETRY, LIQUID SCINTILLATION

IODINES

GELI GAMMA SPECTROMETRY

PARTICULATES

GELI GAMMA SPECTROMETRY, LOW BACKGROUND PROPORTIONAL

LIQUID EFFLUENTS

GELI GAMMA SPECTROMETRY, LIQUID SCINTILLATION

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INSTALLATION BEAVER VALLEY

LOCATION SHIPPINGPORT, PA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA	
	QUARTER	QUARTER	QUARTER	QUARTER
	1	2	1	2
	N/A	N/A	N/A	N/A
BATCH RELEASES			QUARTER	QUARTER
A. LIQUID			1	2
1. NUMBER OF BATCH RELEASES-			48	44
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-			3.64E 04	2.87E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-			2.42E 03	6.92E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-			7.58E 02	6.52E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-			3.90E 01	4.00E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-			9.73E 07	9.73E 07
B. GASEOUS				
NUMBER OF BATCH RELEASES-			20	35
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-			3.63E 04	8.16E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-			1.63E 03	2.51E 04
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-			9.08E 02	2.33E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-			5.70E 01	1.85E 02
ABNORMAL RELEASES				
A. LIQUID				
NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

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INSTALLATION=BEAVER VALLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.82E 01	3.10E 02	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.63E 00	3.98E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/D	N/D	
B. IODINES				
1. TOTAL IODINE-131	CI	5.17E-03	6.65E-02	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.65E-04	8.55E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.58E-01	3.33E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	6.27E-06	1.67E-06	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.06E-07	2.15E-07	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/D	N/D	
4. GROSS ALPHA RADIOACTIVITY	CI	6.57E-08	1.77E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.50E 02	5.68E 01	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.93E 01	7.30E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

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INSTALLATION=BEAVER VALLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	4.97E 01	2.20E 00	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.35E 01	1.50E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	
B. IODINES				
1. TOTAL IODINE-131	CI	3.63E-04	0.00E 00	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.70E-05	0.00E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.81E-02	N/A	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	8.32E-06	3.32E-06	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.10E-12	4.27E-07	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CI	1.87E-07	2.84E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	8.20E 01	8.72E 01	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.05E 01	1.12E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

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INSTALLATION=BEAVER VALLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
FISSION GASES					
KR-85	CI	2.00E-10	2.00E-10	0.00E 00	1.76E 02
KR-85M	CI	5.40E-08	5.40E-08	0.00E 00	5.40E-08*
KR-87	CI	5.10E-08	5.10E-08	0.00E 00	5.10E-08*
KR-88	CI	6.60E-08	6.60E-08	0.00E 00	6.60E-08*
XE-133	CI	1.30E-07	1.30E-07	0.00E 00	1.00E 02
XE-135	CI	3.50E-08	3.50E-08	0.00E 00	1.25E-01
XE-135M	CI	5.40E-08	5.40E-08	0.00E 00	5.40E-08*
XE-138	CI	4.20E-08	4.20E-08	0.00E 00	4.20E-08*
IODINES					
I-131	CI	4.90E-03	3.78E-03	0.00E 00	4.60E-04
I-133	CI	5.78E-05	3.11E-06	0.00E 00	7.20E-05
I-135	CI	1.40E-15	1.40E-15	0.00E 00	1.40E-15
PARTICULATES					
BA-LA-140	CI	4.20E-17	4.20E-17	0.00E 00	
CS-134	CI	1.70E-17	1.70E-17	0.00E 00	
CS-137	CI	2.40E-17	2.40E-17	0.00E 00	
SR-89	CI	6.21E-06	1.03E-06	0.00E 00	
SR-90	CI	6.50E-08	6.20E-07	0.00E 00	

* Values are minimum detectable limit in units of $\mu\text{Ci/cc}$.
These nuclides were not identified in the discharge.

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INSTALLATION=BEAVER VALLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI	2.00E-10	2.00E-10	2.00E-10	6.89E-02
KR-85M	CI	5.40E-08	5.40E-08	5.40E-08	5.40E-08*
KR-87	CI	5.10E-08	5.10E-08	5.10E-08	5.10E-08*
KR-88	CI	6.60E-08	6.60E-08	6.60E-08	6.60E-08*
XE-133	CI	1.30E-07	1.30E-07	1.25E-01	8.38E-02
XE-135	CI	3.50E-08	3.50E-08	1.57E-02	3.50E-08*
XE-135M	CI	5.40E-08	5.40E-08	5.40E-08	5.40E-08*
XE-138	CI	4.20E-08	4.20E-08	4.20E-08	4.20E-08*
IODINES					
I-131	CI	3.31E-04	4.00E-14	4.00E-14	4.00E-14
I-133	CI	2.60E-14	2.60E-14	2.60E-14	2.60E-14
I-135	CI	1.40E-15	1.40E-15	1.40E-15	1.40E-15
PARTICULATES					
CO-58	CI	5.30E-10	2.21E-09		
CO-60	CI		5.30E-09		
SR-89	CI	2.95E-06	3.05E-06		
SR-90	CI	5.30E-06	2.61E-07		

* Values are minimum detectable limit in units of $\mu\text{Ci/cc}$.
These nuclides were not identified in the discharge.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=BEAVER VALLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

* GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85	CI	2.00E-10*	2.00E-10*	4.44E-01	7.42E-02
KR-85M	CI	5.40E-08*	5.40E-08*	5.40E-08*	5.40E-08*
KR-87	CI	5.10E-08*	5.10E-08*	5.10E-08*	5.10E-08*
KR-88	CI	6.60E-08*	6.60E-08*	1.17E-04	6.60E-08*
XE-131M	CI			5.70E-01	2.25E-02
XE-133	CI	1.30E-07*	1.30E-07*	2.70E 01	3.33E 01
XE-133M	CI			1.41E-01	3.13E-01
XE-135	CI	3.50E-08*	3.50E-08*	6.80E-02	2.71E-01
XE-135M	CI	5.40E-08*	5.40E-08*	1.58E-05	5.40E-08*
XE-138	CI	4.20E-08*	4.20E-08*	4.20E-08*	4.20E-08*
IODINES					
I-131	CI	2.66E-04	7.33E-03	4.00E-14*	4.00E-14*
I-133	CI	2.54E-05	6.00E-05	2.60E-14*	2.60E-14*
I-135	CI	1.40E-15*	1.40E-15*	1.40E-15*	1.40E-15*
PARTICULATES					
BA-LA-140	CI	4.20E-17*	4.20E-17*		
CS-134	CI	1.70E-17*	1.70E-17*		
CS-137	CI	2.40E-17*	2.40E-17*		
SR-89	CI	8.00E-10	1.12E-08		
SR-90	CI	6.00E-10	4.20E-09		

* Values are minimum detectable limit in units of $\mu\text{Ci/cc}$.
These nuclides were not identified in the discharge.

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INSTALLATION=BEAVER VALLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI	2.00E-10	2.00E-10	1.95E-01	8.21E-01
KR-85M	CI	5.40E-08	5.40E-08	2.84E-06	1.57E-04
KR-87	CI	5.10E-08	5.10E-08	5.10E-08	5.10E-08*
KR-88	CI	6.60E-08	6.60E-08	6.60E-08	6.60E-08*
XE-131M	CI			5.40E-02	1.59E-02
XE-133	CI	1.30E-07	1.30E-07	3.69E 01	1.17E 01
XE-133M	CI			9.63E 02	9.64E-03
XE-135	CI	3.50E-08	3.50E-08	5.00E-04	3.13E-02
XE-135M	CI	5.40E-08	5.40E-08	5.40E-08	5.40E-08*
XE-138	CI	4.20E-08	4.20E-08	4.20E-08	4.20E-08*
IODINES					
I-131	CI	3.24E-05	4.00E-14	4.00E-14	4.00E-14*
I-133	CI	2.60E-14	2.60E-14	2.60E-14	2.60E-14*
I-135	CI	1.40E-15	1.40E-15	1.40E-15	1.40E-15*
PARTICULATES					
BA-LA-140	CI	4.20E-17	4.20E-17*		
CS-134	CI	1.70E-17	1.70E-17*		
CS-137	CI	2.40E-17	2.40E-17*		
SR-89	CI	3.60E-08	4.00E-09		
SR-90	CI	2.72E-08	2.80E-09		

* VALUES ARE MINIMUM DETECTABLE LIMIT IN UNITS OF UCI/CC.
THESE NUCLIDES WERE NOT IDENTIFIED IN THE DISCHARGE.

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=BEAVER VALLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	7.42E-02	4.12E-02	2.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.52E-08	2.53E-08	
3. PERCENT OF APPLICABLE LIMIT	%	7.42E-01	4.12E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.57E 02	1.27E 02	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.34E-05	7.78E-05	
3. PERCENT OF APPLICABLE LIMIT	%	1.78E 00	2.60E 00	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	2.05E-02	1.90E-02	2.70E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.97E-09	1.16E-08	
3. PERCENT OF APPLICABLE LIMIT	%	2.32E-01	3.87E-01	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	4.77E-06	1.07E-07	2.90E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.88E 06	2.32E 06	5.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.94E 09	1.63E 09	1.00E 01

N/A=NOT APPLICABLE
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INSTALLATION=BEAVER VALLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	7.73E-02	7.00E-02	2.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.68E-08	5.93E-08	
3. PERCENT OF APPLICABLE LIMIT	%	7.73E-01	7.00E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	3.84E 01	2.67E 01	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.82E-05	2.26E-05	
3. PERCENT OF APPLICABLE LIMIT	%	9.40E-01	7.53E-01	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	0.00E 00	1.00E-05	2.70E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	8.50E-12	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	8.62E-07	6.80E-07	2.90E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.51E 06	9.33E 05	5.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.36E 09	1.18E 09	1.00E 01

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INSTALLATION=BEAVER VALLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
		N/A	N/A		
CS-134	CI			1.40E-02	1.12E-03
CS-137	CI			2.94E-02	3.11E-03
I-131	CI			1.23E-02	4.42E-03
SR-89	CI			1.03E-05	1.13E-05
SR-90	CI			4.75E-06	1.21E-06
CO-58	CI			1.00E-02	2.61E-02
CO-60	CI			5.01E-03	3.15E-03
CR-51	CI				1.32E-03
FE-59	CI			1.00E-06	5.57E-04
MN-54	CI			9.94E-04	3.33E-04
ZN-65	CI			1.20E-07	1.20E-07
BA-LA-140	CI			2.56E-04	1.53E-04
CE-141	CI			1.20E-07	1.20E-07
MO-99	CI			3.70E-07	3.70E-07
TC-99M	CI			6.40E-07	6.40E-07
ZR-NB-95	CI				3.41E-05
CS-136	CI			7.70E-04	
I-133	CI			1.21E-03	1.07E-03
NB-97	CI			6.82E-05	
XE-133M	CI			4.12E-04	
XE-133	CI			3.01E-03	1.32E-02
XE-135	CI			1.71E-02	5.81E-03

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
		N/A	N/A		
CS-134	CI			4.27E-05	7.40E-08
CS-137	CI			1.47E-03	7.00E-08
I-131	CI			2.14E-03	3.20E-08
SR-89	CI			7.67E-05	
SR-90	CI			1.52E-05	
CO-58	CI			4.34E-02	2.62E-02
CO-60	CI			1.75E-02	4.14E-02
CR-51	CI			1.12E-02	
FE-59	CI			3.63E-04	1.00E-06
MN-54	CI			3.30E-04	2.36E-03
ZN-65	CI			1.20E-07	1.20E-07
BA-LA-140	CI				4.50E-07
CE-141	CI				1.20E-07
MO-99	CI			3.70E-07	3.70E-07
TC-99M	CI				6.40E-07
ZR-NB-95	CI			7.28E-04	2.24E-05
I-133	CI			1.75E-04	
XE-135	CI				1.00E-05

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INSTALLATION= BEAVER VALLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	9.02E 01	
	CI	1.08E 01	3.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	9.90E 01	
	CI	2.12E-01	3.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
CO-58	%	2.90E 01
CO-60	%	2.00E 01
CS-137	%	1.00E 01
B		
CO-58	%	2.90E 01
CO-60	%	2.00E 01
CS-137	%	1.00E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
12	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= BEAVER VALLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	8.92E 01	
	C1	2.13E 02	3.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.61E 02	
	C1	1.13E 00	3.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	C1		
D. OTHER (DESCRIBE)	M3		
	C1		

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

A			
CO-58	X	4.70E 01	
CO-60	X	4.00E 01	
MN-54	X	2.00E 00	
B			
CO-58	X	4.70E 01	
CO-60	X	4.00E 01	
MN-54	X	2.00E 00	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
17	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
---------------------	------------------------	-------------

0

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION BIG ROCK POINT

LOCATION 4 MI NE CHARLEVOIX MI

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE CONSUMERS POWER

TYPE BWR

LICENSED POWER (MWT) 240.0

DOCKET NO. 50-155

INITIAL CRITICALITY 09/27/62

COOLING WATER SOURCE LAKE MICHIGAN

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURIES/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY N/R

N/A=NOT APPLICABLE
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INSTALLATION BIG ROCK POINT

LOCATION 4 MI NE CHARLEVOIX MI

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)	BETA		GAMMA	
	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
N/R				
BATCH RELEASES				
A. LIQUID			QUARTER 1	QUARTER 2
1. NUMBER OF BATCH RELEASES-			5	3
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-			9.92E 02	7.71E 02
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			3.46E 02	3.97E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			1.98E 02	2.57E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			9.80E 01	1.58E 02
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-				
B. GASEOUS				
1. NUMBER OF BATCH RELEASES-				
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-				
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-				
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

N/A=NOT APPLICABLE
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INSTALLATION BIG ROCK POINT

LOCATION 4 MI NE CHARLEVOIX MI

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

		N/R			
AVERAGE ENERGY (MEV/DISINTEGRATION)		BETA		GAMMA	
		QUARTER	QUARTER	QUARTER	QUARTER
		3	4	3	4
BATCH RELEASES				QUARTER	QUARTER
A. LIQUID				3	4
1. NUMBER OF BATCH RELEASES-					
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-					
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-					
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-					
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-					
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-					
B. GASEOUS					
1. NUMBER OF BATCH RELEASES-					
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-					
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-					
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-					
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-					
ABNORMAL RELEASES					
A. LIQUID					
1. NUMBER OF RELEASES				NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)					
B. GASEOUS					
1. NUMBER OF RELEASES				NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)					

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INSTALLATION=BIG ROCK POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	3.20E 03	5.66E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.12E 02	7.20E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.12E-02	7.20E-02	
B. IODINES				
1. TOTAL IODINE-131	CI	4.57E-04	1.10E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.88E-05	1.40E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.90E-03	1.17E-04	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.42E-03	1.88E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.83E-04	2.39E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	7.80E-03	1.02E-02	
4. GROSS ALPHA RADIOACTIVITY	CI	1.89E-07	5.41E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	2.06E 00	2.53E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.65E-01	3.22E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.10E-02	1.34E-02	

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INSTALLATION=BIG ROCK POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST.. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	4.96E 03	5.09E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.24E 02	6.40E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.24E-02	6.40E-02	
B. IODINES				
1. TOTAL IODINE-131	CI	8.88E-04	4.21E-04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.12E-04	5.30E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	9.31E-03	4.41E-03	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.85E-03	8.92E-04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.33E-04	1.12E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.53E-03	5.65E-03	
4. GROSS ALPHA RADIOACTIVITY	CI	5.52E-07	3.55E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.93E 00	1.80E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.43E-01	2.26E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.01E-02	9.44E-03	

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INSTALLATION=BIG ROCK POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-83M	CI	8.58E 01	1.69E 02		
KR-85	CI	<1.00E 00	<1.00E 00		
KR-85M	CI	1.52E 02	2.87E 02		
KR-87	CI	3.94E 02	6.49E 02		
KR-88	CI	2.06E 02	4.72E 02		
KR-89	CI	4.07E 01	1.23E 02		
KR-90	CI	1.88E 01	9.13E 01		
KR-91	CI		<1.00E 00		
N-13	CI	3.90E 02	4.86E 02		
XE-131M	CI	<1.00E 00	<1.00E 00		
XE-133	CI	1.07E 02	1.21E 02		
XE-133M	CI	7.49E 00	1.34E 01		
XE-135	CI	6.41E 02	1.07E 03		
XE-135M	CI	1.48E 02	3.43E 02		
XE-137	CI	7.10E 01	2.07E 02		
XE-138	CI	9.05E 02	1.48E 03		
XE-139	CI	2.79E 01	1.27E 02		
XE-140	CI	1.64E 00	1.07E 01		
IODINES					
I-131	CI	4.57E-04	1.10E-03		
I-133	CI	3.91E-03	7.34E-03		
I-135	CI	3.74E-02	6.71E-02		
PARTICULATES					
BA-LA-140	CI	1.91E-03	2.37E-03		
BR-82	CI	1.35E-03	1.72E-03		
CO-60	CI	0.15E-05	9.90E-05		
CR-51	CI	1.23E-05			
CS-134	CI	8.34E-06	4.86E-06		
CS-137	CI	9.04E-05	8.55E-05		
MN-54	CI	1.06E-05	2.11E-05		
NP-239	CI	4.84E-05			
TC-99M	CI	3.97E-02	4.49E-02		
UNIDENTIFIED	CI	4.86E-04	6.68E-04		

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INSTALLATION=BIG ROCK POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-83M	CI	1.35E 02	9.53E 01		
KR-85	CI	<1.00E 00	<1.00E 00		
KR-85M	CI	2.12E 02	1.54E 02		
KR-87	CI	4.23E 02	3.00E 02		
KR-88	CI	3.48E 02	2.81E 02		
KR-89	CI	1.69E 02	1.01E 02		
KR-90	CI	1.62E 02	9.08E 01		
KR-91	CI	1.82E 00	<1.00E 00		
N-13	CI	3.58E 02	1.78E 03		
XE-131M	CI	<1.00E 00	<1.00E 00		
XE-133	CI	8.32E 01	7.62E 01		
XE-133M	CI	8.62E 00	6.55E 00		
XE-135	CI	6.87E 02	4.19E 02		
XE-135M	CI	3.62E 02	2.32E 02		
XE-137	CI	2.76E 02	1.65E 02		
XE-138	CI	1.49E 03	1.25E 03		
XE-139	CI	2.19E 02	1.24E 02		
XE-140	CI	2.09E 01	1.14E 01		
IODINES					
I-131	CI	8.88E-04	4.21E-04		
I-133	CI	8.30E-03	3.92E-03		
I-135	CI	1.04E-02	4.93E-03		
PARTICULATES					
BA-LA-140	CI	2.59E-03	1.12E-03		
BR-82	CI	3.06E-03	1.49E-03		
CO-60	CI	7.45E-05	1.25E-04		
CS-134	CI		4.61E-06		
CS-137	CI	5.93E-05	7.70E-05		
MN-54	CI	3.08E-03	1.62E-05		
NP-239	CI		1.80E-04		
TC-99M	CI	6.22E-02			
UNIDENTIFIED	CI	6.73E-04	4.58E-04		

N/A=NOT APPLICABLE
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INSTALLATION=BIG ROCK POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	8.73E-02	3.67E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.20E-09	1.48E-09	
3. PERCENT OF APPLICABLE LIMIT	%	5.02E-02	2.07E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.64E-01	9.32E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.27E-08	3.76E-09	
3. PERCENT OF APPLICABLE LIMIT	%	4.23E-04	1.25E-04	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY:				
1. TOTAL RELEASE	CI	2.45E-07	1.03E-06	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	7.93E 04	5.13E 04	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.08E 10	2.48E 10	

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EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	3.25E-02	1.17E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.27E-09	4.70E-09	
3. PERCENT OF APPLICABLE LIMIT	%	1.65E-02	5.81E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.02E-01	3.49E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	7.89E-09	1.40E-07	
3. PERCENT OF APPLICABLE LIMIT	%	2.63E-04	4.67E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.16E-06	2.66E-06	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	9.53E 04	1.56E 05	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.56E 10	2.49E 10	

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INSTALLATION=BIG ROCK POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CO-60	CI	4.52E-03	5.64E-03		
CS-134	CI	8.91E-03	3.44E-03		
CS-137	CI	5.33E-02	2.58E-02		
FE-59	CI	2.10E-04			
MN-54	CI	9.97E-04	3.67E-04		
SR-89	CI	4.09E-04	2.46E-05		
SR-90	CI	5.67E-05	1.62E-05		
UNIDENTIFIED	CI	1.89E-02	1.46E-03		

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INSTALLATION=BIG ROCK POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CO-58	CI		1.19E-04		
CO-60	CI	3.55E-03	9.69E-03		
CS-134	CI	2.88E-03	7.27E-03		
CS-137	CI	1.82E-02	6.67E-02		
I-59	CI		2.92E-04		
LA-140	CI		8.09E-05		
MN-54	CI	9.24E-04	3.57E-03		
SR-89	CI	2.84E-05	1.25E-04		
SR-90	CI	1.80E-04	1.14E-04		
UNIDENTIFIED	CI	6.78E-03	2.86E-02		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3 C1		
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 C1	2.60E 01 1.72E-01	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 C1		
D. OTHER (DESCRIBE)	M3 C1		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
1	TRUCK	SHEFFIELD ILL.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

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N/R=NOT REPORTED

INSTALLATION= BIG ROCK POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3 C1	5.04E 00 2.54E 01	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 C1		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 C1		
D. OTHER (DESCRIBE)	M3 C1		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
4	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

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INSTALLATION BROWN'S FERRY

LOCATION 10 MI NW DECATUR AL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1
TYPE BWR
DOCKET NO. 50-259
COOLING WATER SOURCE TENNESSEE RIVER
UNIT NUMBER 2
TYPE BWR
DOCKET NO. 50-260
COOLING WATER SOURCE TENNESSEE RIVER
UNIT NUMBER 3
TYPE BWR
DOCKET NO. 50-296
COOLING WATER SOURCE TENNESSEE RIVER

LICENSEE TENNESSEE VALLEY AUTHORITY
LICENSED POWER (MWT) 3293.0
INITIAL CRITICALITY 08/17/73

LICENSEE TENNESSEE VALLEY AUTHORITY
LICENSED POWER (MWT) 3293.0
INITIAL CRITICALITY 07/20/74

LICENSEE TENNESSEE VALLEY AUTHORITY
LICENSED POWER (MWT) 3293.0
INITIAL CRITICALITY 08/08/76

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) *

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

AIRBORNE EFFLUENT GASEOUS ACTIVITY IS CONTINUOUSLY MONITORED AND RECORDED; ADDITIONALLY, GRAB SAMPLES ARE TAKEN AND ANALYZED MONTHLY TO DETERMINE SPECIFIC RADIONUCLIDE ACTIVITY CONCENTRATIONS. STACK AND BUILDING VENT EFFLUENT FLOW RATES ARE CALCULATED ONCE A SHIFT BASED ON THE CONFIGURATION OF OPERATING EXHAUST FANS. THE FLOW RATE DATA IS CONSOLIDATED WEEKLY TO DETERMINE THE VOLUME OF AIRBORNE EFFLUENTS RELEASED FROM THE PLANT. ALLOWANCE IS MADE FOR A PLUS OR MINUS ONE SIGMA COUNTING ERROR ASSOCIATED WITH GAMMA ISOTOPIC ANALYSES.

IODINES

CHARCOAL SAMPLES ARE TAKEN AND ANALYZED AT LEAST WEEKLY TO DETERMINE SPECIFIC ACTIVITY CONCENTRATIONS. THE TOTAL ACTIVITY RELEASED FROM THE PLANT IS THEN CALCULATED BY TAKING WEEKLY ACTIVITY CONCENTRATION VALUES AND MULTIPLYING THEM BY THE WEEKLY AIRBORNE EFFLUENT VOLUME. ALLOWANCE IS MADE FOR A PLUS OR MINUS ONE SIGMA COUNTING ERROR ASSOCIATED WITH GAMMA ISOTOPIC ANALYSES.

PARTICULATES

PARTICULATE SAMPLES ARE TAKEN AND ANALYZED AT LEAST WEEKLY TO DETERMINE SPECIFIC ACTIVITY CONCENTRATIONS. THE TOTAL ACTIVITY RELEASED FROM THE PLANT IS THEN CALCULATED BY TAKING WEEKLY ACTIVITY CONCENTRATION VALUES AND MULTIPLYING THEM BY THE WEEKLY AIRBORNE EFFLUENT VOLUME. ALLOWANCE IS MADE FOR A PLUS OR MINUS ONE SIGMA COUNTING ERROR ASSOCIATED WITH GAMMA ISOTOPIC ANALYSES.

LIQUID EFFLUENTS

GROSS BETA, GAMMA AND TOTAL GAMMA ISOTOPIC CONCENTRATIONS ARE DETERMINED ON EACH BATCH OF LIQUID EFFLUENT PRIOR TO RELEASE. THE TOTAL CURIE CONTENT OF A RELEASED BATCH IS DETERMINED BY MULTIPLYING THE HIGHEST OF THE ABOVE THREE ACTIVITY CONCENTRATIONS BY THE TOTAL VOLUME DISCHARGES. THE TOTAL ACTIVITY RELEASED DURING A MONTH IS THEN DETERMINED BY SUMMING THE ACTIVITY CONTENT OF EACH BATCH DISCHARGED DURING THE MONTH. ALLOWANCE IS MADE FOR A PLUS OR MINUS ONE SIGMA COUNTING ERROR ASSOCIATED WITH THE TOTAL GAMMA ISOTOPIC ANALYSES.

* 10CFR20, APPENDIX B, NOTE 1

N/A=NOT APPLICABLE
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INSTALLATION BROWN'S FERRY

LOCATION 10 MI NW DECATUR AL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA	
	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
	N/A	N/A	N/A	N/A

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-

2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-

3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-

5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-

2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-

3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-

5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES

2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES

2. TOTAL ACTIVITY RELEASED (CURIES)

QUARTER 1	QUARTER 2
123	92
4.83E 04	3.21E 04
1.91E 03	1.59E 03
3.56E 02	3.56E 02
9.00E 00	3.50E 01

NONE NONE

NONE NONE

NONE NONE

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INSTALLATION BROWN'S FERRY

LOCATION 10 MI NW DECATUR AL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	QUARTER 3 N/A	BETA QUARTER 4 N/A	QUARTER 3 N/A	GAMMA QUARTER 4 N/A
BATCH RELEASES			QUARTER 3	QUARTER 4
A. LIQUID			73	96
1. NUMBER OF BATCH RELEASES-				
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-			2.72E 04	3.59E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			2.03E 03	1.21E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			3.73E 02	3.74E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			6.00E 01	6.00E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-				
B. GASEOUS				
NUMBER OF BATCH RELEASES-			NONE	NONE
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-				
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-				
ABNORMAL RELEASES				
A. LIQUID				
NUMBER OF RELEASES			1	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			4.00E-02	
B. GASEOUS				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

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INSTALLATION=BROWN'S FERRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	<1.10E 04	<5.17E 04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<1.40E 03	<6.58E 03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.85E 00	1.32E 01	
B. IODINES				
1. TOTAL IODINE-131	CI	<2.81E-02	4.34E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<3.57E-03	5.52E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.93E-01	1.38E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	<1.01E-02	<2.32E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<1.29E-03	<2.95E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.23E-01	7.38E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	<6.66E-07	<6.23E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	6.26E 00	1.12E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	7.96E-01	1.42E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.30E 00	1.52E 00	

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INSTALLATION=BROWN'S FERRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	<9.33E 04	<1.18E 03	7.60E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<1.19E 04	<1.50E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.37E 01	3.00E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	3.18E-02	<2.49E-02	1.22E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.05E-03	<3.17E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.01E 00	7.93E-01	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	<3.23E-02	<3.31E-02	1.05E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<4.12E-03	<4.21E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.03E 00	1.05E 00	
4. GROSS ALPHA RADIOACTIVITY	CI	<1.92E-06	<6.72E-04	
D. TRITIUM				
1. TOTAL RELEASE	CI	6.34E 00	4.98E 00	3.00E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.07E-01	6.34E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.50E-01	7.79E-01	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	<6.03E 01	<2.02E 02		
H-3	CI	6.19E 00	1.09E 01		
KR-85	CI	<8.90E 03	<4.54E 04		
KR-85M	CI	<2.93E 01	<1.54E 02		
KR-87	CI	<7.05E 01	<3.69E 02		
KR-88	CI	<9.15E 01	<5.07E 02		
XE-133	CI	<5.69E 01	<3.72E 02		
XE-135	CI	<2.68E 01	<1.58E 02		
XE-135M	CI	<1.33E 01	<7.50E 02		
XE-138	CI	<5.68E 02	<2.91E 03		
IODINES					
I-131	CI	<1.26E-02	8.38E-03		
I-133	CI	<1.85E-03	<8.21E-03		
I-135	CI	<1.28E-02	<3.61E-02		
PARTICULATES					
BA-140	CI	<2.96E-04	<7.15E-04		
CO-58	CI	<2.61E-04	<1.30E-03		
CO-60	CI	<2.40E-03	5.00E-03		
CS-134	CI	<2.55E-04	<6.42E-04		
CS-137	CI	<1.86E-03	1.65E-03		
FE-59	CI	<3.36E-04	<1.48E-03		
LA-140	CI	<2.96E-04	<7.15E-04		
MN-54	CI	<5.72E-04	<1.26E-03		
NB-95	CI	<7.16E-04	<2.22E-03		
SR-89	CI	1.07E-05	2.48E-04		
SR-90	CI	2.45E-05	2.01E-04		
ZN-65	CI	<2.11E-03	<5.23E-03		
ZR-95	CI	<6.54E-04	<2.15E-03		

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INSTALLATION=BROWN'S FERRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	<3.91E 02	<5.08E 01		
H-3	CI	5.65E 00	3.98E 00		
KR-85	CI	<8.35E 04	<2.37E 04		
KR-85M	CI	<2.21E 02	<3.04E 01		
KR-87	CI	<5.62E 02	<3.71E 02		
KR-88	CI	<7.79E 02	<2.17E 02		
XE-133	CI	<5.14E 02	<4.68E 01		
XE-135	CI	<2.65E 02	<5.80E 01		
XE-135M	CI	<1.16E 02	<1.66E 02		
XE-138	CI	<3.50E 03	<8.06E 02		
IODINES					
I-131	CI	1.50E-03	1.31E-03		
I-133	CI	<6.41E-03	<3.19E-03		
I-135	CI	<1.46E-01	<2.46E-02		
PARTICULATES					
BA-140	CI	<2.54E-03	<2.47E-03		
CO-58	CI	<2.33E-03	<2.23E-03		
CO-60	CI	6.86E-04	5.87E-04		
CS-134	CI	<1.62E-03	<1.81E-03		
CS-137	CI	<1.07E-03	<9.34E-04		
FE-59	CI	<4.16E-03	<9.39E-03		
LA-140	CI	<1.76E-03	<1.78E-03		
MN-54	CI	<3.96E-03	<1.30E-02		
NB-95	CI	<2.21E-03	<2.98E-03		
SR-89	CI	6.95E-06	2.81E-05		
SR-90	CI	3.00E-06	1.10E-06		
ZN-65	CI	<2.12E-03	<1.93E-03		
ZR-95	CI	<8.20E-03	<1.17E-02		

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INSTALLATION=BROWN'S FERRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	<4.08E 00	<3.80E 00		
H-3	CI	7.15E-02	2.53E-01		
KR-85	CI	<1.44E 00	2.87E 00		
KR-85M	CI	<1.48E 01	5.57E 01		
KR-87	CI	<5.93E 00	<8.57E 00		
KR-88	CI	<4.50E 01	<4.90E 01		
XE-133	CI	<4.13E 02	<4.54E 02		
XE-135	CI	<2.17E 00	<3.92E 00		
XE-135M	CI	<7.17E 01	<3.65E 01		
XE-138	CI	<4.97E 02	<2.58E 02		
IODINES					
I-131	CI	<1.55E-02	3.50E-02		
I-133	CI	<5.07E-03	1.06E-02		
I-135	CI	<5.38E-04	4.93E-03		
PARTICULATES					
BA-140	CI	<2.44E-05	<3.16E-05		
CO-58	CI	<1.31E-05	<1.63E-05		
CO-60	CI	<2.76E-05	3.05E-05		
CS-134	CI	<2.89E-05	<6.59E-05		
CS-137	CI	<4.23E-05	<4.16E-05		
FE-59	CI	<3.25E-05	<4.10E-05		
LA-140	CI	<2.44E-05	<3.16E-05		
MN-54	CI	<1.44E-05	<1.58E-05		
NB-95	CI	<1.31E-05	<2.03E-05		
SR-89	CI	6.38E-06	8.42E-06		
SR-90	CI	3.40E-07	1.34E-07		
ZN-65	CI	<3.23E-05	<4.18E-05		
ZR-95	CI	<2.78E-05	<3.55E-05		

N/A=NOT APPLICABLE
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INSTALLATION=BROWN'S FERRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	1.66E 01	4.72E 01		
H-3	CI	6.88E-01	1.00E 00		
KR-85	CI	6.26E 00	6.71E 00		
KR-85M	CI	1.14E 02	1.73E 03		
KR-87	CI	<9.39E 00	<7.76E 00		
KR-88	CI	1.00E 02	1.29E 02		
XE-133	CI	1.69E 03	1.03E 03		
XE-135	CI	<3.18E 00	<2.98E 00		
XE-135M	CI	<6.50E 01	<3.29E 01		
XE-138	CI	<3.65E 02	<1.42E 02		
IODINES					
I-131	CI	3.03E-02	2.70E-02		
I-133	CI	3.92E-03	1.38E-03		
I-135	CI	2.44E-03	<2.98E 00		
PARTICULATES					
BA-140	CI	<5.67E-05	<4.24E-05		
CO-58	CI	<4.00E-05	<3.22E-05		
CO-60	CI	4.80E-05	3.37E-05		
CS-134	CI	<3.98E-05	<4.08E-05		
CS-137	CI	<7.03E-05	<5.13E-05		
FE-59	CI	<9.94E-05	<7.87E-05		
LA-140	CI	<3.23E-05	<2.78E-05		
MN-54	CI	<4.56E-05	<3.19E-05		
NB-95	CI	<6.35E-05	<6.61E-05		
SR-89	CI	1.04E-08	1.67E-05		
SK-90	CI	3.84E-08	4.36E-07		
ZN-65	CI	<6.62E-05	<5.37E-05		
ZR-95	CI	<1.18E-03	<1.04E-03		

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INSTALLATION=BROWN'S FERRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	5.60E 00	2.80E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.98E-08	2.13E-08	
3. PERCENT OF APPLICABLE LIMIT	%	2.80E 01	1.40E 01	
B. TRITIUM				
1. TOTAL RELEASE	CI	9.08E 00	6.19E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.20E-08	4.05E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.07E-03	1.35E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	<1.09E-01	<2.44E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	<3.84E-10	<1.95E-09	
3. PERCENT OF APPLICABLE LIMIT	%	6.41E-03	3.25E-02	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.03E 04	<5.14E-04	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.35E 07	8.27E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.84E 11	1.34E 11	

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INSTALLATION=BROWN'S FERRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.73E 00	3.06E 00	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.68E-08	1.99E-08	
3. PERCENT OF APPLICABLE LIMIT	%	8.65E 00	1.53E 01	
B. TRITIUM				
1. TOTAL RELEASE	CI	6.32E 00	9.21E 00	5.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.08E-08	5.98E-08	
3. PERCENT OF APPLICABLE LIMIT	%	2.03E-03	2.00E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	<2.55E-01	<3.37E-01	2.80E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	<2.45E-09	<2.19E-09	
3. PERCENT OF APPLICABLE LIMIT	%	4.08E-02	3.65E-02	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.16E-05	<1.87E-02	1.70E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	7.03E 06	1.06E 07	5.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.04E 11	1.54E 11	1.00E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
BA-140	CI	<1.13E-03	<6.80E-04		
CE-141	CI	<2.00E-03	<1.74E-03		
CO-58	CI	<8.20E-03	<9.56E-03		
CO-60	CI	<5.45E-02	<4.61E-02		
CR-51	CI	1.18E-01	1.67E-01		
CS-134	CI	<4.76E-03	<3.76E-03		
CS-136	CI	<4.58E-03	<2.20E-03		
CS-137	CI	<1.45E-02	<1.26E-02		
FE-59	CI	<4.85E-03	<3.87E-03		
H-3	CI	9.08E 00	6.19E 00		
I-131	CI	<1.68E-02	<1.14E-02		
I-133	CI	<8.85E-03	<5.96E-03		
LA-140	CI	<1.13E-03	<6.80E-04		
MN-54	CI	<1.04E-02	<9.01E-03		
MN-56	CI	<8.61E-04	<4.24E-04		
MO-99	CI	<3.78E-03	<2.31E-03		
NA-24	CI	<1.24E-01	<3.29E-02		
NB-95	CI	<1.79E-02	<1.47E-02		
SR-89	CI	<4.57E-04	<7.25E-05		
SR-90	CI	<2.28E-04	2.35E-05		
TC-99M	CI	<3.78E-03	<2.31E-03		
XE-133	CI	<2.87E-02	<7.71E-02		
XE-135	CI	<2.49E-02	<2.36E-02		
ZN-65	CI	<5.46E-02	<9.14E-02		
ZR-95	CI	<2.29E-02	<2.54E-02		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
BA-140	CI	<5.15E-04	<6.75E-04		
CE-141	CI	<2.15E-03	<3.85E-03		
CO-58	CI	<8.26E-03	<1.16E-02		
CO-60	CI	<2.98E-02	<1.02E-01		
CR-51	CI	1.21E-01	2.88E-01		
CS-134	CI	<6.91E-03	<1.67E-02		
CS-136	CI	<2.28E-03	<8.59E-03		
CS-137	CI	<1.56E-02	<2.79E-02		
FE-59	CI	<3.51E-03	<6.53E-03		
H-3	CI	6.32E 00	9.21E 00		
I-131	CI	<1.65E-02	<2.66E-02		
I-133	CI	<4.60E-03	<9.83E-02		
LA-140	CI	<5.15E-04	<6.75E-04		
MN-54	CI	<6.43E-03	<1.99E-02		
MN-56	CI	<3.74E-04	<1.26E-03		
MO-99	CI	<1.53E-03	<1.70E-03		
NA-24	CI	<1.19E-02	<4.56E-02		
NB-95	CI	<1.33E-02	<4.33E-02		
SR-89	CI	<1.87E-04	2.93E-04		
SR-90	CI	<1.19E-04	2.94E-04		
TC-99M	CI	<1.53E-03	<1.70E-03		
XE-133	CI	<1.34E-01	<4.96E-02		
XE-135	CI	<6.46E-02	<3.01E-02		
ZN-65	CI	<3.70E-02	<1.14E-01		
ZR-95	CI	<1.33E-02	<4.33E-02		

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INSTALLATION= BROWN'S FERRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS N/R

1. TYPE OF WASTE	UNIT	6-MONTH PERIOD	EST. TOTAL ERROR, %
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3 CI		
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 CI		
D. OTHER (DESCRIBE)	M3 CI		

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INSTALLATION= BROWN'S FERRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.21E 02	
	CI	1.16E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.06E 03	
	CI	1.66E 02	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3	<5.20E 02	
BOXES	CI	<6.40E-01	

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

A		
OTHERS	X	1.23E 01
FE-59	X	5.56E-01
AG-110M	X	1.23E 00
MN-54	X	2.85E 00
SR-90	X	6.03E-02
SB-124	X	6.94E-01
LA-140	X	3.13E-01
NB-95	X	3.27E 00
ZR-95	X	2.42E 00
CO-60	X	6.35E 00
CO-58	X	3.22E 00
CS-134	X	4.51E 00
CS-137	X	9.13E 00
I-131	X	6.58E 00
ZN-65	X	2.05E 01
CR-51	X	3.03E 01
B		
CR-51	X	2.80E 01
ZN-65	X	1.95E 01
I-131	X	6.67E 00
CS-137	X	8.49E 00
CS-134	X	3.97E 00
CO-58	X	3.06E 00
CO-60	X	6.09E 00
ZR-95	X	2.41E 00
NB-95	X	3.10E 00
LA-140	X	3.25E-01
SB-124	X	7.90E-01
SR-90	X	2.41E-02
MN-54	X	2.70E 00
AG-110M	X	1.13E 00
FE-59	X	5.67E-01
OTHERS	X	1.22E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
95	TRUCK	BARNWELL S.C.

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INSTALLATION BRUNSWICK

LOCATION 20 MI S WILMINGTON NC

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1
TYPE BWR
DOCKET NO. 50-325
COOLING WATER SOURCE CAPE FEAR RIVER
UNIT NUMBER 2
TYPE BWR
DOCKET NO. 50-324
COOLING WATER SOURCE CAPE FEAR RIVER

LICENSEE CAROLINA POWER & LIGHT
LICENSED POWER (MWT) 2436.0
INITIAL CRITICALITY 10/08/76
LICENSEE CAROLINA POWER & LIGHT
LICENSED POWER (MWT) 2436.0
INITIAL CRITICALITY 03/20/75

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) *

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

ANALYSIS FOR SPECIFIC RADIONUCLIDES IN REPRESENTATIVE GRAB SAMPLES BY GAMMA SPECTROSCOPY

IODINES

ANALYSIS FOR SPECIFIC RADIONUCLIDES COLLECTED ON CHARCOAL CARTRIDGES BY GAMMA SPECTROSCOPY

PARTICULATES

ANALYSIS FOR SPECIFIC RADIONUCLIDES COLLECTED ON FILTER PAPERS BY GAMMA SPECTROSCOPY

LIQUID EFFLUENTS

ANALYSIS FOR SPECIFIC RADIONUCLIDES BY INDIVIDUAL RELEASES BY GAMMA SPECTROSCOPY

* 10CFR PART 20

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INSTALLATION BRUNSWICK

LOCATION 20 MI S WILMINGTON NC

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER	BETA QUARTER	QUARTER	GAMMA QUARTER
1	2	1	2
	4.35E-01		6.06E-01

BATCH RELEASES

A. LIQUID

	QUARTER 1	QUARTER 2
1. NUMBER OF BATCH RELEASES-		280
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-		3.52E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		2.02E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-		1.26E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		6.00E 00
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-		N/A

B. GASEOUS

1. NUMBER OF BATCH RELEASES-	NONE
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-	

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)	

B. GASEOUS

1. NUMBER OF RELEASES	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)	

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION BRUNSWICK

LOCATION 20 MI S WILMINGTON NC

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

BETA		GAMMA	
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4
	4.01E-01		5.34E-01

BATCH RELEASES

A. LIQUID

	QUARTER 3	QUARTER 4
1. NUMBER OF BATCH RELEASES-		305
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-		4.37E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-		3.53E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-		1.43E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-		5.00E-01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-		N/A

B. GASEOUS

NUMBER OF BATCH RELEASES-	NONE
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-	
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-	

ABNORMAL RELEASES

A. LIQUID

NUMBER OF RELEASES	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)	

B. GASEOUS

1. NUMBER OF RELEASES	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)	

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INSTALLATION=BRUNSWICK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	1.63E 04	2.07E 04	6.79E 00
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.93E 03	2.55E 03	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.10E 01	1.10E 01	
B. IODINES				
1.TOTAL IODINE-131	CI	8.36E-02	7.72E-02	8.00E 00
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	9.87E-03	9.51E-03	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.09E 00	1.93E 00	
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	2.07E-02	1.59E-02	8.00E 00
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.44E-03	1.96E-03	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.39E 01	1.23E 01	
4.GROSS ALPHA RADIOACTIVITY	CI	7.13E-06	7.86E-07	
D. TRITIUM				
1.TOTAL RELEASE	CI	2.03E 00	1.60E 00	1.23E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.40E-01	1.97E-01	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.34E-02	3.47E-02	

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INSTALLATION=BRUNSWICK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.42E 04	3.02E 04	6.79E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.98E 03	3.75E 03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.16E 01	1.15E 01	
B. IODINES				
1. TOTAL IODINE-131	CI	9.30E-02	4.07E-02	8.00E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.15E-02	5.07E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.33E 00	1.02E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	4.36E-02	3.19E-02	8.00E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.38E-03	3.97E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.67E 01	1.97E 01	
4. GROSS ALPHA RADIOACTIVITY	CI	1.10E-06	6.49E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	3.46E 00	2.94E 00	1.23E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.30E-01	3.66E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.01E-02	9.22E-03	

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INSTALLATION=BRUNSWICK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	<2.51E-08*	<2.51E-08*		
KR-85	CI	<5.68E-06*	<5.68E-06*		
KR-85M	CI	<2.50E-08*	<2.50E-08*		
KR-87	CI	<3.50E-08*	<3.50E-08*		
KR-88	CI	<5.55E-08*	<5.55E-08*		
UNIDENTIFIED	CI	2.34E-02	1.92E-02		
XE-133	CI	1.02E-03	1.39E-03		
XE-133M	CI	4.80E-01	7.75E-01		
XE-135	CI	2.32E-03	1.36E-03		
XE-135M	CI	<2.71E-08*	<2.71E-08*		
XE-138	CI	<5.92E-08*	<5.92E-08*		
IODINES					
I-131	CI	4.00E-04	6.01E-04		
I-132	CI	3.22E-06	<2.87E-14*		
I-133	CI	6.24E-03	2.78E-04		
I-135	CI	8.80E-06	<5.81E-14*		
PARTICULATES					
CD-109	CI	1.49E-06	<5.24E-13*		
CE-139	CI	<1.93E-14*	<1.93E-14*		
CE-144	CI	<1.32E-13*	<1.32E-13*		
CO-57	CI	<1.78E-14*	<1.78E-14*		
CO-58	CI	9.15E-04	5.52E-04		
CO-60	CI	3.38E-03	9.67E-04		
CR-51	CI	6.35E-03	8.89E-03		
CS-134	CI	2.73E-06	7.39E-08		
CS-136	CI	<1.60E-14*	<1.60E-14*		
CS-137	CI	6.17E-05	4.23E-05		
FE-59	CI	8.09E-04	7.23E-04		
I-131	CI	9.81E-05	9.39E-05		
MN-54	CI	2.78E-03	1.39E-03		
SB-124	CI	3.54E-06	<2.70E-14*		
SN-117M	CI	<1.66E-14*	<1.66E-14*		
SR-89	CI	2.10E-05	<1.23E-13*		
SR-90	CI	3.83E-06	<5.29E-14*		
UNIDENTIFIED	CI	1.21E-03	1.02E-03		
Y-88	CI	<1.14E-14*	<1.14E-14*		
ZN-65	CI	6.39E-04	1.43E-04		
ZR-NB-95	CI	9.57E-06	2.07E-06		

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INSTALLATION=BRUNSWICK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	<1.03E-07*	<1.03E-07*		
KR-85	CI	<4.91E-05*	<4.91E-05*		
KR-85M	CI	<1.77E-08*	<1.77E-08*		
KR-87	CI	<5.16E-08*	<5.16E-08*		
KR-88	CI	<3.96E-08*	<3.96E-08*		
UNIDENTIFIED	CI	1.40E 02	2.07E 02		
XE-133	CI	1.88E 03	2.90E 03		
XE-133M	CI	3.68E 01	3.69E 01		
XE-135	CI	1.40E 02	1.13E 02		
XE-135M	CI	<1.67E-07*	<1.67E-07*		
IODINES					
I-131	CI	7.68E-03	1.11E-03		
I-132	CI	<1.16E-14*	<1.16E-14*		
I-133	CI	6.36E-04	4.88E-04		
I-135	CI	<2.82E-14*	<2.82E-14*		
PARTICULATES					
BA-LA-140	CI	1.55E-06	<6.16E-14*		
CD-109	CI	5.20E-04	2.34E-06		
CE-139	CI	<7.63E-15*	2.71E-05		
CE-144	CI	2.42E-04	<6.80E-14*		
CO-57	CI	1.97E-06	<9.35E-15*		
CO-58	CI	5.62E-04	4.16E-04		
CO-60	CI	2.07E-03	1.05E-03		
CR-51	CI	1.56E-02	7.46E-03		
CS-134	CI	2.07E-03	1.63E-04		
CS-136	CI	<1.02E-14*	<1.02E-14*		
CS-137	CI	2.98E-03	3.01E-04		
FE-59	CI	4.63E-04	2.38E-04		
I-131	CI	1.12E-03	1.81E-04		
MN-54	CI	1.80E-03	1.36E-03		
SB-124	CI	<2.54E-14*	5.47E-06		
SN-117M	CI	<6.61E-15*	<6.61E-15*		
SR-89	CI	1.98E-05	6.24E-05		
SR-90	CI	7.53E-06	1.38E-05		
UNIDENTIFIED	CI	2.22E-03	9.68E-04		
Y-88	CI	<9.32E-15*	8.19E-04		
ZN-65	CI	3.08E-04	1.06E-04		
ZR-NB-95	CI	<1.76E-14*	9.25E-06		

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INSTALLATION=BRUNSWICK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	2.03E 02	2.86E 02		
KR-85	CI	<5.68E-06*	<5.68E-06*		
KR-85M	CI	6.63E 02	7.32E 02		
KR-87	CI	1.28E 03	1.35E 03		
KR-88	CI	9.54E 02	9.70E 02		
UNIDENTIFIED	CI	8.07E 02	1.12E 03		
XE-133	CI	2.80E 03	5.53E 03		
XE-133M	CI	7.74E 01	1.68E 02		
XE-135	CI	2.52E 03	2.73E 03		
XE-135M	CI	1.06E 03	1.38E 03		
XE-138	CI	2.33E 03	3.39E 03		
IODINES					
I-131	CI	8.32E-02	7.66E-02		
I-132	CI	3.89E-02	3.77E-02		
I-133	CI	1.62E-01	6.51E-02		
I-135	CI	1.66E-01	6.90E-02		
PARTICULATES					
BA-LA-140	CI	3.07E-03	1.22E-03		
CE-139	CI	2.44E-04	6.77E-05		
CE-144	CI	<1.32E-13*	<1.32E-13*		
CO-58	CI	2.61E-05	3.03E-05		
CO-60	CI	6.54E-05	5.98E-05		
CR-51	CI	5.52E-05	3.56E-04		
CS-134	CI	<1.37E-14*	2.41E-05		
CS-137	CI	6.95E-05	1.09E-04		
FE-59	CI	6.43E-05	5.21E-06		
I-131	CI	3.76E-05	2.35E-05		
MN-54	CI	1.13E-04	6.47E-05		
SR-89	CI	3.53E-04	<1.23E-13*		
SR-90	CI	9.69E-06	<5.29E-14*		
UNIDENTIFIED	CI	3.29E-04	1.57E-04		
Y-88	CI	<1.14E-14*	<1.14E-14*		
ZN-65	CI	3.55E-06	1.53E-07		
ZR-NB-95	CI	<3.77E-14*	<3.77E-14*		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	1.07E 02	1.25E 02		
KR-85	CI	<4.91E-05*	<4.91E-05*		
KR-85M	CI	1.13E 03	1.70E 03		
KR-87	CI	2.27E 03	3.03E 03		
KR-88	CI	2.07E 03	3.06E 03		
UNIDENTIFIED	CI	1.40E 03	1.71E 03		
XE-133	CI	6.12E 03	7.21E 03		
XE-133M	CI	1.68E 02	2.23E 02		
XE-135	CI	4.84E 03	7.37E 03		
XE-135M	CI	1.51E 03	8.39E 02		
XE-138	CI	2.44E 03	1.62E 03		
IODINES					
I-131	CI	8.41E-02	3.91E-02		
I-132	CI	1.58E-02	1.56E-02		
I-133	CI	5.34E-02	3.90E-02		
I-135	CI	4.25E-02	3.07E-02		
PARTICULATES					
BA-LA-140	CI	1.23E-03	1.35E-02		
CE-139	CI	8.62E-05	2.90E-03		
CE-144	CI	<6.80E-14*	<6.80E-14*		
CO-58	CI	1.62E-04	7.78E-06		
CO-60	CI	2.03E-04	4.07E-05		
CR-51	CI	9.29E-03	1.50E-04		
CS-134	CI	6.64E-05	1.78E-05		
CS-137	CI	1.44E-04	1.47E-04		
FE-59	CI	5.31E-05	3.70E-05		
I-131	CI	1.16E-04	3.35E-04		
MN-54	CI	3.34E-04	8.41E-05		
RH-106	CI	1.70E-05	<6.50E-14*		
SR-89	CI	7.84E-04	1.24E-04		
SR-90	CI	6.21E-06	3.29E-05		
SR-91	CI	1.07E-04	<1.77E-14*		
UNIDENTIFIED	CI	1.01E-03	1.40E-03		
Y-88	CI	1.01E-06	2.09E-04		
ZN-65	CI	1.68E-05	<2.13E-14*		
ZR-NB-95	CI	<1.76E-14*	<1.76E-14*		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	9.72E-01	1.16E 00	9.10E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.98E-08	1.86E-08	
3. PERCENT OF APPLICABLE LIMIT	%	4.86E 00	5.80E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.79E 00	3.54E 00	1.23E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.67E-08	5.68E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.89E-03	1.89E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	3.79E-02	1.17E-02	9.10E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	7.70E-10	1.88E-10	
3. PERCENT OF APPLICABLE LIMIT	%	2.57E-04	6.27E-03	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.73E-05	6.45E-05	1.12E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.66E 06	8.01E 06	5.66E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	4.92E 10	6.23E 10	1.10E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	9.72E-01	1.16E 00	9.10E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.98E-08	1.86E-08	
3. PERCENT OF APPLICABLE LIMIT	%	3.89E 01	4.64E 01	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.79E 00	3.54E 00	1.23E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.67E-08	5.68E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.89E-03	1.89E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	3.79E-02	1.17E-02	9.10E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	7.70E-10	1.88E-10	
3. PERCENT OF APPLICABLE LIMIT	%	2.57E-04	6.27E-03	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.73E-05	6.45E-05	1.12E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.66E 06	8.01E 06	5.66E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	4.92E 10	6.23E 10	1.10E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CO-57	CI			<3.49E-08*	<3.49E-08*
I-132	CI			<3.38E-08*	<3.38E-08*
I-133	CI			1.84E-04	6.75E-04
SB-122	CI			3.20E-04	2.01E-03
SB-124	CI			2.06E-04	1.45E-04
SR-85	CI			4.25E-07	5.83E-05
Y-91M	CI			8.83E-05	4.77E-05
BA-139	CI			<1.41E-07*	<1.41E-07*
CE-139	CI			<3.88E-08*	<3.88E-08*
IN-113M	CI			<4.26E-08*	5.19E-06
SN-113	CI			<2.77E-08*	3.38E-06
SN-117M	CI			<3.71E-08*	9.18E-07
TE-132	CI			2.87E-05	<5.17E-08*
W-187	CI			3.44E-04	2.64E-05
CS-134	CI			2.56E-02	3.14E-02
CS-137	CI			7.35E-02	7.80E-02
I-131	CI			1.57E-04	1.05E-02
SR-89	CI			1.68E-04	<1.64E-07*
SR-90	CI			9.58E-05	<1.25E-08*
CO-58	CI			1.91E-02	2.97E-02
CO-60	CI			5.23E-02	6.05E-02
CR-51	CI			7.02E-02	1.05E-01
FE-59	CI			1.88E-02	2.97E-02
MN-54	CI			6.99E-02	9.20E-02
ZN-65	CI			1.04E-02	8.36E-03
BA-LA-140	CI			<1.17E-07*	1.00E-05
CE-141	CI			1.12E-08	<5.81E-08*
MO-99	CI			5.54E-04	3.13E-04
TC-99M	CI			7.20E-04	1.43E-03
ZR-NB-95	CI			2.00E-03	2.19E-03
AR-41	CI			9.32E-06	2.08E-04
KR-85	CI			1.05E-04	<1.02E-05*
KR-85M	CI			<3.71E-08*	<3.71E-08*
XE-133	CI			1.82E-03	1.10E-03
XE-135	CI			8.36E-04	8.59E-04
AG-110M	CI			5.19E-04	<2.65E-08*
AS-76	CI			2.08E-03	3.84E-03
CU-64	CI			1.09E-02	<3.70E-08*
F-18	CI			4.90E-03	2.03E-02

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N/R=NOT-REPORTED

* Indicates minimum detectable activity: values are listed in $\mu\text{Ci/ml}$ where known.

INSTALLATION=BRUNSWICK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
MN-56	CI			1.74E-03	<2.79E-08*
NA-24	CI			2.63E-02	3.66E-01
NB-97	CI			6.33E-04	<2.65E-08*
NI-65	CI			<6.33E-08*	1.16E-05
NP-239	CI			4.85E-04	<3.43E-07*
SR-92	CI			1.12E-04	<3.71E-08*
UNIDENTIFIED	CI			3.57E-02	7.66E-02

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CO-57	CI			<6.29E-09*	<6.29E-09*
I-132	CI			<9.74E-09*	<9.74E-09*
I-133	CI			1.77E-03	2.90E-06
I-134	CI			<2.11E-08*	5.45E-05
SB-122	CI			1.45E-03	1.05E-03
SB-124	CI			8.62E-05	2.89E-04
CE-144	CI			<5.24E-08*	<5.24E-08*
CS-138	CI			<2.05E-08*	<2.05E-08*
SR-85	CI			<2.37E-07*	<2.37E-07*
TE-129M	CI			<3.65E-07*	<3.65E-07*
Y-91M	CI			2.27E-05	2.22E-03
IN-113M	CI			<2.81E-08*	<2.81E-08*
NB-97M	CI			<2.35E-08*	<2.35E-08*
SN-113	CI			<1.83E-08*	<1.83E-08*
SN-117M	CI			<7.22E-09*	<7.22E-09*
ZR-97	CI			<2.24E-08*	<2.24E-08*
BA-139	CI			9.15E-05	<6.38E-08*
CE-139	CI			1.95E-05	<6.35E-09*
SR-91	CI			9.23E-05	7.83E-04
TC-101	CI			<1.69E-08*	<1.69E-08*
TE-132	CI			<1.72E-08*	<1.72E-08*
CS-134	CI			1.96E-02	1.16E-02
CS-137	CI			3.87E-02	1.99E-02
I-131	CI			1.90E-02	1.73E-03
SR-80	CI			9.32E-04	1.34E-03
SR-90	CI			5.20E-05	2.92E-04
CO-58	CI			3.89E-02	4.91E-02
CO-60	CI			8.52E-02	1.70E-01
CR-51	CI			3.37E-01	4.38E-01
FE-59	CI			4.12E-02	6.40E-02
MN-54	CI			1.30E-01	2.46E-01
ZN-65	CI			1.20E-02	2.07E-02
BA-LA-140	CI			<5.92E-08*	<5.92E-08*
CE-141	CI			<3.26E-08*	<3.26E-08*
MO-99	CI			2.60E-04	5.74E-05
TC-99M	CI			4.81E-03	5.45E-04
ZR-NB-95	CI			1.16E-03	7.11E-04
AR-41	CI			2.80E-03	3.55E-03
XE-131M	CI			3.58E-03	<9.49E-07*
XE-133	CI			2.04E-02	3.75E-03

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INSTALLATION=BRUNSWICK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
XE-133M	CI			3.28E-03	<1.78E-07*
XE-135	CI			7.83E-03	4.37E-03
AG-110M	CI			1.20E-05	1.79E-03
AS-76	CI			9.67E-03	2.58E-04
CU-64	CI			1.25E-02	8.68E-03
F-18	CI			6.06E-03	6.71E-03
MN-56	CI			6.78E-04	3.76E-05
NA-24	CI			1.30E-01	1.21E-02
NB-97	CI			1.81E-05	3.56E-03
NI-65	CI			<3.16E-08*	<3.16E-08*
NP-239	CI			<1.46E-07*	<1.46E-07*
SR-85	CI			<2.37E-07*	<2.37E-07*
SR-92	CI			3.49E-05	1.93E-03
UNIDENTIFIED	CI			8.10E-02	9.65E-02

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	5.10E 02	
	CI	5.24E 02	1.50E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.73E 02	
	CI	1.54E 01	2.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	1.63E 01	
	CI	7.43E 02	1.50E 01
D. OTHER (DESCRIBE)	M3	NONE	
	CI	NONE	0.00E 00

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

A + B

CR-51	%	5.99E 01
MN-54	%	2.04E 01
FE-59	%	6.71E-01
CO-57	%	2.03E-03
CO-58	%	5.48E 00
CO-60	%	7.16E 00
CU-64	%	2.66E 00
ZN-65	%	2.81E 00
I-131	%	1.14E-01
NB-95	%	1.80E-01
CS-134	%	1.89E-01
CS-137	%	3.93E-01

C

ZR-95	%	3.04E 01
NB-95	%	3.04E 01
MN-54	%	7.84E 00
CO-58	%	2.08E 00
CU-60	%	1.78E 01
ZN-65	%	8.53E 00
IN-113M	%	3.03E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
132	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

0

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= BRUNSWICK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	7.51E 02	
	CI	8.24E 02	1.50E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	4.74E 02	
	CI	2.23E 01	2.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	3.90E-01	
	CI	1.20E 01	1.50E 01
D. OTHER (DESCRIBE)	M3	NONE	
	CI	NONE	0.00E 00

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

A + B		
CR-51	%	6.23E 01
MN-54	%	1.58E 01
CO-60	%	1.08E 01
FE-59	%	4.07E 00
CO-58	%	3.85E 00
ZN-65	%	1.41E 00
CS-134	%	6.79E-01
CS-137	%	4.80E-01
I-131	%	2.51E-01
NB-95	%	1.79E-01
ZR-95	%	6.96E-02
SB-124	%	4.48E-02
SR-92	%	2.34E-02
C		
ZR-95	%	3.04E 01
NB-95	%	3.04E 01
CO-60	%	1.78E 01
ZN-65	%	8.53E 00
MN-54	%	7.84E 00
IN-113M	%	3.03E 00
CO-58	%	2.08E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
168	TRUCK	BARNWELL S.C.

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INSTALLATION CALVERT CLIFFS

LOCATION 45 MI SE WASHINGTON, D.C.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1
TYPE PWR
DOCKET NO. 50-317
COOLING WATER SOURCE CHESAPEAKE BAY
UNIT NUMBER 2
TYPE PWR
DOCKET NO. 50-318
COOLING WATER SOURCE CHESAPEAKE BAY

LICENSEE BALTIMORE GAS & ELECTRIC
LICENSED POWER (MWT) 2700.0
INITIAL CRITICALITY 10/07/74

LICENSEE BALTIMORE GAS & ELECTRIC
LICENSED POWER (MWT) 2700.0
INITIAL CRITICALITY 11/30/76

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

LIQUIDS
TRITIUM 3.00E-03

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

BATCH RELEASES

PRIOR TO EACH BATCH RELEASE OF GAS FROM A PRESSURIZED GAS DECAY TANK, A SAMPLE IS COLLECTED AND ANALYZED FOR EACH SIGNIFICANT ISOTOPE USING A GE(LI) DETECTOR. THE TOTAL ACTIVITY RELEASED IS BASED ON THE PRESSURE/VOLUME RELATIONSHIP (GAS LAWS) OF THE TANK PRIOR TO AND AFTER THE RELEASE.

PRIOR TO AND AFTER THE RELEASE OF GAS AS A RESULT OF PURGING CONTAINMENT, SAMPLES ARE COLLECTED AND ANALYZED FOR EACH SIGNIFICANT ISOTOPE USING A GE(LI) DETECTOR. THE TOTAL ACTIVITY RELEASED IS BASED ON CONTAINMENT VOLUME AND PURGE RATE WITH ACTIVITY BUILDUP WHILE PURGING BEING CONSIDERED.

CONTINUOUS RELEASES

DURING THE RELEASE OF GAS FROM THE MAIN VENTS, SAMPLES ARE COLLECTED AND ANALYZED AT LEAST WEEKLY FOR EACH SIGNIFICANT ISOTOPE USING A GE(LI) DETECTOR. THE TOTAL ACTIVITY RELEASED FOR THE WEEK IS BASED ON THE WEEKLY RESULT MULTIPLIED BY THE MAIN VENT FLOW FOR THE WEEK.

IODINES

BATCH RELEASES

TOTAL ACTIVITY RELEASED FROM A PRESSURIZED GAS DECAY TANK AS IODINES IS MEASURED BY THE SAME METHODS AS FISSION AND ACTIVATION GASES. PRIOR TO AND AFTER THE RELEASE OF GAS AS A RESULT OF PURGING CONTAINMENT, IODINES ARE SAMPLED USING A CHARCOAL FILTER. THE FILTER IS ANALYZED FOR EACH SIGNIFICANT ISOTOPE USING A GE(LI) DETECTOR. THE TOTAL ACTIVITY RELEASED IS BASED ON CONTAINMENT VOLUME AND PURGE RATE WITH ACTIVITY BUILDUP WHILE PURGING BEING CONSIDERED.

CONTINUOUS RELEASES

DURING THE RELEASE OF GAS FROM THE MAIN VENTS, A SAMPLE OF IODINES IS COLLECTED USING A CHARCOAL FILTER. THE FILTER IS REMOVED WEEKLY AND ANALYZED FOR EACH SIGNIFICANT ISOTOPE USING A GE(LI) DETECTOR. THE TOTAL ACTIVITY RELEASED FOR THE WEEK IS BASED ON THE ACTIVITY FOUND ON THE FILTER MULTIPLIED BY THE MAIN VENT FLOW FOR THE WEEK. THE ACTIVITY ON THE FILTER IS CORRECTED FOR DECAY AND BUILDUP DURING THE SAMPLING PERIOD. ACTIVITY RELEASED VIA CONDENSER VACUUM PUMP RELEASES IS MEASURED BY THE SAME METHODS EMPLOYED FOR FISSION AND ACTIVATION GASES.

PARTICULATES HALF-LIVES > 8 DAYS

BATCH RELEASES

TOTAL ACTIVITY RELEASED FROM A PRESSURIZED GAS DECAY TANK AS PARTICULATES IS MEASURED BY THE SAME METHODS AS FISSION AND ACTIVATION GASES. PRIOR TO AND AFTER THE RELEASE OF GAS

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INSTALLATION CALVERT CLIFFS

LOCATION 45 MI SE WASHINGTON, D.C.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AS A RESULT OF PURGING CONTAINMENT, PARTICULATES ARE SAMPLED USING A PARTICULATE FILTER. THE FILTER IS ANALYZED FOR EACH SIGNIFICANT ISOTOPE USING A GE(LI) DETECTOR. THE TOTAL ACTIVITY RELEASED IS BASED ON CONTAINMENT VOLUME AND PURGE RATE WITH ACTIVITY BUILDUP WHILE PURGING BEING CONSIDERED.

CONTINUOUS RELEASES

DURING THE RELEASE OF GAS FROM THE MAIN VENTS, A SAMPLE OF PARTICULATES IS COLLECTED USING A PARTICULATE FILTER. THE FILTER IS REMOVED WEEKLY AND ANALYZED FOR EACH SIGNIFICANT ISOTOPE USING A GE(LI) DETECTOR. THE TOTAL ACTIVITY RELEASED FOR THE WEEK IS BASED ON THE ACTIVITY FOUND ON THE FILTERS MULTIPLIED BY THE MAIN VENT FLOW FOR THE WEEK. THE ACTIVITY ON THE FILTER IS CORRECTED FOR DECAY AND BUILDUP DURING THE SAMPLING PERIOD. THESE WEEKLY PARTICULATE FILTERS ARE THEN COMPOSITED TO FORM MONTHLY AND QUARTERLY COMPOSITES AT WHICH TIME GROSS ALPHA AND STRONTIUM 89 AND 90 ARE ANALYZED. TOTAL ACTIVITY RELEASED VIA CONDENSER VACUUM PUMP RELEASES IS MEASURED BY THE SAME METHODS EMPLOYED FOR FISSION AND ACTIVATION GASES.

LIQUID EFFLUENTS

BATCH RELEASES

PRIOR TO THE RELEASE OF LIQUID FROM A MONITOR TANK, A SAMPLE IS COLLECTED AND ANALYZED FOR THE CONCENTRATION OF EACH SIGNIFICANT GAMMA ENERGY PEAK. THE TOTAL ACTIVITY RELEASED IN EACH BATCH IS DETERMINED BY MULTIPLYING THE VOLUME RELEASED TIMES THE CONCENTRATION OF EACH ISOTOPE. THE ACTUAL VOLUME RELEASED IS BASED ON THE DIFFERENCE IN TANK LEVELS PRIOR TO AND AFTER THE RELEASE. A PROPORTIONAL COMPOSITE SAMPLE IS ALSO WITHDRAWN FOR EACH WEEK'S RELEASES, AND THIS IS USED IN TURN TO PREPARE MONTHLY AND QUARTERLY COMPOSITES FOR USE IN ANALYSES OF GROSS ALPHA AND STRONTIUM 89 AND 90.

CONTINUOUS RELEASES

STEAM GENERATOR BLOWDOWN IS SAMPLED DAILY AND THESE SAMPLES ARE USED IN TURN TO PREPARE A WEEKLY BLOWDOWN COMPOSITE BASED ON EACH DAY'S BLOWDOWN. THE WEEKLY COMPOSITE IS ANALYZED FOR EACH SIGNIFICANT ISOTOPE USING A GE(LI) DETECTOR AND THESE RESULTS ARE MULTIPLIED BY THE ACTUAL QUANTITY OF BLOWDOWN TO DETERMINE THE TOTAL ACTIVITY RELEASED. THE WEEKLY COMPOSITE IS ALSO USED TO PREPARE MONTHLY AND QUARTERLY COMPOSITES FOR USE IN ANALYSES OF TRITIUM, GROSS ALPHA, AND STRONTIUM 89 AND 90.

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INSTALLATION CALVERT CLIFFS

LOCATION 45 MI SE WASHINGTON, D.C.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA	
	QUARTER	QUARTER	QUARTER	QUARTER
	1	2	1	2
	N/A	N/A	N/A	N/A
BATCH RELEASES			QUARTER	QUARTER
A. LIQUID			1	2
1. NUMBER OF BATCH RELEASES-			47	39
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-			3.62E 02	3.77E 02
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			8.50E 02	9.96E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			4.62E 02	5.80E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			2.50E 01	3.20E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-			4.64E 06	4.64E 06
B. GASEOUS				
NUMBER OF BATCH RELEASES-			7	10
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-			6.95E 04	1.22E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			6.75E 04	8.50E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			9.92E 03	1.22E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-			8.50E 01	1.00E 00
ABNORMAL RELEASES				
A. LIQUID				
NUMBER OF RELEASES			NONE	1
2. TOTAL ACTIVITY RELEASED (CURIES)				1.74E-04
B. GASEOUS				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

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INSTALLATION CALVERT CLIFFS

LOCATION 45 MI. SE WASHINGTON, D.C.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	QUARTER 3 N/A	BETA QUARTER 4 N/A	QUARTER 3 N/A	GAMMA QUARTER 4 N/A
BATCH RELEASES			QUARTER 3	QUARTER 4
A. LIQUID			56	47
1. NUMBER OF BATCH RELEASES-				
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-			5.85E 02	4.08E 02
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			1.25E 03	1.09E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			6.27E 02	5.21E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			3.40E 01	3.10E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-			4.64E 06	4.64E 06
B. GASEOUS			17	13
1. NUMBER OF BATCH RELEASES-				
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-			9.71E 03	7.63E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			4.21E 03	5.87E 04
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			5.71E 02	5.87E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-			2.00E 00	3.00E 00
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.22E 04	8.44E 02	2.80E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.82E 03	1.13E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.56E 01	6.15E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	5.68E-03	1.37E-02	4.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	7.21E-04	1.73E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.05E-01	1.09E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.62E-03	8.42E-04	2.60E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.06E-04	1.07E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.05E-01	1.09E 00	
4. GROSS ALPHA RADIOACTIVITY	CI	<7.96E-07	<8.65E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	5.04E-01	1.38E-01	1.60E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.40E-02	1.75E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.56E 01	6.15E-01	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.85E 03	1.72E 03	2.80E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.62E 02	2.18E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.08E 00	1.33E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	5.25E-02	4.99E-02	4.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.66E-03	6.33E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.18E 00	3.96E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	7.88E-03	3.30E-03	2.60E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.00E-03	4.19E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.18E 00	3.96E 00	
4. GROSS ALPHA RADIOACTIVITY	CI	<9.87E-07	<1.02E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	3.19E-01	6.67E-01	1.60E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.05E-02	8.46E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.08E 00	1.33E 00	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI				5.80E 02
KR-85	CI			2.89E 01	9.67E-01
KR-85M	CI	6.07E 01		1.20E 00	1.17E-01
KR-88	CI				6.27E-03
XE-131M	CI			1.08E 01	1.56E-01
XE-133	CI	1.30E 03	1.00E 02	2.07E 04	7.04E 02
XE-133M	CI			1.33E 01	9.72E 00
XE-135	CI	1.07E 02	2.19E 01	5.23E 01	4.48E 00
HALOGENS					
BR-82	CI				3.89E-05
I-131	CI	5.35E-03	2.80E-03	3.29E-04	1.09E-02
I-132	CI	2.20E-05	1.02E-03	5.78E-04	8.09E-04
I-133	CI	1.28E-03	3.81E-03	9.88E-04	6.39E-03
I-134	CI				4.48E-07
I-135	CI			5.01E-04	1.28E-04
PARTICULATES					
BA-140	CI			3.97E-05	
CE-141	CI			1.71E-04	
CO-58	CI	8.78E-04	4.00E-06	5.12E-04	5.21E-04
CO-60	CI				3.15E-04
CR-51	CI		1.55E-06		
CS-137	CI		2.28E-07	1.87E-05	
CS-138	CI				3.71E-05
LA-140	CI			2.17E-06	
MN-54	CI				3.33E-07
MO-99	CI			9.52E-06	
RB-88	CI			4.46E-02	6.03E-03
RU-103	CI	7.00E-07			
GR-89	CI	4.56E-05	7.14E-06		
SR-90	CI	1.13E-06	1.25E-06		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI			7.36E-01	1.20E-01
KR-85	CI			3.94E-02	1.70E-00
KR-85M	CI			6.17E-01	1.47E-01
KR-88	CI			2.82E-02	1.26E-02
XE-131M	CI			5.75E-01	5.64E-01
XE-133	CI	1.87E-03	7.36E-02	8.90E-02	8.44E-02
XE-133M	CI		9.30E-00	5.94E-01	2.90E-01
XE-135	CI	7.47E-01	1.24E-02	1.27E-01	4.00E-00
IODINES					
BR-82	CI			6.39E-06	2.77E-05
I-131	CI	3.32E-02	3.08E-02	1.93E-02	1.91E-02
I-132	CI	1.05E-04		1.13E-04	8.12E-04
I-133	CI	1.55E-02	2.87E-02	3.80E-03	1.44E-02
I-134	CI	2.66E-03		2.00E-05	1.86E-05
I-135	CI	1.55E-04		1.99E-04	6.69E-05
PARTICULATES					
BA-139	CI			2.04E-06	1.76E-06
BA-140	CI			7.98E-06	1.74E-06
CO-58	CI	4.75E-05	3.56E-05	2.92E-03	1.12E-03
CO-60	CI				2.80E-06
CS-134	CI			2.80E-04	
CS-137	CI			5.74E-04	
CS-138	CI			9.68E-06	4.66E-05
LA-140	CI				5.45E-06
MN-54	CI			1.61E-06	2.01E-06
MN-56	CI			4.58E-06	4.48E-06
MO-99	CI			7.07E-05	2.57E-07
NB-95	CI				1.82E-06
NP-239	CI			4.57E-07	
RB-88	CI			3.93E-03	2.07E-03
SB-124	CI			2.66E-06	
SR-89	CI	4.09E-06	3.04E-06		
SR-90	CI	7.62E-07	4.49E-07		
SR-91	CI			2.41E-05	1.05E-06

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.62E 00	6.42E-01	1.20E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.79E-09	1.13E-09	
3. PERCENT OF APPLICABLE LIMIT	%	2.79E 00	1.13E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	8.41E 01	1.05E 02	1.20E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.45E-07	1.84E-07	
3. PERCENT OF APPLICABLE LIMIT	%	4.83E-03	6.14E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	3.67E 00	2.30E 00	9.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.32E-09	4.04E-09	
3. PERCENT OF APPLICABLE LIMIT	%	2.11E-01	1.35E-01	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<1.41E-04	<1.56E-04	1.60E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	8.38E 06	9.72E 06	2.72E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.80E 11	5.70E 11	3.36E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.53E 00	2.34E 00	1.20E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.62E-09	3.96E-09	
3. PERCENT OF APPLICABLE LIMIT	%	2.62E 00	3.96E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.36E 02	1.31E 02	1.20E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.33E-07	2.22E-07	
3. PERCENT OF APPLICABLE LIMIT	%	7.77E-03	7.38E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	2.09E 01	1.31E 00	9.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.59E-08	2.21E-09	
3. PERCENT OF APPLICABLE LIMIT	%	1.20E 00	7.36E-02	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<2.33E-04	<2.83E-04	1.60E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.49E 07	1.69E 07	2.72E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.84E 11	5.91E 11	3.36E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-110M	CI			1.06E-02	5.45E-03
BA-140	CI			3.71E-02	9.47E-04
CE-141	CI			8.76E-04	2.70E-03
CE-144	CI			1.15E-03	
CO-57	CI			4.99E-04	
CO-58	CI			2.04E-01	9.41E-02
CO-60	CI			1.70E-01	8.62E-02
CR-51	CI			1.87E-02	5.07E-02
CS-134	CI			1.25E-01	6.58E-02
CS-136	CI			1.45E-02	
CS-137	CI			1.75E-01	1.14E-01
FE-59	CI			1.74E-03	
I-131	CI	<5.77E-04	<5.66E-04	3.24E-01	2.24E-02
I-132	CI			3.57E-03	5.49E-03
I-133	CI			2.98E-01	6.72E-03
LA-140	CI			6.46E-02	2.38E-02
MN-54	CI			3.56E-02	1.12E-02
MO-99	CI			1.72E-02	2.07E-03
NA-24	CI			3.79E-03	
NB-95	CI			2.21E-02	3.97E-02
NP-239	CI			8.51E-04	2.05E-03
RU-103	CI			5.27E-03	1.37E-02
RU-106	CI			3.01E-02	1.37E-02
SB-124	CI			3.38E-03	2.78E-04
SB-125	CI			8.30E-03	4.64E-02
SR-89	CI	<4.25E-07	<3.67E-07	1.70E-02	1.83E-03
SR-90	CI	<4.34E-07	<3.75E-07	2.68E-03	6.32E-04
ZN-65	CI			6.51E-05	
ZR-95	CI			1.44E-02	2.39E-02
ZR-97	CI			4.01E-04	
AR-41	CI			1.70E-04	
XE-131M	CI			2.70E-03	
XE-133	CI	<1.03E-03	<1.01E-03	3.49E 00	2.25E 00
XE-133M	CI			3.01E-02	1.24E-02
XE-135	CI			1.45E-01	4.01E-02

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INSTALLATION=CALVERT CLIFFS

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI			2.26E-02	5.38E-03
BA-140	CI			3.45E-03	3.71E-03
CE-141	CI			5.58E-04	3.38E-03
CE-144	CI			6.58E-04	
CO-57	CI			5.73E-05	1.64E-03
CO-58	CI			6.38E-01	1.03E 00
CO-60	CI			1.04E-01	1.02E-01
CR-51	CI			2.58E-01	4.43E-01
CS-134	CI			1.88E-02	9.80E-02
CS-136	CI				2.85E-03
CS-137	CI			3.38E-02	1.42E-01
FE-59	CI			2.43E-02	3.33E-02
I-131	CI	<1.89E-03	<5.44E-03	9.28E-02	5.72E-02
I-132	CI			2.19E-03	
I-133	CI			5.09E-02	2.87E-02
I-135	CI			6.21E-03	1.32E-03
LA-140	CI			4.15E-02	2.62E-02
MN-54	CI			2.69E-02	5.58E-02
MN-56	CI			2.36E-05	
MO-99	CI			9.02E-02	1.71E-03
NA-24	CI				1.32E-03
NB-95	CI			4.79E-02	4.80E-02
NP-239	CI			1.85E-02	
RU-103	CI			8.47E-03	1.02E-02
RU-106	CI			3.69E-03	
SB-124	CI			3.99E-03	5.90E-03
SB-125	CI			4.97E-02	1.37E-01
SR-85	CI			6.00E-04	
SR-89	CI	<1.19E-05	<3.44E-05	4.91E-03	6.12E-04
SR-90	CI	<1.22E-05	<3.51E-05	5.22E-04	3.75E-05
UNIDENTIFIED	CI	<2.26E-03	<6.53E-03	<1.02E-02	<7.60E-03
XE-133	CI		<9.67E-03		
Zr-95	CI			4.51E-02	7.90E-02
ZR-97	CI			4.44E-04	
KR-85M	CI			8.85E-04	
XE-131M	CI			3.74E-03	
XE-133	CI	<3.35E-03	<9.67E-03	2.05E-01	1.25E 00
XE-133M	CI			1.59E-01	2.82E-03
XE-135	CI			2.72E-01	1.05E-02

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.85E 01	
	CI	5.50E 01	2.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	4.53E 01	
	CI	5.87E 01	5.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	1.03E 02	
	CI	3.94E-01	5.00E 01
D. OTHER (DESCRIBE)	M3	NONE	
	CI	NONE	0.00E 00

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

A		
CO-58	X	1.87E 01
CO-60	X	1.58E 01
CS-134	X	5.57E 00
CS-137	X	9.14E 00
I-131	X	2.72E 01
I-133	X	9.14E 00
MN-54	X	4.46E 00
RU-106	X	4.73E 00
B		
CO-60	X	1.00E 02
C		
CO-60	X	1.00E 02

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
14	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
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0

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INSTALLATION= CALVERT CLIFFS

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	4.24E 01	
	CI	1.00E 03	2.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.10E 02	
	CI	5.69E-01	5.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	2.64E 02	
	CI	1.79E 00	5.00E 01
D. OTHER (DESCRIBE)	M3	NONE	
	CI	NONE	0.00E 00

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

A		
RU-106	%	1.05E 00
CO-58	%	5.30E 01
MN-54	%	6.58E 00
CO-60	%	3.19E 00
I-131	%	1.17E 01
CS-137	%	9.58E 00
I-133	%	1.95E 00
CS-134	%	5.76E 00
B		
CO-60	%	1.00E 02
C		
CO-60	%	1.00E 02

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
22	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

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INSTALLATION DONALD C. COOK

LOCATION 11 MI SSW ST. JOSEPH MI

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1
TYPE PWR
DOCKET NO. 50-315
COOLING WATER SOURCE LAKE MICHIGAN
UNIT NUMBER 2
TYPE PWR
DOCKET NO. 50-316
COOLING WATER SOURCE LAKE MICHIGAN

LICENSEE INDIANA & MICHIGAN ELECTRIC
LICENSED POWER (MWT) 3250.0
INITIAL CRITICALITY 01/18/75
LICENSEE INDIANA & MICHIGAN ELECTRIC
LICENSED POWER (MWT) 3391.0
INITIAL CRITICALITY 07/01/78

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

SAMPLED AND ANALYZED ON A 4096 CHANNEL ANALYZER AND GE(LI) DETECTOR.

IODINES

SAMPLED ON AN ACTIVATED CARBON FILTER AND ANALYZED ON A 4096 CHANNEL ANALYZER AND GE(LI) DETECTOR.

PARTICULATES

SAMPLED ON A GLASS FILTER AND ANALYZED ON A 4096 CHANNEL ANALYZER AND GE(LI) DETECTOR.

LIQUID EFFLUENTS

SAMPLED AND ANALYZED ON A 4096 CHANNEL ANALYZER AND GE(LI) DETECTOR.

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INSTALLATION DONALD C. COOK

LOCATION 11 MI SSW ST. JOSEPH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

BETA		GAMMA	
QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
1.37E-01	4.60E-02	1.66E-01	5.10E-02

BATCH RELEASES

A. LIQUID

	QUARTER 1	QUARTER 2
1. NUMBER OF BATCH RELEASES-	185	
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-	1.88E 04	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-	2.09E 02	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-	1.02E 02	
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-	1.50E 01	
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-	1.32E 06	

B. GASEOUS

	QUARTER 1	QUARTER 2
1. NUMBER OF BATCH RELEASES-	53	
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-	3.12E 05	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-	6.93E 04	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-	5.88E 03	
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-	2.50E 01	

ABNORMAL RELEASES

A. LIQUID

	QUARTER 1	QUARTER 2
1. NUMBER OF RELEASES		NONE
2. TOTAL ACTIVITY RELEASED (CURIES)		

B. GASEOUS

	QUARTER 1	QUARTER 2
1. NUMBER OF RELEASES		NONE
2. TOTAL ACTIVITY RELEASED (CURIES)		

N/A=NOT APPLICABLE
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INSTALLATION DONALD C. COOK

LOCATION 11 MI SSW ST. JOSEPH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4
1.40E-02	4.00E-03	1.43E-01	5.30E-02

BATCH RELEASES

A. LIQUID

	QUARTER 3 & QUARTER 4
1. NUMBER OF BATCH RELEASES-	76
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-	9.82E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.91E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	1.29E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.80E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-	2.61E 06

B. GASEOUS

NUMBER OF BATCH RELEASES-	25
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	1.17E 05
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.71E 04
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	4.69E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-	4.70E 01

ABNORMAL RELEASES

A. LIQUID

NUMBER OF RELEASES	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)	

B. GASEOUS

1. NUMBER OF RELEASES	1
2. TOTAL ACTIVITY RELEASED (CURIES)	4.46E-01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	9.99E 03	2.52E 02	1.40E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.28E 03	3.20E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.15E 00	1.90E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	2.96E-04	9.84E-03	1.39E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.81E-05	1.25E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	7.00E-03	2.25E-01	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	<1.77E-03	9.63E-02	1.80E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<2.28E-04	5.15E-09	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%		9.28E-07	
4. GROSS ALPHA RADIOACTIVITY	CI	<3.16E-12	<3.16E-12	
D. TRITIUM				
1. TOTAL RELEASE	CI	6.84E-01	1.31E 01	2.00E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.80E-02	1.67E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.70E-01	1.28E 01	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.46E 01	3.82E 04	4.60E-01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.84E 00	4.81E 03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.98E-03	2.40E 01	
B. IODINES				
1. TOTAL IODINE-131	CI	1.74E-03	4.08E-04	2.35E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.19E-04	5.13E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.90E-02	9.00E-03	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.51E-05	5.81E-05	1.44E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.90E-06	7.31E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.00E-04	1.30E-03	
4. GROSS ALPHA RADIOACTIVITY	CI	<6.19E-06	<4.74E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	3.89E 00	1.97E 00	3.00E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.90E-01	2.47E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.19E 00	2.63E 00	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85	CI			6.98E 01	5.46E 01
KR-85M	CI			7.43E-01	7.04E-01
KR-87	CI				1.22E-01
KR-88	CI				1.36E 00
XE-133	CI	4.17E 02	7.34E 01	9.38E 03	1.15E 02
XE-133M	CI			7.39E 01	7.14E-01
XE-135	CI	4.01E 00		3.67E 01	5.43E 00
IODINES					
I-131	CI	2.12E-04	7.85E-04	8.42E-05	9.06E-03
I-133	CI	2.66E-05	1.38E-05		1.03E-05
PARTICULATES					
CO-58	CI		4.59E-06		4.32E-02
CO-60	CI		1.50E-05		4.08E-02
CR-51	CI				4.88E-03
CS-134	CI				8.62E-10
CS-137	CI				5.31E-06
CS-138	CI		1.70E-06		3.19E-04
MN-54	CI				2.02E-03
NB-95	CI				1.34E-04
RB-88	CI				2.13E-02
SB-124	CI				4.78E-03
ZR-95	CI				8.01E-05

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI			4.60E-01	1.11E 00
KR-85M	CI			2.35E-03	1.07E 00
KR-88	CI			8.11E-05	
XE-133	CI	9.96E 00	4.39E 02	4.13E 00	3.58E 04
XE-133M	CI			3.59E-02	4.62E 02
XE-135	CI			4.01E-02	1.50E 03
IODINES					
I-131	CI	7.02E-04	2.82E-04	1.04E-03	1.26E-04
I-133	CI	1.82E-05	1.09E-05	7.53E-04	6.27E-05
PARTICULATES					
CO-60	CI		5.73E-06	1.94E-06	3.76E-05
CS-137	CI		5.20E-07		2.89E-06
NA-24	CI	5.89E-06	1.51E-04	1.51E-04	1.10E-05
SR-89	CI	1.31E-05	1.13E-05		
SR-90	CI		7.13E-08		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	4.44E-01	5.02E-01	3.03E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.36E-08	2.01E-08	
3. PERCENT OF APPLICABLE LIMIT	%	3.38E-01	1.48E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	8.43E 01	2.08E 02	2.60E-01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.18E-06	2.21E-06	
3. PERCENT OF APPLICABLE LIMIT	%	3.90E-02	7.40E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	6.88E-01	1.79E-02	1.70E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.65E-08	7.19E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<2.93E-03	<9.57E-03	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.25E 06	5.25E 06	2.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.88E 10	2.49E 10	3.48E 00

N/A=NOT APPLICABLE

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INSTALLATION=DONALD C. COOK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	3.41E-01	1.92E-01	2.60E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.46E-08	1.66E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.92E-01	1.18E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.47E 02	1.85E 02	1.95E-01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.06E-05	1.60E-05	
3. PERCENT OF APPLICABLE LIMIT	%	3.53E-01	5.35E-01	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.68E-03	7.18E-04	9.90E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.21E-10	6.21E-11	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<2.76E-03	<1.40E-03	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.62E 06	2.17E 06	2.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.38E 10	1.15E 10	3.48E 00

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INSTALLATION=DONALD C. COOK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CS-134	CI			1.22E-01	1.25E-01
CS-137	CI			1.39E-01	1.33E-01
I-131	CI			1.16E-02	3.23E-03
SR-89	CI			<1.18E-04	<1.91E-04
SR-90	CI			<1.01E-04	<1.64E-04
CO-58	CI			5.59E-02	1.03E-01
CO-60	CI			8.65E-02	8.23E-02
CR-51	CI			3.78E-03	1.01E-02
FE-59	CI			<1.62E-04	7.74E-04
MN-54	CI			1.57E-02	1.09E-02
ZN-65	CI			<1.01E-03	<1.38E-03
BA-LA-140	CI			<3.46E-04	<5.59E-04
CE-141	CI			<1.03E-04	<1.66E-04
MO-99	CI			<7.48E-06	<1.20E-05
TC-99M	CI			<5.62E-05	<9.08E-05
ZR-NB-95	CI			4.16E-03	4.91E-03
AG-110M	CI			1.60E-04	1.55E-03
CO-57	CI			7.02E-05	1.86E-04
CS-136	CI			5.63E-04	7.84E-04
I-133	CI			4.43E-04	1.24E-04
NA-24	CI			2.39E-03	7.83E-03
SB-124	CI			<4.78E-05	1.70E-02
SB-125	CI			<1.53E-04	8.07E-04
ZR-97	CI			3.81E-04	7.19E-05

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INSTALLATION=DONALD C. COOK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CS-134	CI			1.32E-01	3.01E-02
CS-137	CI			1.61E-01	2.35E-02
I-131	CI			8.07E-04	1.65E-03
SR-89	CI			1.45E-05	6.56E-05
SR-90	CI			1.41E-05	1.45E-05
CO-58	CI			1.53E-02	2.76E-02
CO-60	CI			2.07E-02	5.78E-02
FE-59	CI				1.57E-04
MN-54	CI			2.54E-03	6.15E-03
ZN-65	CI			7.66E-04	
ZR-NB-95	CI			1.59E-03	7.26E-03
AG-110M	CI			3.84E-03	3.02E-02
CO-57	CI				2.00E-04
CS-136	CI			8.27E-05	1.44E-03
I-133	CI			3.36E-05	1.67E-05
NA-24	CI			2.52E-03	6.04E-03
ZR-97	CI				1.36E-03

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INSTALLATION= DONALD C. COOK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	6.11E 02	
	CI	1.39E 02	4.00E 00
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.03E 02	
	CI	2.02E 01	2.00E 02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
CS-137	%	5.55E 01
CS-134	%	4.04E 01
CO-58-CO-60	%	4.00E 00
B		
CO-60	%	8.50E 01
CO-58	%	1.50E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
17	TRUCK	SHEFFIELD ILL.
37	TRUCK	BARNWELL S.C.

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INSTALLATION= DONALD C. COOK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.27E 02	
	CI	6.48E 01	4.00E 00
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.34E 02	
	CI	1.05E 00	2.00E 02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A			
CS-137	%	5.70E 01	
CS-134	%	3.90E 01	
CO-58	%	2.00E 01	
CO-60	%	2.00E 01	
B			
CO-60	%	3.00E 01	
CO-58	%	5.00E 01	
CS-137	%	2.00E 01	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
24	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
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INSTALLATION COOPER

LOCATION 70 MI S OMAHA, NB

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE NEBRASKA PUBLIC POWER & IOWA POWER & LIGHT

TYPE BWR

LICENSED POWER (MWT) 2381.0

DOCKET NO. 50-298

INITIAL CRITICALITY 02/21/74

COOLING WATER SOURCE MISSOURI RIVER

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

RADIOACTIVITY AND RADIONUCLIDE COMPOSITION IS DETERMINED BY LABORATORY GELI DETECTOR ANALYSIS IN CORRELATION WITH CONTINUOUS GROSS RADIOACTIVITY MONITORING BY A GASEOUS CHANNEL DETECTOR IN THE RELEASE PATHWAY.

IODINES

CHARCOAL CARTRIDGES PROVIDE CONTINUOUS SAMPLE COLLECTION. THESE CARTRIDGES ARE ANALYZED FOR RADIOACTIVITY AND RADIONUCLIDE COMPOSITION IN THE LABORATORY BY A GELI DETECTOR GAMMA SPECTROMETER. CONTINUOUS RADIOACTIVITY MONITORING OF THE CHARCOAL CARTRIDGES IS ALSO PROVIDED BY AN NAI DETECTOR IN-LINE WITH THE RELEASE PATHWAY.

PARTICULATES

PARTICULATE FILTERS PROVIDE CONTINUOUS SAMPLE COLLECTION. THESE FILTERS ARE ANALYZED FOR RADIOACTIVITY AND RADIONUCLIDE COMPOSITION IN THE LABORATORY BY A GELI DETECTOR GAMMA SPECTROMETER. CONTINUOUS GROSS RADIOACTIVITY MONITORING THE PARTICULATE FILTER IS PROVIDED BY AN NAI DETECTOR IN-LINE WITH THE RELEASE PATHWAY.

LIQUID EFFLUENTS

EACH BATCH OF LIQUID EFFLUENT IS ANALYZED FOR RADIOACTIVITY AND RADIONUCLIDE COMPOSITION IN THE LABORATORY BY A GELI DETECTOR GAMMA SPECTROMETER. EACH BATCH IS ALSO ANALYZED FOR GROSS RADIOACTIVITY BY BOTH GROSS BETA AND GAMMA. IN ADDITION EACH BATCH IS MONITORED FOR GROSS RADIOACTIVITY BY AN NAI DETECTOR IN-LINE WITH THE RELEASE PATHWAY.

N/A=NOT APPLICABLE
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INSTALLATION COOPER

LOCATION 70 MI S OMAHA, NB

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

BETA		GAMMA	
QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
3.20E-01	3.10E-01	5.70E-01	5.50E-01

BATCH RELEASES

A. LIQUID

	QUARTER 1	QUARTER 2
1. NUMBER OF BATCH RELEASES-	62	
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-	1.56E 04	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-	1.85E 03	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-	2.52E 02	
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-	1.26E 02	
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-	5.10E 07	

B. GASEOUS

1. NUMBER OF BATCH RELEASES-	NONE
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-	
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-	

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)	

B. GASEOUS

1. NUMBER OF RELEASES	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	1.38E 03	1.16E 03	2.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.78E 02	1.49E 02	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.49E-01	3.06E-01	
B. IODINES				
1.TOTAL IODINE-131	CI	<4.23E-04	<1.71E-03	3.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<5.45E-05	<2.18E-04	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.04E-02	1.17E-01	
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	<5.40E-04	<5.36E-04	5.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<6.97E-05	<6.82E-05	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.04E-02	1.17E-01	
4.GROSS ALPHA RADIOACTIVITY	CI	4.08E-07	1.96E-06	
D. TRITIUM				
1.TOTAL RELEASE	CI	1.18E 00	1.94E 00	3.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.52E-01	2.47E-01	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.49E-01	3.06E-01	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.25E 03	2.98E 02	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.57E 02	3.75E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.80E-01	8.80E-02	
B. IODINES				
1. TOTAL IODINE-131	CI	<6.31E-04	<4.40E-04	3.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<7.94E-05	<5.54E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.90E-02	5.11E-02	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	<7.09E-04	<4.22E-04	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<7.81E-05	<5.31E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.90E-02	5.11E-02	
4. GROSS ALPHA RADIOACTIVITY	CI	2.45E-06	3.28E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	9.53E-01	1.48E 00	3.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.20E-01	1.86E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.80E-01	8.80E-02	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-83M	CI	1.50E 00	1.46E 00		
KR-85	CI	7.45E-02	7.34E-02		
KR-85M	CI	3.82E 00	3.74E 00		
KR-87	CI	6.33E 00	6.08E 00		
KR-88	CI	1.04E 01	1.02E 01		
KR-89	CI	3.23E-02	2.70E-02		
XE-131M	CI	3.40E-02	3.36E-02		
XE-133	CI	1.50E 01	1.47E 01		
XE-133M	CI	4.55E-01	4.57E-01		
XE-135	CI	1.87E 01	1.84E 01		
XE-135M	CI	1.15E 00	1.03E 00		
XE-137	CI	1.22E-01	1.02E-01		
XE-138	CI	6.00E 00	5.33E 00		
IODINES					
I-131	CI	<6.34E-05	<8.83E-04		
I-133	CI	<5.70E-04	<4.92E-04		
I-135	CI	<3.48E-02	<2.16E-04		
PARTICULATES					
BA-LA-140	CI	<2.47E-04	<1.87E-04		
CO-58	CI		9.03E-06		
CO-60	CI	<1.30E-04	<1.05E-04		
CS-134	CI	<2.45E-05	<2.08E-05		
CS-137	CI	<2.68E-05	<2.21E-05		
I-131	CI	<3.03E-05	<2.91E-05		
MN-54	CI	9.97E-06	3.32E-05		
SR-89	CI	4.07E-06	2.48E-07		
SR-90	CI	6.20E-06	6.60E-07		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
GASES					
KR-83M	CI	3.84E-01	7.37E-01		
KR-85	CI	5.83E-02	1.07E-01		
KR-85M	CI	1.09E 00	2.04E 00		
KR-87	CI	1.53E 00	2.98E 00		
KR-88	CI	2.82E 00	5.34E 00		
KR-89	CI	2.52E-03	1.11E-02		
XE-131M	CI	1.50E-02	2.76E-02		
XE-133	CI	6.08E 00	1.12E 01		
XE-133M	CI	1.69E-01	3.12E-01		
XE-135	CI	5.78E 00	1.07E 01		
XE-135M	CI	1.92E-01	4.55E-01		
XE-137	CI	1.04E-02	4.24E-02		
XE-138	CI	9.68E-01	2.39E 00		
IODINES					
I-131	CI	<1.16E-04	<2.18E-04		
I-133	CI	<1.36E-03	<6.06E-04		
I-135	CI	<5.60E-02	<3.58E-02		
PARTICULATES					
BA-LA-140	CI	<4.55E-04	<2.48E-04		
CO-58	CI		1.23E-06		
CO-60	CI	2.42E-05	6.93E-05		
CS-134	CI	<5.34E-05	<2.73E-05		
CS-137	CI	<5.92E-05	<2.57E-05		
I-131	CI	<8.62E-05	1.59E-06		
MN-54	CI		1.65E-05		
SR-89	CI	3.29E-06	3.55E-06		
SR-90	CI	8.71E-07	3.79E-06		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-83M	CI	2.98E 01	2.24E 01		
KR-85	CI	1.75E 01	3.72E 01		
KR-85M	CI	1.01E 02	1.09E 02		
KR-87	CI	1.18E 02	8.62E 01		
KR-88	CI	2.22E 02	1.80E 02		
KR-89	CI	9.28E-03	8.38E-04		
XE-131M	CI	1.48E 00	2.26E 00		
XE-133	CI	3.51E 02	3.05E 02		
XE-133M	CI	1.01E 01	8.08E 00		
XE-135	CI	4.08E 02	3.22E 02		
XE-135M	CI	1.06E 01	5.47E 00		
XE-137	CI	7.23E-02	9.42E-03		
XE-138	CI	5.05E 01	2.48E 01		
IODINES					
I-131	CI	3.60E-04	8.22E-04		
I-133	CI	1.51E-03	<8.67E-04		
I-135	CI	<1.52E-03	<4.68E-04		
PARTICULATES					
BA-LA-140	CI	<3.53E-05	<5.85E-05		
CO-58	CI		<2.86E-06		
CO-60	CI	<8.89E-07	<9.91E-06		
CS-134	CI	<5.55E-07	<1.39E-06		
CS-137	CI	<8.03E-07	<3.42E-06		
I-131	CI	<1.53E-06	<7.59E-06		
MN-54	CI		6.11E-06		
SR-89	CI	1.96E-05	3.91E-05		
SR-90	CI	2.36E-06	2.13E-07		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
GASES					
KR-83M	CI	2.11E 01	1.30E-01		
KR-85	CI	5.14E 00	3.07E 00		
KR-85M	CI	9.18E 01	5.63E 01		
KR-87	CI	7.78E 01	8.67E-03		
KR-88	CI	1.70E 02	1.74E 01		
KR-89	CI	5.51E-04			
XE-131M	CI	3.22E 01	6.50E 01		
XE-133	CI	3.83E 02	3.30E-04		
XE-133M	CI	6.83E 01	1.20E 02		
XE-135	CI	3.54E 02			
XE-135M	CI	4.22E 00			
XE-137	CI	6.31E-03			
XE-138	CI	1.89E 01			
IODINES					
I-131	CI	4.28E-04	<2.22E-04		
I-133	CI	1.15E-03	<2.83E-04		
I-135	CI	<1.12E-03	<3.82E-04		
PARTICULATES					
BA-LA-140	CI	<1.72E-05	<1.53E-05		
CO-60	CI	8.44E-08	1.02E-07		
CS-134	CI	<8.72E-07	<4.91E-07		
CS-137	CI	<1.03E-06	<5.87E-07		
I-131	CI	<1.07E-06	2.33E-06		
SR-89	CI	5.76E-06	5.90E-06		
SR-90	CI	5.72E-07	3.96E-07		

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INSTALLATION=COOPER

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	<1.42E-01	<2.55E 00	2.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	<2.85E-08	<1.50E-07	
3. PERCENT OF APPLICABLE LIMIT	%	5.68E-01	1.02E 01	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.97E 00	2.33E 00	2.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.95E-07	1.37E-07	
3. PERCENT OF APPLICABLE LIMIT	%	1.32E-02	4.57E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	<1.91E-03	<3.12E-02	5.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	<3.83E-10	<1.84E-09	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<2.63E-04	<1.00E-03	5.00E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.40E 06	2.67E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	4.99E 09	1.70E 10	1.00E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	<2.51E-01	<1.11E-01	2.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	<1.85E-08	<1.18E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.00E 00	4.44E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.68E 00	1.53E 00	2.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.24E-07	1.63E-07	
3. PERCENT OF APPLICABLE LIMIT	%	4.13E-03	5.43E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	<4.64E-02	<3.35E-03	5.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	<3.41E-09	<3.57E-10	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<4.25E-04	<2.67E-04	5.00E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.56E 06	1.18E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.36E 10	9.38E 09	1.00E 01

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INSTALLATION=COOPER

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-110M	CI			<8.12E-04	<2.18E-02
BA-LA-140	CI			<1.46E-03	<1.12E-02
CE-141	CI			<1.26E-03	<7.71E-03
CO-58	CI			5.44E-03	<2.56E-01
CO-60	CI			3.66E-02	5.62E-01
CR-51	CI			<7.62E-03	<2.03E-01
CS-134	CI			5.39E-03	<3.00E-01
CS-137	CI			8.60E-03	<3.50E-01
FE-59	CI			<5.43E-04	<6.06E-02
I-131	CI			<5.03E-04	<1.63E-01
MN-54	CI			2.31E-02	<4.98E-01
MO-99	CI			<3.16E-03	<2.56E-02
NA-24	CI			<4.32E-04	<1.72E-03
NB-95	CI			<3.82E-04	<4.05E-03
SR-89	CI			2.34E-02	1.92E-02
SR-90	CI			1.04E-04	4.09E-04
TC-99M	CI			<6.90E-04	<2.06E-02
UNI	CI			<1.95E-02	<2.90E-02
ZN-65	CI			<1.16E-03	<2.45E-02
ZR-95	CI			<7.69E-04	<6.17E-03
XE-133	CI			<1.41E-03	<2.36E-02
XE-135	CI			<5.02E-04	<7.64E-03

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INSTALLATION=COOPER

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI			1.86E-03	3.04E-04
BA-LA-140	CI			<4.56E-03	<4.51E-03
CE-141	CI			<3.90E-03	<2.31E-03
CO-58	CI			<6.78E-03	<1.68E-03
CO-60	CI			5.38E-02	<3.13E-02
CR-51	CI			<1.48E-02	<9.21E-03
CS-134	CI			2.96E-02	1.39E-02
CS-137	CI			4.05E-02	2.07E-02
FE-59	CI			<1.48E-03	<7.32E-04
I-131	CI			<1.74E-03	<9.67E-04
MN-54	CI			2.68E-02	1.49E-02
MO-99	CI			<9.01E-03	<5.02E-03
NA-24	CI			1.02E-04	
NB-95	CI			<1.08E-03	<6.02E-04
SB-124	CI			1.63E-03	
SR-89	CI			2.41E-02	9.26E-04
SR-90	CI			4.62E-04	5.16E-05
TC-99M	CI			<2.18E-03	<1.25E-03
UNI	CI			6.37E-03	
ZN-65	CI			<2.98E-03	<1.60E-03
ZR-95	CI			<2.05E-03	<1.20E-03
XE-133	CI			<4.02E-02	<2.38E-03
XE-135	CI			<6.16E-03	<9.67E-04

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.36E 02	
	CI	1.66E 02	1.50E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	4.84E 01	
	CI	1.98E 00	2.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI	NONE	0.00E 00
D. OTHER (DESCRIBE)	M3	NONE	
	CI	NONE	

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

A

CR-51	X	2.67E 01
CO-60	X	3.31E 01
CO-58	X	5.54E 00
MN-54	X	1.92E 01
ZR-NB-95	X	7.41E-01
ZN-65	X	2.10E 00
AG-110M	X	1.90E 00
I-131	X	1.36E-01
CS-137	X	6.27E 00
CS-134	X	4.03E 00
FE-59	X	5.00E-01
BA-LA-140	X	4.98E-02

B

CR-51	X	3.39E 01
CO-60	X	1.49E 01
CO-58	X	7.68E 00
MN-54	X	3.80E 01
ZR-NB-95	X	5.45E-02
ZN-65	X	2.53E-01
AG-110M	X	2.48E 00
I-131	X	2.43E-02
CS-137	X	2.75E 00
CS-134	X	6.11E-02
FE-59	X	0.00E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
11	TRUCK	SHEFFIELD ILL.
14	TRUCK	BEATTY NEV.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
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0

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INSTALLATION= COOPER

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.22E 02	
	CI	2.16E 02	1.50E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.26E 01	
	CI	1.37E-01	2.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI	NONE	0.00E 00
D. OTHER (DESCRIBE)	M3	NONE	
	CI	NONE	

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

A

CR-51	X	4.46E 01
CO-60	X	2.27E 01
CO-58	X	6.16E 00
MN-54	X	1.42E 01
ZR-NB-95	X	2.64E-01
ZN-65	X	1.93E 00
AG-110M	X	1.25E 00
I-131	X	2.74E-01
CS-137	X	4.86E 00
CS-134	X	3.26E 00
FE-59	X	4.43E-01

B

CR-51	X	2.69E 01
CO-60	X	3.59E 01
CO-58	X	5.56E 00
ZN-65	X	2.08E 00
MN-54	X	1.92E 01
CS-134	X	4.01E 00
CS-137	X	6.24E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
23	TRUCK	BEATTY NEV.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

0

N/A=NOT APPLICABLE

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INSTALLATION CRYSTAL RIVER

LOCATION 70 MI N TAMPA, FL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 3

TYPE PWR

DOCKET NO. 50-302

COOLING WATER SOURCE GULF OF MEXICO

LICENSEE FLORIDA POWER

LICENSED POWER (MWT) 2452.0

INITIAL CRITICALITY 01/14/77

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) *

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

THE TOTAL CONTINUOUS ACTIVITY RELEASED IS DETERMINED FROM THE NET COUNT RATE OF THE GASEOUS MONITOR (RMA-2G), ITS CALIBRATION FACTOR, AND THE TOTAL EXHAUST FLOW. THE ACTIVITY OF RADIOGAS IS DETERMINED BY THE FRACTION OF THAT RADIOGAS IN THE ISOTOPIC ANALYSIS OF THE AUXILIARY BUILDING ATMOSPHERE FOR THAT PERIOD.

THE BATCH ACTIVITY RELEASED IS BASED ON THE VOLUME RELEASED AND THE ACTIVITY OF THE INDIVIDUAL NUCLIDES OBTAINED FROM AN ISOTOPIC ANALYSIS OF THE GRAB SAMPLE TAKEN PRIOR TO THE RELEASE.

THE PURGE RELEASE ACTIVITY RELEASED IS DETERMINED FROM THE NET COUNT RATE OF THE GASEOUS MONITOR (RMA-1G), THE MONITOR CALIBRATION FACTOR AND THE TOTAL VENT FLOW. THE RELEASE OF EACH RADIOGAS IS A PRODUCT OF THE TOTAL CURIES RELEASED TIMES THE FRACTION OF THAT RADIOGAS IN THE ISOTOPIC ANALYSIS FOR THAT PURGE.

IODINES

THE CONTINUOUS ACTIVITY RELEASED AS IODINE-131, 133, AND 135 IS BASED ON THE CHARCOAL CARTRIDGE ACTIVITIES (RMA-2I) THE PARTICULATE FILTERS ACTIVITIES (RMA-2P) AND THE TOTAL VENT FLOW.

THE IODINES FROM BATCH RELEASES ARE INCLUDED IN THE IODINE DETERMINATION FROM THE CONTINUOUS AUXILIARY BUILDING RELEASE.

THE TOTAL CURIES RELEASED BY PURGE RELEASE AS IODINE-131, 133 AND 135 WAS DETERMINED FROM THE CHARCOAL CARTRIDGE ACTIVITIES (RMA-1I) AND THE PARTICULATE FILTER ACTIVITIES (RMA-1P).

PARTICULATES

THE CONTINUOUS ACTIVITY RELEASED VIA PARTICULATES WITH HALF-LIVES GREATER THAN EIGHT DAYS IS DETERMINED BY ISOTOPIC ANALYSIS OF PARTICULATE FILTERS (RMA-2P) AND THE TOTAL VENT FLOW.

THE PARTICULATES FROM BATCH RELEASES ARE INCLUDED IN THE PARTICULATE DETERMINATION FROM THE CONTINUOUS AUXILIARY BUILDING RELEASE.

THE TOTAL CURIES RELEASED BY PURGE RELEASE VIA PARTICULATES WITH HALF-LIVES GREATER THAN EIGHT DAYS IS DETERMINED BY ISOTOPIC ANALYSIS OF EACH PURGE PARTICULATE FILTER (RMA-1P).

LIQUID EFFLUENTS

THE CONTINUOUS ACTIVITY RELEASED AS TRITIUM IS BASED ON MONTHLY GRAB SAMPLE ANALYSIS AND TOTAL VENT FLOW.

THE BATCH ACTIVITY RELEASED AS TRITIUM IS BASED ON THE GRAB SAMPLE ANALYSIS OF EACH BATCH AND THE BATCH VOLUME.

THE TOTAL CURIES RELEASED BY PURGE RELEASE AS TRITIUM IS BASED ON GRAB SAMPLES TAKEN FOR EACH PURGE (OR THE AVERAGE IF MORE THAN ONE GRAB SAMPLE WAS TAKEN).

* Maximum permissible concentrations are those limits in 10 CFR 20 while our discharges are as low as reasonably achievable in accordance with 10 CFR 5).

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INSTALLATION CRYSTAL RIVER

LOCATION 70 MI N TAMPA, FL

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		
QUARTER	QUARTER	QUARTER	GAMMA
1	2	1	2
N/A	N/A	N/A	N/A
BATCH RELEASES		QUARTER	QUARTER
A. LIQUID		1	2
1. NUMBER OF BATCH RELEASES-		65	39
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-		1.20E 04	8.75E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-		3.45E 02	4.00E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-		1.85E 02	2.24E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-		1.00E 01	3.00E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-		3.95E 06	2.39E 06
B. GASEOUS			
1. NUMBER OF BATCH RELEASES-		27	18
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-		1.09E 05	1.40E 05
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-		1.01E 04	1.01E 04
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-		4.04E 03	7.76E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-		3.00E 01	1.50E 01
ABNORMAL RELEASES			
A. LIQUID			
1. NUMBER OF RELEASES		NONE	1
2. TOTAL ACTIVITY RELEASED (CURIES)			2.00E-05
B. GASEOUS			
1. NUMBER OF RELEASES		6	2
2. TOTAL ACTIVITY RELEASED (CURIES)		3.45E 01	2.70E-03

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INSTALLATION=CRYSTAL RIVER

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.99E 03	2.58E 01	1.10E 02
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.54E 02	3.28E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.96E-01	2.26E-04	
B. IODINES				
1. TOTAL IODINE-131	CI	7.22E-04	7.96E-06	1.1N/D02
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	9.19E-05	1.01E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.61E-02	3.98E-04	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.51E-06	1.37E-06	1.00E 02
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.47E-07	1.74E-07	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.20E-03	5.23E-05	
4. GROSS ALPHA RADIOACTIVITY	CI	7.03E-07	1.56E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	8.18E 00	6.58E 00	9.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.04E 00	8.37E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

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INSTALLATION=CRYSTAL RIVER

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR,%
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	5.54E 00	4.84E 03	1.10E 02
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.97E-01	6.09E 02	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.62E-04	1.24E 00	
B. IODINES				
1.TOTAL IODINE-131	CI	1.71E-05	2.90E-04	1.10E 02
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.18E-06	3.68E-05	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.55E-04	1.45E-02	
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	8.41E-06	2.85E-06	1.00E 02
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.07E-06	3.58E-07	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.87E-05	1.63E-05	
4.GROSS ALPHA RADIOACTIVITY	CI	4.40E-07	1.34E-07	
D. TRITIUM				
1.TOTAL RELEASE	CI	4.78E 00	6.39E 00	9.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.08E-01	8.04E-01	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85	CI	1.14E 02	<5.51E 01	4.22E 00	9.91E-01
KR-85M	CI	2.31E 01	<2.26E 00	2.16E-01	<1.59E-03
KR-87	CI	5.38E 00	<8.23E-01	1.04E-02	<2.95E-04
KR-88	CI	1.63E 01	<8.49E-01	2.05E-02	<4.95E-04
UNIDENTIFIED	CI	4.54E 00	2.48E 01		2.70E-03
XE-131	CI				6.33E-03
XE-131M	CI			1.91E 00	6.30E-03
XE-133	CI	1.12E 03	<5.73E-01	3.78E 02	2.88E-03
XE-133M	CI	4.52E 01		2.98E 00	
XE-135	CI	2.34E 02	<2.32E-01	3.04E 00	<2.03E-04
XE-135M	CI	2.26E 00	<9.97E 00	<2.94E 00	<7.69E-04
XE-138	CI	4.16E 01	<2.86E 01	<3.86E 00	<4.12E-03
IODINES					
I-131	CI	7.22E-04	7.96E-06		
I-133	CI	1.17E-04	<1.94E-04		
I-135	CI	6.47E-06	<4.79E-01		
PARTICULATES					
BA-LA-140	CI	<2.79E-05	<1.53E-05		
CE-141	CI	2.75E-07			
CO-58	CI	3.56E-07	1.12E-06		
CS-134	CI	<5.90E-06	<3.09E-06		
CS-137	CI	<1.27E-05	<3.84E-06		
NB-95	CI	2.88E-06	8.30E-08		
SR-89	CI	<2.98E-11	<9.47E-07		
SR-90	CI	<2.86E-11	<5.80E-07		
ZR-95	CI	6.72E-09	1.68E-07		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	5.12E-01	1.14E-01		
KR-85	CI	<7.50E 01	<1.19E 03	1.10E 00	5.19E 00
KR-85M	CI	<9.30E 01	6.76E 01	<1.19E-02	2.44E 01
KR-87	CI	<9.80E-01	2.95E 01	<5.44E-03	6.79E-02
KR-88	CI	<1.02E 00	8.65E 01	<4.59E-03	1.56E-01
XE-131M	CI				1.69E 00
XE-133	CI	<7.72E-01	3.13E 03	2.58E 00	4.88E 02
XE-133M	CI	9.77E-01	9.04E 01	2.81E-02	4.40E 00
XE-135	CI	3.21E-01	8.15E 02	2.32E-02	5.47E 00
XE-135M	CI	<6.31E 00	2.56E-02	<7.09E 00	<5.63E 00
XE-138	CI	<4.02E 01	1.42E-02	1.37E 02	2.11E-03
IODINES					
I-131	CI	1.71E-05	2.90E-04		
I-133	CI	<1.83E-04	1.70E-05		
I-135	CI	<3.71E-01	6.55E-05		
PARTICULATES					
BA-LA-140	CI	<3.33E-03	<7.63E-05		
CO-58	CI	5.34E-06	7.93E-07		
CO-60	CI	5.89E-07	9.81E-07		
CS-134	CI	<5.19E-04	8.49E-08		
CS-137	CI	2.07E-07	<1.91E-05		
MN-54	CI	1.41E-07			
NB-95	CI	4.40E-07			
SR-89	CI	1.47E-06	9.85E-07		
SR-90	CI	<2.45E-06	<5.62E-07		
ZR-95	CI	5.28E-08			

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N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=CRYSTAL RIVER

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	3.57E-03	3.57E-03	1.00E 02
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.47E-10	6.60E-09	
3. PERCENT OF APPLICABLE LIMIT	%	3.70E-02	2.34E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	8.53E 01	1.13E 01	4.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.12E-06	2.10E-05	
3. PERCENT OF APPLICABLE LIMIT	%	1.51E-01	6.99E-01	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.77E-02	0.00E 00	1.00E 02
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.55E-10	0.00E 00	
3. PERCENT OF APPLICABLE LIMIT	%	8.55E-03	0.00E 00	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	2.41E-06	7.09E-05	1.00E 02
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.33E 06	9.36E 05	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.07E 10	5.40E 08	1.00E 01

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=CRYSTAL RIVER

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL-RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.58E-02	6.61E-03	1.00E 02
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.71E-10	1.77E-10	
3. PERCENT OF APPLICABLE LIMIT	%	2.42E-02	2.61E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.58E 01	4.16E 01	4.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.72E-07	1.11E-06	
3. PERCENT OF APPLICABLE LIMIT	%	2.91E-02	3.70E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	0.00E 00	4.56E-01	1.00E 02
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	1.22E-08	
3. PERCENT OF APPLICABLE LIMIT	%	0.00E 00	1.22E-01	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	4.43E-05	8.12E-06	1.00E 02
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.45E 06	1.45E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.04E 10	4.61E 10	1.00E 01

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=CRYSTAL RIVER

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CS-134	CI	<9.92E-04		8.78E-05	1.33E-04
CS-137	CI	<9.27E-04		4.77E-04	8.05E-05
I-131	CI	<1.24E-03		1.61E-03	8.71E-06
SR-89	CI	<4.46E-04		2.23E-05	1.32E-05
SR-90	CI	<3.43E-04		2.43E-05	8.92E-06
CO-58	CI	5.37E-04		5.04E-04	2.73E-03
CO-60	CI	<1.40E-03		1.06E-04	2.64E-04
CR-51	CI	<7.86E-03		<5.86E-04	<5.44E-04
FE-59	CI	<1.98E-03		1.02E-06	1.44E-05
MN-54	CI	8.95E-04		9.47E-05	4.21E-05
ZN-65	CI	<2.22E-03		<1.36E-04	<9.12E-05
BA-LA-140	CI	<1.32E-03		<3.11E-04	<2.99E-04
CE-141	CI			<1.03E-04	<8.21E-05
MO-99	CI	<6.35E-03		<4.04E-04	<3.59E-04
TC-99M	CI			<4.87E-05	<3.58E-05
ZR-NB-95	CI	<2.18E-03		4.19E-06	2.14E-04
AS-76	CI			1.69E-06	9.95E-06
I-133	CI			8.50E-05	<6.24E-05
I-135	CI			2.08E-05	<1.19E-04
NA-24	CI			1.12E-06	<4.61E-05
ZN-69M	CI	<3.09E-05			
XE-133	CI			1.75E-02	0.00E 00
XE-135	CI			5.90E-05	0.00E 00

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INSTALLATION=CRYSTAL RIVER

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CS-134	CI			1.71E-04	2.04E-04
CS-137	CI			4.53E-04	4.93E-04
I-131	CI			9.57E-04	2.89E-03
SR-89	CI			6.11E-04	<1.98E-05
SR-90	CI			2.05E-04	<1.90E-05
CO-58	CI			9.03E-03	1.80E-03
CO-60	CI			2.66E-03	7.64E-04
CR-51	CI			1.68E-04	8.96E-04
FE-59	CI			1.98E-05	1.90E-06
MN-54	CI			1.99E-04	1.70E-04
ZN-65	CI			<2.46E-04	<1.76E-04
BA-LA-140	CI			<6.54E-04	8.85E-06
CE-141	CI			<1.75E-04	6.63E-07
MO-99	CI			2.50E-05	<5.69E-04
TC-99M	CI			7.01E-05	<8.04E-05
ZR-NB-95	CI			1.05E-03	1.68E-04
AG-110M	CI			5.38E-05	4.36E-06
AS-76	CI				2.86E-06
I-133	CI			7.22E-05	4.06E-05
I-135	CI			4.01E-05	
NA-24	CI				1.21E-05
NP-239	CI			4.06E-05	5.28E-05
UNIDENTIFIED	CI		1.18E-05		
XE-133	CI				4.55E-01

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INSTALLATION= CRYSTAL RIVER

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	2.21E 02	
	C1	1.24E 02	3.70E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.47E 02	
	C1	2.60E 02	6.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	4.58E 00	
	C1	2.59E 04	1.00E 02
D. OTHER (DESCRIBE)	M3		
	C1		

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

A		
CO-58	X	9.60E 01
CO-60	X	1.00E 00
CS-134	X	1.00E 00
CS-137	X	1.00E 00
CR-51	X	<1.00E 00
FE-59	X	<1.00E 00
ZR-NB-95	X	<1.00E 00
I-131	X	<1.00E 00
B		
CO-58	X	9.60E 01
MN-54	X	1.00E 00
CO-60	X	1.00E 00
CS-134	X	1.00E 00
CS-137	X	1.00E 00
C		
CO-58	X	9.50E 01
CO-60	X	1.00E 00
ZR-NB-95	X	1.00E 00
CS-134	X	1.00E 00
CS-137	X	1.00E 00
CR-51	X	<1.00E 00
MN-54	X	<1.00E 00
FE-59	X	<1.00E 00
I-131	X	<1.00E 00
I-133	X	<1.00E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
49	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
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0
N/A=NOT APPLICABLE
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INSTALLATION= CRYSTAL RIVER

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	2.69E 02	
	CI	8.93E 02	3.76E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	4.57E 01	
	CI	1.67E 01	6.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A			
CO-58	%	9.60E 01	
MN-54	%	1.00E 00	
CO-60	%	1.00E 00	
CS-134	%	1.00E 00	
CS-137	%	1.00E 00	
B			
CO-58	%	9.60E 01	
MN-54	%	1.00E 00	
CO-60	%	1.00E 00	
CS-134	%	1.00E 00	
CS-137	%	1.00E 00	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
26	TRUCK	BAHNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

0

N/A=NOT APPLICABLE
N/D=NOT DETECTED
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INSTALLATION DAVIS-BESSE

LOCATION 21 MI E TOLEDO OH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE TOLEDO EDISON AND CLEVELAND ELECTRIC ILLUMIN

TYPE PWR

LICENSED POWER (MWT) 2772.0

DOCKET NO. 50-346

INITIAL CRITICALITY 08/12/77

COOLING WATER SOURCE LAKE ERIE

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) *

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

THESE GASES, EXCLUDING TRITIUM, ARE COLLECTED IN A MARINELLI TYPE BEAKER, SPECIALLY MODIFIED FOR GAS SAMPLING, STEEL BOMBS, OR GLASS VIALS AND COUNTED ON A GE(LI) DETECTOR FOR PRINCIPAL GAMMA EMITTERS. TRITIUM GAS IS COLLECTED USING A BUBBLE APPARATUS AND COUNTED BY LIQUID SCINTILLATION.

IODINES

IODINES ARE COLLECTED ON A CHARCOAL CARTRIDGE FILTER, AND COUNTED ON A GE(LI) DETECTOR.

PARTICULATES

PARTICULATES ARE COLLECTED ON FILTER PAPER AND COUNTED ON A GE(LI) DETECTOR.

LIQUID EFFLUENTS

LIQUID EFFLUENTS ARE COLLECTED IN BOTTLES AND COUNTED ON A GE(LI) DETECTOR.

* See 10CFR20

N/A=NOT APPLICABLE

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INSTALLATION DAVIS-BESSE

LOCATION 21 MI E TOLEDO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA	GAMMA
QUARTER	QUARTER	QUARTER
1	2	1
N/A	N/A	N/A
BATCH RELEASES		QUARTER
A. LIQUID		1 & 2
1. NUMBER OF BATCH RELEASES-		110
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-		1.39E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		6.05E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-		1.27E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		2.30E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-		N/A
B. GASEOUS		
NUMBER OF BATCH RELEASES-		5
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-		4.24E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		2.82E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-		8.48E 02
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-		1.55E 02
ABNORMAL RELEASES		
A. LIQUID		
NUMBER OF RELEASES		
2. TOTAL ACTIVITY RELEASED (CURIES)		
B. GASEOUS		
1. NUMBER OF RELEASES		
2. TOTAL ACTIVITY RELEASED (CURIES)		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION DAVIS-BESSE

LOCATION 21 MI E TOLEDO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4
N/A	N/A	N/A	N/A

BATCH RELEASES

A. LIQUID

	QUARTER 3 & QUARTER 4
1. NUMBER OF BATCH RELEASES-	107
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-	1.52E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	4.13E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	1.42E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	7.70E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-	N/A

B. GASEOUS

NUMBER OF BATCH RELEASES-	17
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	7.38E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	7.20E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	4.34E 01
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-	6.00E 01

ABNORMAL RELEASES

A. LIQUID

NUMBER OF RELEASES	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)	

B. GASEOUS

1. NUMBER OF RELEASES	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)	

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INSTALLATION=DAVIS-BESSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	<6.14E 02	<4.96E 02	N/A
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<7.89E 01	<6.31E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	<1.78E 00	<1.41E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	<8.40E-06	<6.78E-06	N/A
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<1.08E-06	<8.62E-07	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	<4.20E-04	<3.39E-04	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	<6.58E-05	<5.31E-05	N/A
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<8.46E-06	<6.76E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	<2.93E-03	<2.33E-03	
4. GROSS ALPHA RADIOACTIVITY	CI	2.41E-06	1.12E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.48E 01	9.42E 00	1.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.90E 00	1.20E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	9.76E-05	7.70E-05	

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INSTALLATION=DAVIS-BESSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	<4.41E 02	<5.50E 02	N/A
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<5.55E 01	<6.92E 01	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	<1.30E 00	<1.56E 00	
B. IODINES				
1.TOTAL IODINE-131	CI	1.02E-04	8.69E-05	1.50E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.28E-05	1.09E-05	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.10E-03	4.34E-03	
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	<4.84E-05	<5.88E-05	N/A
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<6.09E-06	<7.40E-06	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	<4.53E-03	<4.52E-03	
4.GROSS ALPHA RADIOACTIVITY	CI	9.88E-07	8.60E-08	
D. TRITIUM				
1.TOTAL RELEASE	CI	1.41E 00	7.94E 00	1.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.77E-01	9.99E-01	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.69E-04	2.08E-03	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI				4.94E-03
H-3	CI	1.48E 01	9.42E 00	2.01E-05	3.12E-02
KR-85	CI	<5.66E 02	<4.56E 02	<4.35E-04	<4.29E-01
KR-85M	CI	<2.97E 00	<2.40E 00	<2.29E-06	<2.26E-03
KR-87	CI	<7.52E 00	<6.07E 00	<5.78E-06	<5.71E-03
KR-88	CI	<4.11E 00	<3.32E 00	<3.15E-06	<3.12E-03
XE-133	CI	<1.01E 01	<8.16E 00	<7.78E-06	9.07E-02
XE-135	CI	<2.61E 00	<2.11E 00	<2.01E-06	2.64E-03
XE-135M	CI	<6.32E 00	<5.10E 00	<4.86E-06	<4.80E-03
XE-138	CI	<1.48E 01	<1.20E 01	<1.14E-05	<1.13E-02
IODINES					
I-131	CI	<8.40E-06	<6.78E-06		
I-133	CI	<1.12E-05	<9.03E-06		
I-135	CI	<3.08E-05	<2.49E-05		
PARTICULATES					
BA-LA-140	CI	<4.86E-05	<3.93E-05		
CS-134	CI	<9.04E-06	<7.29E-06		
CS-137	CI	<6.64E-06	<5.36E-06		
SR-89	CI	<4.74E-07	<3.82E-07		
SR-90	CI	<1.01E-06	<8.16E-07		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI	<4.15E 02	<5.05E 02	<4.33E-01	<4.33E-01
KR-85M	CI	<2.18E 00	<2.65E 00	<2.27E-03	<2.27E-03
KR-87	CI	<5.52E 00	<6.71E 00	<5.76E-03	<5.76E-03
KR-88	CI	<3.02E 00	<3.67E 00	<3.15E-03	<3.15E-03
XE-133	CI	<7.42E 00	<9.02E 00	6.40E-01	1.38E 00
XE-135	CI	<1.92E 00	<2.33E 00	<7.44E-03	7.84E-02
XE-135M	CI	<4.64E 00	<5.64E 00	<4.84E-03	<4.84E-03
XE-138	CI	<1.09E 01	<1.32E 01	<1.13E-02	<1.13E-02
IODINES					
I-131	CI	1.02E-04	8.69E-05		
I-133	CI	<8.21E-06	9.50E-06		
I-135	CI	<2.26E-05	<2.75E-05		
PARTICULATES					
BA-LA-140	CI	<3.57E-05	<4.34E-05		
CS-134	CI	<6.64E-06	<8.06E-06		
CS-137	CI	<4.87E-06	<5.92E-06		
SR-89	CI	<3.43E-07	<4.17E-07		
SR-90	CI	<8.19E-07	<9.95E-07		

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INSTALLATION=DAVIS-BESSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	9.13E-03	5.41E-02	1.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.07E-08	1.19E-07	
3. PERCENT OF APPLICABLE LIMIT	X	9.13E-02	5.41E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	4.34E 01	4.42E 01	1.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	9.84E-05	9.80E-05	
3. PERCENT OF APPLICABLE LIMIT	X	3.28E 00	3.27E 00	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	<2.33E-04	<4.45E-04	N/A
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	<5.28E-10	<9.87E-10	
3. PERCENT OF APPLICABLE LIMIT	X	<1.32E-03	<2.46E-03	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<8.77E-06	<2.25E-05	N/A
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	9.85E 05	1.88E 06	8.60E-02
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	8.21E 09	8.49E 09	7.20E-03

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INSTALLATION=DAVIS-BESSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.75E-02	9.39E-03	1.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.74E-08	1.60E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.75E-01	9.39E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	3.78E 01	8.93E 01	1.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.08E-05	1.52E-04	
3. PERCENT OF APPLICABLE LIMIT	%	2.69E 00	5.08E 00	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	<3.35E-04	<4.54E-04	N/A
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	<7.18E-10	<7.74E-10	
3. PERCENT OF APPLICABLE LIMIT	%	<1.79E-05	<1.93E-03	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.33E-05	<4.95E-05	N/A
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.42E 06	1.92E 06	9.03E-02
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.26E 10	1.37E 10	7.46E-03

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DAVIS-BESSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
		N/A	N/A		
CS-134	CI			<5.81E-05	<1.11E-04
CS-137	CI			<9.21E-05	<1.76E-04
I-131	CI			1.18E-04	<1.29E-04
SR-89	CI			<1.09E-04	<2.09E-04
SR-90	CI			<2.60E-04	<4.96E-04
CO-58	CI			5.98E-03	4.06E-02
CO-60	CI			1.05E-04	9.69E-04
CR-51	CI			1.90E-04	5.40E-03
FE-59	CI			9.70E-05	5.84E-04
MN-54	CI			7.29E-04	7.64E-04
ZN-65	CI			<1.12E-04	<2.14E-04
BA-LA-140	CI			<3.43E-04	<6.56E-04
CE-141	CI			<4.22E-04	<8.05E-04
MO-99	CI			<3.90E-04	<7.44E-04
TC-99M	CI			2.20E-05	<9.76E-04
ZR-NB-95	CI			<1.03E-04	1.28E-03
I-133	CI			5.10E-05	
NA-24	CI			1.16E-04	
XE-133	CI			<1.90E-04	<3.63E-04
XE-135	CI			<4.29E-05	<8.20E-05

N/A=NOT APPLICABLE
 N/D=NOT DETECTED
 N/R=NOT REPORTED

INSTALLATION=DAVIS-BESSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
		N/A	N/A		
CS-134	CI			<3.98E-05	<5.38E-05
CS-137	CI			<5.13E-05	<6.93E-05
I-131	CI			1.89E-05	4.09E-05
SR-89	CI			<2.60E-04	<8.60E-05
SR-90	CI			<4.48E-04	<1.30E-04
CO-58	CI			1.33E-02	6.28E-03
CO-60	CI			6.54E-04	5.22E-04
CR-51	CI			4.76E-04	3.97E-05
FE-59	CI			1.02E-04	1.47E-04
MN-54	CI			6.77E-04	5.74E-04
ZN-65	CI			1.04E-04	1.40E-04
BA-LA-140	CI			<2.30E-04	<3.11E-04
CE-141	CI			5.11E-06	9.71E-06
MO-99	CI			<3.35E-04	<4.53E-04
TC-99M	CI			<3.64E-05	2.76E-06
ZR-NB-95	CI			7.64E-04	1.63E-05
NA-24	CI			2.63E-05	2.45E-05
XE-133	CI			<2.74E-04	<3.70E-04
XE-135	CI			<6.19E-05	<8.37E-05

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION= DAVIS-BESSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.25E 02	
	CI	6.40E-01	2.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.13E 01	
	CI	1.82E-02	2.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
CO-58	X	9.19E 01
MN-54	X	5.00E 00
CO-60	X	2.04E 00
B		
CO-58	X	1.00E 02

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
1	TRUCK	SHEFFIELD ILL.
7	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
---------------------	------------------------	-------------

0

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= DAVIS-BESSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.36E 02	
	C1	7.16E-01	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	6.75E 01	
	C1	1.93E 00	2.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	C1		
D. OTHER (DESCRIBE)	M3		
	C1		

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

A		
CO-58	x	7.90E 01
MN-54	x	9.30E 00
CO-60	x	3.50E 00
B		
CO-58	x	1.00E 02

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
12	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION DRESDEN 1 *

LOCATION 14 MI SW JOLIET IL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

TYPE BWR

DOCKET NO. 50-10

COOLING WATER SOURCE KANKAKEE RIVER

LICENSEE COMMON WEALTH EDISON

LICENSED POWER (MWT) 700.0

INITIAL CRITICALITY 10/15/59

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY N/R

*Note: SOLIDS WASTES ARE REPORTED TOGETHER WITH DRESDEN 2 & 3

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION DRESDEN 1

LOCATION 14 MI SW JOLIET

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

BETA		GAMMA	
QUARTER	QUARTER	QUARTER	QUARTER
1	2	1	2

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION DRESDEN 1

LOCATION 14 MI SW JOLIET

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.60E 05	2.30E 05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.10E 04	2.90E 04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.80E 00	5.20E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	1.60E-01	3.30E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.70E-01	4.20E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.50E-01	1.70E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.90E-01	4.00E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.00E-02	5.13E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.07E 00	2.14E 00	
4. GROSS ALPHA RADIOACTIVITY	CI			
D. TRITIUM				
1. TOTAL RELEASE	CI	1.88E 01	1.94E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.40E 00	2.50E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=DRESDEN 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	3.30E 05	1.30E 05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.10E 04	1.60E 04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	7.40E 00	2.92E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	4.80E-01	2.50E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.20E-02	3.10E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.50E 00	1.29E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.88E-01	8.42E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.40E-02	1.10E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	9.80E-01	4.41E-01	
4. GROSS ALPHA RADIOACTIVITY	CI			
D. TRITIUM				
1. TOTAL RELEASE	CI	4.30E 01	7.40E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.43E 00	9.25E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=DRESDEN 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85M	CI	3.50E 03	4.60E 03		
KR-87	CI	1.70E 04	1.70E 04		
KR-88	CI	1.20E 04	1.50E 04		
XE-133	CI	3.10E 03	7.10E 03		
XE-135	CI	2.20E 04	3.00E 04		
XE-135M	CI	2.80E 04	2.40E 04		
XE-138	CI	7.80E 04	1.30E 05		
IODINES					
I-131	CI	1.60E-01	3.30E-01		
I-133	CI	1.00E 00	2.20E 00		
I-135	CI	1.50E 00	3.20E 00		
PARTICULATES					
AG-110M	CI		8.00E-05		
BA-140	CI	1.10E-01	1.20E-01		
CE-141	CI	2.14E-03	1.25E-03		
CE-144	CI	3.60E-04			
CO-58	CI	1.55E-02	4.96E-03		
CO-60	CI	1.03E-02	8.20E-03		
CS-134	CI	3.67E-03	5.12E-03		
CS-136	CI	1.14E-03	1.38E-03		
CS-137	CI	1.03E-02	3.02E-02		
I-131	CI	1.65E-02	1.76E-02		
MN-54	CI	3.60E-04	1.70E-04		
NB-95	CI	2.90E-04	6.00E-05		
RU-103	CI	1.60E-04			
SR-89	CI	2.07E-01	2.07E-01		
SR-90	CI	4.27E-03	5.87E-03		
ZR-95	CI	2.80E-04	1.00E-04		

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=DRESDEN 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85M	CI	5.20E 03	2.00E 03		
KR-87	CI	2.20E 04	8.50E 03		
KR-88	CI	1.80E 04	6.60E 03		
XE-133	CI	5.40E 03	1.70E 03		
XE-135	CI	3.20E 04	9.60E 03		
XE-135M	CI	4.40E 04	1.80E 04		
XE-138	CI	2.00E 05	8.40E 04		
IODINES					
I-131	CI	4.80E-01	2.50E-01		
I-133	CI	4.70E 00	2.10E 00		
I-135	CI	7.40E 00	3.60E 00		
PARTICULATES					
BA-140	CI	6.22E-02	1.10E-02		
CE-141	CI	2.30E-04	1.90E-04		
CE-144	CI	5.00E-05			
CO-58	CI	4.40E-04	1.30E-03		
CO-60	CI	2.26E-03	4.18E-03		
CS-134	CI	4.50E-04	3.50E-04		
CS-137	CI	3.36E-03	2.51E-03		
I-131	CI	1.37E-03	1.43E-03		
MN-54	CI	1.70E-04	2.50E-04		
NB-95	CI	1.30E-04	2.90E-04		
RU-103	CI	1.20E-04	4.00E-05		
SR-89	CI	1.16E-01	6.28E-02		
SR-90	CI	8.00E-04	1.40E-04		
ZR-95	CI	6.00E-05	1.50E-04		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.10E-01	1.30E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.80E-09	1.70E-09	
3. PERCENT OF APPLICABLE LIMIT	%	1.80E 00	1.70E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	5.70E-03	1.50E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.90E-11	1.90E-10	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.10E-04	1.30E-02	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.60E 05	5.80E 05	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.40E 10	7.70E 10	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	3.80E-02	4.80E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.70E-10	6.70E-10	
3. PERCENT OF APPLICABLE LIMIT	%	4.70E-01	6.70E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.30E 01	3.00E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.60E-07	4.20E-10	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	4.60E-05	6.50E-05	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.60E 05	2.60E 05	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	8.00E 10	7.20E 10	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CS-134	CI	1.58E-03	1.47E-03		
CS-137	CI	5.49E-03	3.46E-03		
SR-89	CI	1.79E-03	4.50E-04		
SR-90	CI	2.90E-04	1.20E-04		
CO-58	CI	2.42E-03	3.00E-03		
CO-60	CI	8.55E-02	9.30E-02		
FE-59	CI	3.00E-04	3.40E-03		
MN-54	CI	9.98E-03	1.32E-02		
CE-141	CI	2.90E-04	8.90E-04		
CE-144	CI	1.92E-03	2.36E-03		
NB-95	CI	4.00E-04	1.81E-03		
ZR-95	CI	4.10E-04	1.69E-03		
AG-110M	CI		1.10E-04		
BA-140	CI	4.60E-04			
CR-51	CI	1.25E-03	1.72E-03		
LA-140	CI	3.60E-04			
RU-103	CI	1.00E-04	2.08E-03		
SB-124	CI		3.00E-05		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CS-134	CI	1.05E-03	1.04E-03		
CS-137	CI	3.14E-03	3.03E-03		
I-131	CI	3.30E-04	6.30E-04		
SR-89	CI	2.90E-04	9.60E-04		
SR-90	CI	9.00E-05	1.50E-04		
CO-58	CI	2.00E-03	2.81E-03		
CO-60	CI	2.18E-02	3.00E-02		
CR-51	CI	4.54E-03	2.96E-03		
FE-59	CI		6.40E-04		
MN-54	CI	1.23E-03	2.54E-03		
NB-95	CI	5.20E-04	4.30E-04		
ZR-95	CI	4.20E-04	1.40E-04		
BA-140	CI	2.10E-04	4.00E-04		
CE-141	CI	1.80E-04	4.90E-04		
CE-144	CI	9.20E-04	7.50E-04		
LA-140	CI	2.40E-04	4.70E-04		
RU-103	CI	4.30E-04	2.70E-04		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION DRESDEN 2-3*

LOCATION 14 MI SW JOLIET IL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 2
TYPE BWR
DOCKET NO. 50-237
COOLING WATER SOURCE KANKAKEE RIVER
UNIT NUMBER 3
TYPE BWR
DOCKET NO. 50-249
COOLING WATER SOURCE KANKAKEE RIVER

LICENSEE COMMONWEALTH EDISON
LICENSED POWER (MWT) 2527.0
INITIAL CRITICALITY 06/09/72
LICENSEE COMMONWEALTH EDISON
LICENSED POWER (MWT) 2527.0
INITIAL CRITICALITY 11/16/71

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

* THE SOLID WASTE REPORT INCLUDES UNITS 1 AS WELL AS UNITS 2 & 3
N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION DRESDEN 2-3

LOCATION 14 MI SW JOLIET

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
1	2	1	2

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION DRESDEN 2-3

LOCATION 14 MI SW JOLIET

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	QUARTER 3	BETA QUARTER 4	QUARTER 3	GAMMA QUARTER 4
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BATCH RELEASES

	QUARTER 3	QUARTER 4
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A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 2-3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	9.69E 03	1.40E 04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
B. IODINES				
1. TOTAL IODINE-131	CI	1.47E-01	9.18E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	6.48E-01	4.17E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI			
D. TRITIUM				
1. TOTAL RELEASE	CI	5.80E 01	3.90E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	7.50E 00	5.00E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 2-3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.12E 04	5.71E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
B. IODINES				
1. TOTAL IODINE-131	CI	2.33E-01	2.37E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	7.23E-01	6.30E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI			
D. TRITIUM				
1. TOTAL RELEASE	CI	1.10E 02	1.18E 02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.40E 01	1.47E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 2-3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
XE-133	CI	8.40E 01			
XE-135	CI	1.10E 02	1.10E 02		
IODINES					
I-131	CI	1.65E-02	9.70E-03		
I-133	CI	5.40E-02	6.00E-02		
I-135	CI	5.90E-02	4.20E-02		
PARTICULATES					
AG-110M	CI	5.00E-05	7.00E-05		
BA-140	CI	1.20E-02	5.89E-03		
CE-141	CI	9.60E-04	1.50E-04		
CE-144	CI	1.43E-03	5.10E-04		
CO-58	CI	1.50E-03	1.54E-03		
CO-60	CI	2.80E-02	4.60E-02		
CR-51	CI	1.02E-02	1.20E-02		
CS-134	CI	1.01E-03	1.30E-03		
CS-137	CI	1.47E-03	3.73E-03		
FE-59	CI	6.40E-04	4.90E-04		
I-131	CI	1.01E-02	1.43E-02		
LA-140	CI	1.27E-02	5.44E-03		
MN-54	CI	5.05E-03	5.76E-03		
NB-95	CI	9.10E-04	7.20E-04		
RU-103	CI	1.40E-03	7.40E-04		
SR-89	CI	7.06E-03	1.85E-03		
SR-90	CI	9.00E-05	1.90E-04		
ZR-95	CI	9.00E-04	1.60E-04		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 2-3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
XE-133	CI	1.30E 01	5.10E 01		
XE-135	CI	1.90E 02	6.10E 01		
IODINES					
I-131	CI	4.30E-02	3.50E-02		
I-133	CI	1.19E-01	1.44E-01		
I-135	CI	2.60E-01	3.40E-01		
PARTICULATES					
AG-110M	CI	3.99E-03	8.00E-05		
BA-140	CI	1.20E-02	2.09E-02		
CE-141	CI	5.60E-04	1.63E-03		
CE-144	CI		2.30E-04		
CO-58	CI	2.42E-03	4.05E-03		
CO-60	CI	2.68E-02	2.39E-02		
CR-51	CI	2.99E-02	3.00E-02		
CS-134	CI	3.94E-03	1.78E-03		
CS-136	CI	5.80E-04	1.38E-03		
CS-137	CI	7.38E-03	3.33E-03		
FE-59	CI	6.40E-04	1.64E-03		
I-131	CI	3.12E-02	3.44E-02		
LA-140	CI	1.26E-02	2.32E-02		
MN-54	CI	4.13E-03	3.77E-03		
NB-95	CI	1.90E-04	9.10E-04		
RU-103	CI	2.20E-04	1.24E-03		
SB-124	CI		1.60E-04		
SR-89	CI	3.48E-03	5.77E-03		
SR-90	CI	4.20E-04	4.80E-04		
ZN-65	CI	4.60E-04	5.60E-04		
ZR-95	CI	2.50E-04	7.90E-04		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 2-3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85M	CI	2.10E 02	3.00E 02		
KR-87	CI	4.30E 01	7.20E 02		
KR-88	CI	4.30E 01	4.00E 02		
XE-133	CI	9.40E 01	2.30E 02		
XE-135	CI	3.50E 03	2.40E 03		
XE-135M	CI	9.80E 02	2.00E 02		
XE-138	CI	4.60E 03	9.60E 03		
IODINES					
I-131	CI	1.30E-01	8.20E-02		
I-133	CI	9.60E-01	7.80E-01		
I-135	CI	4.60E 01	1.30E 00		
PARTICULATES					
BA-140	CI	2.56E-01	2.01E-01		
CE-141	CI	2.12E-03			
CE-144	CI	1.02E-03			
CO-58	CI		2.40E-04		
CO-60	CI	1.12E-02	1.99E-02		
CR-51	CI	1.67E-03			
CS-134	CI		5.50E-04		
CS-137	CI	2.09E-03	4.46E-03		
I-131	CI	8.18E-02	1.05E-02		
MN-54	CI	9.10E-04	1.97E-03		
NB-95	CI		7.80E-04		
RU-103	CI	3.00E-04	2.80E-04		
SR-89	CI	1.95E-01	7.48E-02		
SR-90	CI	6.40E-04	4.40E-04		
ZR-95	CI		1.05E-03		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 2-3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85M	CI	2.30E 02	2.00E 02		
KR-87	CI	3.40E 02	2.20E 02		
KR-88	CI	6.20E 02	3.10E 02		
XE-133	CI	2.60E 02	1.10E 03		
XE-135	CI	1.90E 03	1.50E 03		
XE-135M	CI	7.80E 02	2.70E 02		
XE-138	CI	6.90E 03	2.00E 03		
IODINES					
I-131	CI	1.90E-01	2.00E-01		
I-133	CI	1.20E 00	1.20E 00		
I-135	CI	2.20E 00	1.70E 00		
PARTICULATES					
BA-140	CI	2.83E-01	1.90E-01		
CE-141	CI	3.48E-03	4.53E-03		
CO-58	CI		7.80E-04		
CO-60	CI	1.80E-02	1.00E-02		
CS-134	CI	1.90E-04	4.60E-04		
CS-137	CI	3.78E-03	3.27E-03		
I-131	CI	6.49E-02	7.16E-02		
MN-54	CI	2.80E-03	1.10E-03		
SR-89	CI	2.05E-01	1.88E-01		
SR-90	CI	1.38E-03	6.30E-04		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 2-3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	2.50E-01	1.40E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.40E-09	4.20E-09	
3. PERCENT OF APPLICABLE LIMIT	%	2.40E 00	4.20E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	8.00E 00	1.10E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	7.80E-08	3.30E-07	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	2.20E-04	2.20E-03	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.40E 06	2.00E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.00E 11	3.30E 10	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 2-3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	6.20E-03	3.20E-03	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.20E-11	8.40E-12	
3. PERCENT OF APPLICABLE LIMIT	%	1.20E-02	8.40E-03	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.40E-01	4.10E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.70E-10	1.10E-10	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	2.10E-06	1.00E-06	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.30E 05	3.00E 05	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.00E 11	3.80E 11	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 2-3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CS-134	CI	6.04E-03	1.11E-03		
CS-137	CI		1.37E-02		
I-131	CI	4.34E-03			
SR-89	CI	9.77E-02	2.30E-04		
SR-90	CI	2.14E-03	1.48E-03		
CO-58	CI		3.69E-03		
CO-60	CI	2.42E-02	8.67E-02		
CR-51	CI	9.08E-02			
FE-59	CI	3.24E-03			
MN-54	CI	1.93E-03	1.39E-02		
CE-141	CI	1.14E-02			
NB-95	CI		4.58E-03		
ZR-95	CI		5.42E-03		
CE-144	CI		3.08E-03		
RU-103	CI	5.57E-03	4.00E-03		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DRESDEN 2-3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CS-134	CI	1.30E-03	4.40E-04		
CS-137	CI	2.70E-03	1.00E-03		
SR-89	CI	8.40E-04			
SR-90	CI	5.00E-05			
CO-58	CI		1.30E-04		
CO-60	CI	9.90E-04	1.40E-03		
MN-54	CI	3.00E-04	2.40E-04		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= DRESDEN 2-3 + DRESDEN 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	4.60E 02	
	CI	7.50E 02	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	4.30E 02	
	CI	1.30E 01	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
68	MOTOR FREIGHT	SHEFFIELD ILL.
5	MOTOR FREIGHT	BARNWELL S.C.
5	TRUCK	SHEFFIELD ILL.
50	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= DRESDEN 2-3 + DRESDEN 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	5.84E 02	
	CI	1.10E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	3.00E 02	
	CI	1.47E 01	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
25	MOTOR TRANSPORT	BARNWELL S.C.
134	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION DUANE ARNOLD

LOCATION 8 MI NW CEDAR RAPIDS IA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE IOWA ELECTRIC LIGHT & POWER

TYPE BWR

LICENSED POWER (MWT) 1658.1

DOCKET NO. 50-331

INITIAL CRITICALITY 03/23/74

COOLING WATER SOURCE CEDAR RAPIDS RIVER & CIRC WATER SYSTEM

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY N/R

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION DUANE ARNOLD

LOCATION 8 MI NW CEDAR RAPIDS IA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

		N/R			
AVERAGE ENERGY (MEV/DISINTEGRATION)		BETA		GAMMA	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
BATCH RELEASES				QUARTER	QUARTER
A. LIQUID				1	2
1. NUMBER OF BATCH RELEASES-					
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-					
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-					
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-					
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-					
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-					
B. GASEOUS					
NUMBER OF BATCH RELEASES-					
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-					
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-					
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-					
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-					
ABNORMAL RELEASES					
A. LIQUID					
NUMBER OF RELEASES					
2. TOTAL ACTIVITY RELEASED (CURIES)					
B. GASEOUS					
1. NUMBER OF RELEASES					
2. TOTAL ACTIVITY RELEASED (CURIES)					

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION DUANE ARNOLD

LOCATION 8 MI NW CEDAR RAPIDS IA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER 3	BETA QUARTER 4	QUARTER 3	GAMMA QUARTER 4
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BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=DUANE ARNOLD

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	2.36E 02	1.28E 03	
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
B. IODINES				
1.TOTAL IODINE-131	CI	6.69E-04	9.46E-03	
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.86E-01	5.68E 00	
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.79E-02	5.19E-03	
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.59E 01	4.54E 00	
4.GROSS ALPHA RADIOACTIVITY	CI	<7.40E-07	<7.28E-07	
D. TRITIUM				
1.TOTAL RELEASE	CI	2.53E 00	3.04E 00	
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.58E-01	2.19E-01	

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INSTALLATION=DUANE ARNOLD

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.76E 01	1.71E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
B. IODINES				
1. TOTAL IODINE-131	CI	<1.85E-03	<6.71E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.62E 00	5.66E-02	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	6.25E-04	<7.48E-04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.41E-01	5.58E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	<1.08E-06	<2.35E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.04E-01	4.35E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.02E-02	3.38E-03	

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N/R=NOT REPORTED

INSTALLATION=DUANE ARNOLD

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	1.04E 01	1.02E 02		
KR-85	CI	7.17E-02	1.97E 01		
KR-85M	CI	1.73E 01	1.49E 02		
KR-87	CI	1.50E 01	9.16E 01		
KR-88	CI	3.34E 01	1.66E 02		
N-13	CI	4.72E 01	1.21E 01		
XE-133	CI	5.65E 01	3.09E 02		
XE-135	CI	1.27E 01	1.40E 02		
XE-135M	CI	2.59E 00	5.08E 01		
XE-138	CI	3.80E 01	2.35E 02		
IODINES					
I-131	CI	6.69E-04	9.46E-03		
I-133	CI	8.20E-03	1.12E-02		
I-135	CI	9.13E 00	1.28E 01		
PARTICULATES					
BA-140	CI	1.10E-05			
CO-58	CI	2.04E-04	2.03E-04		
CO-60	CI	8.24E-04	1.01E-03		
CR-51	CI	1.63E-03	3.05E-03		
CS-134	CI	3.14E-05	2.60E-05		
CS-137	CI	2.81E-04	3.30E-05		
FE-59	CI	8.13E-05	1.19E-04		
LA-140	CI	7.70E-06			
MN-54	CI	4.45E-04	5.07E-04		
NB-95	CI		9.70E-05		
SR 09	CI	1.38E-05	7.66E-06		
SR-90	CI	3.71E-07	5.42E-07		
UNIDENTIFIED	CI	1.44E-02	8.00E-05		
ZR-95	CI		5.20E-05		

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N/R=NOT REPORTED

INSTALLATION=DUANE ARNOLD

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI	<1.74E 01	<1.71E 01		
XE-133	CI	<1.02E 01			
IODINES					
I-131	CI	<1.85E-03	<6.71E-05		
I-133	CI	<1.54E-03	<3.65E-03		
I-135	CI	<7.99E 00	<1.29E 01		
PARTICULATES					
CO-58	CI	1.30E-05	6.53E-07		
CO-60	CI	3.84E-04	5.43E-04		
CR-51	CI		1.22E-06		
CS-134	CI	6.72E-06	3.27E-05		
CS-137	CI	5.19E-06	1.58E-05		
FE-59	CI	1.72E-06			
MN-54	CI	1.33E-04	1.54E-04		
SR-89	CI	<1.74E-07	<3.84E-07		
SR-90	CI	<1.02E-07	<2.19E-07		
UNIDENTIFIED	CI	7.99E-05			

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INSTALLATION=DUANE ARNOLD

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER & 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI		2.62E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML		1.98E-06	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI		2.56E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML		1.94E-06	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI		1.22E-04	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML		9.24E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI		<1.37E-07	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS		3.90E 05	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS		1.32E 08	

N/A=NOT APPLICABLE
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INSTALLATION=DUANE ARNOLD

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	8.51E-03	2.01E-03	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.81E-08	2.01E-08	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	6.49E 01	5.40E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.19E-04	5.41E-04	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	0.00E 00	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<3.54E-05	2.67E-05	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.97E 05	7.67E 05	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.25E 08	9.92E 07	

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INSTALLATION=DUANE ARNOLD

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
		NONE			
AG-110M	CI		1.48E-03		
AS-76	CI		1.98E-04		
CO-58	CI		4.98E-03		
CO-60	CI		5.76E-03		
CR-51	CI		8.15E-03		
CS-134	CI		7.70E-04		
CS-137	CI		2.45E-04		
FE-59	CI		1.96E-03		
MN-54	CI		4.60E-03		
NB-95	CI		2.43E-03		
SB-124	CI		6.47E-05		
UNIDENTIFIED	CI		5.64E-03		
ZN-65	CI		3.81E-04		
CU-64	CI		5.92E-04		
NA-24	CI		1.61E-05		
SR-89	CI		<4.64E-06		
SR-90	CI		<3.00E-06		
TC-99M	CI		1.92E-05		
W-187	CI		7.63E-05		

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INSTALLATION=DUANE ARNOLD

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI	1.41E-04	1.09E-05		
CO-58	CI	1.82E-04	5.74E-05		
CO-60	CI	1.05E-03	1.26E-03		
CR-51	CI	2.17E-04			
CS-134	CI	7.62E-05	6.71E-05		
CS-137	CI	3.81E-05	1.33E-04		
FE-59	CI	1.18E-04	3.89E-05		
I-131	CI	7.56E-04	0.00E 00		
MN-54	CI	4.16E-04	3.37E-04		
NA-24	CI	1.34E-06	1.28E-06		
NB-95	CI	1.96E-05	0.00E 00		
SR-89	CI	<6.67E-04	<5.53E-04		
SR-90	CI	<6.67E-04	<5.53E-04		
UNIDENTIFIED	CI	5.19E-03	8.63E-05		
ZN-65	CI	0.00E 00	1.36E-05		

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INSTALLATION= DUANE ARNOLD

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	5.04E 02	
	CI	1.46E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3		
	CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
50	TRUCK	BARNWELL S.C.
1	TRUCK	BEATTY NEVADA
1	TRUCK	SHEFFIELD ILL.

N/A=NOT APPLICABLE
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INSTALLATION= DUANE ARNOLD

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	5.91E 02	
	CI	3.97E 02	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3		
	CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
38	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
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INSTALLATION JOSEPH M. FARLEY

LOCATION DOTHAN AL

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1
TYPE PWR
DOCKET NO. 50-348
COOLING WATER SOURCE

LICENSEE ALABAMA POWER
LICENSED POWER (MWT) 2652.0
INITIAL CRITICALITY 08/09/77

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) *

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

PERIODIC GRAB SAMPLES FROM PLANT EFFLUENT STREAMS ARE ANALYZED BY A COMPUTERIZED PULSE HEIGHT ANALYZER SYSTEM UTILIZING HIGH RESOLUTION GERMANIUM DETECTORS. ISOTOPIC VALUES THUS OBTAINED ARE USED FOR DOSE RELEASE RATE CALCULATIONS. ONLY THOSE NUCLIDES THAT ARE DETECTED ARE USED IN THIS COMPUTATION. DURING THE PERIOD BETWEEN GRAB SAMPLES, THE AMOUNT OF RADIOACTIVITY RELEASED IS BASED ON THE EFFLUENT MONITOR READINGS. MONITORS ARE ASSIGNED A CALIBRATION FACTOR BASED UPON THE LAST ISOTOPIC ANALYSIS. THESE CALIBRATION FACTORS ALONG WITH THE HOURLY EFFLUENT MONITOR READINGS ARE INPUT TO THE LABORATORY COMPUTER WHERE THE RELEASE RATES FOR INDIVIDUAL NUCLIDES ARE CALCULATED AND STORED. TO ENSURE THAT ISOTOPIC DISTRIBUTIONS DO NOT CHANGE SIGNIFICANTLY DURING MAJOR OPERATIONAL OCCURRENCES, THE FREQUENCY OF GRAB SAMPLING IS INCREASED.

IODINES

CONTINUOUS SAMPLING IS PERFORMED ON THE CONTINUOUS RELEASE POINTS (I.E. THE PLANT VENT STACK, CONTAINMENT PURGE AND THE TURBINE BUILDING VENT). IODINES ARE COLLECTED BY ADSORPTION ON A CHARCOAL FILTER. PERIODICALLY THESE FILTERS ARE REMOVED AND ANALYZED ON THE PULSE HEIGHT ANALYZER TO IDENTIFY AND QUANTIFY RADIOACTIVE MATERIALS COLLECTED ON THE FILTERS. THE PROCESSING OF BATCH TYPE RELEASES (FROM CONTAINMENT PURGE AND WASTE GAS DECAY TANKS) IS ANALOGOUS TO THAT FOR CONTINUOUS RELEASES, EXCEPT THAT THE RELEASE IS NOT COMMENCED UNTIL GRAB SAMPLES HAVE BEEN OBTAINED AND ANALYZED.

PARTICULATES

CONTINUOUS SAMPLING IS PERFORMED ON THE CONTINUOUS RELEASE POINTS (I.E. THE PLANT VENT STACK, CONTAINMENT PURGE AND THE TURBINE BUILDING VENT). PARTICULATE MATERIAL IS COLLECTED BY FILTRATION. PARTICULATE FILTERS ARE THEN ANALYZED FOR GROSS ALPHA, AND STRONTIUM 89 AND 90, AS REQUIRED. GROSS ALPHA DETERMINATIONS ARE MADE USING A 2 PI GAS FLOW PROPORTIONAL COUNTER. SR-89 AND 90 VALUES ARE OBTAINED BY CHEMICAL SEPARATION AND SUBSEQUENT ANALYSIS USING 2 PI GAS FLOW PROPORTIONAL COUNTERS. THE PROCESSING OF BATCH TYPE RELEASES (FROM CONTAINMENT PURGE AND WASTE GAS DECAY TANKS) IS ANALOGOUS TO THAT FOR CONTINUOUS RELEASES, EXCEPT THAT THE RELEASE IS NOT COMMENCED UNTIL GRAB SAMPLES HAVE BEEN OBTAINED AND ANALYZED.

LIQUID EFFLUENTS

BATCH RELEASES-REPRESENTATIVE PRE-RELEASE GRAB SAMPLES ARE OBTAINED AND ANALYZED. ISOTOPIC ANALYSES ARE PERFORMED USING THE COMPUTERIZED PULSE HEIGHT ANALYSIS SYSTEM PREVIOUSLY DESCRIBED. ALIQUOTS OF EACH PRE-RELEASE SAMPLE PROPORTIONAL TO THE WASTE VOLUME RELEASED, ARE COMPOSITED. STRONTIUM DETERMINATIONS ARE MADE BY PERFORMING A CHEMICAL SEPARATION AND COUNTING THE STRONTIUM THUS SEPARATED USING A 2 PI GAS FLOW PROPORTIONAL COUNTER. GROSS BETA-GAMMA AND GROSS ALPHA DETERMINATIONS ARE MADE USING 2 PI GAS FLOW PROPORTIONAL COUNTERS. TRITIUM CONCENTRATIONS ARE DETERMINED BY USING LIQUID SCINTILLATION TECHNIQUES. DISSOLVED GASES ARE DETERMINED EMPLOYING GRAB SAMPLING TECHNIQUES AND THEN COUNTING ON THE PULSE HEIGHT ANALYZER SYSTEM.

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

*=1.0CFR20

INSTALLATION JOSEPH M. FARLEY

LOCATION DOTHAN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

CONTINUOUS RELEASES (FROM THE STEAM GENERATOR BLOWDOWN) ARE ANALOGOUS TO THAT OF THE
BATCH RELEASES EXCEPT THAT THEY ARE TO BE ANALYZED ON A WEEKLY COMPOSITE BASIS.

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INSTALLATION JOSEPH M. FARLEY

LOCATION DOTHAN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
	QUARTER	QUARTER	QUARTER
	1	2	1
	N/A	N/A	N/A
BATCH RELEASES			
A. LIQUID			
1. NUMBER OF BATCH RELEASES-			222
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-			3.25E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			1.57E 04
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			1.46E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			1.20E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-			2.89E 07
B. GASEOUS			
NUMBER OF BATCH RELEASES-			2
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-			1.02E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			6.00E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			5.40E 02
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-			4.80E 02
ABNORMAL RELEASES			
A. LIQUID			
NUMBER OF RELEASES			NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			
B. GASEOUS			
1. NUMBER OF RELEASES			NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			

N/A=NOT APPLICABLE
N/D=NOT DETECTED
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INSTALLATION JOSEPH M. FARLEY

LOCATION DOTHAN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

BETA		GAMMA	
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4
N/A	N/A	N/A	N/A

BATCH RELEASES

A. LIQUID

	QUARTER 3	QUARTER 4
1. NUMBER OF BATCH RELEASES-	562	
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-	3.46E 04	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	8.85E 02	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	6.20E 01	
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.00E 01	
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-	8.94E 06	

B. GASEOUS

	QUARTER 3	QUARTER 4
1. NUMBER OF BATCH RELEASES-	10	
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	7.68E 03	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.86E 03	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	7.80E 02	
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-	2.10E 01	

ABNORMAL RELEASES

A. LIQUID

	QUARTER 3	QUARTER 4
1. NUMBER OF RELEASES	NONE	
2. TOTAL ACTIVITY RELEASED (CURIES)		

B. GASEOUS

	QUARTER 3	QUARTER 4
1. NUMBER OF RELEASES	NONE	
2. TOTAL ACTIVITY RELEASED (CURIES)		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
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INSTALLATION=JOSEPH M. FARLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	6.80E 02	9.60E 02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.70E 01	1.20E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.60E-03	4.90E-03	
B. IODINES				
1. TOTAL IODINE-131	CI	6.20E-06	1.90E-06	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.00E-07	2.40E-07	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.40E-09	7.20E-10	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	8.20E-06	9.20E-08	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.10E-06	1.20E-08	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.30E-09	4.30E-14	
4. GROSS ALPHA RADIOACTIVITY	CI			
D. TRITIUM				
1. TOTAL RELEASE	CI	8.30E 00	1.00E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.10E 00	1.30E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.00E-07	1.20E-07	

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INSTALLATION=JOSEPH M. FARLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	7.90E 02	1.10E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	9.90E 01	1.40E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.30E-03	4.80E-03	
B. IODINES				
1. TOTAL IODINE-131	CI	2.60E-05	2.40E-07	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.30E-06	3.00E-08	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.00E-08	9.10E-11	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	4.10E-02	3.20E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.20E-03	4.10E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.90E-03	1.60E-06	
4. GROSS ALPHA RADIOACTIVITY	CI			
D. TRITIUM				
1. TOTAL RELEASE	CI	5.30E 01	7.30E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.60E 00	9.20E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.20E-07	1.20E-07	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
				NONE	
FISSION GASES					
AR-41	CI	3.90E 01	1.90E 00		0.00E 00
KR-85	CI	0.00E 00	0.00E 00		3.60E-02
KR-85M	CI	0.00E 00	0.00E 00		0.00E 00
KR-87	CI	0.00E 00	4.70E-02		0.00E 00
KR-88	CI	4.50E-01	0.00E 00		0.00E 00
KR-89	CI	1.20E-03	0.00E 00		0.00E 00
KR-90	CI	0.00E 00	0.00E 00		0.00E 00
XE-131M	CI	0.00E 00	1.10E-04		3.40E-05
XE-133	CI	4.70E 02	2.00E 01		3.60E-02
XE-133M	CI	2.60E-01	0.00E 00		3.50E-02
XE-135	CI	2.20E 01	1.30E 00		0.00E 00
XE-135M	CI	0.00E 00	0.00E 00		0.00E 00
XE-137	CI	0.00E 00	0.00E 00		0.00E 00
XE-138	CI	0.00E 00	0.00E 00		0.00E 00
IODINES					
I-131	CI	3.70E-07	6.50E-08		0.00E 00
I-133	CI	0.00E 00	0.00E 00		0.00E 00
PARTICULATES					
BA-140	CI	1.60E-07	0.00E 00		0.00E 00
CE 141	CI	6.50E-09	0.00E 00		0.00E 00
CO-58	CI	0.00E 00	0.00E 00		0.00E 00
CO-60	CI	0.00E 00	0.00E 00		0.00E 00
CR-51	CI	0.00E 00	9.20E-08		0.00E 00
CS-134	CI	0.00E 00	0.00E 00		0.00E 00
CS-136	CI	2.20E-08	0.00E 00		0.00E 00
CS-137	CI	0.00E 00	0.00E 00		0.00E 00
FE-59	CI	0.00E 00	0.00E 00		0.00E 00
I-131	CI	2.30E-07	0.00E 00		0.00E 00
I-133	CI	0.00E 00	0.00E 00		0.00E 00
MN-54	CI	0.00E 00	0.00E 00		0.00E 00
SB-124	CI	0.00E 00	0.00E 00		0.00E 00
SR-89	CI	4.20E-08	0.00E 00		0.00E 00
SR-90	CI	9.10E-09	0.00E 00		0.00E 00
ZN-65	CI	0.00E 00	0.00E 00		0.00E 00
ZR-95	CI	0.00E 00	0.00E 00		0.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	2.30E 01	5.60E 01	1.10E-04	2.30E-03
KR-85	CI	6.40E-01	1.40E 01	8.30E-03	0.00E 00
KR-85M	CI	0.00E 00	0.00E 00	6.60E-04	0.00E 00
KR-87	CI	0.00E 00	0.00E 00	1.50E-05	0.00E 00
KR-88	CI	0.00E 00	0.00E 00	3.40E-04	0.00E 00
KR-89	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
KR-90	CI	0.00E 00	2.60E-01	0.00E 00	0.00E 00
XE-131M	CI	4.60E-02	0.00E 00	3.10E-03	1.60E-03
XE-133	CI	2.20E 01	8.20E 02	2.00E-01	2.30E-02
XE-133M	CI	2.10E 01	9.10E 00	2.60E-03	0.00E 00
XE-135	CI	2.50E 00	2.60E 01	1.40E-02	7.50E-05
XE-135M	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
XE-137	CI	0.00E 00	0.00E 00	3.40E-05	0.00E 00
XE-138	CI	0.00E 00	0.00E 00	4.60E-06	0.00E 00
IODINES					
I-131	CI	4.50E-08	4.00E-08	0.00E 00	5.00E-08
I-133	CI	2.90E-10	0.00E 00	0.00E 00	0.00E 00
PARTICULATES					
BA-140	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CE-141	CI	0.00E 00	9.00E-09	0.00E 00	0.00E 00
CO-58	CI	2.80E-03	4.20E-08	0.00E 00	6.50E-10
CO-60	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CR-51	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CS-134	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CS-136	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CS-137	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
FE-59	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
I-131	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
I-133	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
MN-54	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SB-124	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SR-89	CI	0.00E 00	7.20E-08	0.00E 00	0.00E 00
SR-90	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
ZN-65	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
ZR-95	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
				NONE	
FISSION GASES					
AR-41	CI	4.40E 01	7.50E-01		0.00E 00
KR-85	CI	0.00E 00	0.00E 00		3.70E 00
KR-85M	CI	0.00E 00	0.00E 00		0.00E 00
KR-87	CI	0.00E 00	1.20E 00		0.00E 00
KR-88	CI	1.70E-03	0.00E 00		0.00E 00
KR-89	CI	2.40E-02	0.00E 00		0.00E 00
KR-90	CI	0.00E 00			0.00E 00
XE-131M	CI	0.00E 00	4.70E 00		5.70E-03
XE-133	CI	9.50E-01	7.90E-02		3.60E 00
XE-133M	CI	5.00E-04	0.00E 00		3.60E 00
XE-135	CI	3.40E 00	5.80E-01		0.00E 00
XE-135M	CI	0.00E 00	0.00E 00		0.00E 00
XE-137	CI	0.00E 00	0.00E 00		0.00E 00
XE-138	CI	0.00E 00	0.00E 00		0.00E 00
IODINES					
I-131	CI	5.90E-06	1.80E-06		0.00E 00
I-133	CI	0.00E 00	0.00E 00		0.00E 00
PARTICULATES					
BA-140	CI	2.40E-06	0.00E 00		0.00E 00
CE-141	CI	0.00E 00	0.00E 00		0.00E 00
CO-58	CI	0.00E 00	0.00E 00		0.00E 00
CO-60	CI	0.00E 00	0.00E 00		0.00E 00
CR-51	CI	0.00E 00	0.00E 00		0.00E 00
CS-134	CI	0.00E 00	0.00E 00		0.00E 00
CS-136	CI	3.40E-07	0.00E 00		0.00E 00
CS-137	CI	0.00E 00	0.00E 00		0.00E 00
FE-59	CI	0.00E 00	0.00E 00		0.00E 00
I-131	CI	3.50E-06	0.00E 00		0.00E 00
I-133	CI	0.00E 00	0.00E 00		0.00E 00
MN-54	CI	0.00E 00	0.00E 00		0.00E 00
SB-124	CI	0.00E 00	0.00E 00		0.00E 00
SR-89	CI	1.10E-06	0.00E 00		0.00E 00
SR-90	CI	3.40E-07	0.00E 00		0.00E 00
ZN-65	CI	0.00E 00	0.00E 00		0.00E 00
ZR-95	CI	0.00E 00	0.00E 00		0.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	7.40E 01	1.70E 01	5.40E-03	1.60E-02
KR-85	CI	3.10E 00	7.50E-01	8.10E-01	0.00E 00
KR-85M	CI	0.00E 00	0.00E 00	2.70E-02	0.00E 00
KR-87	CI	0.00E 00	0.00E 00	6.00E-04	0.00E 00
KR-88	CI	0.00E 00	0.00E 00	1.40E-02	0.00E 00
KR-89	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
KR-90	CI	0.00E 00	1.60E-02	0.00E 00	0.00E 00
XE-131M	CI	1.70E-01	0.00E 00	1.40E-01	4.90E-02
XE-133	CI	5.70E 02	1.80E 02	8.90E 00	5.50E-01
XE-133M	CI	6.00E 00	3.10E-01	1.10E-01	0.00E 00
XE-135	CI	4.20E 01	1.20E 00	5.70E-01	4.40E-04
XE-135M	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
XE-137	CI	0.00E 00	0.00E 00	1.30E-03	0.00E 00
XE-138	CI	0.00E 00	0.00E 00	1.80E-04	0.00E 00
IODINES					
I-131	CI	2.60E-05	5.00E-06	0.00E 00	5.20E-06
I-133	CI	2.60E-07	0.00E 00	0.00E 00	0.00E 00
PARTICULATES					
BA-140	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CE-141	CI	0.00E 00	1.90E-07	0.00E 00	0.00E 00
CO-58	CI	3.80E-02	6.80E-07	0.00E 00	1.90E-05
CO-60	CI	0.00E 00	0.00E 00	0.00E 00	2.20E-06
CR-51	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CS-134	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CS-136	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CS-137	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
FE-59	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
I-131	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
I-133	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
MN-54	CI	0.00E 00	8.80E-06	0.00E 00	0.00E 00
SB-124	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SR-89	CI	0.00E 00	1.30E-06	0.00E 00	0.00E 00
SR-90	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
ZN-65	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
ZR-95	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	2.50E-02	1.00E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.20E-08	1.30E-08	
3. PERCENT OF APPLICABLE LIMIT	%	6.40E-02	6.80E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	3.30E 01	2.60E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.60E-05	3.30E-05	
3. PERCENT OF APPLICABLE LIMIT	%	5.50E-01	1.10E 00	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.30E-01	6.50E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.40E-08	8.20E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.60E-01	2.10E-01	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.30E 06	1.40E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.00E 09	7.90E 08	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	9.00E-03	5.90E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.30E-10	5.10E-09	
3. PERCENT OF APPLICABLE LIMIT	%	2.20E-03	8.20E-03	
B. TRITIUM				
1. TOTAL RELEASE	CI	7.20E-02	4.40E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.60E-05	3.80E-09	
3. PERCENT OF APPLICABLE LIMIT	%	2.20E 00	1.30E-04	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	5.30E-02	7.80E-03	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.90E-09	6.80E-10	
3. PERCENT OF APPLICABLE LIMIT	%	1.20E-02	1.70E-03	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.50E 07	5.00E 07	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.10E 10	1.10E 10	

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LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
		NONE	NONE		
AG-110M	CI			1.20E-05	0.00E 00
AS-76	CI			1.50E-05	0.00E 00
BA-140	CI			2.90E-05	0.00E 00
CE-141	CI			9.60E-06	0.00E 00
CE-144	CI			1.30E-04	0.00E 00
CO-58	CI			1.20E-02	5.50E-03
CO-60	CI			9.90E-04	5.10E-04
CR-51	CI			1.50E-03	1.10E-03
CS-134	CI			7.00E-05	1.40E-04
CS-136	CI			1.20E-05	0.00E 00
CS-137	CI			7.80E-04	9.50E-04
CU-64	CI			0.00E 00	1.40E-04
FE-59	CI			1.60E-04	1.20E-04
I-131	CI			2.10E-04	9.30E-05
I-132	CI			1.80E-05	0.00E 00
I-133	CI			8.50E-05	3.10E-05
I-135	CI			3.10E-05	6.60E-06
LA-140	CI			6.20E-05	2.90E-05
MN-54	CI			1.60E-03	6.20E-04
MO-99	CI			5.60E-05	2.90E-06
NA-24	CI			6.90E-03	1.20E-03
NB-95	CI			6.70E-05	6.80E-05
NP-239	CI			5.10E-05	0.00E 00
RU-103	CI			6.90E-06	1.30E-06
RU-106	CI			6.30E-05	0.00E 00
SR-89	CI			5.00E-05	0.00E 00
SR-90	CI			0.00E 00	0.00E 00
SR-91	CI			3.60E-05	1.30E-06
TC-99M	CI			4.00E-07	1.80E-06
ZN-65	CI			2.50E-05	6.80E-07
ZR-95	CI			5.20E-05	4.40E-05
AR-41	CI			0.00E 00	3.70E-05
KR-87	CI			0.00E 00	2.50E-06
XE-133	CI			1.20E-01	6.40E-02
XE-133M	CI			0.00E 00	1.40E-05
XE-135	CI			1.60E-03	7.90E-04

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI	0.00E 00	0.00E 00	0.00E 00	2.20E-07
AS-76	CI	9.50E-07	0.00E 00	0.00E 00	2.40E-05
BA-140	CI	0.00E 00	0.00E 00	0.00E 00	8.30E-05
CE-141	CI	0.00E 00	0.00E 00	0.00E 00	1.10E-06
CE-144	CI	0.00E 00	0.00E 00	1.30E-04	1.20E-04
CO-57	CI			9.80E-07	5.50E-05
CO-58	CI	1.40E-03	3.40E-04	4.60E-03	4.70E-02
CO-60	CI	2.00E-04	3.50E-05	5.80E-04	5.00E-03
CR-51	CI	0.00E 00	0.00E 00	1.10E-04	1.80E-03
CS-134	CI	0.00E 00	0.00E 00	6.80E-05	1.50E-04
CS-136	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CS-137	CI	0.00E 00	0.00E 00	4.20E-04	2.30E-04
CU-64	CI			0.00E 00	0.00E 00
FE-59	CI	0.00E 00	0.00E 00	3.70E-05	1.60E-04
I-131	CI	0.00E 00	0.00E 00	2.10E-05	3.20E-05
I-132	CI	0.00E 00	0.00E 00	0.00E 00	1.60E-04
I-133	CI	0.00E 00	1.10E-08	1.30E-05	2.30E-06
I-135	CI			1.10E-06	0.00E 00
LA-140	CI			1.20E-06	1.50E-05
MN-54	CI	4.40E-04	2.00E-05	6.90E-04	1.20E-03
MO-99	CI	0.00E 00	0.00E 00	0.00E 00	1.10E-04
NA-24	CI			2.10E-04	1.30E-05
NB-95	CI	0.00E 00	0.00E 00	1.90E-05	1.40E-04
NP-239	CI	0.00E 00	0.00E 00	2.80E-05	1.40E-04
RU-103	CI	0.00E 00	0.00E 00	3.60E-06	7.80E-06
RU-106	CI			1.50E-06	2.30E-04
SR-89	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SR-90	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SR-91	CI	0.00E 00	0.00E 00	9.80E-07	9.10E-06
TC-99M	CI	0.00E 00	0.00E 00	3.70E-07	0.00E 00
ZN-65	CI	0.00E 00	0.00E 00	4.40E-06	0.00E 00
ZR-95	CI	0.00E 00	0.00E 00	0.10E-06	4.30E-05
AR-41	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
KR-87	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
XE-133	CI	0.00E 00	0.00E 00	4.90E-02	7.80E-03
XE-133M	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
XE-135	CI	0.00E 00	0.00E 00	3.40E-03	3.50E-05

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INSTALLATION= JOSEPH M. FARLEY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	6.80E 01	
	CI	1.17E-01	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	NONE	
	CI	NONE	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI	NONE	
D. OTHER (DESCRIBE)	M3	NONE	
	CI	NONE	

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

A		
CO-58	%	3.43E 01
NA-24	%	2.79E 01
I-131	%	1.31E 01
MN-54	%	7.40E 00
CS-137	%	7.00E 00
CO-60	%	2.90E 00
I-133	%	1.70E 00
CS-134	%	1.10E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.10E 02	
	CI	3.40E 00	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	9.10E 01	
	CI	2.20E 00	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI	NONE	
D. OTHER (DESCRIBE)	M3	NONE	
	CI	NONE	

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

A			
CO-58	%	8.10E 01	
MN-54	%	6.00E 00	
CO-60	%	8.00E 00	
B			
CO-58	%	8.10E 01	
MN-54	%	6.00E 00	
CO-60	%	8.00E 00	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
14	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
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0

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INSTALLATION JAMES A. FITZPATRICK

LOCATION 36 MI N SYRACUSE, NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

TYPE BWR

DOCKET NO. 50-333

COOLING WATER SOURCE LAKE ONTARIO

LICENSEE POWER AUTHORITY OF THE STATE OF NEW YORK

LICENSED POWER (MWT) 2436.0

INITIAL CRITICALITY 11/17/74

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

GASES

AR-41	4.00E-08
KR-85	3.00E-07
KR-87	2.00E-08
KR-88	2.00E-08
N-13	3.00E-08
XE-131M	4.00E-07
XE-133	3.00E-07
XE-133M	3.00E-07
XE-135	1.00E-07
XE-135M	3.00E-08
XE-138	3.00E-08

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

CONTINUOUS MONITOR ON EACH RELEASE PATH CALIBRATED TO MARINELLI GRAB SAMPLE ANALYZED BY GE(LI) SPECTROMETER; BUBBLER GRAB SAMPLE ANALYZED FOR TRITIUM.

IODINES

GE(LI) ANALYSIS OF CHARCOAL CARTRIDGE AND PARTICULATE FILTER ON EACH RELEASE PATH.

PARTICULATES

GE(LI) ANALYSIS OF PARTICULATE FILTER ON EACH RELEASE PATH.

LIQUID EFFLUENTS

GE(LI) ANALYSIS OF EACH BATCH DISCHARGED, EXCEPT COMPOSITE ANALYSIS FOR SR-89, SR-90, AND TRITIUM.

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INSTALLATION JAMES A. FITZPATRICK

LOCATION 36 MI N SYRACUSE, NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

BETA	
QUARTER 1	QUARTER 2
4.19E-01	3.04E-01

GAMMA	
QUARTER 1	QUARTER 2

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-

QUARTER 1	QUARTER 2
NONE	9
	6.60E 02
	1.08E 02
	7.08E 01
	4.50E 01

N/A

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE	NONE
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B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE	NONE
------	------

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR,%
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	1.38E 03	1.10E 03	1.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.77E 02	1.40E 02	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.81E-02	3.22E-02	
B. IODINES				
1.TOTAL IODINE-131	CI	5.14E-02	1.20E-01	1.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.61E-03	1.53E-02	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	7.41E-03	7.44E-03	1.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	9.52E-04	9.46E-04	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.25E 00	2.55E 00	
4.GROSS ALPHA RADIOACTIVITY	CI	3.73E-06	5.21E-06	
D. TRITIUM				
1.TOTAL RELEASE	CI	2.00E 00	2.00E 00	1.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.57E-01	2.54E-01	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.91E 03	4.89E 02	1.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.66E 02	6.15E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	X	2.06E-01	5.64E-03	
B. IODINES				
1. TOTAL IODINE-131	CI	4.75E-02	3.47E-03	1.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.97E-03	4.36E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	X			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.15E-02	1.03E-02	1.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.96E-03	1.30E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	X	5.41E 00	9.12E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	2.74E-05	2.16E-05	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.72E 00	1.82E 00	1.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.17E-01	2.29E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	X			

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	9.53E 00	5.48E 00	0.00E 00	0.00E 00
KR-85M	CI	9.69E 00	1.03E 01	0.00E 00	0.00E 00
KR-87	CI	2.13E 01	5.22E 00	0.00E 00	0.00E 00
KR-88	CI	1.71E 01	3.43E 00	0.00E 00	0.00E 00
N-13	CI	2.39E 01	4.95E 01	0.00E 00	0.00E 00
XE-131M	CI	2.40E 01	4.08E 01	0.00E 00	0.00E 00
XE-133	CI	1.73E 02	2.15E 01	0.00E 00	0.00E 00
XE-133M	CI	4.88E 00	1.02E 01	0.00E 00	0.00E 00
XE-135	CI	3.98E 01	2.56E 01	0.00E 00	0.00E 00
XE-138	CI	7.22E 00	4.48E 00	0.00E 00	0.00E 00
IODINES					
I-131	CI	8.51E-03	2.53E-02	0.00E 00	0.00E 00
I-133	CI	1.08E-02	2.54E-03	0.00E 00	0.00E 00
I-135	CI	1.05E-04	7.97E-04	0.00E 00	0.00E 00
PARTICULATES					
BA-LA-140	CI	4.62E-05	9.45E-05	0.00E 00	0.00E 00
CE-141	CI	4.68E-08	1.86E-05	0.00E 00	0.00E 00
CO-58	CI	2.85E-04	7.98E-04	0.00E 00	0.00E 00
CO-60	CI	1.17E-03	2.06E-03	0.00E 00	0.00E 00
CR-51	CI	3.76E-03	2.29E-03	0.00E 00	0.00E 00
CS-134	CI	5.99E-04	2.74E-04	0.00E 00	0.00E 00
CS-137	CI	5.82E-04	1.59E-04	0.00E 00	0.00E 00
MN-54	CI	4.97E-04	1.16E-03	0.00E 00	0.00E 00
NB-95	CI	9.17E-07	2.07E-06	0.00E 00	0.00E 00
SR-89	CI	3.19E-04	3.22E-04	0.00E 00	0.00E 00
ZN-65	CI	4.47E-06	6.71E-05	0.00E 00	0.00E 00
ZR-95	CI		3.84E-06	0.00E 00	0.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	3.91E 01	0.00E 00	0.00E 00	0.00E 00
KR-85M	CI	7.64E 01	6.30E 00	0.00E 00	0.00E 00
KR-87	CI	8.11E 01	9.01E-01	0.00E 00	0.00E 00
KR-88	CI	1.24E 02	4.80E 00	0.00E 00	0.00E 00
N-13	CI	4.18E 01	0.00E 00	0.00E 00	0.00E 00
XE-133	CI	7.25E 02	4.90E 00	0.00E 00	0.00E 00
XE-133M	CI	1.46E 02	0.00E 00	0.00E 00	0.00E 00
XE-135	CI	3.06E 02	2.26E 00	0.00E 00	0.00E 00
XE-138	CI	3.10E 01	0.00E 00	0.00E 00	0.00E 00
IODINES					
I-131	CI	4.49E-02	2.78E-03	0.00E 00	0.00E 00
I-133	CI	1.64E-02	4.18E-04	0.00E 00	0.00E 00
I-135	CI	7.32E-03	0.00E 00	0.00E 00	0.00E 00
PARTICULATES					
BA-LA-140	CI	2.22E-04	1.20E-05	0.00E 00	0.00E 00
CO-58	CI	1.45E-03	7.16E-04	0.00E 00	0.00E 00
CO-60	CI	4.34E-03	4.87E-03	0.00E 00	0.00E 00
CR-51	CI	2.32E-02	1.77E-03	0.00E 00	0.00E 00
CS-134	CI	7.86E-05	1.39E-04	0.00E 00	0.00E 00
CS-137	CI	3.81E-06	5.98E-04	0.00E 00	0.00E 00
MN-54	CI	1.44E-03	1.47E-03	0.00E 00	0.00E 00
NB-95	CI	0.00E 00	9.29E-06	0.00E 00	0.00E 00
SR-89	CI	1.95E-04	1.95E-04	0.00E 00	0.00E 00
SR-90	CI	1.22E-05	1.22E-05	0.00E 00	0.00E 00
ZN-65	CI	4.78E-04	3.11E-04	0.00E 00	0.00E 00
ZR-95	CI	0.00E 00	3.38E-05	0.00E 00	0.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	6.86E 01	9.33E 00	0.00E 00	0.00E 00
KR-85	CI	1.58E 00		0.00E 00	0.00E 00
KR-85M	CI	6.27E 01	3.93E 01	0.00E 00	0.00E 00
KR-87	CI	4.33E 01	2.00E 01	0.00E 00	0.00E 00
KR-88	CI	8.83E 01	7.24E 01	0.00E 00	0.00E 00
N-13	CI	4.01E 00	3.27E 00	0.00E 00	0.00E 00
XE-131M	CI	6.24E 01	2.94E 00	0.00E 00	0.00E 00
XE-133	CI	4.30E 02	4.68E 02	0.00E 00	0.00E 00
XE-133M	CI	9.77E 00	5.90E 00	0.00E 00	0.00E 00
XE-135	CI	2.60E 02	2.82E 02	0.00E 00	0.00E 00
XE-138	CI	1.57E 01	2.12E 01	0.00E 00	0.00E 00
IODINES					
I-131	CI	4.29E-02	9.45E-02	0.00E 00	0.00E 00
I-133	CI	1.39E-03	2.73E-03	0.00E 00	0.00E 00
I-135	CI	9.61E-05	4.99E-04	0.00E 00	0.00E 00
PARTICULATES					
BA-LA-140	CI	1.08E-05	8.92E-05	0.00E 00	0.00E 00
CO-58	CI	7.17E-07	7.29E-07	0.00E 00	0.00E 00
CO-60	CI	7.10E-05	6.69E-05	0.00E 00	0.00E 00
CS-137	CI	5.00E-05	5.98E-06	0.00E 00	0.00E 00
MN-54	CI	5.77E-06	1.85E-05	0.00E 00	0.00E 00
SR-89	CI	1.46E-05	1.46E-05	0.00E 00	0.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	3.70E 01	2.10E 01	0.00E 00	0.00E 00
KR-85M	CI	7.01E 01	3.61E 01	0.00E 00	0.00E 00
KR-87	CI	7.25E 01	3.36E 01	0.00E 00	0.00E 00
KR-88	CI	1.06E 02	5.28E 01	0.00E 00	0.00E 00
N-13	CI	5.45E 00	1.97E-01	0.00E 00	0.00E 00
XE-131M	CI	1.03E 02	0.00E 00	0.00E 00	0.00E 00
XE-133	CI	6.53E 02	1.36E 02	0.00E 00	0.00E 00
XE-133M	CI	1.34E-02	6.40E 00	0.00E 00	0.00E 00
XE-135	CI	2.61E 02	1.79E 02	0.00E 00	0.00E 00
XE-138	CI	2.99E 01	5.24E 00	0.00E 00	0.00E 00
IODINES					
I-131	CI	2.62E-03	6.86E-04	0.00E 00	0.00E 00
I-133	CI	1.46E-05	1.10E-05	0.00E 00	0.00E 00
I-135	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
PARTICULATES					
BA-LA-140	CI	4.74E-05	4.26E-06	0.00E 00	0.00E 00
CO-58	CI	3.89E-08	1.57E-06	0.00E 00	0.00E 00
CO-60	CI	2.65E-05	2.08E-05	0.00E 00	0.00E 00
CS-137	CI	1.23E-05	9.74E-06	0.00E 00	0.00E 00
MN-54	CI	6.98E-06	1.68E-05	0.00E 00	0.00E 00
NB-95	CI	0.00E 00	1.36E-07	0.00E 00	0.00E 00
SR-89	CI	1.22E-07	1.22E-07	0.00E 00	0.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	0.00E 00	6.17E-02	1.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	3.37E-10	
3. PERCENT OF APPLICABLE LIMIT	%	0.00E 00	3.87E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	0.00E 00	1.59E-01	1.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	8.70E-10	
3. PERCENT OF APPLICABLE LIMIT	%	0.00E 00	2.90E-05	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	0.00E 00	
3. PERCENT OF APPLICABLE LIMIT	%	0.00E 00	0.00E 00	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	4.79E-07	1.00E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	0.00E 00	4.44E 05	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.83E 11	1.83E 11	1.00E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	9.59E-01	5.57E-01	1.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.33E-09	6.41E-09	
3. PERCENT OF APPLICABLE LIMIT	%	3.83E-02	2.42E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	8.08E-01	9.30E-01	1.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.49E-09	1.07E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.50E-04	3.57E-04	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	9.71E-04	1.57E-03	1.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.39E-12	1.80E-11	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	4.14E 06	4.34E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.80E 11	8.69E 10	1.00E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CS-134	CI	0.00E 00	0.00E 00	0.00E 00	1.48E-03
CS-137	CI	0.00E 00	0.00E 00	0.00E 00	1.95E-03
I-131	CI	0.00E 00	0.00E 00	0.00E 00	2.06E-02
SR-89	CI	0.00E 00	0.00E 00	0.00E 00	3.30E-05
SR-90	CI	0.00E 00	0.00E 00	0.00E 00	1.33E-05
CO-58	CI	0.00E 00	0.00E 00	0.00E 00	2.67E-03
CO-60	CI	0.00E 00	0.00E 00	0.00E 00	1.55E-02
CR-51	CI	0.00E 00	0.00E 00	0.00E 00	2.28E-03
FE-59	CI	0.00E 00	0.00E 00	0.00E 00	1.12E-03
MN-54	CI	0.00E 00	0.00E 00	0.00E 00	8.29E-03
ZN-65	CI	0.00E 00	0.00E 00	0.00E 00	9.70E-04
BA-LA-140	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CE-141	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
MO-99	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
TC-99M	CI	0.00E 00	0.00E 00	0.00E 00	8.04E-05
ZR-NB-95	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
AS-76	CI	0.00E 00	0.00E 00	0.00E 00	4.24E-05
CE-144	CI	0.00E 00	0.00E 00	0.00E 00	1.43E-05
I-133	CI	0.00E 00	0.00E 00	0.00E 00	1.10E-03
NA-24	CI	0.00E 00	0.00E 00	0.00E 00	7.47E-04
XE-133	CI	0.00E 00	0.00E 00	0.00E 00	2.56E-03
XE-135	CI	0.00E 00	0.00E 00	0.00E 00	2.21E-03

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=JAMES A. FITZPATRICK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI	0.00E 00	0.00E 00	0.00E 00	3.39E-05
AS-76	CI	0.00E 00	0.00E 00	0.00E 00	1.22E-04
BA-LA-140	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CE-141	CI	0.00E 00	0.00E 00	4.43E-05	0.00E 00
CE-144	CI	0.00E 00	0.00E 00	0.00E 00	1.33E-04
CO-58	CI	0.00E 00	0.00E 00	1.14E-01	4.67E-02
CO-60	CI	0.00E 00	0.00E 00	4.04E-01	2.39E-01
CR-51	CI	0.00E 00	0.00E 00	7.25E-03	4.72E-03
CS-134	CI	0.00E 00	0.00E 00	4.36E-02	3.70E-02
CS-137	CI	0.00E 00	0.00E 00	5.44E-02	4.05E-02
CU-64	CI	0.00E 00	0.00E 00	0.00E 00	2.49E-03
FE-59	CI	0.00E 00	0.00E 00	1.67E-02	1.44E-02
I-131	CI	0.00E 00	0.00E 00	1.28E-02	1.17E-03
I-133	CI	0.00E 00	0.00E 00	9.71E-04	1.41E-03
I-135	CI	0.00E 00	0.00E 00	3.62E-04	2.49E-05
KR-85M	CI	0.00E 00	0.00E 00	0.00E 00	1.56E-04
MN-54	CI	0.00E 00	0.00E 00	2.82E-01	1.52E-01
MO-99	CI	0.00E 00	0.00E 00	0.00E 00	2.49E-04
NA-24	CI	0.00E 00	0.00E 00	1.73E-05	1.96E-03
SR-89	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SR-90	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
TC-99M	CI	0.00E 00	0.00E 00	3.59E-04	0.00E 00
XE-133	CI	0.00E 00	0.00E 00	9.71E-04	1.41E-03
ZN-65	CI	0.00E 00	0.00E 00	2.19E-02	1.36E-02
ZR-NB-95	CI	0.00E 00	0.00E 00	0.00E 00	2.40E-04

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INSTALLATION= JAMES A. FITZPATRICK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.35E 02	
	CI	2.48E 02	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.50E 02	
	CI	5.02E 00	1.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
CO-60	%	2.80E 01
MN-54	%	1.70E 01
CR-51	%	3.50E 01
CO-58	%	9.40E 00
CS-137	%	4.60E 00
ZN-65	%	2.70E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
20	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
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0

N/A=NOT APPLICABLE
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INSTALLATION= JAMES A. FITZPATRICK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	4.58E 02	
	CI	6.06E 01	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.27E 02	
	CI	4.94E 00	1.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
CO-60	x	2.80E 01
MN-54	x	1.70E 01
CR-51	x	3.50E 01
CO-58	x	9.00E 00
CS-137	x	5.00E 00
ZN-65	x	3.00E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
13	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION FORT CALHOUN

LOCATION 19 MI N OMAHA, NB

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE OMAHA PUBLIC POWER

TYPE PWR

LICENSED POWER (MWT) 1420.0

DOCKET NO. 50-285

INITIAL CRITICALITY 08/06/73

COOLING WATER SOURCE MISSOURI RIVER

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION FORT CALHOUN

LOCATION 19 MI N OMAHA, NB

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
1	2	1	2

BATCH RELEASES

QUARTER	QUARTER
1	2

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION FORT CALHOUN

LOCATION 19 MI N OMAHA, NB

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER 3	BETA QUARTER 4	QUARTER 3	GAMMA QUARTER 4
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BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
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INSTALLATION=FORT CALHOUN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.57E 02	1.86E 02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.02E 01	2.37E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.52E-01	1.78E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	7.10E-04	2.09E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	9.13E-05	2.66E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.21E 00	3.54E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	<9.70E-06	1.48E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.25E-06	1.88E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	7.80E-01	1.18E 00	
4. GROSS ALPHA RADIOACTIVITY	CI	2.56E-07	3.53E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.34E 00	1.19E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.73E-01	1.52E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=FORT CALHOUN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	7.36E 02	2.84E 02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	9.26E 01	3.58E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.98E-01	2.69E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	6.07E-04	4.77E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	7.63E-05	6.00E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.01E 00	7.97E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	6.08E-05	3.75E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	7.65E-06	4.72E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.78E 00	2.95E 00	
4. GROSS ALPHA RADIOACTIVITY	CI	1.02E-06	1.50E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	3.92E-01	9.98E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.94E-02	1.26E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=FORT CALHOUN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	3.20E-02	1.94E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.66E-11	6.18E-10	
3. PERCENT OF APPLICABLE LIMIT	%	2.89E-01	2.06E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.93E 01	6.35E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	7.94E-08	2.03E-07	
3. PERCENT OF APPLICABLE LIMIT	%	2.65E-03	6.75E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.91E 00	1.47E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.17E-09	4.70E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	5.60E-05	8.55E-05	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.19E 07	1.96E 07	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.69E 11	3.14E 11	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	2.54E-01	1.15E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.70E-10	1.18E-09	
3. PERCENT OF APPLICABLE LIMIT	%	2.23E 00	3.93E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	3.62E 01	2.06E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	9.56E-08	2.12E-07	
3. PERCENT OF APPLICABLE LIMIT	%	3.19E-03	7.05E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.67E 00	2.38E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.41E-09	2.45E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	2.21E-05	6.71E-06	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.41E 07	8.78E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.79E 11	9.72E 10	

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INSTALLATION=FORT CALHOUN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
BA-140	CI	<6.97E-04	<5.91E-04	<1.70E-04	<4.03E-04
CE-141	CI	<8.81E-04	<6.91E-04	<3.48E-04	<3.78E-04
CO-57	CI	<3.90E-04	<6.51E-04	<1.39E-04	<5.71E-04
CO-58	CI	<2.11E-04	<2.08E-04	1.02E-02	1.64E-02
CO-60	CI	<1.83E-04	<1.69E-04	7.28E-04	2.30E-03
CR-51	CI	<2.71E-03	<2.63E-03	<6.48E-04	<1.46E-03
CS-134	CI	<2.83E-04	<2.28E-04	2.84E-03	5.78E-02
CS-136	CI	<2.55E-04	<2.18E-04	<3.83E-05	<8.88E-04
CS-137	CI	<2.52E-04	<2.98E-04	3.76E-03	7.45E-02
FE-59	CI	<3.33E-04	<3.11E-04	<5.57E-05	<9.06E-05
I-131	CI	<3.22E-04	<2.68E-04	1.56E-03	2.53E-02
I-133	CI	<2.54E-04	<4.24E-04	<1.31E-04	<6.20E-04
LA-140	CI	<2.08E-04	<1.52E-04	<2.33E-05	<8.91E-05
MN-54	CI	<1.90E-04	<1.90E-04	1.04E-03	2.96E-03
MO-99	CI	<6.96E-05	<1.50E-04	<2.88E-05	<8.89E-05
NB-95	CI	<1.90E-04	<1.91E-04	<5.36E-05	<9.55E-05
RU-103	CI	<2.78E-04	<2.50E-04	<6.65E-05	<1.51E-04
SB-124	CI	<4.08E-04	<3.09E-04	<4.73E-05	<5.17E-05
SN-117M	CI	<3.67E-04	<4.07E-04	<5.51E-04	<1.71E-04
SR-89	CI	<2.13E-05	<7.17E-05	8.28E-05	2.71E-04
SR-90	CI	<2.44E-05	<3.59E-05	3.78E-05	4.07E-05
TC-99M	CI	<3.38E-05	<7.28E-05	<1.40E-05	<4.32E-05
ZN-65	CI	<3.78E-04	<3.44E-04	<5.73E-05	<1.16E-04
ZR-95	CI	<3.44E-04	<3.87E-04	<6.35E-05	<1.37E-04
XE-133	CI	<6.98E-03	9.54E-03	1.84E 00	1.42E 00
XE-135	CI	<5.41E-04	<2.33E-03	6.54E-02	3.81E-02
ALPHA	CI	<4.91E-05	7.61E-05	<6.85E-06	<9.34E-06
TRITIUM	CI	2.68E-02	8.26E-03	2.93E 01	6.35E 01

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INSTALLATION=FORT CALHOUN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
BA-140	CI	8.10E-04	2.42E-04	5.46E-04	4.55E-04
CE-141	CI	1.09E-03	4.73E-04	4.14E-04	3.92E-04
CO-57	CI	5.94E-04	3.03E-04	4.15E-04	4.44E-04
CO-58	CI	1.70E-03	7.18E-04	2.11E-02	3.03E-02
CO-60	CI	2.21E-04	6.74E-05	3.04E-03	4.11E-03
CR-51	CI	3.33E-03	1.10E-03	2.03E-03	2.01E-03
CS-134	CI	3.96E-04	9.08E-05	8.71E-02	2.57E-02
CS-136	CI	2.69E-04	8.20E-05	3.04E-04	2.85E-04
CS-137	CI	6.75E-04	1.47E-04	1.11E-01	3.63E-02
FE-59	CI	3.93E-04	1.13E-04	1.23E-04	2.09E-04
I-131	CI	5.02E-04	1.22E-04	9.01E-03	5.32E-03
I-133	CI	4.08E-04	1.08E-04	6.89E-04	3.95E-04
LA-140	CI	2.02E-04	6.06E-05	2.96E-05	5.20E-05
MN-54	CI	2.31E-04	7.18E-05	2.15E-03	2.21E-03
MO-99	CI	1.52E-04	5.79E-05	5.54E-05	5.03E-05
NB-95	CI	2.45E-04	7.64E-05	1.48E-04	4.95E-04
RU-103	CI	3.19E-04	1.02E-04	2.00E-04	2.03E-04
SB-124	CI	4.11E-04	1.30E-04	6.45E-05	1.05E-04
SN-117M	CI	6.20E-04	3.34E-04	2.23E-04	2.01E-04
SR-89	CI	4.44E-05	2.51E-05	2.40E-05	1.40E-04
SR-90	CI	2.00E-05	6.90E-06	1.39E-05	8.01E-05
TC-99M	CI	7.38E-05	2.82E-05	2.69E-05	2.45E-05
ZN-65	CI	4.25E-04	1.28E-04	1.44E-03	1.43E-04
ZR-95	CI	4.45E-04	1.39E-04	1.86E-04	2.57E-04
XE-133	CI	1.18E-02	2.62E-03	1.10E 00	2.23E-01
XE-135	CI	5.36E-01	6.75E-03	1.01E-02	6.53E-03
ALPHA	CI	1.52E-05	3.31E-06	6.83E-06	3.41E-06
TRITIUM	CI	8.31E-03	7.10E-03	3.62E 01	2.06E 01

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= FORT CALHOUN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	2.31E 02	
	CI	4.54E 01	2.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	4.26E 01	
	CI	9.00E-02	2.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI	NONE	
D. OTHER (DESCRIBE)	M3	NONE	
	CI	NONE	

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

A			
CS-137	X	5.50E 01	
CS-134	X	4.99E 01	
CO-58	X	8.50E 00	
MN-54	X	1.13E 00	
B			
CS-137	X	5.50E 01	
CS-134	X	4.99E 01	
CO-58	X	8.50E 00	
MN-54	X	1.13E 00	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
10	TRUCK	SHEFFIELD ILL.
7	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= FORT.CALHOUN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.88E 02	
	C1	5.67E 01	2.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.22E 02	
	C1	3.95E 00	2.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	C1	NONE	
D. OTHER (DESCRIBE)	M3	NONE	
	C1	NONE	

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

A			
CS-137	X	5.63E 01	
CO-58	X	3.79E 01	
CS-134	X	5.39E 00	
B			
CS-137	X	5.63E 01	
CO-58	X	3.79E 01	
CS-134	X	5.39E 00	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
24	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
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0

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION R.E.GINNA

LOCATION 16 MI NE ROCHESTER NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

TYPE PWR

DOCKET NO. 50-244

COOLING WATER SOURCE LAKE ONTARIO

LICENSEE ROCHESTER GAS/ELEC

LICENSED POWER (MWT) 1520.1

INITIAL CRITICALITY 11/08/69

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY N/R

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION R.E.GINNA

LOCATION 16 MI NE ROCHESTER NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
1	2	1	2

BATCH RELEASES

QUARTER	QUARTER
1	2

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION R.E.GINNA

LOCATION 16 MI NE ROCHESTER NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER 3	BETA QUARTER 4	QUARTER 3	GAMMA QUARTER 4
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BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=R.E.GINNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	5.16E 02	6.29E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.20E-01	1.43E-02	
B. IODINES				
1. TOTAL IODINE-131	CI	1.91E-04	8.87E-04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.43E-01	3.58E-01	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.31E-04	7.01E-06	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	<3.00E-03	<1.00E-03	
4. GROSS ALPHA RADIOACTIVITY	CI	1.86E-08	6.19E-08	
D. TRITIUM				
1. TOTAL RELEASE	CI	9.43E 00	1.47E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=R.E.GINNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	2.12E 02	1.81E 02	
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.00E-02	4.10E-02	
B. IODINES				
1.TOTAL IODINE-131	CI	2.91E-03	6.24E-03	
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.83E-01	1.10E 00	
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.76E-06	1.17E-06	
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	<1.00E-03	<1.00E-03	
4.GROSS ALPHA RADIOACTIVITY	CI	N/D	2.69E-08	
D. TRITIUM				
1.TOTAL RELEASE	CI	1.36E 01	6.10E 00	
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=R.E.GINNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	3.62E-01	2.46E-01		
CR-51	CI	2.57E-07	N/D		
FE-59	CI	4.00E-08	N/D		
KR-85	CI	1.23E 02	1.11E 02		
KR-85M	CI	2.20E 00	5.38E-01		
KR-87	CI	4.39E-02	N/D		
KR-88	CI	7.35E-02	N/D		
MN-54	CI	5.82E-08	1.65E-07		
NB-95	CI	7.31E-07	2.58E-07		
RU-103	CI	6.18E-07	3.11E-07		
XE-131M	CI	3.35E-01	9.40E-01		
XE-133	CI	3.73E 02	1.74E 01		
XE-133M	CI	6.99E-01	3.38E-01		
XE-135	CI	1.65E 01	2.33E 00		
XE-135M	CI	4.60E-03	N/D		
XE-138	CI	5.30E-03	N/D		
ZR-95	CI		1.27E-07		
IODINES					
I-131	CI	5.42E-04	8.10E-04		
I-133	CI	3.16E-04	7.73E-05		
PARTICULATES					
CE-141	CI	2.29E-08	N/D		
CE-144	CI	1.10E-07	6.39E-07		
CO-58	CI	1.86E-06	1.14E-06		
CO-60	CI	8.88E-05	1.87E-06		
CS-134	CI		1.46E-07		
CS-137	CI	5.33E-07	9.37E-07		

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INSTALLATION=R.E.GINNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	6.37E-02	3.21E-01		
KR-85	CI	2.81E-01	8.34E 01		
KR-85M	CI	1.85E-01	3.55E-01		
NB-95	CI	2.51E-07	N/D		
XE-131M	CI	1.57E-02	2.00E-02		
XE-133	CI	1.95E 02	8.68E 01		
XE-133M	CI	6.00E-04	1.00E-04		
XE-135	CI	4.77E 00	7.83E 00		
XE-135M	CI	1.70E-02	N/D		
IODINES					
I-131	CI	1.61E-03	2.59E-03		
I-133	CI	1.30E-03	3.65E-03		
PARTICULATES					
CE-144	CI	3.29E-07	1.72E-07		
CO-58	CI	2.82E-07	N/D		
CO-60	CI	1.05E-06	6.00E-08		
CS-134	CI	3.68E-07	3.82E-07		
CS-137	CI	1.71E-06	9.37E-07		

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INSTALLATION=R.E.GINNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	7.19E-03	4.36E-03	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.57E-11	6.82E-01	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	2.98E 01	3.77E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.48E-07	5.84E-07	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	N/D	N/D	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	N/D	1.20E-06	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.08E 06	2.54E 05	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.01E 11	1.92E 11	

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INSTALLATION=R.E.GINNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-110M	CI			3.16E-05	1.14E-04
BA-LA-140	CI			2.48E-03	N/D
CE-PR-144	CI			7.35E-04	1.66E-03
CO-58	CI			2.31E-03	7.35E-03
CO-60	CI			5.80E-03	9.40E-03
CS-134	CI			1.49E-03	7.88E-04
CS-137	CI			4.19E-03	4.35E-03
I-131	CI			1.14E-02	7.20E-05
I-133	CI			6.50E-05	N/D
MN-54	CI			6.15E-04	1.81E-03
MO-99	CI			3.81E-04	N/D
NB-95	CI			9.33E-05	1.02E-03
CE-141	CI				9.20E-06
RU-103	CI			1.10E-04	5.17E-04
SB-125	CI			7.16E-04	2.03E-04
TE-132	CI			5.30E-04	N/D
ZR-95	CI			9.91E-05	8.69E-04

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N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=R.E.GINNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI			5.89E-05	1.72E-04
BA-LA-140	CI			N/D	N/D
CE-PR-144	CI			2.13E-04	9.92E-06
CE-141	CI			7.08E-05	4.05E-05
CO-58	CI			3.14E-04	2.72E-05
CO-60	CI			1.08E-03	2.96E-04
CS-134	CI			6.05E-04	1.18E-03
CS-137	CI			4.52E-03	2.26E-03
I-131	CI			5.23E-05	6.54E-06
I-133	CI			N/D	N/D
MN-54	CI			4.10E-06	4.94E-06
MO-99	CI			N/D	8.83E-05
NB-95	CI			2.87E-05	1.98E-05
RU-103	CI			4.08E-05	1.53E-06
SB-125	CI			1.25E-04	2.22E-04
TE-132	CI			3.87E-05	6.70E-06
ZR-95	CI			1.24E-05	4.43E-06

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION= R.E.GINNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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,EVAPORATOR BOTTOMS,ETC.	M3 C1	5.82E 02	
B.DRY COMPRESSIBLE WASTE,CONTAMINATED EQUIPMENT,ETC.	M3 C1		
C.IRRADIATED COMPONENTS,CONTROL RODS,ETC.	M3 C1		
D.OTHER(DESCRIBE)	M3 C1		

3.SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
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11	TRUCK	BARNWELL SC
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N/A=NOT APPLICABLE
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INSTALLATION= R.E.GINNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	5.96E 01	
	CI	4.50E 01	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3		
	CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
5	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION HADDAM NECK

LOCATION 9.5 MI SE MIDDLETOWN, CT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

TYPE PWR

DOCKET NO. 50-213

COOLING WATER SOURCE CONNECTICUT RIVER

LICENSEE CONNECTICUT YANKEE ATOMIC POWER

LICENSED POWER (MWT) 1825.0

INITIAL CRITICALITY 07/24/67

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

GASES

AR-37	1.00E-04
KR-85	3.00E-07
KR-85M	1.00E-07
KR-87	2.00E-08
KR-88	2.00E-08
XE-133	3.00E-07
XE-135	1.00E-07
XE-135M	1.00E-06
XE-138	1.00E-06

IODINES

I-131	1.00E-10
I-133	4.00E-10
I-135	1.00E-09

PARTICULATES

BA-140	1.00E-09
CS-134	4.00E-10
CS-137	5.00E-10
LA-140	4.00E-09
SR-89	3.00E-10
SR-90	3.00E-11

LIQUIDS

AG-110M	3.00E-05
AR-37	3.00E-06
BA-140	2.00E-05
BE-7	2.00E-03
CE-141	9.00E-05
CO-57	4.00E-04
CO-58	9.00E-05
CO-60	3.00E-05
CR-51	2.00E-03
CS-134	4.00E-05
CS-137	2.00E-05
EU-154	2.00E-05
FE-59	5.00E-05
I-131	3.00E-07
KR-85	3.00E-06
LA-140	2.00E-05
MN-54	1.00E-04
MO-99	4.00E-05
NB-95	1.00E-04
RU-106	1.00E-05

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION HADDAM NECK

LOCATION 9.5 MI SE MIDDLETOWN, CT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

SB-124	2.00E-05
SB-125	1.00E-04
SR-89	3.00E-06
SR-90	3.00E-07
TC-99M	3.00E-03
XE-133	3.00E-06
XE-135	3.00E-06
ZN-65	1.00E-04
ZR-95	6.00E-05

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

AN IN-LINE G. M. DETECTOR MONITORS STACK EFFLUENT. GAS SAMPLES ARE COLLECTED ON THE STACK AND ARE SENT TO AN OFF SITE LAB FOR LOW LEVEL FISSION AND ACTIVATION GAS ANALYSES.

IODINES

CONTINUOUS IN LINE CHARCOAL FILTER ON MAIN STACK EFFLUENT. CHARCOAL FILTERS ARE THEN ANALYZED FOR IODINES.

PARTICULATES

CONTINUOUS IN LINE PARTICULATE FILTER ON MAIN STACK EFFLUENT. PARTICULATE SAMPLES ARE THEN COUNTED FOR GROSS BETA-GAMMA. WEEKLY SAMPLES ARE SENT TO AN OFF SITE LAB FOR ANALYSES OF LOW LEVEL GAMMA EMITTERS. A MONTHLY COMPOSITE IS MADE FROM THESE WEEKLY SAMPLES. THE MONTHLY COMPOSITE IS CHECKED FOR GROSS ALPHA AND 89SR-90SR.

LIQUID EFFLUENTS

IN LINE SCINTILLATION DETECTOR MONITORS WASTE LIQUID BEING RELEASED. PRIOR TO DISCHARGE A SAMPLE IS TAKEN. PRINCIPAL GAMMA EMITTERS, GROSS BETA-GAMMA AND TRITIUM ANALYSIS ARE PERFORMED. WEEKLY COMPOSITES ARE PREPARED AND SENT TO AN OFF SITE LABORATORY. PRINCIPAL GAMMA EMITTERS ARE DETERMINED. A MONTHLY COMPOSITE IS MADE FROM THE WEEKLY SAMPLES. GROSS ALPHA, 89SR AND 90SR ARE DETERMINED. ONE BATCH SAMPLE PER MONTH IS SENT OUT FOR DETERMINATION OF DISSOLVED AND ENTRAINED GASES.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION HADDAM NECK

LOCATION 9.5 MI SE MIDDLETOWN, CT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER 1	BETA QUARTER 2	QUARTER 1	GAMMA QUARTER 2
1.97E-01	1.98E-01	4.80E-02	5.50E-02

BATCH RELEASES

A. LIQUID

	QUARTER 1	QUARTER 2
1. NUMBER OF BATCH RELEASES-	56	
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-	3.44E 04	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.23E 03	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	6.18E 02	
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	9.00E 01	
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-	2.68E 07	

B. GASEOUS

	QUARTER 1	QUARTER 2
1. NUMBER OF BATCH RELEASES-	38	
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	1.06E 04	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	3.85E 03	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	2.79E 02	
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-	3.00E 01	

ABNORMAL RELEASES

A. LIQUID

	QUARTER 1	QUARTER 2
1. NUMBER OF RELEASES		
2. TOTAL ACTIVITY RELEASED (CURIES)		NONE

B. GASEOUS

	QUARTER 1	QUARTER 2
1. NUMBER OF RELEASES		NONE
2. TOTAL ACTIVITY RELEASED (CURIES)		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION HADDAM NECK

LOCATION 9.5 MI SE MIDDLETOWN, CT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

BETA		GAMMA	
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4
1.97E-01	2.00E-01	5.30E-02	5.10E-02

BATCH RELEASES.

A. LIQUID

1. NUMBER OF BATCH RELEASES-

2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-

3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-

5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

NUMBER OF BATCH RELEASES-

2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-

3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-

5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

NUMBER OF RELEASES

2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES

2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
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INSTALLATION=HADDAM NECK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	5.99E 02	5.92E 02	1.40E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	7.64E 01	7.17E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.20E 00	2.10E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	1.23E-03	2.46E-04	1.32E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.05E-10	3.13E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.15E-02	1.22E-02	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.28E-03	2.72E-04	1.46E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.65E-04	3.46E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.46E 00	5.19E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	<3.00E-16	<3.00E-16	
D. TRITIUM				
1. TOTAL RELEASE	CI	4.87E 00	2.84E 01	7.80E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.26E-01	3.61E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.27E-02	7.35E-02	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.13E 02	7.32E 02	1.40E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.68E 01	9.21E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	7.75E-01	2.72E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	5.22E-04	1.03E-03	1.32E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.57E-05	1.30E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.61E-02	5.15E-02	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	5.36E-04	9.88E-05	1.46E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.74E-05	1.24E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.01E 00	1.87E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	<3.00E-16	<3.00E-16	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.88E 01	1.57E 01	7.80E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.37E 00	1.98E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.82E-02	4.03E-02	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS MIXED MODE RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-37	CI	3.92E 00	1.52E 00	4.67E-02	5.14E-02
AR-41	CI	<1.00E-06	<1.00E-06	1.83E-02	2.30E-02
C-14	CI	9.24E 00	2.16E 01	6.14E-02	6.72E-02
KR-85	CI	8.89E 00	2.33E 01	4.05E 01	7.28E-01
KR-85M	CI	<1.00E-06	<1.00E-06	9.83E-02	4.84E-01
KR-87	CI	<1.00E-06	<1.00E-06	1.34E-01	7.39E-01
KR-88	CI	<1.00E-06	<1.00E-06	1.68E-01	8.62E-01
XE-131M	CI	<1.00E-06	<1.00E-06	8.68E-01	5.84E 00
XE-133	CI	4.59E 02	1.67E 02	6.99E 01	3.36E 02
XE-133M	CI	<1.00E-06	<1.00E-06	6.54E-02	7.03E-01
XE-135	CI	<1.00E-06	<1.00E-06	5.97E-01	3.04E 00
XE-135M	CI	<1.00E-06	<1.00E-06	4.94E-02	3.19E-01
XE-137	CI	<1.00E-06	<1.00E-06	<1.00E-06	1.51E-01
XE-138	CI	<1.00E-06	<1.00E-06	1.42E-01	1.07E 00
3H	CI	4.86E 00	2.84E 01	8.56E-03	9.38E-03
IODINES					
I-131	CI	1.23E-03	2.43E-04		
I-133	CI	<1.00E-10	2.63E-06		
I-135	CI	<1.00E-10	<1.00E-10		
PARTICULATES					
BA-LA-140	CI	<2.00E-13	<1.00E-13		
CE-144	CI	9.75E-07	<8.00E-14		
CO-58	CI	1.18E-05	<1.00E-14		
CO-60	CI	2.89E-05	2.49E-05		
CS-134	CI	3.07E-07	8.71E-07		
CS-137	CI	1.25E-06	2.69E-06		
MN-54	CI	1.31E-06	5.96E-07		
SR-89	CI	<9.00E-15	7.12E-07		
SR-90	CI	4.82E-07	1.83E-08		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS MIXED MODE RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-37	CI	<1.00E-04	<4.00E-09	3.48E-02	1.07E 00
AR-41	CI	<1.00E-04	<1.00E-05	9.57E-03	2.24E-03
C-14	CI	3.25E 00	1.75E 01	4.54E-02	1.85E 01
KR-85	CI	5.56E 00	2.06E 01	6.26E-01	2.78E 01
KR-85M	CI	<1.00E-04	<1.00E-05	2.04E-01	5.41E-01
KR-87	CI	<1.00E-04	<1.00E-05	3.58E-01	9.62E-01
KR-88	CI	<1.00E-04	<1.00E-05	3.66E-01	1.06E 00
XE-131M	CI	<1.00E-04	<1.00E-05	5.50E 00	1.78E 01
XE-133	CI	9.95E 01	1.96E 02	9.63E 01	4.24E 02
XE-133M	CI	<1.00E-04	<1.00E-05	9.93E-02	2.50E-01
XE-135	CI	<1.00E-04	<1.00E-05	1.25E 00	3.18E 00
XE-135M	CI	<1.00E-04	<1.00E-05	1.31E-01	3.18E-01
XE-137	CI	<1.00E-04	<1.00E-05	3.95E-02	4.04E-01
XE-138	CI	<1.00E-04	<1.00E-05	4.46E-01	1.52E 00
3H	CI	1.88E 01	1.55E 01	6.35E-03	2.03E-01
IODINES					
I-131	CI	5.22E-04	1.03E-03		
I-133	CI	<1.00E-10	9.91E-05		
I-135	CI	<1.00E-10	<1.00E-10		
PARTICULATES					
BA-LA-140	CI	<1.00E-13	<1.00E-13		
CE-141	CI	<1.00E-11	3.75E-07		
CE-144	CI	<7.00E-14	1.08E-06		
CO-58	CI	<2.00E-14	3.56E-07		
CO-60	CI	1.17E-05	8.81E-06		
CS-134	CI	1.51E-07	4.08E-05		
CS-137	CI	0.91E-07	4.55E-05		
MN-54	CI	<7.00E-14	<1.00E-14		
RU-103	CI	<1.00E-11	3.41E-07		
SR-89	CI	3.86E-07	<3.00E-15		
SR-90	CI	2.91E-07	3.28E-08		
ZR-NB-95	CI	<1.00E-11	1.57E-06		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	5.55E-01	2.69E-01	1.15E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.90E-09	1.39E-09	
3. PERCENT OF APPLICABLE LIMIT	%	5.55E 00	2.69E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	6.14E 02	5.40E 02	3.55E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.21E-06	2.78E-06	
3. PERCENT OF APPLICABLE LIMIT	%	1.07E-01	9.28E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.14E-01	2.74E-02	1.89E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.98E-10	1.41E-10	
3. PERCENT OF APPLICABLE LIMIT	%	2.00E-02	4.70E-03	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	3.72E-06	3.77E-04	8.00E 00
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.21E 06	2.27E 07	3.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.91E 11	1.94E 11	2.60E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	8.74E-02	3.90E-02	1.15E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.48E-10	1.62E-10	
3. PERCENT OF APPLICABLE LIMIT	%	8.74E-01	3.09E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.41E 03	1.38E 03	3.55E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	7.24E-06	7.26E-06	
3. PERCENT OF APPLICABLE LIMIT	%	2.41E-01	2.42E-01	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	8.03E-02	7.04E-02	1.89E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.12E-10	3.71E-10	
3. PERCENT OF APPLICABLE LIMIT	%	1.38E-02	1.23E-02	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	8.01E-06	7.00E-08	8.00E 00
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.68E 07	1.04E 07	3.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.95E 11	1.90E 11	2.60E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-110M	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
BA-LA-140	CI	<1.00E-06	<1.00E-06	<1.00E-06	<1.00E-06
BE-7	CI	<5.00E-07	<3.00E-07	<5.00E-07	<1.00E-07
CE-141	CI	<9.00E-08	<1.00E-07	<2.00E-07	<1.00E-07
CE-144	CI	<4.00E-07	<1.00E-07	<4.00E-07	<1.00E-07
CO-57	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
CO-58	CI	6.28E-03	<5.00E-07	9.79E-02	4.93E-02
CO-60	CI	1.92E-02	1.27E-02	4.73E-02	5.09E-02
CR-51	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
CS-134	CI	3.28E-02	7.44E-03	1.43E-01	5.52E-02
CS-137	CI	4.28E-02	1.67E-02	1.47E-01	5.44E-02
EU-154	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
FE-59	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
I-131	CI	1.08E-02	1.16E-02	2.69E-03	7.18E-03
I-133	CI	<5.00E-07	<5.00E-07	<5.00E-07	6.42E-04
MN-54	CI	4.92E-04	<5.00E-07	3.87E-03	2.89E-03
MO-99	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
RU-106	CI	<4.00E-07	<1.00E-07	<4.00E-07	<1.00E-07
SB-124	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
SB-125	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
SR-89	CI	<4.00E-08	7.80E-05	9.27E-05	2.55E-04
SR-90	CI	1.66E-04	<1.00E-08	8.88E-05	1.47E-04
TC-99M	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
ZN-65	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
ZR-NB-95	CI	<4.00E-08	<5.00E-07	<1.00E-07	<5.00E-07
AR-37	CI	<1.00E-08	<1.00E-05	<1.00E-08	<1.00E-05
KR-85	CI	<2.00E-08	<1.00E-05	3.74E-05	5.64E-05
TRITIUM	CI	1.72E 00	2.04E-01	6.12E 02	5.40E 02
XE-133	CI	<1.00E-06	<1.00E-05	1.10E-01	2.72E-02
XE-135	CI	<1.00E-06	<1.00E-05	4.30E-03	1.21E-04

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
BA-LA-140	CI	<1.00E-06	<1.00E-07	<1.00E-06	7.32E-04
BE-7	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
CE-141	CI	<2.00E-07	<1.00E-07	9.33E-05	1.05E-03
CE-144	CI	<5.00E-07	<2.00E-07	8.71E-04	2.38E-04
CO-57	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
CO-58	CI	<3.00E-08	<1.00E-08	3.45E-03	3.62E-04
CO-60	CI	1.03E-02	1.95E-03	1.35E-02	6.32E-03
CR-51	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
CS-134	CI	7.23E-04	1.52E-03	2.14E-02	6.64E-03
CS-137	CI	5.89E-03	1.53E-03	2.48E-02	8.79E-03
EU-154	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
FE-59	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
I-131	CI	2.84E-03	7.52E-04	2.26E-03	3.18E-04
I-133	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
MN-54	CI	<2.00E-08	<1.00E-08	1.45E-04	2.15E-05
MO-99	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
RU-103	CI	<2.00E-07	<5.00E-07	<5.00E-07	4.53E-05
SB-124	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
SB-125	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
SR-89	CI	1.03E-04	<4.00E-08	5.90E-05	3.56E-04
SR-90	CI	5.33E-04	<5.00E-08	2.69E-05	1.52E-04
TC-99M	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
ZN-65	CI	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
ZR-NB-95	CI	<4.00E-08	<1.00E-08	3.95E-04	1.00E-04
AR-37	CI	<5.00E-08	<1.00E-08	<6.00E-09	<1.00E-08
KR-85	CI	2.29E-03	<2.00E-09	2.01E-04	1.03E-04
TRITIUM	CI	8.35E-01	1.75E 00	1.41E 03	1.38E 03
XE-133	CI	<1.00E-05	<1.00E-05	7.52E-02	6.31E-02
XE-135	CI	<1.00E-05	<1.00E-05	2.59E-03	7.24E-03

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	4.51E 01	
	CI	9.40E 01	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.03E 02	
	CI	1.51E 00	1.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
CO-60	%	8.00E 01
CO-58	%	1.00E 01
CS-137	%	5.00E 00
MN-54	%	5.00E 00
B		
CO-60	%	8.70E 01
CO-58	%	5.00E 00
CS-137	%	4.00E 00
MN-54	%	4.00E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
8	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= HADDAM NECK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	8.49E 00	
	CI	4.82E 01	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	7.25E 01	
	CI	2.61E-01	1.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A			
CO-60	%	8.00E 01	
CO-58	%	1.00E 01	
CS-137	%	0.50E 01	
MN-54	%	0.50E 01	
B			
CO-60	%	8.70E 01	
CO-58	%	5.00E 00	
CS-137	%	4.00E 00	
MN-54	%	4.00E 00	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
5	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

0

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION EDWIN I. HATCH

LOCATION 11-MI N BAXLEY GA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1
TYPE BWR
DOCKET NO. 50-321
COOLING WATER SOURCE ALTAMAHA RIVER
UNIT NUMBER 2
TYPE BWR
DOCKET NO. 50-366
COOLING WATER SOURCE ALTAMAHA RIVER

LICENSEE GEORGIA POWER
LICENSED POWER (MWT) 2436.0
INITIAL CRITICALITY 09/12/74

LICENSEE GEORGIA POWER
LICENSED POWER (MWT) 2436.0
INITIAL CRITICALITY 07/04/78

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

THE TOTAL CURIE RELEASE IS DETERMINED FROM THE CONTINUOUSLY READING GASEOUS MONITORS IN ADDITION TO THE VENT FLOW RECORDERS. ACTIVITY MONITORS AND VENT FLOW RATE READINGS ARE READ HOURLY AND INPUT INTO THE COMPUTER. FROM THESE READINGS A DAILY RELEASE IS CALCULATED. THE CALIBRATION FACTORS FOR THE MONITORS ARE DETERMINED FROM THE MONTHLY ISOTOPICS WHEN SUFFICIENT ACTIVITY ALLOWS OR BY INJECTION OF A KNOWN AMOUNT OF OFF-GAS INTO THE SAMPLE CHAMBERS. THE TOTAL CURIE RELEASE IS CALCULATED BY THE COMPUTER FOR EACH OF THE INDIVIDUAL NUCLIDES RELEASED. THIS NUMBER IS MULTIPLIED BY THE AVERAGE ENERGY PER DISINTEGRATION (GAMMA AND BETA) ALONG WITH THE COEFFICIENTS IN THE RELEASE LIMIT FORMULA IN OUR ENVIRONMENTAL TECHNICAL SPECIFICATIONS. ALL OF THE NUCLIDES ARE SUMMED AND STORED IN THEIR RESPECTIVE DATA FILES UNTIL THE END OF THE QUARTER. THEN THE COMPUTER DIVIDES THE SUM OF THE NUCLIDES BY THE SECONDS IN THE QUARTER TO DETERMINE THE PERCENT OF THE TECH. SPEC. LIMIT RELEASED.

IODINES

IODINE RELEASES ARE DETERMINED WEEKLY FOR I-131, I-133, AND I-135 FOR EACH VENT. WHERE SIGNIFICANT ACTIVITY IS NOT MEASURED MDA RELEASES ARE CALCULATED. SINCE CALCULATED MDA'S ARE BELOW TECHNICAL SPECIFICATION DETECTABLE CONCENTRATIONS THEN 0 (ZERO) RELEASE IS USED FOR THE WEEKS WITH ONLY MDA VALUES. WEEKLY RELEASES ARE SUMMARIZED WITH THE AID OF THE COUNTING ROOM CALCULATOR - COMPUTER SYSTEM AND A QUARTERLY TOTAL IS PREPARED FROM THE WEEKLY SUMMARIES. THE PERCENT TECHNICAL SPECIFICATION FOR I-131 ON TABLE 2-1 IS BASED ON THE QUARTERLY TECHNICAL SPECIFICATION LIMIT.

PARTICULATES

PARTICULATE RELEASES ARE DETERMINED WEEKLY FOR EACH VENT. WHERE SIGNIFICANT ACTIVITY IS NOT MEASURED MDA RELEASE IS CALCULATED. SINCE CALCULATED MDA'S ARE BELOW TECHNICAL SPECIFICATION DETECTABLE CONCENTRATIONS, THEN 0 (ZERO) RELEASE IS USED FOR WEEKS WITH ONLY MDA VALUES. WEEKLY RELEASES ARE SUMMARIZED WITH THE AID OF THE COUNTING ROOM CALCULATOR - COMPUTER.

LIQUID EFFLUENTS

EACH BATCH OF LIQUID RADWASTE IS MEASURED FOR DISSOLVED GASES AND GAMMA ISOTOPES BY GE(LI) SPECTROMETRY WITH ON-LINE COMPUTER. SR-89 AND SR-90 ARE MEASURED FROM MONTHLY COMPOSITES BY CHEMICAL SEPARATION AND GAS FLOW PROPORTIONAL COUNTING. EACH BATCH IS MEASURED FOR GROSS GAMMA BY 2X2 NAI WITH CRYSTAL COUNTING AND GROSS BETA BY GAS FLOW PROPORTIONAL COUNTING. MONTHLY COMPOSITES ARE MEASURED FOR TRITIUM BY DISTILLATION AND LIQUID SCINTILLATION COUNTING AND ALPHA BY GAS FLOW PROPORTIONAL COUNTING.

* 10 CFR 20 APPENDIX B, TABLE 2
N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION EDWIN I. HATCH

LOCATION 11 MI N BAXLEY GA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA QUARTER 1	BETA QUARTER 2	GAMMA QUARTER 1	GAMMA QUARTER 2
BATCH RELEASES				
A. LIQUID				
1. NUMBER OF BATCH RELEASES-			187	130
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-			2.25E 04	1.50E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			1.82E 02	2.55E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			1.20E 02	1.16E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			1.00E 00	7.80E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-			3.75E 07	1.44E 07
B. GASEOUS				
NUMBER OF BATCH RELEASES-				
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-				
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-				
ABNORMAL RELEASES				
A. LIQUID				
NUMBER OF RELEASES				
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES				
2. TOTAL ACTIVITY RELEASED (CURIES)				

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION EDWIN I. HATCH

LOCATION 11 MI N BAXLEY GA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-

2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-

3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-

5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-

2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-

3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-

5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES

2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES

2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=EDWIN I. HATCH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	3.13E 02	6.28E 00	8.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.98E 01	7.99E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.22E-02	1.20E-03	
B. IODINES				
1. TOTAL IODINE-131	CI	1.08E-04	3.19E-05	1.10E 02
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.37E-05	4.06E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.40E-03	1.59E-03	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	4.14E-05	7.31E-05	1.00E 02
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.27E-06	9.29E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.88E-03	4.33E-03	
4. GROSS ALPHA RADIOACTIVITY	CI	4.93E-06	7.53E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.97E-02	6.42E-01	9.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.51E-03	8.17E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.41E-07	8.22E-08	

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N/R=NOT REPORTED

INSTALLATION=EDWIN I. HATCH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.59E 02	1.04E 03	8.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.30E 01	1.29E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.88E-02	2.56E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	1.60E-05	1.44E-03	1.10E 02
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.04E-06	1.79E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.00E-04	3.60E-02	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.47E-04	2.27E-03	1.00E 02
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.87E-05	2.82E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.01E-02	5.20E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	5.25E-06	4.83E-06	1.00E 02
D. TRITIUM				
1. TOTAL RELEASE	CI	2.53E 00	2.72E 00	9.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.22E-01	3.38E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	0.00E 00	0.00E 00	

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INSTALLATION=EDWIN I. HATCH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	2.24E-05	2.83E-03		
KR-85	CI	0.00E 00	0.00E 00		
KR-85M	CI	1.88E-02	4.32E-03		
KR-87	CI	1.20E-02	7.98E-03		
KR-88	CI	5.47E-02	1.56E-03		
N-13	CI	2.95E 00	2.44E-02		
XE-133	CI	4.03E-01	1.23E-06		
XE-133M	CI	1.84E-03	6.41E-03		
XE-135	CI	5.95E-02	2.23E-02		
XE-135M	CI	8.02E-03	5.09E-04		
XE-138	CI	2.28E-03	9.75E-04		
IODINES					
I-131	CI	9.29E-05	1.78E-05		
I-133	CI	5.13E-05	1.84E-05		
I-135	CI	1.36E-05	3.59E-04		
PARTICULATES					
BA-LA-140	CI	2.68E-09	7.90E-06		
CS-134	CI	0.00E 00	0.00E 00		
CS-137	CI	1.03E-05	1.58E-05		
I-131	CI	2.50E-06	2.66E-05		
SR-89	CI	9.90E-06	1.20E-05		
SR-90	CI	7.01E-06	7.02E-06		

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N/R=NOT REPORTED

INSTALLATION=EDWIN I. HATCH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

		GAS EFFLUENTS		GROUND RELEASE	
NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
				NONE	NONE
FISSION GASES					
AR-41	CI	0.00E 00	0.00E 00		
I-131	CI	0.00E 00	0.00E 00		
I-133	CI	0.00E 00	0.00E 00		
I-135	CI	0.00E 00	0.00E 00		
KR-85	CI	0.00E 00	0.00E 00		
KR-85M	CI	1.92E-03	1.13E-01		
KR-87	CI	1.21E-03	8.15E-01		
KR-88	CI	2.58E-03	1.27E 00		
KR-89	CI	1.10E-01	4.52E 01		
N-13	CI	4.99E 00	2.55E 00		
XE-131M	CI	0.00E 00	0.00E 00		
XE-133	CI	5.40E 00	1.07E 00		
XE-133M	CI	9.72E-02	3.86E-02		
XE-135	CI	2.50E 01	5.97E 00		
XE-135M	CI	0.00E 00	1.39E-03		
XE-137	CI	0.00E 00	0.00E 00		
XE-138	CI	0.00E 00	1.63E-01		
IODINES					
I-131	CI	4.76E-06	9.31E-04		
I-133	CI	3.42E-06	2.50E-04		
I-135	CI	2.70E-06	2.13E-04		
PARTICULATES					
BA-140	CI	0.00E 00	0.00E 00		
CE-141	CI	0.00E 00	0.00E 00		
CE-144	CI	0.00E 00	9.63E-08		
CO-58	CI	0.00E 00	1.02E-05		
CO-60	CI	5.44E-05	5.06E-05		
CR-51	CI	3.58E-05	3.46E-04		
CS-134	CI	1.23E-08	6.51E-04		
CS-137	CI	4.12E-10	6.49E-04		
FE-59	CI	0.00E 00	3.18E-07		
I-131	CI	5.26E-08	4.51E-04		
LA-140	CI	3.80E-08	0.00E 00		
MN-54	CI	2.54E-05	0.00E 00		
NB-95	CI	0.00E 00	3.87E-08		
SN-113	CI	0.00E 00	5.13E-06		
SR-89	CI	6.44E-06	2.55E-05		
SR-90	CI	8.98E-07	3.32E-06		
ZR-95	CI	0.00E 00	0.00E 00		

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INSTALLATION=EDWIN I. HATCH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	4.42E 00	4.36E-02		
KR-85	CI	0.00E 00	0.00E 00		
KR-85M	CI	5.74E 01	1.51E-01		
KR-87	CI	1.68E 00	9.87E-03		
KR-88	CI	2.28E 01	8.63E-03		
N-13	CI	2.66E 01	5.64E 00		
XE-133	CI	1.91E 02	0.00E 00		
XE-133M	CI	1.45E 00	0.00E 00		
XE-135	CI	3.11E 00	5.11E-04		
XE-135M	CI	2.86E-01	2.56E-01		
XE-138	CI	8.99E-01	2.97E-02		
IODINES					
I-131	CI	1.47E-05	1.41E-05		
I-133	CI	4.21E-06	6.43E-05		
I-135	CI	1.11E-05	1.42E-05		
PARTICULATES					
BA-LA-140	CI	1.06E-06	4.02E-07		
CS-134	CI	0.00E 00	0.00E 00		
CS-137	CI	2.66E-07	2.06E-07		
I-131	CI	2.46E-07	4.26E-07		
SR-89	CI	5.61E-06	2.62E-06		
SR-90	CI	4.88E-06	7.53E-08		

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INSTALLATION=EDWIN I. HATCH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
				NONE	NONE
FISSION GASES					
AR-41	CI	3.59E 00	1.16E 01		
I-131	CI	6.75E-07	0.00E 00		
I-133	CI	0.00E 00	0.00E 00		
I-135	CI	0.00E 00	0.00E 00		
KR-85	CI	0.00E 00	0.00E 00		
KR-85M	CI	2.66E 01	1.33E 02		
KR-87	CI	2.55E 00	9.86E 00		
KR-88	CI	7.54E 00	3.54E 01		
KR-89	CI	0.00E 00	0.00E 00		
N-13	CI	4.82E 00	3.03E 01		
XE-131M	CI	0.00E 00	4.45E 01		
XE-133	CI	1.60E 02	6.58E 02		
XE-133M	CI	0.00E 00	2.21E 00		
XE-135	CI	3.89E 00	1.84E 01		
XE-135M	CI	5.10E-03	6.43E 00		
XE-137	CI	3.67E-02	0.00E 00		
XE-138	CI	1.40E 01	3.19E 01		
IODINES					
I-131	CI	1.05E-05	5.58E-05		
I-133	CI	2.88E-05	9.19E-05		
I-135	CI	1.01E-06	4.83E-05		
PARTICULATES					
BA-140	CI	0.00E 00	1.21E-05		
CE-141	CI	0.00E 00	0.00E 00		
CE-144	CI	0.00E 00	0.00E 00		
CO-58	CI	0.00E 00	0.00E 00		
CO-60	CI	6.98E-07	2.76E-07		
CR-51	CI	0.00E 00	0.00E 00		
CS-134	CI	0.00E 00	2.58E-06		
CS-137	CI	0.00E 00	3.36E-06		
FE-59	CI	0.00E 00	0.00E 00		
I-131	CI	1.42E-08	2.09E-06		
LA-140	CI	7.08E-07	3.41E-05		
MN-54	CI	0.00E 00	0.00E 00		
NB-95	CI	0.00E 00	0.00E 00		
SN-133	CI	0.00E 00	0.00E 00		
SR-89	CI	2.24E-05	2.10E-05		
SR-90	CI	2.71E-07	2.31E-07		
ZR-95	CI	0.00E 00	0.00E 00		

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INSTALLATION=EDWIN I. HATCH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.26E-02	5.25E-03	4.20E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.08E-08	1.25E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.02E-01	1.02E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	4.24E 00	8.78E-01	2.80E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.65E-06	2.09E-06	
3. PERCENT OF APPLICABLE LIMIT	%	1.22E-01	6.96E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.02E-02	1.78E-03	1.00E 02
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.80E-09	4.33E-09	
3. PERCENT OF APPLICABLE LIMIT	%	8.80E-02	4.23E-02	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	2.92E-07	1.08E-07	1.20E 02
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	7.22E 06	4.31E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.15E 09	8.19E 08	1.60E 02

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INSTALLATION=EDWIN I. HATCH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	7.34E-03	1.51E-02	4.73E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.87E-09	1.91E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.02E-01	3.35E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.49E 00	2.39E 00	3.31E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.70E-06	3.17E-06	
3. PERCENT OF APPLICABLE LIMIT	%	5.65E-02	1.06E-01	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	4.47E-03	6.34E-04	1.39E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.51E-09	7.31E-10	
3. PERCENT OF APPLICABLE LIMIT	%	1.37E-02	1.83E-03	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.28E-05	3.52E-06	1.20E 02
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	9.64E 06	8.08E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.22E 09	1.62E 09	1.60E 02

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=EDWIN I. HATCH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CS-134	CI			4.39E-04	4.48E-04
CS-137	CI			7.83E-04	7.08E-04
I-131	CI			1.42E-04	8.03E-06
SR-89	CI			0.00E 00	0.00E 00
SR-90	CI			1.44E-04	7.81E-05
CO-58	CI			4.92E-04	1.79E-04
CO-60	CI			2.10E-03	7.88E-04
CR-51	CI			2.06E-03	3.34E-04
FE-59	CI			4.22E-05	9.42E-05
MN-54	CI			3.79E-04	1.93E-04
ZN-65	CI			4.06E-03	1.25E-03
BA-140	CI			1.81E-05	4.58E-06
CE-141	CI			4.02E-06	1.86E-06
MO-99	CI			4.68E-05	1.99E-05
TE-99M	CI			1.12E-05	2.53E-06
ZR-95	CI			8.33E-05	6.41E-05
CE-144	CI			0.00E 00	0.00E 00
CU-64	CI			1.12E-03	8.47E-04
F-18	CI			2.88E-04	1.59E-04
LA-140	CI			5.20E-06	3.52E-07
NA-24	CI			5.68E-06	1.90E-06
NB-95	CI			1.70E-04	7.78E-05
AG-110M	CI			4.45E-05	4.84E-06
AS-76	CI			2.81E-05	2.72E-06
CS-136	CI			3.99E-06	5.95E-07
I-132	CI			6.85E-06	4.55E-06
I-133	CI			7.23E-06	3.95E-06
I-135	CI			9.91E-06	1.91E-06
NP-239	CI			2.23E-05	8.46E-06
W-187	CI			5.07E-05	4.69E-06
XE-133	CI			3.62E-03	0.00E 00
XE-135	CI			4.80E-05	0.00E 00
ZN-69M	CI			1.16E-05	1.88E-06
ZR-97	CI			9.99E-06	2.48E-06

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N/R=NOT REPORTED

INSTALLATION=EDWIN I. HATCH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI			1.17E-06	3.11E-06
AS-76	CI			8.91E-07	9.19E-05
BA-140	CI			9.75E-06	1.70E-06
CE-141	CI			1.19E-06	0.00E 00
CE-144	CI			0.00E 00	0.00E 00
CO-58	CI			2.45E-04	4.01E-04
CO-60	CI			1.25E-03	9.47E-04
CR-51	CI			6.00E-05	2.16E-03
CS-134	CI			3.74E-04	1.67E-03
CS-136	CI			0.00E 00	1.50E-04
CS-137	CI			6.76E-04	1.88E-03
CU-64	CI			2.49E-04	2.48E-03
FE-59	CI			5.37E-06	1.08E-05
F-18	CI			5.83E-04	1.25E-03
I-131	CI			3.10E-06	5.36E-04
I-132	CI			0.00E 00	4.71E-07
I-133	CI			7.62E-06	5.70E-06
I-135	CI			1.94E-05	9.78E-06
LA-140	CI			2.84E-07	0.00E 00
MN-54	CI			2.00E-04	1.34E-04
MN-56	CI			7.39E-06	1.27E-05
MO-99	CI			4.58E-05	0.00E 00
NA-24	CI			3.17E-04	1.52E-03
NB-95	CI			4.16E-05	1.67E-05
NI-65	CI			0.00E 00	1.84E-06
NP-239	CI			0.00E 00	0.00E 00
SR-89	CI			9.81E-04	9.12E-05
SR-90	CI			1.16E-04	5.69E-05
TC-99M	CI			0.00E 00	0.00E 00
W-187	CI			0.00E 00	3.67E-05
ZN-65	CI			2.13E-03	1.57E-03
ZN-69M	CI			0.00E 00	5.89E-06
ZR-95	CI			1.80E-05	4.16E-06
ZR-97	CI			0.00E 00	1.33E-06
KR-85M	CI			2.52E-06	0.00E 00
KR-87	CI			0.00E 00	0.00E 00
KR-88	CI			0.00E 00	4.42E-07
XE-131M	CI			0.00E 00	0.00E 00
XE-133	CI			4.40E-03	2.91E-04
XE-133M	CI			4.95E-05	0.00E 00
XE-135	CI			1.85E-05	3.43E-04
XE-135M	CI			6.75E-12	0.00E 00
XE-138	CI			2.80E-07	0.00E 00

N/A=NOT APPLICABLE
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INSTALLATION= EDWIN I. HATCH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.65E 02	
	CI	6.36E 01	1.00E 02
B. DRY, COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.22E 02	
	CI	2.98E 00	1.00E 02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	2.85E 00	
	CI	1.72E 02	1.00E 02
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
ZN-65	X	4.51E 01
CO-60	X	1.55E 01
CS-137	X	1.30E 01
OTHERS	X	2.65E 01
B		
ZN-65	X	4.51E 01
CO-60	X	1.55E 01
CS-137	X	1.30E 01
OTHERS	X	2.65E 01
C		
ZR-95	X	7.50E 01
NB-95	X	2.50E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
28	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION= EDWIN I. HATCH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	2.76E 02	
	CI	1.45E 02	1.00E 02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	7.40E 01	
	CI	1.60E 01	1.00E 02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	1.03E 01	
	CI	1.05E 04	1.00E 02
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
OTHERS	X	1.50E 01
ZN-65	X	5.70E 01
CO-60	X	1.50E 01
CS-137	X	5.00E 00
NB-95	X	8.00E 00
B		
OTHERS	X	1.90E 01
ZN-65	X	5.70E 01
CO-60	X	1.50E 01
CS-137	X	5.00E 00
CR-51	X	4.00E 00
C		
FUEL CHANNELS		
NB-95	X	2.50E 01
ZR-95	X	7.50E 01
LPRM'S		
OTHERS	X	6.00E 00
NB-95	X	6.00E 00
CO-60	X	4.20E 01
ZN-65	X	4.60E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
38	TRUCK	BARNWELL S.C.

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INSTALLATION HUMBOLDT BAY

LOCATION 4 MI SW EUREKA CA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1
TYPE BWR
DOCKET NO. 50-133
COOLING WATER SOURCE HUMBOLDT BAY

LICENSEE PACIFIC GAS & ELECTRIC
LICENSED POWER (MWT) 220.0
INITIAL CRITICALITY 02/16/63

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

IODINES	Fission & Activation Gases: N/A
ALL	3.00E-10
PARTICULATES	Liquid Effluents: *
HALF-LIVES > 8 DAYS	3.00E-10

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

DURING OPERATION, SAMPLES (OF AIR EJECTOR OFF-GAS) ARE TAKEN AT LEAST MONTHLY FOR SODIUM IODIDE GAMMA SPECTRUM ANALYSIS AND, BASED ON SIX MEASUREABLE NUCLIDES (XE138, KR87, KR88, KR85M, XE135, AND XE133), THE REMAINING NUCLIDES IN THE MIXTURE ARE ESTIMATED. THIS ANALYSIS IS USED TO CALIBRATE THE GROSS COUNTING RESULTS OF ROUTINE SAMPLES WHICH ARE THEN USED TO CALIBRATE THE STACK CONTINUOUS MONITORS. DAILY AVERAGE RELEASE RATES DETERMINED FROM THE STACK MONITORS ARE USED TO DERIVE TOTAL QUANTITY OF THE MIXTURES RELEASED, AND INDIVIDUAL NUCLIDES ARE PROPORTIONED ACCORDING TO THE MIXTURE FOUND FROM THE MONTHLY ANALYSIS.

IODINES

CHAROCAL CARTRIDGES ARE REMOVED FROM THE STACK SAMPLING SYSTEM WEEKLY AND AFTER 48 HOUR DECAY ARE GAMMA SPECTRUM COUNTED FOR I-131 AND I-133 (WITH A SODIUM IODIDE DETECTOR).

PARTICULATES

FILTER PAPERS ARE REMOVED FROM THE STACK SAMPLING SYSTEM WEEKLY AND GROSS BETA COUNTED AFTER 48 HOUR DECAY. AFTER 7 DAYS THEY ARE RECOUNTED TO DETERMINE BALANCE (SODIUM IODIDE DETECTOR). FILTERS FOR EACH QUARTER ARE DECAY COUNTED TO DETERMINE OTHER PARTICULATES (LONG-LIVED), ALPHA EMITTERS, AND THEN ANALYZED FOR SR89 AND SR90.

LIQUID EFFLUENTS

WASTE RECEIVER TANK AND WASTE HOLD TANK BATCH SAMPLES ARE GAMMA SPECTRUM ANALYZED (SODIUM IODIDE DETECTOR) AND GROSS BETA AND GROSS GAMMA COUNTED. IF THE NUCLIDES IDENTIFIED DO NOT ACCOUNT FOR THE GROSS GAMMA COUNT, THE MIXTURE IS PROPORTIONATELY ADJUSTED. IF THE GROSS BETA COUNT INDICATES MORE ACTIVITY THAN THE ADJUSTED MIXTURE, THE EXCESS ACTIVITY IS RECORDED AS "ADDITIONAL BUT OTHERWISE UNSPECIFIED". LAUNDRY WASTE TANKS ARE INDIVIDUALLY ANALYZED ONLY BY GROSS BETA AND GROSS GAMMA. A MONTHLY COMPOSITE IS ANALYZED AS ABOVE. A QUARTERLY COMPOSITE OF ALL BATCHES IS ANALYZED FOR TRITIUM, SR89 AND SR90. THE STRONTIUM RESULTS ARE SUBTRACTED FROM "ADDITIONAL BUT OTHERWISE UNSPECIFIED" ACTIVITY AND IF NECESSARY, INCREASED TO ACCOUNT FOR THE EXCESS.

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INSTALLATION HUMBOLDT BAY

LOCATION 4 MI SW EUREKA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

BETA		GAMMA	
QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
N/A	N/A	N/A	N/A

BATCH RELEASES

A. LIQUID

	QUARTER 1	QUARTER 2
1. NUMBER OF BATCH RELEASES-	127	
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-	2.40E 03	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	3.90E 02	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	1.90E 01	
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	4.00E 00	
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-	N/A	

B. GASEOUS

1. NUMBER OF BATCH RELEASES-	NONE
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-	

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)	

B. GASEOUS

1. NUMBER OF RELEASES	N/A
2. TOTAL ACTIVITY RELEASED (CURIES)	

N/A=NOT APPLICABLE
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INSTALLATION HUMBOLDT BAY

LOCATION 4 MI SW EUREKA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	QUARTER 3 N/A	BETA QUARTER 4 N/A	QUARTER 3 N/A	GAMMA QUARTER 4 N/A
BATCH RELEASES			QUARTER & 3	QUARTER 4
A. LIQUID				26
1. NUMBER OF BATCH RELEASES-				1.52E 03
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-				3.42E 02
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				5.90E 01
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				9.00E 00
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-				N/A
B. GASEOUS				
NUMBER OF BATCH RELEASES-				NONE
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-				
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-				
ABNORMAL RELEASES				
A. LIQUID				
NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES				N/A
2. TOTAL ACTIVITY RELEASED (CURIES)				

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N/R=NOT REPORTED

INSTALLATION=HUMBOLDT BAY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	<1.10E-05	<1.10E-05	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<1.41E-06	<1.40E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	X	<2.82E-09	<2.80E-09	
B. IODINES				
1. TOTAL IODINE-131	CI	<1.00E-06	<1.00E-06	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<1.29E-07	<1.27E-07	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	X	<7.17E-05	<7.06E-05	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.39E-04	1.42E-04	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.36E-05	1.81E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	X	2.42E-02	1.00E-02	
4. GROSS ALPHA RADIOACTIVITY	CI	6.26E-07	3.31E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	<1.00E-02	<1.00E-02	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<1.29E-03	<1.27E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	X			

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INSTALLATION=HUMBOLDT BAY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	<1.10E-05	<1.10E-05	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<1.38E-06	<1.38E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	<2.76E-09	<2.76E-09	
B. IODINES				
1. TOTAL IODINE-131	CI	<3.00E-06	<3.00E-06	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<3.77E-07	<3.77E-07	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	<2.09E-04	<2.09E-04	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.14E-04	1.23E-04	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.43E-05	1.55E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	7.94E-03	8.61E-03	
4. GROSS ALPHA RADIOACTIVITY	CI	1.40E-07	2.79E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	<1.00E-02	<1.00E-02	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<1.26E-03	<1.26E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=HUMBOLDT BAY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-83M	CI	<1.00E-06*	<1.00E-06*		
KR-85M	CI	<1.00E-06*	<1.00E-06*		
KR-87	CI	<1.00E-06*	<1.00E-06*		
KR-88	CI	<1.00E-06*	<1.00E-06*		
KR-89	CI	<1.00E-06*	<1.00E-06*		
XE-133	CI	<1.00E-06*	<1.00E-06*		
XE-133M	CI	<1.00E-06*	<1.00E-06*		
XE-135	CI	<1.00E-06*	<1.00E-06*		
XE-135M	CI	<1.00E-06*	<1.00E-06*		
XE-137	CI	<1.00E-06*	<1.00E-06*		
XE-138	CI	<1.00E-06*	<1.00E-06*		
IODINES					
I-131	CI	<1.00E-06*	<1.00E-06*		
I-133	CI	<1.00E-06*	<1.00E-06*		
I-135	CI	<1.00E-06*	<1.00E-06*		
PARTICULATES					
BA-LA-140	CI	<1.00E-06*	<1.00E-06*		
CE-144	CI	<6.54E-06*	<4.65E-06*		
CO-60	CI	2.26E-04	9.71E-05		
CS-134	CI	2.95E-06	1.84E-06		
CS-137	CI	1.60E-05	1.20E-05		
MN-54	CI	8.45E-05	2.15E-05		
SR-89	CI	<1.00E-06*	<1.00E-06*		
SR-90	CI	<6.94E-07	2.93E-06		

* No release was detected due to the decay time since the unit was shut down on July 2, 1976. Quantities reported are an arbitrary 1 micro-curie.

+ The minimum sensitivity of the plant's sodium iodide spectrometer system for a particular nuclide depends upon the mixture of nuclides present in each batch; therefore, some nuclides not detected could be present at levels comparable to those detected. Those nuclides expected to be present, but not detected, are reported "less than" typical quarter curie maximum quantities.

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INSTALLATION=HUMBOLDT BAY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-83M	CI	<1.00E-06*	<1.00E-06*		
KR-85M	CI	<1.00E-06*	<1.00E-06*		
KR-87	CI	<1.00E-06*	<1.00E-06*		
KR-88	CI	<1.00E-06*	<1.00E-06*		
KR-89	CI	<1.00E-06*	<1.00E-06*		
XE-133	CI	<1.00E-06*	<1.00E-06*		
XE-133M	CI	<1.00E-06*	<1.00E-06*		
XE-135	CI	<1.00E-06*	<1.00E-06*		
XE-135M	CI	<1.00E-06*	<1.00E-06*		
XE-137	CI	<1.00E-06*	<1.00E-06*		
XE-138	CI	<1.00E-06*	<1.00E-06*		
IODINES					
I-131	CI	<1.00E-06*	<1.00E-06*		
I-133	CI	<1.00E-06*	<1.00E-06*		
I-135	CI	<1.00E-06*	<1.00E-06*		
PARTICULATES					
BA-LA-140	CI	<1.00E-06*	<1.00E-06*		
CE-144	CI	<1.00E-06*	<1.00E-06*		
CO-60	CI	5.49E-05	6.64E-05		
CS-134	CI	<1.05E-05+	<8.68E-06+		
CS-137	CI	1.04E-05	1.76E-05		
MN-54	CI	2.49E-05	2.35E-05		
SR-89	CI	<1.02E-05	<3.92E-06		
SR-90	CI	<1.08E-06	<1.10E-06		

* No release was detected due to the decay time since the unit was shut down on July 2, 1976. Quantities reported are an arbitrary 1 micro-curie.

+ The minimum sensitivity of the plant's sodium iodide spectrometer system for a particular nuclide depends upon the mixture of nuclides present in each batch; therefore, some nuclides not detected could be present at levels comparable to those detected. Those nuclides expected to be present, but not detected, are reported "less than" typical quarter curie maximum quantities.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=HUMBOLDT BAY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.40E-01	4.82E-03	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.56E-09	2.10E-10	
3. PERCENT OF APPLICABLE LIMIT	%	2.79E-02	6.98E-04	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.47E-02	9.15E-03	4.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.56E-10	4.00E-10	
3. PERCENT OF APPLICABLE LIMIT	%	1.85E-05	1.33E-05	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	<2.00E-06	<2.00E-06	5.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<1.68E-05	<6.23E-06	7.50E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.96E 05	7.26E 04	5.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.52E 10	2.29E 10	5.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	4.74E-03	4.56E-02	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.84E-10	1.75E-09	
3. PERCENT OF APPLICABLE LIMIT	%	1.42E-03	9.67E-03	
B. TRITIUM				
1. TOTAL RELEASE	CI	4.48E-03	7.94E-03	4.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.74E-10	3.05E-10	
3. PERCENT OF APPLICABLE LIMIT	%	5.80E-06	1.02E-05	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	<2.00E-06	<2.00E-06	5.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	3.56E-05	<1.30E-05	7.50E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	4.58E 04	8.23E 04	5.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.58E 10	2.60E 10	5.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CS-134	CI			1.37E-02	2.28E-04
CS-137	CI			7.38E-02	1.26E-03
I-131	CI			<1.00E-06*	<1.00E-06*
SR-89	CI			<1.00E-06*	<1.00E-06*
SR-90	CI			2.76E-05	1.42E-06
CO-58	CI			<1.00E-03+	<1.00E-03+
CO-60	CI			3.12E-02	1.06E-03
CR-51	CI			<1.00E-06*	<1.00E-06*
MN-54	CI			1.37E-02	1.74E-04
ZN-65	CI			<1.00E-03+	<1.00E-03+
BA-LA-140	CI			<1.00E-06*	<1.00E-06*
CE-144	CI			5.36E-03	8.57E-05
MO-99	CI			<1.00E-06*	<1.00E-06*
TC-99M	CI			<1.00E-06*	<1.00E-06*
ZR-NB-95	CI			<1.00E-06*	<1.00E-06*
NP-239	CI			<1.00E-06*	<1.00E-06*
XE-133	CI			<1.00E-06*	<1.00E-06*
XE-135	CI			<1.00E-06*	<1.00E-06*

* No release was detected due to the decay time since the unit was shut down on July 2, 1976. Quantities reported are an arbitrary 1 micro-curie.

+ The minimum sensitivity of the plant's sodium iodide spectrometer system for a particular nuclide depends upon the mixture of nuclides present in each batch; therefore, some nuclides not detected could be present at levels comparable to those detected. Those nuclides expected to be present, but not detected, are reported "less than" typical quarter curie maximum quantities.

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CS-134	CI			4.92E-04	5.47E-03
CS-137	CI			2.44E-03	2.78E-02
I-131	CI			<1.00E-06*	<1.00E-06*
SR-89	CI			<2.58E-05	<1.85E-05
SR-90	CI			3.54E-05	7.51E-05
CO-58	CI			<1.00E-04+	<1.00E-04+
CO-60	CI			3.17E-04	3.28E-03
CR-51	CI			<1.00E-06*	<1.00E-06*
MN-54	CI			<5.00E-04+	<5.00E-03+
ZN-65	CI			<3.00E-04+	<3.00E-03+
BA-LA-140	CI			<1.00E-06*	<1.00E-06*
CE-144	CI			8.18E-04	8.33E-04
MO-99	CI			<1.00E-06*	<1.00E-06*
TC-99M	CI			<1.00E-06*	<1.00E-06*
ZR-NB-95	CI			<1.00E-06*	<1.00E-06*
NP-239	CI			<1.00E-06*	<1.00E-06*
XE-133	CI			<1.00E-06*	<1.00E-06*
XE-135	CI			<1.00E-06*	<1.00E-06*

* No release was detected due to the decay time since the unit was shut down on July 2, 1976. Quantities reported are an arbitrary 1 micro-curie.

+ The minimum sensitivity of the plant's sodium iodide spectrometer system for a particular nuclide depends upon the mixture of nuclides present in each batch; therefore, some nuclides not detected could be present at levels comparable to those detected. Those nuclides expected to be present, but not detected, are reported "less than" typical quarter curie maximum quantities.

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3 CI	NONE NONE	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 CI	1.42E 02 4.14E-01	2.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 CI		
D. OTHER (DESCRIBE)	M3 CI		

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

B		
MN-54	x	2.00E 01
CO-60	x	3.50E 01
UNIDENTIFIED	x	1.50E 01
CS-137	x	2.00E 01
CS-134	x	1.00E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
5	TRUCK	RICHLAND WA.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

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N/R=NOT REPORTED

INSTALLATION= HUMBOLDT BAY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	NONE	
	CI	NONE	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	3.57E 01	
	CI	3.77E-01	2.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

B	%	
CS-134	%	1.00E 01
CS-137	%	2.00E 01
UNIDENTIFIED	%	1.50E 01
CO-60	%	3.50E 01
MN-54	%	2.00E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
1	TRUCK	RICHLAND WA.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
---------------------	------------------------	-------------

0

N/A=NOT APPLICABLE
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INSTALLATION INDIAN POINT *

LOCATION 3 MI SW PEEKSKILL, NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1
TYPE PWR
DOCKET NO. 50-3
COOLING WATER SOURCE
UNIT NUMBER 2
TYPE PWR
DOCKET NO. 50-247
COOLING WATER SOURCE
UNIT NUMBER 3
TYPE PWR
DOCKET NO. 50-286
COOLING WATER SOURCE

LICENSEE CONSOLIDATED EDISON
LICENSED POWER (MWT) 615.0
INITIAL CRITICALITY 08/02/62

LICENSEE CONSOLIDATED EDISON
LICENSED POWER (MWT) 2758.0
INITIAL CRITICALITY 05/22/73

LICENSEE POWER AUTHORITY OF THE STATE OF NEW YORK
LICENSED POWER (MWT) 2760.0
INITIAL CRITICALITY 04/06/76

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) **

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

ANALYSIS OF EFFLUENT GASES HAS BEEN PERFORMED IN COMPLIANCE WITH THE REQUIREMENTS OF TABLE 2.4-2 OF THE ETSR. IN THE CASE OF ISOLATED TANKS (BATCH RELEASES) THE TOTAL ACTIVITY DISCHARGED IS BASED ON AN ISOTOPIC ANALYSIS OF EACH BATCH AND THE VOLUME OF GAS IN THAT BATCH CORRECTED TO STANDARD TEMPERATURE AND PRESSURE. VAPOR CONTAINMENT VENTILATION DISCHARGES HAVE BEEN GENERALLY TREATED AS BATCH RELEASES. AT LEAST ONE COMPLETE ISOTOPIC CONCENTRATION ANALYSIS OF CONTAINMENT AIR IS PERFORMED PER MONTH AND THIS IS APPLIED TO A GROSS ANALYSIS OF THE VENTILATION AIR PERFORMED PRIOR TO EACH DISCHARGE. THIS INFORMATION IS COMBINED WITH THE VOLUME OF AIR IN EACH DISCHARGE TO CALCULATE THE RADIONUCLIDE COMPOSITION OF THESE DISCHARGES. THE CONTINUOUS DISCHARGES ARE BASED ON THE ISOTOPIC CONTENT DETERMINED FROM WEEKLY SAMPLES OF VENTILATION AIR. THIS INFORMATION IS COMBINED WITH TOTAL AIR VOLUME DISCHARGED BY THIS ROUTE. THE ACCUMULATION OF BATCH AND CONTAINMENT VENTILATION RELEASES ARE THEN USED TO DETERMINE TOTAL DISCHARGES. FOR THIS REPORTING PERIOD, THE PLANT VENT WAS THE MAJOR SOURCE OF GASEOUS DISCHARGES.

IODINES

IODINE-131 IS QUANTIFIED BY COLLECTING A CONTINUOUS SAMPLE OF VENTILATION AIR ON A POTASSIUM-IODIDE IMPREGNATED ACTIVATED CHARCOAL CARTRIDGE AND A GLASS-FIBER PAPER. THESE SAMPLES ARE CHANGED WEEKLY AS REQUIRED IN TABLE 2.4-2 OF THE ETSR AND THE CONCENTRATION OF ISOTOPES FOUND BY ANALYSIS OF THESE SAMPLES IS COMBINED WITH THE VOLUME OF AIR DISCHARGED DURING THE SAMPLING PERIOD TO CALCULATE THE AMOUNT OF ACTIVITY DISCHARGED. FOR OTHER IODINE ISOTOPES THE RATIO OF EACH ISOTOPE TO IODINE-131 IS DETERMINED FOR A MONTHLY 24 HOUR SAMPLE. THESE RATIOS ARE THEN USED, ALONG WITH THE TOTAL MONTHLY DISCHARGE OF IODINE-131, TO CALCULATE THE AMOUNT OF THESE ISOTOPES DISCHARGED IN THIS MONTHLY PERIOD.

PARTICULATES

PARTICULATE RELEASES ARE QUANTIFIED BY COLLECTING A CONTINUOUS SAMPLE OF VENTILATION AIR ON A GLASS-FIBER FILTER PAPER. THESE SAMPLES ARE CHANGED WEEKLY AS REQUIRED IN TABLE 2.4-2 OF THE ETSR AND THE CONCENTRATION OF ISOTOPES FOUND BY ANALYSIS OF THESE SAMPLES IS COMBINED WITH THE VOLUME OF AIR DISCHARGED DURING THE SAMPLING PERIOD TO CALCULATE THE AMOUNT OF ACTIVITY DISCHARGED.

LIQUID EFFLUENTS

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INSTALLATION INDIAN POINT

LOCATION 3 MI SW PEEKSKILL, NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

A PROPORTIONAL COMPOSITE SAMPLE OF EACH BATCH DISCHARGE IS TAKEN AND AN ISOTOPIC ANALYSIS IS PERFORMED IN COMPLIANCE WITH REQUIREMENTS SPECIFIED IN TABLE 2.4-1 OF THE ETSR. THIS ISOTOPIC CONCENTRATION DATA IS COMBINED WITH INFORMATION OF VOLUME DISCHARGED TO DETERMINE THE AMOUNT OF EACH ISOTOPE DISCHARGED IN THE PERIOD. SAMPLES OF CONTINUOUS DISCHARGES HAVE BEEN TAKEN AND ANALYZED IN COMPLIANCE WITH TABLE 2.4-1 OF THE ETSR. THIS CONCENTRATION DATA IS COMBINED WITH THE VOLUME DISCHARGED IN CALCULATING THE TOTAL ACTIVITY DISCHARGED.

* THIS REPORT COVERS ALL SITE DISCHARGES FOR THE FIRST QUARTER OF 1978 AND ONLY UNITS 1 AND 2 FOR THE SECOND, THIRD AND FOURTH QUARTERS.

** LIMITS STATED IN THE ETSR AND 10CTR20

N/A=NOT APPLICABLE
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INSTALLATION INDIAN POINT

LOCATION 3 MI SW PEEKSKILL, NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA	
	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
	1.58E-01	1.74E-01	4.44E-02	6.57E-02
BATCH RELEASES			QUARTER 1	QUARTER 2
A. LIQUID				
1. NUMBER OF BATCH RELEASES-			404	417
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-			4.43E 04	4.60E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-			2.55E 02	2.10E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-			1.09E 02	1.26E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-			1.50E 01	1.50E 02
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-			2.29E 01	1.77E 01
B. GASEOUS				
NUMBER OF BATCH RELEASES-			124	60
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-			4.66E 04	9.24E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-			5.04E 03	5.00E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-			3.76E 02	2.50E 01
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-			4.00E 01	2.50E 01
ABNORMAL RELEASES				
A. LIQUID				
NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES			2	1
2. TOTAL ACTIVITY RELEASED (CURIES)			7.31E 01	4.01E 01

N/A=NOT APPLICABLE
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INSTALLATION INDIAN POINT

LOCATION 3 MI SW PEEKSKILL, NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

BETA		GAMMA	
QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
1.51E-01	1.52E-01	3.83E-02	3.97E-02

BATCH RELEASES

A. LIQUID

	QUARTER 3	QUARTER 4
1. NUMBER OF BATCH RELEASES-	366	360
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-	4.34E 04	4.30E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-	1.80E 02	8.57E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-	1.18E 02	1.19E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-	2.50E 01	2.50E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-	3.93E 00	6.17E 00

B. GASEOUS

	QUARTER 3	QUARTER 4
1. NUMBER OF BATCH RELEASES-	109	116
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-	3.66E 04	2.73E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-	1.63E 03	1.44E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-	3.36E 02	2.35E 02
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-	2.00E 01	4.00E 01

ABNORMAL RELEASES

A. LIQUID

	QUARTER 3	QUARTER 4
1. NUMBER OF RELEASES	NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)		

B. GASEOUS

	QUARTER 3	QUARTER 4
1. NUMBER OF RELEASES	NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)		

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INSTALLATION=INDIAN POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	8.87E 02	1.25E 02	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.14E 03	1.50E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.18E 01	4.46E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	1.46E-03	3.57E-04	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.88E-04	4.54E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.31E-07	5.80E-02	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	8.76E-04	2.26E-04	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.13E-04	2.75E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.31E-03	5.80E-02	
4. GROSS ALPHA RADIOACTIVITY	CI	<4.68E-07	<3.41E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	4.72E 00	3.19E 00	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.06E-01	4.06E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.74E 03	1.22E 03	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.45E-02	1.53E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.46E 00	3.40E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	3.11E-03	1.17E-02	3.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.91E-04	1.47E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.61E 01	4.62E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	6.62E-04	1.87E-01	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.33E-05	2.36E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.61E-01	4.62E 00	
4. GROSS ALPHA RADIOACTIVITY	CI	<3.54E-07	<1.68E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.00E 00	1.39E 00	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.26E-01	1.75E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=INDIAN POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

NUCLIDES RELEASED	UNIT	GAS EFFLUENTS GROUND		RELEASE	
		CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
FISSION GASES					
KR-85	CI	2.67E 02	4.14E 02	1.82E 02	2.78E 01
KR-85M	CI	1.70E 00	1.49E 00	1.52E 01	4.35E-01
KR-87	CI	5.12E-01		2.21E 00	3.99E-04
KR-88	CI	1.07E 01		1.54E 01	2.85E-01
XE-131M	CI	2.77E 01	5.86E 01	5.23E 01	3.19E 01
XE-133	CI	1.77E 03	5.12E 02	5.52E 03	1.23E 03
XE-133M	CI	1.69E 01	2.01E 00	7.87E 01	1.55E 00
XE-135	CI	2.04E 02	3.28E 01	1.77E 02	9.88E 00
XE-135M	CI	7.61E-01		8.84E-01	6.73E-05
XE-138	CI	1.35E-01		1.95E 00	
IODINES					
I-131	CI	1.11E-03	2.51E-04		
I-133	CI	1.07E-03	3.33E-04		
I-135	CI	<4.49E-03	<3.75E-03		
PARTICULATES					
BA-LA-140	CI	<4.02E-05	<1.86E-05		
CO-58	CI	1.85E-04	3.54E-05		
CO-60	CI	9.15E-05	3.47E-05		
CS-134	CI	3.01E-05	1.05E-05		
CS-137	CI	8.67E-05	3.05E-05		
I-131	CI	2.04E-05	7.17E-06		
SR-89	CI	<1.80E-06	<1.34E-06		
SR-90	CI	<9.03E-06	<3.20E-07		

N/A=NOT APPLICABLE
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INSTALLATION=INDIAN POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

		GAS EFFLUENTS GROUND		RELEASE	
NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		3	4	3	4
FISSION GASES					
KR-85	CI	5.36E 01	1.93E 00	1.30E 01	5.01E 00
KR-85M	CI	3.02E 00	2.24E 00	1.36E 00	7.50E-01
KR-87	CI	1.43E 00		1.53E-01	6.70E-02
KR-88	CI	<3.90E 00	<5.65E-01	<1.44E 00	<8.91E-01
XE-131M	CI	3.01E 00		3.27E 01	5.01E 00
XE-133	CI	9.94E 02	2.68E 02	1.48E 03	8.54E 02
XE-133M	CI	6.79E 00	9.31E-01	1.88E 01	7.93E 00
XE-135	CI	3.84E 01	2.16E 01	2.29E 01	2.04E 01
XE-135M	CI	8.88E 00	7.19E 00		
XE-137	CI	1.10E 01			
IODINES					
I-131	CI	2.07E-03	7.87E-03		
I-133	CI	5.45E-04	5.73E-03		
I-135	CI	4.66E-03	3.61E-02		
PARTICULATES					
BA-LA-140	CI	2.66E-05	1.65E-05		
CO-58	CI	9.30E-05	4.39E-05		
CO-60	CI	9.49E-05	4.58E-05		
CS-134	CI	1.34E-04	2.50E-05		
CS-137	CI	1.74E-04	6.99E-05		
I-131	CI	1.34E-05	2.58E-05		
SR-89	CI	<1.53E-06	<8.20E-07		
SR-90	CI	4.38E-07	2.06E-07		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85	CI	2.00E 00	1.42E-01		
KR-85M	CI	9.33E-01	3.84E-01		
KR-88	CI	<5.00E 00	<1.20E 00		
XE-131M	CI		5.10E 00		
XE-133	CI	4.05E 02	2.85E 01		
XE-133M	CI		1.37E 00		
XE-135	CI	<2.00E 00	<3.47E-01		
XE-138	CI	<1.44E 00			
IODINES					
I-131	CI	3.52E-04	1.06E-04		
I-133	CI	<1.51E-04	<1.47E-04		
I-135	CI	<2.04E-03	<1.79E-03		
PARTICULATES					
BA-LA-140	CI	<2.49E-05	<1.57E-05		
CO-58	CI	1.35E-04	1.63E-05		
CO-60	CI	5.68E-05	1.28E-05		
CS-134	CI	1.11E-06	6.12E-06		
CS-137	CI	6.47E-05	1.49E-05		
I-131	CI	1.58E-05	8.81E-06		
SR-89	CI	<1.28E-06	<1.28E-06		
SR-90	CI	<1.85E-06	<8.56E-07		

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INSTALLATION=INDIAN POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI	2.71E-01	4.37E-02		
KR-85M	CI		7.25E-02		
KR-88	CI	1.28E-01	<1.13E-01		
XE-131M	CI		6.05E 00		
XE-133	CI	5.43E 01	1.75E 01		
XE-133M	CI		2.06E 00		
IODINES					
I-131	CI	1.06E-03	3.80E-03		
I-133	CI	2.17E-04	3.69E-04		
I-135	CI	2.08E-03	2.81E-03		
PARTICULATES					
BA-LA-140	CI	<2.13E-05	<1.43E-03		
CO-58	CI	2.57E-05	1.77E-02		
CS-134	CI	1.09E-05	2.09E-02		
CS-137	CI	2.75E-05	7.02E-02		
CO-60	CI	2.55E-05	7.07E-02		
I-131	CI	1.10E-05	2.60E-04		
MN-54-CR-51-ZN*	CI		5.94E-03		
SR-89	CI	<1.31E-06	<2.38E-05		
SR-90	CI	<9.39E-07	<4.18E-05		

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INSTALLATION=INDIAN POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	4.70E-01	4.62E-01	2.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.63E-09	2.98E-09	
3. PERCENT OF APPLICABLE LIMIT	%	1.49E-01	3.72E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.96E 02	9.36E 01	2.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.81E-07	4.22E-07	
3. PERCENT OF APPLICABLE LIMIT	%	2.27E-02	1.41E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	2.28E 00	2.20E-01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	7.92E-09	9.91E-10	
3. PERCENT OF APPLICABLE LIMIT	%	3.11E-04	3.89E-05	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<2.83E-04	<1.08E-04	2.50E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.83E 07	8.05E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.88E 11	2.22E 11	1.00E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.59E-01	9.02E-01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.23E-10	2.38E-09	
3. PERCENT OF APPLICABLE LIMIT	%	1.31E-02	6.27E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	8.42E 01	1.38E 02	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.76E-07	3.66E-07	
3. PERCENT OF APPLICABLE LIMIT	%	9.21E-03	1.22E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	4.16E-01	2.01E-01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.36E-09	5.33E-10	
3. PERCENT OF APPLICABLE LIMIT	%	5.86E-05	2.28E-05	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<1.18E-04	<1.33E-03	2.50E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.57E 07	2.70E 07	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.04E 11	3.77E 11	1.00E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CS-134	CI	<1.98E-03	6.23E-03	3.43E-02	4.92E-03
CS-137	CI	<1.86E-03	1.52E-02	1.31E-01	9.28E-02
I-131	CI	<4.03E-03	<1.02E-03	2.69E-02	3.32E-02
SR-89	CI	<8.14E-04	<2.87E-04	<5.56E-04	<5.36E-04
SR-90	CI	<1.64E-04	<4.86E-05	<2.53E-04	<7.78E-04
CO-58	CI	<1.99E-03	4.64E-03	5.71E-02	1.21E-01
CO-60	CI	<1.97E-03	2.08E-03	1.09E-01	2.13E-03
CR-51	CI	<1.73E-02	<4.34E-03	1.90E-02	1.43E-04
FE-59	CI	<3.84E-03	<1.41E-03	<2.52E-03	<1.65E-03
MN-54	CI	<1.62E-03	5.36E-04	8.33E-03	8.31E-03
ZN-65	CI	<3.27E-03	<1.36E-03	<3.50E-03	<2.99E-03
BA-LA-140	CI	<6.00E-03	<2.16E-03	<1.07E-02	<8.90E-03
CE-141	CI	<8.21E-04	<5.41E-04	<3.42E-03	<3.07E-03
MO-99	CI	<1.03E-02	<5.83E-03	<6.27E-03	<4.63E-03
TC-99M	CI	<6.41E-04	<6.61E-04	<7.72E-04	<5.91E-04
ZR-NB-95	CI	<3.22E-03	<9.03E-04	<3.30E-03	<2.25E-03
XE-133	CI	<1.74E-03	<5.21E-04	<2.28E-00	<2.19E-01
XE-135	CI	<9.97E-04	<3.68E-04	<1.48E-03	<5.64E-04

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CS-134	CI	1.14E-03	2.17E-03	4.45E-05	1.85E-01
CS-137	CI	2.10E-03	1.49E-02	2.17E-02	3.15E-01
I-131	CI	2.82E-03	6.69E-03	4.89E-03	4.83E-02
SR-89	CI	<3.90E-04	<7.30E-04	<7.41E-05	<2.22E-04
SR-90	CI	<8.96E-05	<1.43E-04	<5.85E-05	<3.16E-05
CO-58	CI	2.59E-03	3.31E-03	9.99E-03	1.49E-01
CO-60	CI	1.30E-03	6.80E-03	3.09E-02	4.92E-02
CR-51	CI	8.16E-03	1.48E-02	5.88E-03	1.92E-02
FE-59	CI	<3.07E-03	<6.90E-03	<1.13E-03	<1.60E-03
MN-54	CI	1.38E-03	2.62E-03	2.95E-02	4.37E-03
ZN-65	CI	<2.75E-03	<6.12E-03	<1.61E-03	<1.91E-03
BA-LA-140	CI	<6.92E-03	<1.37E-02	<3.57E-03	<9.30E-03
CE-141	CI	<7.36E-04	<1.86E-03	<7.71E-04	<3.51E-03
MO-99	CI	<3.03E-03	<9.67E-03	<4.47E-03	<1.24E-02
TE-99M	CI	<2.38E-04	<6.54E-04	<3.38E-04	<1.99E-03
ZR-NB-95	CI	<2.14E-03	<5.46E-03	<1.15E-03	<1.68E-03
XE-133	CI	1.18E-03	2.52E-03	4.13E-01	1.95E-01
XE-135	CI	6.16E-04	1.23E-03	6.67E-04	1.83E-03

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.08E 02	
	CI	1.81E 03	1.00E 02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	7.54E 03	
	CI	4.90E 01	1.00E 02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	1.13E 00	
	CI	3.40E 00	1.00E 02
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
CO-58	X	6.50E 01
CS-13M-CO-60	X	2.60E 01
CS-134-MN-54-I-131	X	9.00E 00
B		
CO-58	X	6.50E 01
CS-137-CO-60	X	2.60E 01
CS-134-MN-54-I-131	X	9.00E 00
C		
FE-55	X	3.40E 01
CR-51	X	3.30E 01
NI-63-CO-58-CO-60-MN-54	X	3.30E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
64	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
1	TRUCK	GALVESTON TX.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= INDIAN POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.30E 02	
	C1	4.70E 02	1.00E 02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.50E 02	
	C1	9.10E 00	1.00E 02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	C1	2.70E 00	1.00E 02
D. OTHER (DESCRIBE)	M3		
	C1		

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

A		
CO-58	X	4.00E 01
CS-137	X	2.60E 01
CS-134-CO-60	X	3.30E 01
B		
CO-58	X	4.00E 01
CS-137	X	2.60E 01
CS-134-CO-60	X	3.30E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
47	TRUCK	BARNWELL S.C.
1	TRUCK	WINDSOR CT.
1	TRUCK	PITTSBURGH PA.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
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0

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION INDIAN POINT 3 +

LOCATION 3 MI SW PEEKSKILL NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 3

TYPE PWR

DOCKET NO. 50-286

COOLING WATER SOURCE

LICENSEE POWER AUTHORITY OF THE STATE OF NEW YORK

LICENSED POWER (MWT) 2760.0

INITIAL CRITICALITY 04/06/76

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) *

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

ANALYSIS OF EFFLUENT GASES HAS BEEN PERFORMED IN COMPLIANCE WITH THE REQUIREMENTS OF THE ETSR. IN THE CASE OF ISOLATED TANKS (BATCH RELEASES) THE TOTAL ACTIVITY DISCHARGED IS BASED ON AN ISOTOPIC ANALYSIS OF EACH BATCH AND THE VOLUME OF GAS IN THAT BATCH CORRECTED TO STANDARD TEMPERATURE AND PRESSURE.

VAPOR CONTAINMENT VENTILATION DISCHARGES HAVE BEEN TREATED AS BATCH RELEASES.

AT LEAST ONE COMPLETE ISOTOPIC CONCENTRATION ANALYSIS OF CONTAINMENT AIR IS PERFORMED PER MONTH AND THIS IS APPLIED TO A GROSS ANALYSIS OF THE VENTILATION AIR PERFORMED PRIOR TO EACH PRESSURE RELIEF. THIS INFORMATION IS COMBINED WITH THE VOLUME OF AIR IN EACH DISCHARGE TO CALCULATE THE RADIONUCLIDE COMPOSITION OF THESE DISCHARGES.

THE CONTINUOUS DISCHARGES ARE BASED ON WEEKLY SAMPLES OF VENTILATION AIR FOR ISOTOPIC CONTENT. THIS INFORMATION IS COMBINED WITH TOTAL AIR VOLUME DISCHARGED BY THIS ROUTE. THE BATCH AND CONTAINMENT VENTILATION RELEASES ARE THEN USED TO DETERMINE CONTINUOUS DISCHARGES.

+ FIRST QUARTER INDIAN POINT 3 IS INCLUDED IN REPORT ON INDIAN POINT 1 & 2

* SEE ETSR

N/A=NOT APPLICABLE

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INSTALLATION INDIAN POINT 3

LOCATION 3 MI SW PEEKSKILL NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA	GAMMA
QUARTER	QUARTER	QUARTER
1	2	2
	1.78E-01	7.25E-02

BATCH RELEASES

A. LIQUID

	QUARTER	QUARTER
	1	2
1. NUMBER OF BATCH RELEASES-	69	
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-	3.94E 03	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	2.64E 02	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	9.20E 01	
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.50E 01	
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-	5.43E 07	

B. GASEOUS

	QUARTER	QUARTER
	1	2
1. NUMBER OF BATCH RELEASES-	28	
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	2.74E 04	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	2.37E 04	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	9.77E 02	
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-	2.50E 01	

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)	

B. GASEOUS

1. NUMBER OF RELEASES	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION INDIAN POINT 3

LOCATION 3 MI SW PEEKSKILL NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

BETA		GAMMA	
QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
1.80E-01	1.80E-01	1.01E-01	9.41E-02

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

QUARTER 3	QUARTER 4
NONE	NONE

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

17	53
5.04E 04	7.27E 03
4.46E 04	3.52E 02
2.96E 03	1.37E 02
3.00E 01	5.00E 00

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE	NONE
------	------

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE	NONE
------	------

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=INDIAN POINT 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI		4.54E 02	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC		5.73E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%		1.97E 00	
B. IODINES				
1. TOTAL IODINE-131	CI		1.85E-03	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC		2.35E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%		1.80E-01	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI		1.88E-03	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC		2.39E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%		1.80E-01	
4. GROSS ALPHA RADIOACTIVITY	CI		<1.74E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI		2.14E-04	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC		2.73E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=INDIAN POINT 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	8.88E 01	2.66E 02	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.12E 01	3.55E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.19E-01	1.13E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	2.12E-03	3.90E-04	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.67E-04	4.91E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.06E-01	4.30E-02	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	2.17E-03	4.53E-03	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.73E-04	5.70E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.06E-01	4.30E-02	
4. GROSS ALPHA RADIOACTIVITY	CI	<1.87E-07	<1.87E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	2.09E 00	4.28E 00	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.63E-01	5.38E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=INDIAN POINT 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85	CI		6.87E-01		1.23E 00
KR-85M	CI		3.20E 01		3.86E-01
KR-87	CI				4.66E-02
KR-88	CI				4.81E-01
XE-131M	CI		1.00E 02		8.67E-01
XE-133	CI		1.38E 02		8.25E 01
XE-133M	CI		4.40E 01		1.05E 00
XE-135	CI		4.88E 01		3.75E 00
XE-135M	CI				8.31E-03
IODINES					
I-131	CI		1.85E-03		
I-133	CI		1.51E-03		
PARTICULATES					
CO-58	CI		6.48E-06		
CS-137	CI		2.49E-06		
I-131	CI		1.04E-06		
SR-89	CI		2.39E-05		
SR-90	CI		2.58E-07		

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INSTALLATION=INDIAN POINT 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI	1.78E 00	6.59E 00	1.21E 00	7.58E-01
KR-85M	CI	0.00E 00	4.32E-03	3.90E-01	5.85E-02
KR-87	CI	0.00E 00	3.97E-02	1.06E-01	3.45E-02
KR-88	CI	3.70E-01	7.86E-02	6.27E-02	6.98E-02
XE-131M	CI	0.00E 00	1.72E-02	1.73E-02	4.19E-01
XE-133	CI	5.15E 01	1.90E 02	1.10E 01	2.22E 01
XE-133M	CI	2.64E-01	0.00E 00	1.89E-01	3.11E-01
XE-135	CI	1.63E 01	4.44E 01	4.60E 00	1.00E 00
XE-135M	CI	3.33E-01	1.86E-02	0.00E 00	6.88E-02
IODINES					
I-131	CI	2.12E-03	3.90E-04		
I-133	CI	3.95E-03	2.08E-04		
I-135	CI	4.31E-03	7.86E-04		
PARTICULATES					
CD-109	CI	0.00E 00	3.92E-06		
CE-139	CI	5.26E-07	0.00E 00		
CE-141	CI	5.39E-07	0.00E 00		
CO-58	CI	1.97E-05	2.55E-05		
CO-60	CI	1.59E-05	2.64E-05		
CS-137	CI	8.32E-06	6.69E-06		
MN-54	CI	2.76E-06	4.33E-07		
SR-89	CI	7.01E-07	1.20E-07		
SR-90	CI	1.86E-07	2.23E-07		

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INSTALLATION=INDIAN POINT 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR,%
A. FISSION AND ACTIVATION PRODUCTS				
1.TOTAL RELEASE(NOT INCLUDING TRITIUM, GASES,ALPHA)	CI		3.05E-01	2.50E 01
2.AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML		1.37E-09	
3.PERCENT OF APPLICABLE LIMIT	%		4.24E-02	
B. TRITIUM				
1.TOTAL RELEASE	CI		8.66E 01	2.50E 01
2.AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML		3.90E-07	
3.PERCENT OF APPLICABLE LIMIT	%		1.30E-02	
C. DISSOLVED AND ENTRAINED GASES				
1.TOTAL RELEASE	CI		3.46E-01	2.50E 01
2.AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML		1.56E-09	
3.PERCENT OF APPLICABLE LIMIT	%		6.12E-05	
D. GROSS ALPHA RADIOACTIVITY				
1.TOTAL RELEASE	CI		<2.21E-05	2.50E 01
E. VOLUME OF WASTE RELEASED(PRIOR TO DILUTION)	LITERS		2.36E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS		2.22E 11	1.00E 01

N/A=NOT APPLICABLE
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INSTALLATION=INDIAN POINT 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.11E-01	6.18E-01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.90E-10	1.58E-10	
3. PERCENT OF APPLICABLE LIMIT	%	8.34E-03	2.61E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	7.01E 01	9.89E 01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.83E-07	2.53E-07	
3. PERCENT OF APPLICABLE LIMIT	%	6.10E-03	8.40E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	2.71E-01	2.33E-01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	7.08E-10	5.96E-10	
3. PERCENT OF APPLICABLE LIMIT	%	2.75E-05	2.34E-05	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<3.06E-05	<1.89E-04	2.50E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.82E 06	2.35E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.83E 11	3.91E 11	1.00E 01

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INSTALLATION=INDIAN POINT 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
		N/A			
CS-134	CI				3.56E-02
CS-137	CI				5.72E-02
I-131	CI				2.50E-02
SR-89	CI				1.03E-03
SR-90	CI				5.24E-05
CO-58	CI				9.45E-02
CO-60	CI				4.97E-02
CR-51	CI				1.19E-02
FE-59	CI				1.74E-03
MN-54	CI				6.02E-03
ZN-65	CI				1.43E-03
BA-LA-140	CI				5.17E-03
CE-141	CI				1.49E-03
MO-99	CI				2.08E-03
TC-99M	CI				2.61E-04
ZR-NB-95	CI				1.55E-03
CS-136	CI				4.40E-04
I-133	CI				1.49E-04
RU-103	CI				1.54E-05
SB-122	CI				1.07E-03
SB-125	CI				5.49E-03
UNIDENTIFIED	CI				0.00E 00
XE-133	CI				3.24E-01
XE-135	CI				7.59E-03
CE-139	CI				4.87E-05
NA-24	CI				8.68E-04
NB-97	CI				1.80E-05
NP-239	CI				7.63E-06
SB-124	CI				1.91E-03
Y-91M	CI				1.47E-06

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		3	4	3	4
		NONE	NONE		
CS-137	CI			3.92E-03	4.66E-02
I-131	CI			1.83E-02	8.60E-02
SR-89	CI			6.08E-05	1.42E-04
SR-90	CI			4.83E-05	3.77E-05
CO-58	CI			8.69E-03	4.13E-02
CO-60	CI			2.49E-02	1.62E-02
CR-51	CI			4.85E-03	1.06E-02
FE-59	CI			9.59E-04	1.18E-03
MN-54	CI			3.10E-02	2.21E-03
ZN-65	CI			1.36E-03	1.17E-03
BA-LA-140	CI			3.03E-03	4.54E-03
CE-141	CI			6.52E-04	1.47E-03
MO-99	CI			3.23E-03	6.40E-03
TC-99M	CI			2.59E-04	9.37E-04
ZR-NB-95	CI			1.64E-04	8.06E-04
CS-138	CI			0.00E 00	1.78E-02
I-132	CI			0.00E 00	1.00E-02
I-133	CI			0.00E 00	1.02E-02
I-134	CI			0.00E 00	7.86E-03
I-135	CI			0.00E 00	1.78E-02
XE-133	CI			2.70E-01	2.30E-07
XE-135	CI			5.38E-04	2.70E-03
CE-139	CI			0.00E 00	2.66E-04
MN-56	CI			0.00E 00	3.63E-03
NA-24	CI			0.00E 00	3.20E-01
RH-106	CI			0.00E 00	5.92E-03

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INSTALLATION= INDIAN POINT 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	2.34E 00	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	C1	1.19E-01	1.00E 02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	9.13E 01	
D. OTHER (DESCRIBE)	C1	9.95E-01	1.00E 02

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

A		
CO-58	X	8.88E 01
CR-51	X	6.62E 00
CO-60	X	4.58E 00
B		
CO-58	X	8.88E 01
CR-51	X	6.62E 00
CO-60	X	4.58E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
3	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
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INSTALLATION= INDIAN POINT 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.20E 00	
	CI	4.10E 00	1.00E 02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	4.90E 02	
	CI	6.70E 00	1.00E 02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3	7.00E 00	
FILTER CARTRIDGES	CI	5.30E 01	1.00E 02

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

A			
CO-58	x	7.80E 01	
CR-51	x	1.30E 01	
CO-60	x	9.00E 00	
B			
CO-58	x	7.30E 01	
CR-51	x	1.50E 01	
CO-60	x	1.20E 01	
C			
CO-58	x	7.60E 01	
CR-51	x	1.30E 01	
CO-60	x	1.10E 01	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
14	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION KEWAUNEE

LOCATION 27 MI ESE GREEN BAY WI

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1
TYPE PWR
DOCKET NO. 50-305
COOLING WATER SOURCE LAKE MICHIGAN

LICENSEE WISCONSIN PUBLIC SERVICE
LICENSED POWER (MWT) 1650.0
INITIAL CRITICALITY 03/07/74

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

GASEOUS RADIOACTIVE EFFLUENTS ARE RELEASED IN BOTH THE CONTINUOUS MODE (AUXILIARY BUILDING STACK) AND THE BATCH MODE CONTAINMENT VENTING OR GAS DECAY TANKS). THE AUXILIARY BUILDING STACK IS SAMPLED CONTINUOUSLY FOR STRONTIUM BY "OFF-LINE" SAMPLE TRAINS. THE STACK IS ALSO GRAB-SAMPLED DAILY FOR GASEOUS GAMMA EMITTERS. THE BATCH RELEASES ARE SAMPLED FOR FISSION GASES PRIOR TO RELEASE TO DETERMINE ALLOWABLE RELEASE RATES. THE ACTUAL AMOUNTS RELEASED ARE QUANTIFIED BY SAMPLERS DOWNSTREAM OF ANY FILTERS IN THE RELEASE PATH.

IODINES

GASEOUS RADIOACTIVE EFFLUENTS ARE RELEASED IN BOTH THE CONTINUOUS MODE (AUXILIARY BUILDING STACK) AND THE BATCH MODE CONTAINMENT VENTING OR GAS DECAY TANKS). THE AUXILIARY BUILDING STACK IS SAMPLED CONTINUOUSLY FOR HALOGENS BY "OFF-LINE" SAMPLE TRAINS. THE BATCH RELEASES ARE SAMPLED FOR HALOGENS PRIOR TO RELEASE TO DETERMINE ALLOWABLE RELEASE RATES. THE ACTUAL AMOUNTS RELEASED ARE QUANTIFIED BY SAMPLERS DOWNSTREAM OF ANY FILTERS IN THE RELEASE PATH.

PARTICULATES

GASEOUS RADIOACTIVE EFFLUENTS ARE RELEASED IN BOTH THE CONTINUOUS MODE (AUXILIARY BUILDING STACK) AND THE BATCH MODE CONTAINMENT VENTING OR GAS DECAY TANKS). THE AUXILIARY BUILDING STACK IS SAMPLED CONTINUOUSLY FOR PARTICULATES BY "OFF-LINE" SAMPLE TRAINS. THE STACK IS ALSO GRAB-SAMPLED DAILY FOR GASEOUS GAMMA EMITTERS. THE BATCH RELEASES ARE SAMPLED FOR PARTICULATES PRIOR TO RELEASE TO DETERMINE ALLOWABLE RELEASE RATES. THE ACTUAL AMOUNTS RELEASED ARE QUANTIFIED BY SAMPLERS DOWNSTREAM OF ANY FILTERS IN THE RELEASE PATH.

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INSTALLATION KEWAUNEE

LOCATION 27 MI ESE GREEN BAY WI

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA QUARTER 1	BETA QUARTER 2	GAMMA QUARTER 1	GAMMA QUARTER 2
BATCH RELEASES				
A. LIQUID				
1. NUMBER OF BATCH RELEASES-				447
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-				6.29E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-				8.25E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-				1.41E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-				1.00E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-				
B. GASEOUS				
1. NUMBER OF BATCH RELEASES-				13
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-				6.60E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-				2.47E 04
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-				5.07E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-				2.85E 01
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

N/A=NOT APPLICABLE
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INSTALLATION KEWAUNEE

LOCATION 27 MI ESE GREEN BAY WI

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA QUARTER 3	BETA QUARTER 4	GAMMA QUARTER 3	GAMMA QUARTER 4
BATCH RELEASES				
A. LIQUID				
1. NUMBER OF BATCH RELEASES-				355
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-				4.66E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				5.65E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				1.31E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				1.30E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-				
B. GASEOUS				
1. NUMBER OF BATCH RELEASES-				13
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-				4.18E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				7.18E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				3.22E 02
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-				6.00E 01
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

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INSTALLATION=KEWAUNEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.60E 02	2.71E 02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.05E 01	3.45E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.60E-01	7.75E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	3.67E-04	3.46E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.67E-05	4.40E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	7.63E-02	7.19E-01	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.93E-04	6.26E-04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.04E-05	7.96E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.23E-02	1.30E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	6.55E-05	9.75E-05	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.39E 00	7.50E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.78E-01	9.54E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=KEWAUNEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	3.56E 00	9.57E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.47E-01	1.20E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.00E-02	2.70E-02	
B. IODINES				
1. TOTAL IODINE-131	CI	6.31E-06	4.21E-06	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	7.93E-07	5.29E-07	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.29E-03	8.64E-04	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	4.14E-04	2.11E-04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.20E-05	2.65E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.50E-02	4.33E-02	
4. GROSS ALPHA RADIOACTIVITY	CI	7.29E-05	3.15E-05	
D. TRITIUM				
1. TOTAL RELEASE	CI	7.14E-01	2.65E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.98E-02	3.30E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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N/R=NOT REPORTED

INSTALLATION=KEWAUNEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI			2.47E 00	3.49E 00
KR-85	CI				5.39E-02
KR-85M	CI			2.34E-02	6.03E-02
KR-88	CI				3.35E-02
UNIDENTIFIED	CI	2.10E-01	2.66E 00		3.13E 00
XE-133	CI	9.29E 01	4.71E 01	5.67E 01	2.11E 02
XE-133M	CI			6.08E-01	1.31E 00
XE-135	CI	5.69E 00	8.20E-01	1.24E 00	4.09E 00
IODINES					
I-131	CI	3.22E-04	1.02E-03	4.55E-05	2.44E-03
I-132	CI		1.63E-06		1.38E-05
I-133	CI	2.48E-06	6.98E-05	1.00E-05	3.57E-04
I-135	CI		7.44E-06	2.26E-06	3.77E-05
PARTICULATES					
CO-58	CI	4.76E-07	2.11E-05		6.19E-06
CO-60	CI	1.32E-05	3.20E-05	7.18E-07	1.99E-05
CS-134	CI	3.25E-07	2.29E-07		
CS-137	CI	5.61E-06	5.84E-06		2.90E-06
MN-54	CI		1.90E-06		4.22E-06
RB-88	CI				3.82E-03
SR-89	CI	<5.60E-05	<1.29E-04		
SR-90	CI	<5.60E-05	<1.29E-04		
UNIDENTIFIED	CI	1.61E-05	1.98E-04	3.56E-04	4.36E-04

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI			1.30E-01	8.65E-01
KR-85	CI				1.34E 00
KR-85M	CI				1.84E-02
KR-88	CI				9.74E-03
UNIDENTIFIED	CI	<2.30E 00	<1.91E 00	<2.87E-04	4.64E-02
XE-133	CI			6.45E-01	4.87E 00
XE-133M	CI				5.23E-02
XE-135	CI	4.43E-01		4.36E-02	4.60E-01
IODINES					
I-131	CI	5.82E-06	1.35E-06	4.90E-07	2.86E-06
I-132	CI				1.78E-07
I-133	CI	6.35E-06	4.12E-07	1.01E-06	4.60E-06
I-135	CI				8.04E-07
PARTICULATES					
CO-58	CI	1.30E-05	9.64E-07		
CO-60	CI	1.26E-05	8.23E-06	2.68E-07	4.39E-07
CS-134	CI		2.14E-07	2.30E-07	
CS-137	CI	1.85E-06	1.94E-06		
CS-138	CI				2.20E-07
NA-24	CI			5.40E-07	
RB-88	CI				1.79E-06
SR-89	CI	2.53E-05	<4.40E-07		
SR-90	CI	<5.33E-06	<4.40E-07		
UNIDENTIFIED	CI	9.55E-06	1.46E-05	3.47E-04	1.84E-04

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INSTALLATION=KEWAUNEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	9.63E-02	4.38E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.76E-09	1.23E-08	
3. PERCENT OF APPLICABLE LIMIT	%	9.63E-01	4.38E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	7.85E 01	7.08E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.25E-06	1.99E-06	
3. PERCENT OF APPLICABLE LIMIT	%	7.50E-02	6.63E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	4.16E-02	1.36E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.19E-09	3.82E-02	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<3.10E-04	<3.31E-04	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.10E 06	3.31E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.49E 10	3.56E 10	

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INSTALLATION=KEWAUNEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.06E-01	5.85E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.00E-09	1.86E-09	
3. PERCENT OF APPLICABLE LIMIT	%	1.06E 00	5.85E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	6.89E 01	7.82E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.95E-06	2.48E-06	
3. PERCENT OF APPLICABLE LIMIT	%	6.50E-02	8.27E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	6.08E-04	7.85E-05	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.33E-11	7.70E-12	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<2.66E-04	<2.78E-04	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.66E 06	2.78E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.53E 10	3.15E 10	

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INSTALLATION=KEWAUNEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-110M	CI			3.61E-03	6.71E-03
CO-57	CI			7.54E-05	6.15E-05
CO-58	CI			8.68E-03	2.70E-01
CO-60	CI			4.47E-02	5.43E-02
CR-51	CI			4.34E-04	2.29E-02
CS-134	CI			6.93E-03	1.16E-02
CS-136	CI				1.65E-04
CS-137	CI			8.59E-03	1.09E-02
CS-138	CI				1.56E-03
FE-59	CI				1.99E-03
I-131	CI			1.34E-02	3.91E-03
I-133	CI				7.49E-05
MN-54	CI			8.20E-03	3.32E-03
NA-24	CI			2.61E-05	3.48E-04
NB-95	CI			7.99E-04	2.26E-03
SB-124	CI				2.86E-02
SB-125	CI			5.04E-04	2.11E-02
SR-89	CI			1.86E-05	1.75E-04
SR-90	CI			<9.00E-06	<1.13E-05
XE-133	CI			4.16E-02	1.35E-02
XE-133M	CI				1.81E-04
ZR-95	CI			2.05E-04	1.84E-04

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI			3.93E-02	1.08E-02
CO-58	CI			3.10E-02	2.03E-02
CO-60	CI			1.46E-02	1.96E-02
CR-51	CI			7.96E-03	
CS-134	CI			8.49E-04	3.47E-03
CS-136	CI			3.92E-04	
CS-137	CI			3.99E-03	2.20E-03
FE-59	CI			1.52E-03	
I-131	CI			5.48E-05	
MN-54	CI			1.39E-03	1.14E-03
NA-24	CI			3.25E-05	
NB-95	CI			1.18E-03	
SB-124	CI			7.69E-04	
SB-125	CI			1.20E-03	1.31E-03
SR-89	CI			3.73E-05	2.11E-05
SR-90	CI			1.25E-05	<1.08E-05
XE-133	CI			3.54E-04	7.85E-05
XE-135	CI			2.54E-04	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.64E 01	
	CI	4.30E 02	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.31E 01	
	CI	5.74E 00	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3	7.69E 00	
CONTAMINATED FILTERS IN CONCRETE DRUMS	CI	3.92E 01	

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

A		
CO-58	X	6.10E 00
CO-60	X	3.54E 01
CS-137	X	3.00E 01
CS-134	X	1.63E 01
MN-54	X	1.13E 01
MIXED FISSION AND CORROSION PRODUCTS	X	7.25E-01
B		
CO-60	X	3.54E 01
CS-137	X	3.00E 01
CS-134	X	1.63E 01
MN-54	X	1.13E 01
CO-58	X	6.10E 00
MIXED FISSION AND CORROSION PRODUCTS	X	7.25E-01
C		
CO-60	X	3.54E 01
CS-137	X	3.00E 01
CS-134	X	1.63E 01
MN-54	X	1.13E 01
CO-58	X	6.10E 00
MIXED FISSION AND CORROSION PRODUCTS	X	7.25E-01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
3	TRUCK	BARNWELL S.C.
5	TRUCK	SHEFFIELD ILL.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
---------------------	------------------------	-------------

0

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.05E 01	
	CI	1.02E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.12E-01	
	CI	3.70E-01	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3	1.91E 00	
CONTAMINATED FILTERS IN CONCRETE DRUMS	CI	8.75E 00	

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

A		
CO-58	%	2.40E 00
CO-60	%	4.23E 01
CS-137	%	3.20E 01
CS-134	%	1.70E 01
MN-54	%	6.30E 00
B		
CO-60	%	4.23E 01
CS-137	%	3.20E 01
CS-134	%	1.70E 01
MN-54	%	6.30E 00
CO-58	%	2.40E 00
C		
CO-60	%	4.23E 01
CS-137	%	3.20E 01
CS-134	%	1.70E 01
MN-54	%	6.30E 00
CO-58	%	2.40E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
11	TRUCK	BARNWELL S.C.

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INSTALLATION LACROSSE

LOCATION 19 MI S LACROSSE WI

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE DAIRYLAND POWER

TYPE BWR

LICENSED POWER (MWT)

165.0

DOCKET NO. 50-409

INITIAL CRITICALITY 07/11/67

COOLING WATER SOURCE MISSISSIPPI RIVER

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

GASES

KR-85	3.00E-07
XE-133	3.00E-07
KR-88	2.00E-08
KR-87	2.00E-08
KR-85M	1.00E-07
XE-132	3.00E-08
XE-135M	3.00E-08
XE-135	1.00E-07
XE-133M	3.00E-07
XE-131M	4.00E-07
XE-129M	1.00E-10
KR-89	3.00E-08
XE-137	3.00E-08
H-3	2.00E-07
I-131	1.00E-10
I-133	4.00E-10
I-135	1.00E-09

PARTICULATES

CO-57	6.00E-09
CE-144	2.00E-10
CE-141	5.00E-09
BA-LA-170	1.00E-09
CS-134	4.00E-10
CS-137	5.00E-10
CR-51	8.00E-08
MN-54	1.00E-09
FE-59	2.00E-09
CO-58	2.00E-09
CO-60	3.00E-10
ZN-65	2.00E-09
ZR-95	1.00E-09
NB-95	3.00E-09
AG-110M	3.00E-10
RU-RH-106	2.00E-10
RU-103	3.00E-09
CS-136	6.00E-09
BA-133	1.00E-10
CD-109	2.00E-09
CD-113M	1.00E-10
ND-147	8.00E-09
CM-241	1.00E-10
SR-89	3.00E-10
SR-90	3.00E-11

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INSTALLATION LACROSSE

LOCATION 19 MI S LACROSSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

LIQUIDS	
SR-89	3.00E-06
SR-90	3.00E-07
BA-LA-140	2.00E-05
I-131	3.00E-07
CS-134	9.00E-06
CS-137	2.00E-05
XE-133	3.00E-06
XE-135	3.00E-06
CO-58	9.00E-05
CO-60	3.00E-05
CO-57	4.00E-04
CR-51	2.00E-03
MN-54	1.00E-04
ZN-65	1.00E-04
CE-144	1.00E-05
CE-141	9.00E-05
SR-91	5.00E-05
ZR-95	6.00E-05
NB-95	1.00E-04
FE-59	5.00E-05
TC-99M	3.00E-03
MO-99	4.00E-05
RU-RH-106	1.00E-05
RU-103	8.00E-05
I-133	1.00E-06
BA-133	3.00E-06
NP-239	1.00E-04
XE-131M	3.00E-06
XE-133M	3.00E-06
XE-135M	0.00E 00
KR-85M	3.00E-06
SR-92	6.00E-05
CD-109	2.00E-04
Y-92	8.00E-05
Y-91M	3.00E-03
I-135	4.00E-06
NA-24	3.00E-05
KR-87	0.00E 00
CS-138	0.00E 00
H-3	3.00E-03

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

AIRBORNE GASEOUS EFFLUENTS ARE DETERMINED BY GAMMA ANALYSIS ON A GE-LI DETECTOR OF SAMPLES FROM THE VARIOUS FLOW PATHS.

IODINES

THE GAMMA ANALYSIS INCLUDES A DETERMINATION OF GASEOUS HALOGEN CONTENT.

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INSTALLATION LACROSSE

LOCATION 19 MI S LACROSSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

PARTICULATES

AIRBORNE PARTICULATE AND PARTICULATE HALOGEN RELEASES ARE DETERMINED BY GAMMA ANALYSIS ON A GE-LI DETECTOR OF WEEKLY SAMPLES OF STACK DISCHARGES ON GLASS FIBER FILTER PAPER AND CHARCOAL CARTRIDGE ABSORBANTS.

LIQUID EFFLUENTS

LIQUID EFFLUENT MEASUREMENTS FOR GROSS RADIOACTIVITY ARE PERFORMED BY GAMMA ANALYSIS ON A GE-LI DETECTOR FOR EACH TANK DISCHARGED. A COMPOSITE SAMPLE IS CREATED BY COLLECTING REPRESENTATIVE AMOUNTS FROM EACH TANK BATCH DISCHARGED AND IT IS ANALYZED MONTHLY FOR TRITIUM, STRONTIUM 89 AND 90, AND GROSS ALPHA ACTIVITY. IN ADDITION, EACH TANK IS ANALYZED FOR ALPHA CONCENTRATION AND IS THE BASIS FOR THE VALUES REPORTED IN TABLE I, LINE 4.

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INSTALLATION LACROSSE

LOCATION 19 MI S LACROSSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA	
	QUARTER	QUARTER	QUARTER	QUARTER
	1	2	1	2
	N/A	N/A	N/A	N/A
BATCH RELEASES			QUARTER	QUARTER
A. LIQUID			1	2
1. NUMBER OF BATCH RELEASES-			37	45
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-			9.37E 03	1.33E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			7.90E 02	1.37E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			2.46E 02	2.98E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			2.52E 01	6.00E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-			3.52E 07	9.41E 07
B. GASEOUS				
1. NUMBER OF BATCH RELEASES-			NONE	NONE
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-				
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-				
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

N/A=NOT APPLICABLE
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INSTALLATION LACROSSE

LOCATION 19 MI S LACROSSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
	QUARTER	QUARTER	QUARTER
	3	4	3
	N/A	N/A	N/A
BATCH RELEASES			
A. LIQUID			
1. NUMBER OF BATCH RELEASES-	42	35	
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-	1.32E 04	1.75E 04	
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	4.96E 02	1.32E 03	
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	3.09E 02	4.74E 02	
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.17E 02	1.90E 02	
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-	8.72E 07	3.51E 07	
B. GASEOUS			
1. NUMBER OF BATCH RELEASES-	NONE	NONE	
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-			
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-			
ABNORMAL RELEASES			
A. LIQUID			
1. NUMBER OF RELEASES	NONE	NONE	
2. TOTAL ACTIVITY RELEASED (CURIES)			
B. GASEOUS			
1. NUMBER OF RELEASES	NONE	NONE	
2. TOTAL ACTIVITY RELEASED (CURIES)			

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INSTALLATION=LACROSSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.03E 03	2.15E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.28E 02	2.75E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	X	1.85E 00	1.65E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	1.72E-04	6.11E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.14E-05	7.77E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	X	7.43E-02	1.52E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	4.64E-04	1.06E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.77E-05	1.35E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	X	3.83E-02	7.57E-02	
4. GROSS ALPHA RADIOACTIVITY	CI	9.76E-07	6.23E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	3.53E-01	1.56E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.56E-02	1.93E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	X	1.12E 00	3.01E 00	

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INSTALLATION=LACROSSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	3.21E 03	2.06E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.05E 02	2.59E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.31E 00	1.12E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	1.10E-02	7.42E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.36E-03	9.28E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.67E 00	2.05E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.14E-03	5.50E-04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.42E-04	6.94E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.87E-02	3.76E-02	
4. GROSS ALPHA RADIOACTIVITY	CI	1.44E-06	1.14E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	3.18E 00	2.56E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.00E-01	3.21E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.04E 00	5.47E 00	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
FISSION GASES					
KR-85	CI	7.19E 00	2.86E 01		
KR-85M	CI	2.35E 01	1.36E 02		
KR-87	CI	8.20E 01	1.22E 02		
KR-88	CI	6.27E 01	2.15E 02		
KR-89	CI	1.84E 01	6.57E 00		
XE-129M	CI	1.15E-01	6.81E-01		
XE-131M	CI	8.17E-01	2.46E 00		
XE-133	CI	3.32E 01	2.67E 02		
XE-133M	CI	7.37E 00	3.19E 01		
XE-135	CI	1.95E 02	1.10E 03		
XE-135M	CI	8.67E 01	4.22E 01		
XE-137	CI	6.04E 01	2.05E 01		
XE-138	CI	4.52E 02	1.86E 02		
IODINES					
I-131	CI	1.72E-04	6.11E-03		
I-133	CI	1.88E-03	3.62E-03		
I-135	CI	2.14E-03	2.86E-03		
PARTICULATES					
BA-LA-140	CI	7.64E-05	3.60E-04		
CE-144	CI	1.01E-04	5.07E-05		
CM-241	CI	2.47E-06			
CO-57	CI	1.80E-06	2.26E-06		
CO-58	CI	4.78E-05	5.29E-05		
CO-60	CI	9.59E-05	5.74E-05		
CS-134	CI	8.60E-06	7.22E-06		
CS-136	CI	8.88E-06	2.76E-05		
CS-137	CI	1.16E-05	2.33E-05		
MN-54	CI	1.35E-05	8.44E-06		
NB-95	CI	2.56E-05	1.03E-05		
SR-89	CI	4.87E-05	4.12E-04		
SR-90	CI	4.58E-07	1.88E-05		
ZR-95	CI	2.09E-05	8.02E-06		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI	7.72E-01	4.73E-02		
KR-85M	CI	1.54E-02	7.06E-01		
KR-87	CI	5.60E-01	8.43E-01		
KR-88	CI	1.72E-02	1.23E-02		
KR-89	CI	3.31E-00	6.84E-00		
XE-129M	CI	2.32E-03	1.18E-02		
XE-131M	CI	3.16E-00	2.85E-00		
XE-133	CI	9.56E-02	5.22E-02		
XE-133M	CI	2.95E-01	2.05E-01		
XE-135	CI	1.72E-03	8.56E-02		
XE-135M	CI	2.65E-01	5.89E-01		
XE-137	CI	1.13E-01	2.68E-01		
XE-138	CI	8.05E-01	2.94E-02		
IODINES					
I-131	CI	1.10E-02	7.42E-03		
I-132	CI	1.83E-05	7.00E-07		
I-133	CI	4.52E-03	4.40E-04		
I-134	CI		3.62E-05		
I-135	CI	1.44E-03	7.69E-05		
PARTICULATES					
BA-LA-140	CI	5.36E-04	2.33E-04		
CD-109	CI		9.77E-06		
CE-141	CI	1.25E-06	5.58E-07		
CE-144	CI	8.22E-05	1.57E-05		
CM-241	CI	1.40E-06	3.11E-06		
CO-57	CI	1.70E-06	1.10E-06		
CO-58	CI	2.73E-05	1.93E-05		
CO-60	CI	6.10E-05	2.69E-05		
CR-51	CI	2.69E-05	2.71E-06		
CS-134	CI		2.21E-06		
CS-136	CI		1.44E-06		
CS-137	CI	7.68E-06	1.53E-05		
FE-59	CI		9.51E-07		
MN-54	CI	5.55E-06	9.22E-07		
NB-94	CI		2.80E-07		
NB-95	CI	5.03E-06	2.82E-06		
ND-147	CI	4.17E-06	1.82E-06		
RU-RH-106	CI		4.00E-07		
RU-103	CI	1.02E-06	1.38E-06		
SR-89	CI	3.62E-04	1.66E-04		
SR-90	CI	1.54E-05	3.40E-05		
ZN-65	CI		1.65E-06		
ZR-95	CI		8.66E-06		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	2.62E 00	1.87E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.00E-08	2.53E-08	
3. PERCENT OF APPLICABLE LIMIT	%	3.48E-01	1.81E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.50E 00	1.91E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.65E-08	2.81E-07	
3. PERCENT OF APPLICABLE LIMIT	%	1.88E-03	9.36E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	7.85E-04	1.99E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.91E-11	2.49E-09	
3. PERCENT OF APPLICABLE LIMIT	%	6.37E-04	8.00E-02	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.07E-02	1.97E-03	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	4.63E 05	6.17E 05	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	4.67E 10	6.85E 10	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	6.42E-01	3.73E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.02E-09	9.98E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.35E-01	2.85E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.62E 01	9.37E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.09E-07	2.65E-07	
3. PERCENT OF APPLICABLE LIMIT	%	6.97E-03	8.80E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.65E-01	4.86E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.06E-09	1.46E-09	
3. PERCENT OF APPLICABLE LIMIT	%	6.87E-02	4.85E-02	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	3.80E-04	1.51E-03	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.94E 05	4.38E 05	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	7.55E 10	3.68E 10	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
BA-LA-140	CI				1.80E-02
BA-133	CI			4.16E-04	7.20E-05
CD-109	CI				2.64E-03
CE-141	CI			3.32E-04	1.31E-02
CE-144	CI			7.05E-01	3.30E-01
CO-57	CI			1.01E-02	1.07E-02
CO-58	CI			3.80E-01	3.81E-01
CO-60	CI			7.78E-01	6.26E-01
CR-51	CI			1.27E-02	1.69E-02
CS-134	CI			5.92E-02	3.33E-02
CS-137	CI			1.22E-01	8.67E-02
CS-138	CI				1.85E-03
FE-59	CI			6.20E-03	1.23E-02
I-131	CI			1.22E-03	9.04E-03
I-133	CI			6.02E-04	8.58E-03
I-135	CI				1.99E-04
KR-85M	CI				2.83E-04
KR-87	CI				1.12E-04
MN-54	CI			1.01E-01	7.25E-02
MO-99	CI				3.59E-03
NB-95	CI			1.87E-01	3.22E-02
NP-239	CI				4.02E-02
RU-RH-106	CI			1.04E-01	7.27E-02
RU-103	CI			2.29E-03	1.02E-02
SR-89	CI			1.38E-02	1.10E-02
SR-90	CI			4.15E-03	8.46E-04
SR-91	CI				5.19E-04
SR-92	CI				4.20E-03
TC-99M	CI				9.54E-03
XE-131M	CI				2.54E-03
XE-133	CI				1.44E-02
XE-133M	CI				1.61E-01
XE-135	CI			7.85E-04	1.47E-02
XE-135M	CI				6.99E-03
Y-91M	CI				1.26E-03
Y-92	CI				1.07E-02
ZN-65	CI			7.67E-02	3.74E-02
ZR-95	CI			5.61E-02	1.83E-02

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
BA-LA-140	CI			2.06E-04	1.88E-02
CD-109	CI				8.60E-03
CE-141	CI			4.12E-04	1.64E-02
CE-144	CI			1.01E-01	9.32E-02
CM-241	CI				7.90E-04
CO-57	CI			1.94E-03	6.50E-03
CO-58	CI			5.20E-02	1.06E 00
CO-60	CI			2.37E-01	1.46E 00
CR-51	CI				6.09E-02
CS-134	CI			2.14E-02	1.22E-01
CS-136	CI				1.28E-02
CS-137	CI			7.17E-02	3.27E-01
CS-138	CI			7.76E-03	2.50E-04
FE-59	CI				2.06E-02
I-131	CI			1.42E-02	1.75E-01
I-133	CI			1.84E-02	5.51E-03
I-134	CI			1.15E-03	
I-135	CI			5.72E-03	9.68E-04
KR-85M	CI			9.29E-04	9.45E-04
KR-87	CI			1.48E-03	6.80E-05
KR-88	CI			4.71E-04	
MN-54	CI			2.03E-02	5.40E-02
NB-95	CI			6.67E-03	4.32E-02
NP-239	CI			1.01E-02	1.06E-02
RB-88	CI			7.24E-03	3.45E-03
RU-RH-106	CI			1.95E-02	2.23E-02
RU-103	CI			4.58E-02	3.05E-02
SB-124	CI				6.03E-03
SR-89	CI			3.27E-03	1.04E 00
SR-90	CI			1.65E-03	1.34E-03
SR-91	CI			1.33E-03	
SR-92	CI			1.75E-03	1.34E-04
TC-99M	CI			1.95E-02	3.79E-03
XE-131M	CI			1.07E-02	1.47E-02
XE-133	CI			1.84E-02	1.75E-02
XE-135	CI			6.05E-02	6.14E-03
XE-135M	CI			7.25E-02	9.27E-03
Y-91M	CI			1.91E-03	2.32E-04
ZN-65	CI			7.83E-03	2.85E-02
ZR-95	CI			6.76E-04	4.20E-02

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	7.82E-01	
	CI	6.09E-01	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	3.02E-01	
	CI	8.89E-01	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A+B		
CO-60	X	3.00E 01
CO-58	X	1.00E 01
MN-54	X	3.00E 00
CS-134	X	1.50E 01
CS-137	X	2.50E 01
CE-144	X	1.50E 01
OTHER	X	2.00E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
2	TRUCK	RICHLAND WA.
2	TRUCK	SHEFFIELD IL.

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(January-December)

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, EVAPORATOR BOTTOMS, ETC.	M3	7.82E 00	
	CI	6.09E 01	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	3.02E 01	
	CI	8.89E-01	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A+B		
CO-60	X	3.00E 01
CO-58	X	1.00E 01
MN-54	X	3.00E 00
CS-134	X	1.50E 01
CS-137	X	2.50E 01
CE-144	X	1.50E 01
OTHER	X	2.00E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
2	TRUCK	RICHLAND WA.
2	TRUCK	SHEFFIELD IL.

N/A=NOT APPLICABLE
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INSTALLATION MAINE YANKEE

LOCATION 3.9 MI S WICASSETT ME

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE MAINE YANKEE ATOMIC POWER

TYPE PWR

LICENSED POWER (MWT) 2440.0

DOCKET NO. 50-309

INITIAL CRITICALITY 10/23/72

COOLING WATER SOURCE BACK RIVER

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

CONTINUOUS DISCHARGE-VENT STACK SAMPLES ARE ANALYZED MONTHLY AND THE LEVELS OF ACTIVITIES DETERMINED ARE ASSUMED TO HOLD FOR THE PERIOD BETWEEN SAMPLES. THE CONTINUOUS VENT STACK MONITOR READING IS USED AS A BASIS FOR INCREASING PERIODIC SAMPLE FREQUENCY. AIR EJECTOR IS SAMPLED MONTHLY AND ON ANY INCREASE IN CONTINUOUS AIR EJECTOR MONITOR READING. BATCH DISCHARGES-DIRECT MEASUREMENT OF WASTE GAS HOLD UP DRUMS ARE MADE BEFORE DISCHARGE. CONTAINMENT VENTS AND PURGES ARE ANALYZED BY DIRECT MEASUREMENT OF THE CONTAINMENT ATMOSPHERE AT PERIODIC INTERVALS DURING THE DISCHARGE.

IODINES

CONTINUOUS MONITORING OF PRIMARY VENT STACK IODINES ARE MADE BY WEEKLY MEASUREMENTS OF AN IN-LINE CHARCOAL FILTER.
BATCH DISCHARGES-DIRECT MEASUREMENT OF WASTE GAS HOLD UP DRUMS BEFORE DISCHARGE.

PARTICULATES

CONTINUOUS MONITORING OF PRIMARY VENT STACK IS MADE BY WEEKLY MEASUREMENT OF AN IN-LINE PARTICULATE FILTER.
BATCH DISCHARGES-DIRECT MEASUREMENT OF WASTE GAS HOLD UP DRUMS BEFORE DISCHARGE.

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INSTALLATION MAINE YANKEE

LOCATION 3.9 MI S WICASSETT ME

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA	
	QUARTER	QUARTER	QUARTER	
	1	2	1	2
	N/A	N/A	N/A	N/A
BATCH RELEASES			QUARTER	QUARTER
A. LIQUID			1	2
1. NUMBER OF BATCH RELEASES-				71
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-				1.01E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				4.18E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				1.42E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				1.00E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-				
B. GASEOUS				4
1. NUMBER OF BATCH RELEASES-				2.87E 03
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-				1.20E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				7.17E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				1.85E 02
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-				
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

N/A=NOT APPLICABLE
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INSTALLATION MAINE YANKEE

LOCATION 3.9 MI S WICASSETT ME

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA	GAMMA
QUARTER	QUARTER	QUARTER
3	4	3
N/A	N/A	N/A
BATCH RELEASES		QUARTER
A. LIQUID		3 & 4
1. NUMBER OF BATCH RELEASES-		174
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-		1.83E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		1.11E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-		1.05E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		3.00E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-		
B. GASEOUS		
NUMBER OF BATCH RELEASES-		29
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-		9.03E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		4.35E 04
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-		3.06E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-		1.10E 02
ABNORMAL RELEASES		
A. LIQUID		
NUMBER OF RELEASES		
2. TOTAL ACTIVITY RELEASED (CURIES)		
B. GASEOUS		
1. NUMBER OF RELEASES		
2. TOTAL ACTIVITY RELEASED (CURIES)		

N/A=NOT APPLICABLE
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INSTALLATION=MAINE YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	N/D	5.54E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	N/D	7.05E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/D	2.20E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	9.10E-05	1.53E-04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.16E-05	1.95E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.00E-04	5.04E-04	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	2.21E-04	1.07E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.81E-05	1.34E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.38E-04	1.31E-05	
4. GROSS ALPHA RADIOACTIVITY	CI	3.76E-07	1.11E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	7.78E-01	2.99E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	9.90E-02	3.80E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.28E-03	5.04E-04	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=MAINE YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	<1.70E-06*	<1.70E-06*	<1.70E-06*	<1.70E-06*
KR-85	CI	<8.00E-05*	<8.00E-05*	<8.00E-05*	5.01E 00
KR-85M	CI	<1.00E-07*	<1.00E-07*	<1.00E-07*	<1.00E-07*
KR-87	CI	<3.00E-07*	<3.00E-07*	<3.00E-07*	<3.00E-07*
KR-88	CI	<3.50E-07*	<3.50E-07*	<3.50E-07*	<3.50E-07*
UNIDENTIFIED	CI	0.00E 00	0.00E 00	0.00E 00	6.53E 00
XE-131M	CI	<1.00E-06*	<1.00E-06*	<1.00E-06*	4.40E 00
XE-133	CI	<3.50E-07*	<3.50E-07*	<3.50E-07*	3.94E 01
XE-135	CI	<1.70E-07*	<1.70E-07*	<1.70E-07*	6.43E-02
XE-135M	CI	<1.70E-07*	<1.70E-07*	<1.70E-07*	<1.70E-07*
XE-138	CI	<1.70E-07*	<1.70E-07*	<1.70E-07*	<1.70E-07*
IODINES					
I-131	CI	9.10E-05	1.53E-04	<1.00E-05*	<1.00E-05*
I-133	CI	<1.00E-13*	<1.00E-13*	<1.00E-05*	<1.00E-05*
I-135	CI	<2.00E-12*	<2.00E-12*	<1.00E-04*	<1.00E-04*
PARTICULATES					
BA-LA-140	CI	<1.00E-13*	<1.00E-13*	<1.00E-04*	<1.00E-04*
CO-58	CI	2.24E-06	<2.00E-14*	<1.00E-04*	<1.00E-04*
CO-60	CI	2.17E-04	<3.00E-14*	<1.00E-04*	<1.00E-04*
CS-134	CI	<3.00E-14*	<3.00E-14*	<1.00E-04*	<1.00E-04*
CS-137	CI	1.71E-06	<3.00E-14*	<1.00E-04*	<1.00E-04*
SR-89	CI	<3.12E-15*	1.06E-05	**	**
SR-90	CI	9.22E-08	1.32E-07	**	**
UNIDENTIFIED	CI	0.00E 00	0.00E 00		

* Minimum detectable activity in $\mu\text{Ci/cc}$.

** Iodines and particulates collected on continuous mode filters include batch mode releases.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=MAINE YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	<1.70E-06*	<1.70E-06*	<1.70E-06*	<1.70E-06*
KR-85	CI	<8.00E-05*	<8.00E-05*	1.43E 00	1.20E 00
KR-85M	CI	<1.00E-07*	<1.00E-07*	<1.00E-07*	<1.00E-07*
KR-87	CI	<3.00E-07*	<3.00E-07*	<3.00E-07*	<3.00E-07*
KR-88	CI	<3.50E-07*	<3.50E-07*	<3.50E-07*	<3.50E-07*
UNIDENTIFIED	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
XE-131M	CI	<1.00E-06*	<1.00E-06*	1.07E 01	<1.00E-06*
XE-133	CI	1.32E 01	8.79E 01	1.01E 03	2.42E 02
XE-133M	CI	<5.00E-07*	<5.00E-07*	5.45E-03	<5.00E-07*
XE-135	CI	<7.00E-07*	<7.00E-07*	3.37E 00	2.36E 00
XE-135M	CI	<5.00E-07*	<5.00E-07*	<5.00E-07*	<5.00E-07*
XE-138	CI	<1.70E-07*	<1.70E-07*	<1.70E-07*	<1.70E-07*
IODINES					
I-131	CI	1.46E-03	1.00E-04	<1.00E-05*	<1.00E-05*
I-133	CI	3.17E-05	<1.00E-13*	<1.00E-05*	<1.00E-05*
I-135	CI	<2.00E-12*	<2.00E-12*	<1.00E-04*	<1.00E-04*
PARTICULATES					
BA-LA-140	CI	<1.00E-13*	<1.00E-13*	<1.00E-04*	<1.00E-04*
CO-58	CI	1.68E-05	2.42E-06	<1.00E-04*	<1.00E-04*
CO-60	CI	1.15E-06	<3.00E-14*	<1.00E-04*	<1.00E-04*
CS-134,	CI	<3.00E-14*	<3.00E-14*	<1.00E-04*	<1.00E-04*
CS-137	CI	<3.00E-14*	8.47E-07	<1.00E-04*	<1.00E-04*
SR-89	CI	<7.00E-15*	1.05E-06	**	**
SR-90	CI	5.87E-08	2.57E-08	**	**
UNIDENTIFIED	CI	0.00E 00	4.34E-06		

* Minimum detectable activity in $\mu\text{Ci/cc}$.

** Iodines and particulates collected on continuous mode filters include batch mode releases.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=MAINE YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	6.79E-03	9.01E-03	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.22E-11	4.19E-11	
3. PERCENT OF APPLICABLE LIMIT	%	1.12E-02	2.47E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.75E 02	8.42E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.29E-07	3.92E-07	
3. PERCENT OF APPLICABLE LIMIT	%	2.76E-02	1.30E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.65E-02	7.29E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	7.82E-11	3.39E-10	
3. PERCENT OF APPLICABLE LIMIT	%	2.61E-03	1.13E-02	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.66E-08	4.64E-07	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.20E 07	2.93E 07	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.11E 11	2.15E 11	

N/A=NOT APPLICABLE
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INSTALLATION=MAINE YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	7.62E-02	1.20E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.63E-10	5.56E-11	
3. PERCENT OF APPLICABLE LIMIT	%	1.61E-01	6.02E-03	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.41E 01	4.14E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.26E-07	1.92E-07	
3. PERCENT OF APPLICABLE LIMIT	%	4.20E-03	6.39E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	4.53E-02	2.88E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.96E-11	1.33E-09	
3. PERCENT OF APPLICABLE LIMIT	%	1.35E-02	4.44E-02	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	5.47E-07	1.36E-07	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.67E 07	1.47E 07	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.12E 11	2.16E 11	

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- N/R=NOT REPORTED

INSTALLATION=MAINE YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CS-134	CI	<5.00E-08*	<5.00E-08*	3.18E-04	<5.00E-07*
CS-137	CI	<6.00E-08*	<6.00E-08*	2.45E-03	7.89E-04
I-131	CI	<5.00E-08*	<5.00E-08*	1.74E-03	4.37E-03
SR-89	CI	<9.00E-08*	<6.00E-08*	<1.00E-07*	<5.00E-08*
SR-90	CI	<2.00E-08*	<9.00E-09*	5.36E-05	<5.00E-09*
CO-58	CI	<5.00E-08*	<5.00E-08*	2.33E-05	<5.00E-07*
CO-60	CI	<6.00E-08*	<6.00E-08*	3.70E-04	<6.00E-07*
CR-51	CI	<3.00E-07*	<3.00E-07*	<3.00E-06*	<3.00E-06*
FE-59	CI	<1.00E-07*	<1.00E-07*	<1.00E-06*	<1.00E-06*
MN-54	CI	<5.00E-08*	<5.00E-08*	<5.00E-07*	<5.00E-07*
ZN-65	CI	<9.00E-08*	<9.00E-08*	<9.00E-07*	<9.00E-07*
BA-LA-140	CI	<2.00E-07*	<2.00E-07*	<2.00E-06*	<2.00E-06*
CE-141	CI	<4.00E-08*	<4.00E-08*	<4.00E-07*	<4.00E-07*
MO-99	CI	<4.00E-08*	<4.00E-08*	<4.00E-07*	<4.00E-07*
TC-99M	CI	<4.00E-08*	<4.00E-08*	<4.00E-07*	<4.00E-07*
ZR-NB-95	CI	<8.00E-08*	<8.00E-08*	<8.00E-07*	<8.00E-07*
UNIDENTIFIED	CI	8.63E-05	6.93E-06	1.75E-03	3.84E-03
XE-133	CI	1.03E-02	<1.00E-07*	6.12E-03	6.84E-02
XE-135	CI	<6.00E-06*	<6.00E-06*	8.62E-05	4.53E-03

* MINIMUM DETECTABLE ACTIVITY IN UCI/ML
 N/A=NOT APPLICABLE
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INSTALLATION=MAINE YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CS-134	CI	<5.00E-08*	<5.00E-08*	1.20E-03	2.05E-04
CS-137	CI	<6.00E-08*	<6.00E-08*	1.42E-03	6.52E-04
I-131	CI	<5.00E-08*	<5.00E-08*	6.43E-02	3.86E-03
SR-89	CI	2.00E-03	<5.00E-08*	1.04E-03	<3.00E-08*
SR-90	CI	<1.00E-08*	<7.00E-08*	<7.00E-09*	<7.00E-09*
CO-58	CI	<5.00E-08*	<5.00E-08*	5.62E-03	7.25E-03
CO-60	CI	<6.00E-08*	<6.00E-08*	1.19E-04	<6.00E-07*
CR-51	CI	<3.00E-07*	<3.00E-07*	<3.00E-06*	<3.00E-06*
FE-59	CI	<1.00E-07*	<1.00E-07*	<1.00E-06*	<1.00E-06*
MN-54	CI	<5.00E-08*	<5.00E-08*	7.04E-05	<5.00E-07*
ZN-65	CI	<9.00E-08*	<9.00E-08*	<9.00E-07*	<9.00E-07*
BA-LA-140	CI	<2.00E-07*	<2.00E-07*	<2.00E-06*	<2.00E-06*
CE-141	CI	<4.00E-08*	<4.00E-08*	<4.00E-07*	<4.00E-07*
MO-99	CI	<4.00E-08*	<4.00E-08*	<4.00E-07*	<4.00E-07*
TC-99M	CI	<4.00E-08*	<4.00E-08*	<4.00E-07*	<4.00E-07*
ZR-NB-95	CI	<8.00E-08*	<8.00E-08*	<8.00E-07*	<8.00E-07*
CO-57	CI	<1.00E-08*	<1.00E-08*	<1.00E-07*	6.53E-05
I-133	CI	<4.00E-07*	<4.00E-07*	4.61E-04	<4.00E-06*
UNIDENTIFIED	CI	0.00E 00		0.00E 00	0.00E 00
XE-133	CI	<1.00E-07*	<1.00E-07*	4.53E-02	2.87E-01
XE-135	CI	<6.00E-06*	<6.00E-06*	<6.00E-05*	5.27E-04

* MINIMUM DETECTABLE ACTIVITY IN UCI/ML
 N/A=NOT APPLICABLE
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 N/R=NOT REPORTED

INSTALLATION= MAINE YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.14E 02	
	CI	5.79E 01	3.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.10E 02	
	CI	1.48E 01	3.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A			
CS-137	X	4.50E 01	
CS-134	X	2.80E 01	
CO-60-CO-58	X	2.70E 01	
B			
CS-137	X	4.00E 01	
CO-60	X	3.00E 01	
CS-134-CO-58	X	3.00E 01	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
27	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
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0

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= MAINE YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	8.98E 01	
	CI	6.76E 01	3.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.66E 02	
	CI	1.38E 00	3.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	1.25E 00	
	CI	4.00E 03	3.00E 01
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
CS-137	%	4.50E 01
CS-134	%	2.80E 01
CO-60-CO-58	%	2.70E 01
B		
CS-137	%	4.00E 01
CO-60	%	3.00E 01
CS-134-CO-58	%	3.00E 01
C		
CO-60	%	4.00E 01
MN-54	%	6.00E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
18	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
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0

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION MILLSTONE POINT 1

LOCATION 3.2 MI WSW NEW LONDON CT

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

TYPE BWR

DOCKET NO. 50-245

COOLING WATER SOURCE LONG ISLAND SOUND

LICENSEE NORTHEAST NUCLEAR ENERGY

LICENSED POWER (MWT) 2011.0

INITIAL CRITICALITY 10/26/70

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

STACK MONITORS CONTINUOUSLY RECORD THE EFFLUENT ACTIVITY AND FLOW RATE. DURING PERIODS WHEN THE AUGMENTED OFF-GAS SYSTEM IS NOT OPERABLE THE RADIATION MONITOR READING IS RELATED TO UCI BY OFF-GAS SAMPLING AT THE STEAM JET AIR EJECTORS AND SUBSEQUENT ISOTOPIC ANALYSIS. THE ISOTOPIC ACTIVITY AT THE SJAE IS MATHEMATICALLY DECAYED TO ESTABLISH THE ACTIVITY IN THE STACK USING THE KNOWN HOLD-UP TIME. DURING PERIODS OF AUGMENTED OFF-GAS OPERATION, SAMPLES ARE TAKEN DIRECTLY FROM THE STACK WITH A SUBSEQUENT ISOTOPIC ANALYSIS. IN BOTH CASES, THE CALCULATED ACTIVITY IN THE STACK IS THEN CORRELATED TO THE MONITOR READING. THE ISOTOPIC CONCENTRATIONS AT THE RELEASE POINT ARE MULTIPLIED BY THE TOTAL STACK FLOW TO OBTAIN TOTAL UCI RELEASE FOR EACH ISOTOPE.

IODINES

CHARCOAL CARTRIDGES ARE USED TO COLLECT IODINES. THE FILTERS ARE THEN ANALYZED FOR ISOTOPIC CONTENT USING A GAMMA SPECTROMETER. ISOTOPIC CONCENTRATIONS ARE MULTIPLIED BY THE RELEASE FLOW RATE TO DETERMINE THE AMOUNT OF ACTIVITY RELEASED.

PARTICULATES

PARTICULATE FILTERS ARE USED TO COLLECT PARTICULATES. THE FILTERS ARE THEN ANALYZED FOR ISOTOPIC CONTENT USING A GAMMA SPECTROMETER. PARTICULATE FILTERS ARE ALSO ANALYZED FOR STRONTIUM. ISOTOPIC CONCENTRATIONS ARE MULTIPLIED BY THE RELEASE FLOW RATE TO DETERMINE THE TOTAL AMOUNT OF ACTIVITY RELEASED.

LIQUID EFFLUENTS

THERE ARE FIVE TANKS WHICH ARE USED TO DISCHARGE LIQUIDS CONTAINING RADIOACTIVITY TO THE ENVIRONS; THEY ARE-
DECONTAMINATION SOLUTION TANK
FLOOR DRAIN SAMPLE TANKS(2)
WASTE SAMPLE TANKS(2)
PRIOR TO RELEASE A TANK IS RECIRCULATED FOR TWO EQUIVALENT TANK VOLUMES, A SAMPLE IS DRAWN AND ANALYZED ON THE GE(LI) GAMMA SPECTROMETER FOR INDIVIDUAL RADIONUCLIDE COMPOSITION. AN ALIQUOT OF THE SAMPLE IS ANALYZED FOR TRITIUM. ISOTOPIC CONCENTRATIONS ARE MULTIPLIED BY THE VOLUME RELEASED TO OBTAIN THE TOTAL ACTIVITY RELEASED.
A PROPORTIONAL ALIQUOT OF EACH DISCHARGE IS RETAINED FOR COMPOSITE ANALYSIS FOR STRONTIUM AND GROSS ALPHA.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION MILLSTONE POINT 1 LOCATION 3.2 MI WSW NEW LONDON

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA QUARTER 1	QUARTER 2	GAMMA QUARTER 1	QUARTER 2
BATCH RELEASES				
A. LIQUID				
1. NUMBER OF BATCH RELEASES-				28
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-				6.63E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				7.63E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				2.37E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				6.50E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-				N/A
B. GASEOUS				
1. NUMBER OF BATCH RELEASES-				NONE
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-				
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-				
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION MILLSTONE POINT 1

LOCATION 3.2 MI WSW NEW LONDON

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA QUARTER 3	BETA QUARTER 4	GAMMA QUARTER 3	GAMMA QUARTER 4
BATCH RELEASES				
A. LIQUID				
1. NUMBER OF BATCH RELEASES-				10
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-				1.64E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				2.50E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				1.65E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				6.80E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-				N/A
B. GASEOUS				
NUMBER OF BATCH RELEASES-				NONE
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-				
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-				
ABNORMAL RELEASES				
A. LIQUID				
NUMBER OF RELEASES				1
2. TOTAL ACTIVITY RELEASED (CURIES)				2.37E-04
B. GASEOUS				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

ABNORMAL RELEASES

NUCLIDES RELEASED	UNIT	QUARTER 3	QUARTER 4
LIQUID			
PARTICULATE			
CO-60	CI		8.18E-05
CS-134	CI		3.82E-05
CS-137	CI		1.17E-04

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INSTALLATION=MILLSTONE POINT 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	3.95E 05	1.64E 05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.08E 04	2.08E 04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.79E 01	1.65E 01	
B. IODINES				
1. TOTAL IODINE-131	CI	1.70E 00	1.15E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.18E-01	1.46E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.56E-01	9.63E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.01E-02	1.22E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.21E 01	2.34E 01	
4. GROSS ALPHA RADIOACTIVITY	CI	1.64E-05	2.20E-05	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.68E 01	7.68E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.16E 00	9.77E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.80E 03	4.18E 03	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.52E 02	5.26E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.65E-01	3.17E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	1.81E-01	1.61E-01	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.28E-02	2.03E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.31E-01	1.05E-01	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.65E-02	1.32E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.53E 00	2.69E 00	
4. GROSS ALPHA RADIOACTIVITY	CI	1.35E-05	1.56E-05	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.31E 01	1.11E 01	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.65E 00	1.40E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=MILLSTONE POINT 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-83M	CI	1.64E 04	6.43E 03		
KR-85	CI	3.75E 00	2.12E 00		
KR-85M	CI	2.66E 04	8.25E 03		
KR-87	CI	7.98E 04	3.44E 04		
KR-88	CI	9.39E 04	3.28E 04		
KR-89	CI	4.43E 00	4.72E 00		
XE-131M	CI	1.83E 01	1.85E 00		
XE-133	CI	1.35E 04	2.01E 03		
XE-133M	CI	7.15E 02	1.14E 02		
XE-135	CI	8.67E 04	2.27E 04		
XE-135M	CI	1.21E 04	9.64E 03		
XE-137	CI	4.18E 01	4.30E 01		
XE-138	CI	6.53E 04	4.74E 04		
IODINES					
I-131	CI	1.67E 00	1.14E 00		
I-133	CI	8.93E 00	7.15E 00		
I-135	CI	9.15E 00	6.91E 00		
PARTICULATES					
BA-LA-140	CI	1.04E-01	7.24E-01		
CO-58	CI	2.07E-03	1.54E-03		
CO-60	CI	2.57E-03	2.16E-03		
CS-134	CI	3.84E-04	3.05E-05		
CS-137	CI	7.59E-04	3.23E-03		
FE-59	CI	4.39E-03	3.03E-03		
I-131	CI	2.27E-02	1.01E-02		
MN-54	CI	5.65E-03	8.86E-03		
SR-89	CI	1.31E-02	2.09E-01		
SR-90	CI	1.23E-04	9.81E-04		
ZN-65	CI		1.28E-05		

N/A=NOT APPLICABLE
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INSTALLATION=MILLSTONE POINT 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-83M	CI		3.61E 00		
KR-85	CI		9.22E-04		
KR-85M	CI		5.82E 01		
KR-87	CI		1.93E 02		
KR-88	CI		2.14E 02		
KR-89	CI		7.89E-03		
XE-131M	CI		2.38E-04		
XE-133	CI		2.22E 01		
XE-133M	CI		3.19E-01		
XE-135	CI	9.89E 02	1.12E 03		
XE-135M	CI	9.03E 02	9.31E 02		
XE-137	CI		8.24E-02		
XE-138	CI	9.06E 02	1.64E 03		
IODINES					
I-131	CI	1.73E-01	1.52E-01		
I-133	CI	7.34E-01	6.11E-01		
I-135	CI	7.64E-01	8.04E-01		
PARTICULATES					
BA-LA-140	CI	7.57E-02	8.03E-02		
CO-58	CI	2.46E-04	2.74E-04		
CO-60	CI	1.88E-03	2.78E-03		
CS-134	CI	1.43E-05	1.00E-04		
CS-137	CI	5.77E-04	4.11E-04		
FE-59	CI	4.75E-04	6.30E-04		
I-131	CI	8.57E-03	8.96E-03		
MN-54	CI	1.83E-03	2.31E-03		
SR-89	CI	4.17E-02	9.05E-03		
SR-90	CI	3.37E-04	5.88E-05		
ZN-65	CI		2.14E-05		

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N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.19E-01	4.88E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.79E-08	1.45E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.19E 00	4.90E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	9.77E 01	1.29E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.11E-07	3.85E-07	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	5.26E-03	6.43E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.68E-09	1.91E-07	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.04E-05	1.42E-05	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.96E 05	8.59E 05	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.15E 09	3.36E 09	

N/A=NOT APPLICABLE
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INSTALLATION=MILLSTONE POINT 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	2.26E-03	4.93E-03	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.29E-09	1.24E-08	
3. PERCENT OF APPLICABLE LIMIT	%	2.30E-02	4.90E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	9.34E-01	2.15E-04	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.31E-07	5.42E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.17E-01	N/D	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.65E-08	N/D	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.96E-06	1.24E-06	1.50E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.18E 05	9.54E 03	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.76E 09	3.97E 08	1.00E 01

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N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
BA-LA-140	CI			9.03E-04	4.24E-04
CO-58	CI			3.58E-02	6.06E-03
CS-134	CI			1.46E-03	5.12E-04
CS-137	CI			5.09E-03	1.82E-03
I-131	CI			5.50E-03	8.00E-05
CO-60	CI			4.12E-02	3.33E-02
FE-59	CI				3.85E-04
I-133	CI			6.78E-03	
MN-54	CI			6.30E-03	3.89E-03
MO-99	CI			2.87E-03	
NB-95	CI				1.14E-03
ZR-95	CI			3.16E-03	3.91E-04
I-135	CI			1.87E-03	
NA-24	CI				1.40E-05
NB-95	CI			7.86E-03	
SR-89	CI			3.89E-04	6.01E-04
SR-90	CI			4.22E-05	5.51E-05
ZR-97	CI				8.10E-05
XE-133	CI			3.29E-03	3.33E-01
XE-135	CI			1.97E-03	3.09E-01

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INSTALLATION=MILLSTONE POINT 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
BA-LA-140	CI			4.40E-05	N/D
CO-58	CI			7.10E-05	1.56E-04
CS-134	CI			1.80E-04	1.16E-04
CS-137	CI			5.31E-04	4.30E-04
I-131	CI			1.63E-04	N/D
CO-60	CI			1.04E-03	3.89E-03
MN-54	CI			2.22E-04	3.29E-04
NB-95	CI			1.00E-06	
SR-89	CI			N/D	2.67E-06
SR-90	CI			5.14E-06	2.10E-06
XE-133	CI			9.00E-02	N/D
XE-135	CI			2.69E-02	N/D

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N/R=NOT REPORTED
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= MILLSTONE POINT 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.47E 02	
	CI	1.30E 02	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	9.25E 02	
	CI	3.06E 00	1.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	1.61E 01	
	CI	2.31E 04	1.00E 01
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
CO-60	X	3.70E 01
CS137-CS134	X	4.10E 01
I131-CO58-MN54-LA140-FE59-FE55	X	2.00E 01
NI63-SB124-BA140-SR89-SR90-UNIDENTIFIED	X	2.00E 00
B		
CS-137	X	2.70E 01
CO-60	X	4.60E 01
CS134-MN54	X	2.57E 01
FE55-FE59-SR89-SR90-UNIDENTIFIED	X	1.30E 00
C		
FE-55	X	7.60E 01
CO-60	X	1.80E 01
MN54-NI63-CO58-CR51-FE59	X	6.00E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
93	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
1	TRUCK	PLEASANTON CA.

N/A=NOT APPLICABLE
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INSTALLATION= MILLSTONE POINT 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.72E 02	
	CI	1.96E 02	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	3.14E 02	
	CI	1.80E 00	1.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	2.72E 01	
	CI	5.81E 04	1.00E 01
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
CO-60	%	3.20E 01
LA140-BA140-CS137-CS134-MN54-CO58	%	6.50E 01
NB95-RU105-CE141-SR89-NI63-FE55-AG110M-UNI*	%	3.00E 00
B		
CO-60	%	5.10E 01
MN54-FE59-CO58	%	4.00E 01
CE144-CR51-CS137-NB95-LA140-SR89-SR90-UNI*	%	9.00E 00
C		
FE-55	%	7.60E 01
CO-60	%	1.80E 01
MN54-NI63-CO58-CR57-FE59-UNIDENTIFIED	%	6.00E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
85	TRUCK	BARNWELL S.C.

*=UNIDENTIFIED
N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION MILLSTONE POINT 2

LOCATION 3.2 MI WSW NEW LONDON CT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 2

TYPE PWR

DOCKET NO. 50-336

COOLING WATER SOURCE LONG ISLAND SOUND

LICENSEE NORTHEAST NUCLEAR ENERGY

LICENSED POWER (MWT) 2560.0

INITIAL CRITICALITY 10/17/75

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

UNIT 2 VENT--

TOTAL CC'S OUT THE UNIT 2 VENT PER MONTH IS MULTIPLIED BY THE ISOTOPIC CONCENTRATIONS AS MEASURED BY GAMMA SPECTROMETER GE(LI) ANALYSIS OF GRAB SAMPLES OF GASES TO OBTAIN TOTAL UCI RELEASED FROM THE VENT.

CONTAINMENT PURGES--

GRAB SAMPLES ARE TAKEN OF GASES. THESE ARE ANALYZED ON GE(LI) GAMMA SPECTROMETER AND CONCENTRATIONS COMPUTED. COMPUTED CONCENTRATIONS ARE THEN MULTIPLIED BY THE PURGE VOLUME FOR TOTAL UCI RELEASED.

TRITIUM COLLECTION IS BY THE GAS WASHING BOTTLE METHOD. THE SAMPLE IS COUNTED ON A LIQUID SCINTILLATION COUNTER. CONCENTRATION IS COMPUTED USING WORST POSSIBLE CASE, 100% HUMIDITY. CONCENTRATION IS MULTIPLIED BY VOLUME PURGED TO GIVE TOTAL UCI RELEASED.

IODINES

UNIT 2 VENT--

TOTAL CC'S OUT THE UNIT 2 VENT PER MONTH IS MULTIPLIED BY THE ISOTOPIC CONCENTRATIONS AS MEASURED BY GAMMA SPECTROMETER GE(LI) ANALYSIS OF GRAB SAMPLES OF IODINES TO OBTAIN TOTAL UCI RELEASED FROM THE VENT.

CONTAINMENT PURGES--

GRAB SAMPLES ARE TAKEN OF IODINES. THESE ARE ANALYZED ON GE(LI) GAMMA SPECTROMETER AND CONCENTRATIONS COMPUTED. COMPUTED CONCENTRATIONS ARE THEN MULTIPLIED BY THE PURGE VOLUME FOR TOTAL UCI RELEASED.

PARTICULATES

UNIT 2 VENT--

TOTAL CC'S OUT THE UNIT 2 VENT PER MONTH IS MULTIPLIED BY THE ISOTOPIC CONCENTRATIONS AS MEASURED BY GAMMA SPECTROMETER GE(LI) ANALYSIS OF GRAB SAMPLES OF PARTICULATES TO OBTAIN TOTAL UCI RELEASED FROM THE VENT.

CONTAINMENT PURGES--

GRAB SAMPLES ARE TAKEN OF PARTICULATES. THESE ARE ANALYZED ON GE(LI) GAMMA SPECTROMETER AND CONCENTRATIONS COMPUTED. COMPUTED CONCENTRATIONS ARE THEN MULTIPLIED BY THE PURGE VOLUME FOR TOTAL UCI RELEASED.

LIQUID EFFLUENTS

THERE ARE THREE TANKS WHICH ARE USED TO DISCHARGE LIQUIDS CONTAINING RADIOACTIVITY TO THE ENVIRONS. THEY ARE ONE AERATED WASTE MONITOR TANK AND TWO COOLANT WASTE MONITOR TANKS. PRIOR TO RELEASE, THE TANK IS RECIRCULATED FOR TWO TANK VOLUMES, A ONE LITER SAMPLE IS DRAWN AND ANALYZED ON THE GE(LI) GAMMA SPECTROMETER FOR INDIVIDUAL RADIONUCLIDE COMPOSITION. AN ALIQUOT OF THE SAMPLE IS ANALYZED FOR TRITIUM IN UCI PER CC. THE UCI PER CC IS MULTIPLIED BY THE CC'S RELEASED TO OBTAIN TOTAL UCI RELEASED. THE SAMPLE IS RETAINED FOR COMPOSITE ANALYSIS FOR SR-89, 90 AND GROSS ALPHA. THE COMPOSITE CONTAINS PROPORTIONAL AMOUNTS OF EACH DISCHARGE.

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION MILLSTONE POINT 2

LOCATION 3.2 MI. WSW NEW LONDON

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA QUARTER 1	QUARTER 2	GAMMA QUARTER 1 & 2
BATCH RELEASES	QUARTER 1	QUARTER 2	
A. LIQUID			
1. NUMBER OF BATCH RELEASES-			195
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-			1.82E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			3.15E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			9.30E 01
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			5.00E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-			N/A
B. GASEOUS			
1. NUMBER OF BATCH RELEASES-			16
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-			1.74E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			3.69E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			1.09E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-			5.00E 00
ABNORMAL RELEASES			
A. LIQUID			
1. NUMBER OF RELEASES			NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			
B. GASEOUS			
1. NUMBER OF RELEASES			NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION MILLSTONE POINT 2

LOCATION 3.2 MI WSW NEW LONDON

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA QUARTER 3	QUARTER 4	GAMMA QUARTER 3	QUARTER 4
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BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-

QUARTER 3	& QUARTER 4
	148
	1.49E 04
	9.07E 02
	1.00E 02
	4.00E 01
	N/A

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-

13
4.64E 03
1.40E 03
3.22E 02
5.00E 00

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	8.00E 01	5.39E 02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.02E 01	6.86E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	*	*	
B. IODINES				
1. TOTAL IODINE-131	CI	6.93E-04	5.87E-04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.90E-05	7.47E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	2.46E-04	4.05E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.16E-05	5.15E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	*	*	
4. GROSS ALPHA RADIOACTIVITY	CI	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	CI	N/D	N/D	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

* Reported under Millstone Unit No. 1 effluents

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	3.04E 01	1.15E 02	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.82E 00	1.45E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	*	*	
B. IODINES				
1. TOTAL IODINE-131	CI	8.51E-04	6.39E-05	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.07E-04	8.04E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.03E-04	3.89E-04	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.30E-05	8.10E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	*	*	
4. GROSS ALPHA RADIOACTIVITY	CI	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.69E 01	2.27E 01	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.13E 00	2.86E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

* Reported under Millstone Unit No. 1 effluents.

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85	CI			4.99E-01	
XE-131M	CI			7.54E-02	
XE-133	CI			5.96E-02	9.15E-03
XE-135	CI			6.80E-04	
PARTICULATES					
CO-60	CI			5.64E-04	
H-3	CI			2.59E-04	1.98E-02

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 2

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI				4.05E-01
XE-133	CI			1.14E-01	5.02E-01
XE-135	CI			9.22E-02	7.65E-04
XE-135M	CI				7.59E-03
PARTICULATES					
CO-60	CI				3.25E-04
H-3	CI			1.93E-04	9.70E-05

N/A=NOT APPLICABLE
 N/D=NOT DETECTED
 N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-37	CI	2.03E 01	2.13E 01		
KR-85	CI	2.56E 01			
XE-133	CI	3.34E 01			1.55E 02
XE-135	CI		5.04E 02		2.08E 01
IODINES					
I-131	CI	6.91E-04	5.80E-04		4.32E-04
I-133	CI	1.77E-03	1.33E-03		
I-135	CI	2.19E-03	3.70E-04		
PARTICULATES					
BA-LA-140	CI	N/D	N/D		
CO-58	CI	3.24E-07			
CO-60	CI	2.07E-04	2.99E-05		2.33E-04
GROSS ALPHA	CI	N/D	N/D		
I-131	CI	8.79E-06	7.77E-06		
MN-54	CI	2.90E-05			
SR-89	CI	5.39E-07	2.38E-06		
SR-90	CI	4.39E-08	4.73E-06		
TRITIUM	CI	N/D	N/D		2.18E 00

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI				7.02E-02
KR-85	CI	5.33E-02	5.42E 00		
XE-133	CI	3.02E 01	1.10E 02	2.43E 03	5.14E 01
XE-135	CI			3.21E-03	3.70E-01
IODINES					
I-131	CI	8.51E-04	6.39E-05	4.80E-03	3.30E-06
I-133	CI	7.43E-04	1.23E-04	1.77E-07	
I-135	CI	9.62E-04	9.75E-05		
PARTICULATES					
BA-LA-140	CI	N/D	1.13E-06		
CO-60	CI	4.31E-05	4.16E-05		
CS-137	CI	3.43E-06	6.03E-05		
GROSS ALPHA	CI	N/D	N/D		
I-131	CI	5.15E-05	1.05E-05		
MN-54	CI	4.53E-06	4.08E-06		
SR-89	CI	N/D	9.90E-07		
SR-90	CI	3.76E-07	2.86E-08		
TRITIUM	CI	1.69E 01	2.27E 01	6.48E 00	4.74E-01

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	4.32E-01	1.27E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.81E-08	6.20E-08	
3. PERCENT OF APPLICABLE LIMIT	%	4.32E 00	1.27E 01	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.77E 00	3.57E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.38E-07	2.13E-06	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	9.09E-04	3.90E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.22E-10	1.90E-07	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	N/D	N/D	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.29E 06	2.80E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	7.43E 09	2.05E 10	

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	7.15E-01	3.72E-01	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.83E-08	5.39E-09	
3. PERCENT OF APPLICABLE LIMIT	%	7.15E 00	3.72E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	9.13E 01	7.20E 01	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.17E-06	1.04E-06	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	8.86E-01	4.37E-01	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.99E-08	6.33E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	N/D	N/D	1.50E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.79E 06	2.20E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.49E 10	6.93E 10	1.00E 01

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
BA-LA-140	CI		N/D	N/D	
CO-58	CI			2.10E-01	
CS-134	CI			3.83E-03	
CS-137	CI			6.23E-03	
I-131	CI		N/D	N/D	
SR-89	CI		N/D		
SR-90	CI		N/D		
CO-60	CI			1.67E-01	
MN-54	CI			3.53E-02	
NA-24	CI		8.82E-02		
NB-95	CI			8.70E-03	
ZR-95	CI			1.12E-03	
GROSS ALPHA	CI		N/D	N/D	
H-3	CI		N/D	1.77E 00	
SR-89	CI			2.34E-04	
SR-90	CI			1.40E-05	
XE-133	CI		N/D	7.94E-04	
XE-135	CI		N/D	1.15E-04	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=MILLSTONE POINT 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
BA-LA-140	CI	N/D	N/D	N/D	4.50E-03
CO-58	CI			2.19E-01	4.60E-02
CS-134	CI			7.26E-02	1.83E-02
CS-137	CI			1.39E-01	3.48E-02
I-131	CI	N/D	N/D	5.20E-04	2.70E-03
NA-24	CI		1.41E-01		
SR-89	CI	N/D	N/D		
SR-90	CI	N/D	N/D		
AG-110M	CI			7.68E-03	3.93E-03
CO-60	CI			1.88E-01	8.51E-02
CR-51	CI			6.17E-03	
GROSS ALPHA	CI	N/D	N/D		
H-3	CI	N/D	N/D		7.20E 01
MN-54	CI			3.13E-02	1.47E-02
NB-97	CI			1.19E-02	4.74E-03
ZR-95	CI				4.40E-05
CS-136	CI			5.34E-04	
FE-59	CI			9.26E-04	
I-133	CI				1.31E-04
NA-24	CI				6.22E-03
NB-95	CI			2.07E-02	2.34E-03
SB-124	CI				6.52E-03
SR-92	CI			6.76E-03	6.66E-04
XE-133	CI	N/D	N/D		
XE-135	CI	N/D	N/D		
ZR-95	CI			9.17E-03	
I-133	CI			1.21E-04	
NA-24	CI			1.65E-04	
SR-89	CI			N/D	N/D
SR-90	CI			4.91E-05	N/D
GROSS ALPHA	CI			N/D	N/D
H-3	CI			9.13E 01	7.20E-01
XE-133	CI			8.86E-01	4.30E-01
XE-135	CI			4.70E-04	7.49E-03

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= MILLSTONE POINT 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	4.25E 01	
	CI	1.39E-01	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	6.45E 01	
	CI	2.66E 00	1.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI		
D. OTHER (DESCRIBE)	M3	NONE	
	CI		

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

A		
CO-58	X	6.25E 01
CO-60	X	2.95E 01
MN-54	X	3.00E 00
CS-137	X	2.00E 00
NB-95-NB-97-AG-110M-CS-134	X	1.80E 00
SR-92-SR-90-SR-89-RU-105-ZR-95	X	6.00E-01
CS-136-FE-59-CO-57-UNIDENTIFIED	X	6.00E-01
B		
CS-134	X	9.80E 00
CO-60	X	4.60E 01
MN-54	X	1.59E 01
CS-137	X	2.70E 01
FE-59-SR-89-SR-90-UNIDENTIFIED	X	1.30E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
8	TRUCK	BARNWELL SC

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= MILLSTONE POINT 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.40E 01	
	CI	7.15E 00	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.37E 01	
	CI	7.06E 00	1.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI		
D. OTHER (DESCRIBE)	M3	NONE	
	CI		

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

A		
CO-60	X	5.30E 01
CO-58	X	3.40E 01
MN-54	X	5.00E 00
CS-137	X	4.00E 00
AG-110M-NB-97-NB-95-ZR-95	X	3.50E 00
CO-57-SR-89-SR-90-UNIDENTIFIED	X	5.00E-01
B		
CS-137	X	3.00E 01
MN-54	X	3.00E 01
CO-60-CO-58-CS-134	X	3.70E 01
FE-55-NI-63-SR-89-SR-90-UNIDENTIFIED	X	3.00E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
5	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION MONTICELLO

LOCATION 23 MI SE ST. CLOUD MN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

TYPE BWR

DOCKET NO. 50-263

COOLING WATER SOURCE MISSISSIPPI RIVER

LICENSEE NORTHERN STATES POWER

LICENSED POWER (MWT) 1670.0

INITIAL CRITICALITY 12/10/70

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

CONTINUOUS GROSS ACTIVITY MONITORS IN REACTOR BUILDING VENT AND PLANT STACK EXHAUST STREAMS. WEEKLY ISOTOPIC ANALYSIS OF STEAM JET AIR EJECTOR STREAM. MONTHLY ANALYSIS OF STORAGE TANK CONTENTS.

TRITIUM- CONTINUOUS MONITORING WITH SILICA GEL CARTRIDGES IN REACTOR BUILDING VENT AND PLANT STACK EXHAUST STREAMS WITH BIWEEKLY ANALYSIS.

IODINES

CONTINUOUS MONITORING WITH CHARCOAL CARTRIDGES IN REACTOR BUILDING VENT AND PLANT STACK EXHAUST STREAMS WITH WEEKLY ANALYSIS.

PARTICULATES

CONTINUOUS MONITORING WITH PARTICULATE FILTERS IN REACTOR BUILDING VENT AND PLANT STACK EXHAUST STREAMS WITH WEEKLY ANALYSIS.

LIQUID EFFLUENTS

TANK SAMPLE ANALYZED PRIOR TO RELEASE WITH CONTINUOUS MONITORING OF GROSS ACTIVITY DURING RELEASE.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION MONTICELLO

LOCATION 23 MI SE ST. CLOUD

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER	BETA QUARTER	QUARTER	GAMMA QUARTER
1	2	1	2
N/A	N/A	N/A	N/A

BATCH RELEASES

A. LIQUID

QUARTER	QUARTER
1	2
	NONE

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

NONE

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION MONTICELLO

LOCATION 23 MI SE ST. CLOUD

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

BETA		GAMMA	
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4
N/A	N/A	N/A	N/A

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

QUARTER	QUARTER
3	4
	NONE

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

NONE

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=MONTICELLO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	2.12E 03	1.91E 03	5.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.73E 02	2.42E 02	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.17E 01	7.76E 00	
B. IODINES				
1.TOTAL IODINE-131	CI	9.12E-03	1.60E-02	5.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.17E-03	2.03E-03	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.60E-03	2.26E-03	5.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.63E-04	2.87E-04	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.89E-01	9.79E-01	
4.GROSS ALPHA RADIOACTIVITY	CI	1.28E-06	1.67E-06	1.00E 02
D. TRITIUM				
1.TOTAL RELEASE	CI	8.58E 01	2.98E 01	5.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.10E 01	3.79E 00	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=MONTICELLO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	1.61E 03	7.78E 02	5.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.03E 02	9.78E 01	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.65E 00	2.47E 00	
B. IODINES				
1.TOTAL IODINE-131	CI	1.17E-02	4.37E-03	5.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.47E-03	5.50E-04	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.02E-03	4.85E-03	5.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.79E-04	6.11E-04	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	7.50E-01	5.51E-01	
4.GROSS ALPHA RADIOACTIVITY	CI	1.45E-06	2.98E-06	1.00E 02
D. TRITIUM				
1.TOTAL RELEASE	CI	1.20E 01	1.08E 02	5.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.50E 00	1.36E 01	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=MONTICELLO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
				NONE	NONE
FISSION GASES					
KR-83M	CI	1.86E 00	1.16E 00		
KR-85	CI	3.91E-03	4.33E-03		
KR-85M	CI	1.56E 00	9.61E-01		
KR-87	CI	9.26E 00	5.80E 00		
KR-88	CI	5.25E 00	3.21E 00		
KR-89	CI	1.84E 02	1.19E 02		
KR-90	CI	6.26E 00	4.06E 00		
XE-131M	CI	1.07E-03	6.79E-04		
XE-133	CI	6.69E-01	3.89E-01		
XE-133M	CI	3.04E-02	1.80E-02		
XE-135	CI	1.05E 01	6.11E 00		
XE-135M	CI	1.41E 01	9.00E 00		
XE-137	CI	2.41E 02	1.55E 02		
XE-138	CI	2.17E 02	1.39E 02		
XE-139	CI	1.87E 01	1.21E 01		
IODINES					
I-131	CI	<1.77E-03	<2.54E-03		
I-133	CI	<1.49E-02	<1.55E-02		
I-135	CI	<4.27E-02	<3.55E-02		
PARTICULATES					
BA-140	CI	4.19E-04	4.40E-04		
CE-141	CI	<9.53E-06	<1.58E-05		
CE-144	CI	<3.20E-05	<1.52E-05		
CO-57	CI	<4.27E-06	<1.92E-06		
CO-58	CI	<6.85E-06	<3.67E-06		
CO-60	CI	2.18E-04	<1.52E-04		
CR-51	CI	<5.09E-05	<2.93E-05		
CS-134	CI	<2.26E-05	<2.11E-05		
CS-136	CI	<1.21E-05	<6.46E-06		
CS-137	CI	1.21E-04	7.77E-05		
FE-59	CI	<1.45E-05	<8.57E-06		
MN-54	CI	<9.07E-06	<3.80E-06		
NB-95	CI	<7.05E-06	<3.24E-06		
ND-147	CI	<2.54E-05	<1.11E-05		
RU-103	CI	<6.28E-06	<3.32E-06		
SB-124	CI	<9.80E-06	<5.92E-06		
SB-126	CI	<8.25E-06	<4.22E-06		
SR-89	CI	<2.00E-05	3.10E-05		
SR-90	CI	2.15E-05	6.75E-06		
ZN-65	CI	<1.60E-05	<1.01E-05		
ZR-95	CI	<1.18E-05	<6.35E-06		

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=MONTICELLO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
				NONE	NONE
FISSION GASES					
KR-83M	CI	6.56E-01	3.67E-01		
KR-85	CI	2.90E-03	4.29E 00		
KR-85M	CI	5.38E-01	3.10E-01		
KR-87	CI	3.26E 00	1.86E 00		
KR-88	CI	1.79E 00	1.04E 00		
KR-89	CI	6.74E 01	3.65E 01		
KR-90	CI	2.31E 00	1.24E 00		
XE-131M	CI	3.98E-04	1.93E-01		
XE-133	CI	2.15E-01	2.49E 01		
XE-133M	CI	1.01E-02	1.31E-01		
XE-135	CI	3.42E 00	2.01E 00		
XE-135M	CI	5.09E 00	2.78E 00		
XE-137	CI	8.79E 01	4.76E 01		
XE-138	CI	7.92E 01	4.18E 01		
XE-139	CI	6.86E 00	3.69E 00		
IODINES					
I-131	CI	<2.69E-03	<9.56E-04		
I-133	CI	<1.84E-02	<4.80E-03		
I-135	CI	<2.97E-02	<2.17E-02		
PARTICULATES					
BA-140	CI	9.99E-04	<4.23E-04		
CE-141	CI	<1.16E-05	<3.53E-06		
CE-144	CI	<2.33E-05	<2.08E-05		
CO-57	CI	<1.82E-06	<2.03E-06		
CO-58	CI	<3.58E-06	<3.92E-06		
CO-60	CI	9.93E-05	4.66E-04		
CR-51	CI	<2.85E-05	<2.57E-05		
CS-134	CI	<2.43E-05	<2.36E-05		
CS-136	CI	<6.69E-06	<6.58E-06		
CS-137	CI	8.73E-05	9.91E-05		
FE-59	CI	<8.13E-06	<8.50E-06		
MN-54	CI	<3.64E-06	<6.27E-06		
NB-95	CI	<3.56E-06	<3.77E-06		
ND-147	CI	<1.02E-05	<1.16E-05		
RU-103	CI	<3.27E-06	<3.23E-06		
SB-124	CI	<1.25E-05	<5.33E-06		
SB-126	CI	<3.89E-06	<3.82E-06		
SR-89	CI	3.20E-05	3.69E-04		
SR-90	CI	4.24E-06	1.55E-05		
ZN-65	CI	<1.96E-05	<3.53E-05		
ZR-95	CI	<5.93E-06	<6.39E-06		
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N/D=NOT DETECTED					
N/R=NOT REPORTED					

INSTALLATION=MONTICELLO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
				NONE	NONE
FISSION GASES					
KR-83M	CI	3.19E 00	3.32E 00		
KR-85	CI	9.05E 00	1.73E 01		
KR-85M	CI	2.69E 00	2.74E 00		
KR-87	CI	1.58E 01	1.65E 01		
KR-88	CI	9.00E 00	9.23E 00		
KR-89	CI	3.16E 02	3.39E 02		
KR-90	CI	1.07E 01	1.16E 01		
XE-131M	CI	9.32E-01	8.84E-01		
XE-133	CI	1.85E 02	1.38E 02		
XE-133M	CI	6.34E-01	3.72E-01		
XE-135	CI	1.80E 01	1.73E 01		
XE-135M	CI	2.41E 01	2.56E 01		
XE-137	CI	4.12E 02	4.42E 02		
XE-138	CI	3.73E 02	3.93E 02		
XE-139	CI	3.20E 01	3.44E 01		
IODINES					
I-131	CI	8.21E-03	1.36E-02		
I-133	CI	2.15E-02	3.66E-02		
I-135	CI	<2.04E-02	<2.65E-02		
PARTICULATES					
BA-140	CI	2.34E-03	1.19E-03		
CE-141	CI	<1.68E-06	<3.13E-06		
CE-144	CI	<3.99E-05	<1.90E-05		
CO-57	CI	<1.32E-06	<6.69E-07		
CO-58	CI	<1.99E-06	<1.17E-06		
CO-60	CI	<4.78E-06	<3.60E-06		
CR-51	CI	<1.40E-05	<8.77E-06		
CS-134	CI	<4.29E-06	<4.98E-06		
CS-136	CI	<3.52E-06	<2.13E-06		
CS-137	CI	3.83E-05	3.00E-05		
FE-59	CI	<4.42E-06	<2.68E-06		
MN-54	CI	<1.73E-06	<1.05E-06		
NB-95	CI	<2.19E-06	<1.14E-06		
ND-147	CI	<4.96E-06	<2.89E-06		
RU-103	CI	<1.69E-06	<1.02E-06		
SB-124	CI	<3.46E-06	<2.13E-06		
SB-126	CI	<2.35E-06	<1.41E-06		
SR-89	CI	3.42E-04	2.73E-04		
SR-90	CI	8.96E-06	5.33E-06		
ZN-65	CI	<4.60E-06	<2.85E-06		
ZR-95	CI	<3.36E-06	<2.05E-06		

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INSTALLATION=MONTICELLO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
				NONE	NONE
FISSION GASES					
KR-83M	CI	3.19E 00	1.27E 00		
KR-85	CI	1.45E 01	8.74E 00		
KR-85M	CI	2.63E 00	1.06E 00		
KR-87	CI	1.58E 01	6.37E 00		
KR-88	CI	8.76E 00	3.58E 00		
KR-89	CI	3.22E 02	1.26E 02		
KR-90	CI	1.10E 01	4.29E 00		
XE-131M	CI	8.09E-01	6.46E-01		
XE-133	CI	1.10E 02	1.18E 02		
XE-133M	CI	2.68E-01	5.27E-01		
XE-135	CI	1.66E 01	6.85E 00		
XE-135M	CI	2.44E 01	9.62E 00		
XE-137	CI	4.20E 02	1.65E 02		
XE-138	CI	3.70E 02	1.44E 02		
XE-139	CI	3.27E 01	1.28E 01		
IODINES					
I-131	CI	<1.12E-02	4.09E-03		
I-133	CI	<3.41E-02	<1.42E-02		
I-135	CI	<2.23E-02	<9.87E-03		
PARTICULATES					
BA-140	CI	1.51E-03	2.84E-03		
CE-141	CI	<5.62E-06	<1.28E-06		
CE-144	CI	<9.86E-06	<4.89E-05		
CO-57	CI	<4.67E-07	<5.04E-07		
CO-58	CI	<1.09E-06	<1.07E-06		
CO-60	CI	<2.49E-06	<2.46E-06		
CR-51	CI	<7.56E-06	<8.11E-06		
CS-134	CI	<1.12E-06	<1.82E-05		
CS-136	CI	<2.09E-06	<1.89E-06		
CS-137	CI	<1.59E-05	<9.17E-05		
FE-59	CI	<2.54E-06	<2.33E-06		
MN-54	CI	<3.95E-06	<2.50E-06		
NB-95	CI	<1.06E-06	<1.03E-06		
ND-147	CI	<2.70E-06	<2.81E-06		
RU-103	CI	<9.42E-07	<2.34E-06		
SB-124	CI	<1.93E-06	<1.84E-06		
SB-126	CI	<1.27E-06	<1.20E-06		
SR-89	CI	2.13E-04	4.27E-04		
SR-90	CI	5.71E-06	5.12E-05		
ZN-65	CI	<3.99E-06	<3.08E-06		
ZR-95	CI	<1.83E-06	<1.82E-06		

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INSTALLATION=MONTICELLO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	0.00E 00	0.00E 00	0.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	0.00E 00	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
B. TRITIUM				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	0.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	0.00E 00	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	0.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	0.00E 00	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	0.00E 00
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	0.00E 00	0.00E 00	0.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	0.00E 00	0.00E 00	0.00E 00

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N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=MONTICELLO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	0.00E 00	0.00E 00	0.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	0.00E 00	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
B. TRITIUM				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	0.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	0.00E 00	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	0.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	0.00E 00	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	0.00E 00
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	0.00E 00	0.00E 00	0.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	0.00E 00	0.00E 00	0.00E 00

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N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= MONTICELLO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.31E 01	
	C1	2.46E 02	5.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	3.81E 01	
	C1	2.52E 00	5.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	8.41E 00	
	C1	6.28E 04	5.00E 01
D. OTHER (DESCRIBE)	M3		
	C1		

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

A		
CS-137	x	3.00E 00
ZN-65	x	3.70E 01
CO-60	x	5.50E 01
B		
CS-137	x	3.00E 00
ZN-65	x	3.70E 01
CO-60	x	5.50E 01
C		
CO-60	x	9.50E 01
MN-54	x	5.01E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
2	TRUCK	SHEFFIELD ILL.
5	TRUCK	BARNWELL S.C.
14	TRUCK	RICHLAND WA.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= MONTICELLO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

1. TYPE OF WASTE	UNIT	6-MONTH PERIOD	EST. TOTAL ERROR, %
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.38E 02	
	CI	4.02E 02	5.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.97E 02	
	CI	4.86E 00	5.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI	NONE	0.00E 00
D. OTHER (DESCRIBE)	M3	8.48E 01	
SOLID LAUNDRY WASTE	CI	1.35E 00	5.00E 01

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

A		
CS-137	%	2.20E 01
ZN-65	%	2.40E 01
CO-60	%	3.50E 01
B		
CS-137	%	2.20E 01
ZN-65	%	2.40E 01
CO-60	%	3.50E 01
D		
CS-137	%	2.20E 01
ZN-65	%	2.40E 01
CO-60	%	3.50E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
25	TRUCK	BARNWELL S.C.
9	TRUCK	RICHLAND WA.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
---------------------	------------------------	-------------

0

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION NINE MILE POINT

LOCATION 8 MI NE OSWEGO NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE NIAGARA MOHAWK POWER

TYPE BWR

LICENSED POWER (MWT) 1850.0

DOCKET NO. 50-220

INITIAL CRITICALITY 09/05/69

COOLING WATER SOURCE LAKE ONTARIO

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) *

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

STACK MONITOR CALIBRATED TO (GELI) ISOTOPIIC ANALYSIS OF 2.5L MARINELLI BEAKER.

IODINES

WEEKLY ANALYSIS (GELI) OF STACK SAMPLER CHARCOAL CARTRIDGE.

PARTICULATES

ISOTOPIIC ANALYSIS (GELI) OF STACK SAMPLER FILTERS.

LIQUID EFFLUENTS

GELI ISOTOPIIC OF REPRESENTATIVE SAMPLE OF EACH BATCH.

* 10 CFR 20

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION NINE MILE POINT

LOCATION 8 MI NE OSWEGO NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

BETA		GAMMA	
QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
4.00E-01	4.20E-01	7.80E-01	9.50E-01

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

QUARTER 1	QUARTER 2
NONE	NONE

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

N/A	N/A
-----	-----

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE	NONE
------	------

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE	NONE
------	------

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION NINE MILE POINT

LOCATION 8 MI NE OSWEGO NY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA QUARTER 3	BETA QUARTER 4	GAMMA QUARTER 3	GAMMA QUARTER 4
	4.50E-01	4.30E-01	8.80E-01	8.00E-01
BATCH RELEASES			QUARTER 3	QUARTER 4
A. LIQUID			NONE	NONE
1. NUMBER OF BATCH RELEASES-				
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-				
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-				
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-				
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-				
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-				
B. GASEOUS			N/A	N/A
1. NUMBER OF BATCH RELEASES-				
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-				
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-				
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-				
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-				
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=NINE MILE POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	9.03E 02	8.51E 02	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.16E 02	1.08E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.59E-02	2.23E-02	
B. IODINES				
1. TOTAL IODINE-131	CI	2.55E-02	3.95E-02	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.28E-03	5.02E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	6.68E-03	1.14E-02	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.58E-04	1.45E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	1.37E-05	6.59E-04	
D. TRITIUM				
1. TOTAL RELEASE	CI	2.32E 01	2.63E 01	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.98E 00	3.35E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=NINE MILE POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	7.07E 02	5.63E 02	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.89E 01	7.08E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.40E-02	9.90E-03	
B. IODINES				
1. TOTAL IODINE-131	CI	2.56E-02	1.55E-02	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.22E-03	1.95E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	6.46E-03	4.32E-03	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.12E-04	5.44E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	4.24E-06	3.20E-05	
D. TRITIUM				
1. TOTAL RELEASE	CI	2.09E 01	1.49E 01	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.63E 00	1.88E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=NINE MILE POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
				NONE	NONE
FISSION GASES					
KR-85M	CI	0.00E 00	0.00E 00		
KR-87	CI	0.00E 00	0.00E 00		
KR-88	CI	4.78E 01	1.04E 02		
XE-133	CI	2.44E 01	1.64E 01		
XE-135	CI	2.46E 02	1.34E 02		
XE-135M	CI	1.86E 02	1.74E 02		
XE-138	CI	3.99E 02	4.23E 02		
IODINES					
I-131	CI	2.55E-02	3.95E-02		
I-133	CI	8.52E-02	4.96E-02		
I-135	CI	1.44E-01	8.98E-02		
PARTICULATES					
BA-LA-140	CI	2.25E-03	4.28E-03		
CE-141	CI		7.25E-05		
CO-58	CI		1.28E-04		
CO-60	CI	1.90E-03	1.82E-03		
CR-51	CI	5.54E-04	2.16E-03		
CS-134	CI	4.28E-05	1.34E-05		
CS-136	CI	1.87E-04	5.04E-04		
CS-137	CI	1.51E-04	1.08E-04		
FE-59	CI	4.86E-05	5.60E-05		
MN-54	CI	2.76E-05	4.07E-04		
SR-89	CI	1.49E-03	1.87E-03		
SR-90	CI	2.61E-05	7.80E-06		

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N/R=NOT REPORTED

INSTALLATION=NINE MILE POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
				NONE	NONE
FISSION GASES					
KR-88	CI	2.29E-01			
XE-133	CI	1.28E-01			
XE-135	CI	1.41E-02	1.28E-02		
XE-135M	CI	1.13E-02	1.30E-02		
XE-138	CI	4.17E-02	3.05E-02		
IODINES					
I-131	CI	2.56E-02	1.55E-02		
I-133	CI	1.81E-01	1.10E-01		
I-135	CI	2.91E-01	1.39E-01		
PARTICULATES					
BA-LA-140	CI	2.17E-03	1.33E-03		
CE-141	CI	8.07E-05			
CO-60	CI	1.06E-03	1.40E-03		
CR-51	CI	1.48E-04	2.64E-04		
CS-134	CI	5.30E-05			
CS-136	CI	2.99E-04	3.41E-05		
CS-137	CI	3.37E-04	1.79E-04		
FE-59	CI	4.70E-05			
MN-54	CI	1.28E-04	3.06E-04		
SR-89	CI	2.10E-03	7.94E-04		
SR-90	CI	4.24E-05	<1.42E-05		

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INSTALLATION=NINE MILE POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

NUCLIDES RELEASED	UNIT	GAS EFFLUENTS		GROUND		RELEASE	
		CONTINUOUS MODE				BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER	QUARTER	QUARTER
		1	2			1	2
		NONE	NONE			NONE	NONE

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=NINE MILE POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

NUCLIDES RELEASED	UNIT	GAS EFFLUENTS GROUND RELEASE			
		CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
		NONE	NONE	NONE	NONE

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=NINE MILE POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES-NO RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM; GASES, ALPHA)	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI			
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS			
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS			

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=NINE MILE POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES-NO RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI			
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS			
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS			

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= NINE MILE POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	7.37E 01	
	C1	2.54E 02	2.50E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	3.06E 01	
	C1	3.97E 00	2.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	1.06E 02	
	C1	2.06E 04	2.50E 01
D. OTHER (DESCRIBE)	M3		
	C1		

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

A		
CS-134	X	1.50E 01
CS-137	X	4.20E 01
CO-60	X	4.30E 01
C		
CO-60	X	1.00E 02

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
24	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= NINE MILE POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.46E 02	
	CI	1.57E 03	3.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.91E 01	
	CI	8.00E-02	2.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
CO-60	X	3.50E 01
CS-137	X	5.00E 01
CS-134	X	1.50E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
23	TRUCK.	BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION NORTH ANNA

LOCATION 40 MI NW RICHMOND VA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE VIRGINIA ELECTRIC ✓POWER

TYPE PWR

LICENSED POWER (MWT) 2775.0

DOCKET NO. 50-338

INITIAL CRITICALITY 04/05/78

COOLING WATER SOURCE LAKE ANNA

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY N/R

AVERAGE ENERGY (MEV/DISINTEGRATION) N/R

QUARTER	BETA QUARTER	QUARTER	GAMMA QUARTER
1	2	1	2

BATCH RELEASES

QUARTER	QUARTER
1	2

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION NORTH ANNA

LOCATION 40 MI NW RICHMOND VA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER 3	BETA QUARTER 4	QUARTER 3	GAMMA QUARTER 4
--------------	----------------------	--------------	-----------------------

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=NORTH ANNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI		8.07E 03	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC		1.03E 03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%		4.08E-01	TOTAL BODY SKIN
			2.04E-01	
B. IODINES				
1. TOTAL IODINE-131	CI		1.76E-04	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC		2.34E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%		8.80E-03	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI		8.58E-04	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC		1.09E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%		9.62E-03	
4. GROSS ALPHA RADIOACTIVITY	CI		1.63E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI		1.00E 01	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC		1.27E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

N/A=NOT APPLICABLE
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INSTALLATION=NORTH ANNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	6.41E 03	6.49E 02	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.06E 02	8.16E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.13E-02	4.00E-03	TOTAL BODY SKIN
		2.10E-02	2.01E-03	
B. IODINES				
1. TOTAL IODINE-131	CI	2.85E-02	2.24E-03	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.58E-03	2.83E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.43E 00	1.12E-01	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.15E-04	7.09E-06	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.45E-05	8.92E-07	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.49E-01	1.18E-02	
4. GROSS ALPHA RADIOACTIVITY	CI	1.03E-04	3.87E-05	
D. TRITIUM				
1. TOTAL RELEASE	CI	7.49E 00	3.20E-01	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	9.42E-01	4.03E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=NORTH ANNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

NUCLIDES RELEASED	UNIT	GAS EFFLUENTS GROUND RELEASE			
		CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85	CI		1.47E 03		
KR-85M	CI		5.68E 02		
KR-87	CI		9.26E 02		
KR-88	CI		1.60E 03		
XE-133	CI		7.37E 02		
XE-135	CI		5.22E 02		
XE-135M	CI		7.89E 02		
XE-138	CI		1.46E 03		
IODINES					
I-131	CI		1.76E-04		
I-133	CI		1.86E-04		
I-135	CI		6.24E-04		
PARTICULATES					
BA-LA-140	CI		4.89E-04		
CS-134	CI		1.70E-04		
CS-137	CI		1.78E-04		
SR-85	CI		9.87E-06		
SR-89	CI		8.22E-06		
SR-90	CI		3.33E-06		

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INSTALLATION=NORTH ANNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI				5.03E-03
KR-85M	CI			4.02E-01	1.66E-02
KR-88	CI			1.42E-04	1.56E-02
XE-131M	CI			3.52E-05	6.38E-01
XE-133	CI	3.10E 03	4.81E 02	3.19E 03	1.64E 02
XE-133M	CI	4.05E-01		2.09E 01	9.94E-01
XE-135	CI	6.04E 01	7.78E-01	3.84E 01	8.43E-01
IODINES					
I-131	CI	1.53E-02	2.16E-03	8.43E-03	8.66E-05
I-133	CI	1.93E-03	3.86E-07	2.87E-03	2.64E-08
I-135	CI			1.31E-05	
PARTICULATES					
CO-58	CI	7.11E-05	5.72E-06	4.14E-06	
CO-60	CI	2.03E-05			
CS-134	CI			2.53E-13	
CS-137	CI			6.80E-13	
MN-54	CI	1.51E-05			
SR-89	CI	4.54E-06	1.19E-06		
SR-90	CI	4.00E-07	1.81E-07		

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INSTALLATION=NORTH ANNA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI		1.24E-01	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML		2.84E-10	
3. PERCENT OF APPLICABLE LIMIT	%		3.80E-03	
B. TRITIUM				
1. TOTAL RELEASE	CI		1.98E 01	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML		4.54E-08	
3. PERCENT OF APPLICABLE LIMIT	%		1.51E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI		4.39E-03	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML		1.01E-11	
3. PERCENT OF APPLICABLE LIMIT	%		2.52E-05	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI		5.02E-05	1.50E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS		5.76E 06	2.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS		4.36E 11	2.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	8.03E-02	6.33E-02	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.70E-10	1.36E-10	
3. PERCENT OF APPLICABLE LIMIT	%	3.42E-04	2.74E-04	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.61E 02	1.01E 02	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.40E-07	2.17E-07	
3. PERCENT OF APPLICABLE LIMIT	%	1.13E-02	7.22E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.86E-01	9.13E-01	1.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.94E-10	1.96E-09	
3. PERCENT OF APPLICABLE LIMIT	%	9.84E-04	4.90E-03	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI			
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	9.77E 06	7.61E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	4.73E 11	4.66E 11	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CS-134	CI		1.34E-05		
CS-137	CI		1.22E-03		
I-131	CI		3.65E-03		
SR-89	CI		1.32E-03		
SR-90	CI		5.18E-05		
CO-58	CI		6.35E-02		
CO-60	CI		7.21E-03		
CR-51	CI		1.15E-02		
FE-59	CI		2.36E-03		
MN-54	CI		3.00E-03		
ZN-65	CI		2.42E-03		
BA-LA-140	CI		3.18E-03		
CE-141	CI		2.02E-03		
MO-99	CI		7.67E-03		
TC-99	CI		2.09E-03		
ZR-NB-95	CI		1.99E-03		
I-133	CI		1.71E-03		
NA-24	CI		6.25E-03		
W-187	CI		1.39E-03		
XE-133	CI		3.10E-03		
XE-135	CI		1.29E-03		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CS-134	CI	1.10E-04	3.01E-03		
CS-137	CI	7.50E-04	6.39E-03		
I-131	CI	4.70E-02	3.76E-02		
SR-89	CI	1.95E-04	3.04E-04		
SR-90	CI	3.91E-05	6.85E-05		
CO-58	CI	2.16E-02	1.40E-02		
CO-60	CI	1.89E-03	2.68E-04		
FE-59	CI	1.36E-04	2.02E-04		
MN-54	CI	3.95E-03	2.99E-04		
I-133	CI	4.50E-03	1.16E-03		
NA-24	CI	3.78E-04			
XE-133	CI	1.83E-01	9.13E-01		
XE-135	CI	3.16E-03	1.04E-04		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3 C1		
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 C1	2.14E 01 3.59E 00	1.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 C1		
D. OTHER (DESCRIBE)	M3 C1		

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

B	%	
CO-58	%	4.38E 01
CO-60	%	5.00E-01
CS-134	%	3.70E 00
CS-137	%	1.70E 01
MN-54	%	3.50E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
2	PRIVATE VEHICLE	BARNWELL S.C.

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INSTALLATION OCONEE LOCATION 30 MI W GREENVILLE NC

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1	LICENSEE DUKE POWER
TYPE PWR	LICENSED POWER (MWT) 2568.0
DOCKET NO. 50-269	INITIAL CRITICALITY 04/19/73
COOLING WATER SOURCE KEOWEE LAKE	
UNIT NUMBER 2	LICENSEE DUKE POWER
TYPE PWR	LICENSED POWER (MWT) 2568.0
DOCKET NO. 50-270	INITIAL CRITICALITY 11/11/73
COOLING WATER SOURCE KEOWEE LAKE	
UNIT NUMBER 3	LICENSEE DUKE POWER
TYPE PWR	LICENSED POWER (MWT) 2568.0
DOCKET NO. 50-287	INITIAL CRITICALITY 09/05/74
COOLING WATER SOURCE KEOWEE LAKE	

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURIES/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY N/R

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INSTALLATION OCONEE

LOCATION 30 MI W GREENVILLE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION) N/R

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
1	2	1	2

BATCH RELEASES

QUARTER	QUARTER
1	2

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
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INSTALLATION OCONEE

LOCATION 30 MI W GREENVILLE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION) N/R

QUARTER 3	BETA QUARTER 4	QUARTER 3	GAMMA QUARTER 4
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BATCH RELEASES

QUARTER 3	QUARTER 4
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A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

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INSTALLATION=OCONEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	3.08E 03	1.31E 04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.03E 00	2.56E 01	
B. IODINES				
1. TOTAL IODINE-131	CI	3.09E-02	7.81E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.12E 00	2.05E 01	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.82E-03	8.88E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.47E-01	8.07E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	0.00E 00	0.00E 00	
D. TRITIUM				
1. TOTAL RELEASE	CI	4.19E-01	1.55E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=OCONEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.99E 04	7.21E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.90E 01	1.41E 01	
B. IODINES				
1. TOTAL IODINE-131	CI	3.68E-02	2.52E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	9.68E 00	6.64E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.11E-02	6.90E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.83E 00	6.27E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	0.00E 00	0.00E 00	
D. TRITIUM				
1. TOTAL RELEASE	CI	4.45E 00	4.75E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	3.33E 01	2.63E 01		
KR-85	CI	3.29E 02	1.51E 02		
KR-85M	CI	0.00E 00	6.69E 00		
KR-87	CI	0.00E 00	8.19E-01		
KR-88	CI	8.34E 00	7.74E 00		
XE-131M	CI	1.53E 02	7.31E 01		
XE-133	CI	2.36E 03	1.25E 04		
XE-133M	CI	5.14E 00	1.08E 02		
XE-135	CI	1.88E 02	1.43E 02		
XE-135M	CI	0.00E 00	3.20E-01		
XE-137	CI	0.00E 00	1.61E-01		
XE-138	CI	0.00E 00	6.29E-01		
IODINES					
F-18	CI	3.61E-04	2.65E-03		
I-131	CI	2.94E-02	6.87E-02		
I-132	CI	9.23E-06	1.41E-04		
I-133	CI	1.03E-03	5.45E-03		
I-134	CI	7.73E-07	1.62E-05		
I-135	CI	4.09E-05	1.34E-03		
PARTICULATES					
AG-108M	CI	0.00E 00	1.89E-06		
AG-110M	CI	1.62E-06	9.66E-05		
BA-LA-140	CI	1.22E-07	5.00E-05		
BA-139	CI	0.00E 00	2.04E-05		
CD-109	CI	0.00E 00	0.00E 00		
CD-115	CI	8.90E-06	1.05E-04		
CE-141	CI	0.00E 00	0.00E 00		
CE-144	CI	0.00E 00	2.21E-04		
CO-57	CI	0.00E 00	4.33E-07		
CO-58	CI	7.14E-06	1.19E-04		
CO-60	CI	2.57E-05	1.36E-05		
CR-51	CI	2.85E-07	3.26E-04		
CS-134	CI	2.14E-05	4.32E-05		
CS-136	CI	1.56E-06	6.34E-06		
CS-137	CI	9.24E-06	1.22E-04		
CS-138	CI	3.73E-05	6.89E-05		
FE-59	CI	0.00E 00	9.63E-06		
IN-115M	CI	0.00E 00	1.98E-05		
MN-54	CI	3.60E-07	4.67E-07		
MN-56	CI	1.84E-08	1.23E-06		
MO-99	CI	0.00E 00	2.91E-07		
NA-22	CI	0.00E 00	1.03E-07		
NA-24	CI	0.00E 00	8.60E-06		
NB-95	CI	6.60E-09	1.29E-07		
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INSTALLATION=OCONEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
NB-97	CI	4.17E-07	5.76E-07		
NI-65	CI	0.00E 00	5.38E-05		
NP-239	CI	0.00E 00	2.15E-04		
PR-144	CI	0.00E 00	0.00E 00		
RB-88	CI	3.70E-03	3.93E-03		
RU-103	CI	4.74E-08	1.34E-07		
RU-106	CI	0.00E 00	0.00E 00		
SB-124	CI	0.00E 00	0.00E 00		
SB-125	CI	0.00E 00	8.03E-05		
SN-123M	CI	0.00E 00	0.00E 00		
SN-125M	CI	0.00E 00	0.00E 00		
SR-89	CI	9.45E-07	8.78E-06		
SR-90	CI	2.01E-07	6.50E-07		
SR-91	CI	0.00E 00	7.16E-05		
SR-92	CI	0.00E 00	1.34E-05		
TC-99M	CI	3.83E-08	2.77E-06		
W-187	CI	0.00E 00	4.79E-05		
Y-91M	CI	0.00E 00	0.00E 00		
Y-92	CI	0.00E 00	3.16E-03		
ZN-65	CI	0.00E 00	2.27E-05		
ZR-95	CI	0.00E 00	3.83E-05		
ZR-97	CI	0.00E 00	1.44E-07		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	2.44E 00	3.42E-01		
KR-85	CI	8.99E 01	1.35E 02		
KR-85M	CI	9.76E 00	1.14E 01		
KR-87	CI	3.72E-01	3.60E-01		
KR-88	CI	6.56E 00	8.15E 00		
XE-131M	CI	5.68E 01	4.83E 01		
XE-133	CI	1.93E 04	6.82E 03		
XE-133M	CI	1.77E 02	4.33E 01		
XE-135	CI	2.36E 02	1.40E 02		
XE-135M	CI	9.93E-03	2.26E-01		
XE-137	CI	1.15E-01	1.88E-02		
XE-138	CI	2.25E 00	2.65E-02		
IODINES					
BR-84	CI	1.56E-05	0.00E 00		
F-18	CI	2.42E-08	0.00E 00		
I-131	CI	3.27E-02	2.07E-02		
I-132	CI	8.14E-04	3.09E-04		
I-133	CI	3.06E-03	2.99E-03		
I-134	CI	8.58E-06	9.48E-05		
I-135	CI	2.13E-04	1.20E-03		
PARTICULATES					
AG-108M	CI	6.71E-07	1.26E-06		
AG-110M	CI	4.21E-06	1.88E-06		
BA-LA-140	CI	2.25E-05	4.26E-05		
BA-139	CI	5.98E-06	0.00E 00		
CD-109	CI	5.19E-05	0.00E 00		
CD-115	CI	1.22E-05	8.97E-06		
CE-141	CI	3.40E-06	0.00E 00		
CE-144	CI	6.25E-05	1.39E-04		
CO-57	CI	4.20E-07	2.00E-08		
CO-58	CI	9.04E-05	6.62E-05		
CO-60	CI	5.77E-06	2.53E-05		
CR-51	CI	3.75E-03	2.47E-04		
CS-134	CI	1.02E-05	2.78E-05		
CS-136	CI	1.23E-06	1.86E-06		
CS-137	CI	1.35E-05	9.22E-05		
CS-138	CI	1.02E-04	8.10E-05		
FE-59	CI	2.65E-06	2.59E-06		
IN-115M	CI	2.75E-06	0.00E 00		
MN-54	CI	1.02E-06	9.54E-06		
MN-56	CI	5.76E-07	2.96E-08		
MO-99	CI	4.43E-05	1.49E-04		
NA-22	CI	4.58E-08	2.53E 00		
NA-24	CI	2.29E-08	2.90E-08		

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EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
NB-95	CI	8.36E-07	4.62E-08		
NB-97	CI	1.14E-06	1.66E-07		
NI-65	CI	6.83E-06	2.49E-05		
NP-239	CI	1.73E-03	6.40E-06		
PR-144	CI	1.13E-04	0.00E 00		
RB-88	CI	2.49E-02	5.57E-03		
RU-103	CI	6.24E-07	1.45E-07		
RU-106	CI	7.22E-05	3.21E-04		
SB-124	CI	1.14E-08	0.00E 00		
SB-125	CI	1.45E-05	8.88E-06		
SN-125M	CI	0.00E 00	0.00E 00		
SR-89	CI	6.62E-09	8.16E-08		
SR-90	CI	2.95E-09	8.67E-09		
SR-91	CI	1.09E-05	3.71E-05		
SR-92	CI	8.81E-06	3.36E-06		
TC-99M	CI	9.48E-08	2.13E-08		
W-187	CI	1.62E-05	2.46E-05		
Y-91M	CI	2.30E-09	0.00E 00		
Y-92	CI	2.36E-05	0.00E 00		
ZN-65	CI	3.79E-06	1.79E-06		
ZR-95	CI	4.75E-06	2.56E-06		
ZR-97	CI	2.70E-07	2.52E-08		

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INSTALLATION=OCONEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.04E 00	2.52E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.97E-09	7.48E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	3.24E 02	2.49E 02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	9.24E-07	7.40E-07	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	3.52E-01	3.01E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.43E-09	8.94E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.55E 07	3.28E 07	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.50E 11	3.37E 11	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=OCONEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	2.14E 00	8.10E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.81E-08	4.16E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	2.72E 02	3.26E 02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.36E-06	1.67E-06	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	4.47E 00	1.54E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.78E-08	7.90E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.54E 07	2.47E 07	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.18E 11	1.95E 11	

N/A=NOT APPLICABLE
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INSTALLATION=OCONEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-108M	CI	6.00E-05	2.92E-05		
AG-110M	CI	2.07E-02	5.13E-02		
AR-41	CI	4.12E-05	3.30E-04		
BA-LA-140	CI	3.42E-03	1.38E-02		
BA-139	CI	6.45E-06	3.32E-03		
CD-109	CI	0.00E 00	0.00E 00		
CD-115	CI	6.62E-04	2.65E-04		
CD-115M	CI	0.00E 00	4.75E-05		
CE-134	CI	0.00E 00	0.00E 00		
CE-144	CI	2.68E-03	6.45E-03		
CO-57	CI	3.42E-04	2.72E-03		
CO-58	CI	1.39E-01	1.35E 00		
CO-60	CI	9.29E-02	1.80E-01		
CR-51	CI	5.95E-03	1.13E-01		
CS-134	CI	1.29E-01	5.93E-02		
CS-135M	CI	0.00E 00	0.00E 00		
CS-136	CI	1.12E-03	4.75E-03		
CS-137	CI	2.39E-01	1.00E-01		
CS-138	CI	8.40E-06	5.50E-03		
FE-59	CI	5.36E-04	4.30E-03		
F-18	CI	0.00E 00	0.00E 00		
IN-115M	CI	7.06E-05	1.64E-05		
I-131	CI	2.86E-01	3.18E-01		
I-132	CI	8.01E-07	0.00E 00		
I-133	CI	1.19E-02	1.34E-02		
I-134	CI	1.31E-06	0.00E 00		
I-135	CI	7.89E-03	7.85E-04		
KR-85	CI	2.26E-01	4.95E-01		
KR-85M	CI	2.04E-03	2.09E-04		
KR-87	CI	3.59E-05	1.84E-05		
KR-88	CI	3.90E-04	2.61E-04		
MN-54	CI	1.54E-02	2.50E-02		
MN-56	CI	0.00E 00	0.00E 00		
MO-99	CI	5.53E-04	0.00E 00		
NA-24	CI	3.86E-05	4.75E-05		
NB-95	CI	4.81E-03	1.76E-02		
NB-97	CI	3.10E-02	1.46E-01		
NI-65	CI	7.03E-05	3.64E-04		
NP-239	CI	1.70E-03	1.11E-03		
PR-144	CI	0.00E 00	0.00E 00		
RB-88	CI	7.23E-03	3.45E-02		
RU-103	CI	1.39E-04	5.63E-03		
RU-106	CI	0.00E 00	0.00E 00		
SB-122	CI	0.00E 00	0.00E 00		
SB-124	CI	0.00E 00	0.00E 00		
SB-125	CI	1.35E-03	1.38E-03		
SN-123M	CI	0.00E 00	0.00E 00		

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INSTALLATION=OCONEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
SN-125	CI	1.42E-03	0.00E 00		
SN-125M	CI	2.16E-05	0.00E 00		
SR-89	CI	2.91E-02	3.18E-02		
SR-90	CI	1.73E-03	1.87E-03		
SR-91	CI	8.03E-05	6.42E-05		
SR-92	CI	1.67E-04	6.32E-05		
TC-99M	CI	1.85E-04	2.81E-03		
W-187	CI	5.16E-04	1.97E-03		
XE-131M	CI	1.47E-02	6.43E-02		
XE-133	CI	5.95E-01	2.40E 00		
XE-133M	CI	2.11E-03	1.97E-02		
XE-135	CI	1.10E-02	2.97E-02		
XE-135M	CI	0.00E 00	0.00E 00		
XE-138	CI	1.35E-05	2.37E-03		
Y-88	CI	0.00E 00	0.00E 00		
Y-92	CI	1.87E-03	5.56E-04		
ZN-65	CI	4.96E-05	1.39E-03		
ZR-95	CI	1.39E-03	1.29E-02		
ZR-97	CI	2.29E-04	2.21E-03		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-108M	CI	0.00E 00	0.00E 00		
AG-110M	CI	2.41E-02	5.31E-03		
AR-41	CI	8.66E-05	6.68E-05		
BA-LA-140	CI	1.02E-02	3.67E-03		
BA-139	CI	9.60E-05	0.00E 00		
CD-109	CI	3.50E-03	0.00E 00		
CD-115	CI	3.24E-04	6.01E-05		
CD-115M	CI	0.00E 00	0.00E 00		
CE-134	CI	0.00E 00	0.00E 00		
CE-141	CI	0.00E 00	0.00E 00		
CE-144	CI	2.31E-03	1.84E-03		
CO-57	CI	3.53E-03	4.31E-04		
CO-58	CI	1.14E 00	2.54E-01		
CO-60	CI	1.67E-01	2.76E-02		
CR-51	CI	6.96E-02	1.42E-02		
CS-134	CI	9.28E-02	1.06E-01		
CS-135M	CI	0.00E 00	0.00E 00		
CS-136	CI	3.20E-03	2.27E-03		
CS-137	CI	1.32E-01	1.68E-01		
CS-138	CI	7.48E-05	6.93E-05		
FE-59	CI	4.93E-03	2.77E-04		
F-18	CI	0.00E 00	0.00E 00		
IN-115M	CI	0.00E 00	0.00E 00		
I-131	CI	2.52E-01	1.35E-01		
I-132	CI	4.49E-04	0.00E 00		
I-133	CI	1.33E-02	7.77E-03		
I-134	CI	6.17E-03	1.50E-03		
I-135	CI	4.00E-03	3.89E-03		
KR-85	CI	4.33E-01	2.40E-01		
KR-85M	CI	1.10E-03	2.41E-04		
KR-87	CI	0.00E 00	0.00E 00		
KR-88	CI	1.52E-02	2.57E-03		
MN-54	CI	2.15E-02	3.93E-03		
MN-56	CI	1.09E-04	0.00E 00		
MO-99	CI	3.40E-03	4.16E-04		
NA-24	CI	4.07E-05	2.57E-05		
NB-95	CI	1.03E-02	1.65E-03		
NB-97	CI	4.85E-02	6.63E-03		
NI-65	CI	9.42E-05	2.36E-05		
NP-239	CI	3.37E-04	8.58E-05		
PR-144	CI	2.80E-03	0.00E 00		
RB-88	CI	2.76E-02	4.64E-02		
RU-103	CI	9.19E-04	4.68E-05		
RU-106	CI	5.08E-02	2.31E-03		
SB-122	CI	2.34E-03	0.00E 00		
SB-124	CI	3.62E-04	2.61E-05		
SB-125	CI	8.79E-04	3.62E-04		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
SM-125	CI	0.00E 00	0.00E 00		
SN-123M	CI	0.00E 00	0.00E 00		
SN-125M	CI	0.00E 00	0.00E 00		
SR-89	CI	1.53E-02	1.11E-02		
SR-90	CI	1.66E-03	1.14E-03		
SR-91	CI	4.58E-08	5.76E-05		
SR-92	CI	3.10E-03	1.26E-03		
TC-99M	CI	7.68E-03	1.47E-03		
W-187	CI	9.87E-04	1.27E-04		
XE-131M	CI	6.36E-02	2.01E-02		
XE-133	CI	3.87E 00	1.23E 00		
XE-133M	CI	3.77E-02	1.55E-02		
XE-135	CI	5.42E-02	3.25E-02		
XE-135M	CI	3.34E-04	0.00E 00		
XE-138	CI	0.00E 00	3.92E-05		
Y-88	CI	0.00E 00	0.00E 00		
Y-92	CI	3.48E-03	0.00E 00		
ZN-65	CI	1.87E-04	8.67E-06		
ZR-95	CI	4.69E-03	5.39E-04		
ZR-97	CI	5.77E-04	0.00E 00		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	7.38E 02	
	C1	7.52E 02	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3		
	C1		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	C1		
D. OTHER (DESCRIBE)	M3		
	C1		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
117	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
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INSTALLATION= OCONEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	8.44E 02	
	C1	5.18E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3		
	C1		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	C1		
D. OTHER (DESCRIBE)	M3		
	C1		

3. SOLID WASTE DISPOSITION-		
NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
113	TRUCK	BARNWELL S.C.

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INSTALLATION OYSTER CREEK

LOCATION 9 MI S TOMS RIVER, NJ

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

TYPE BWR

DOCKET NO. 50-219

COOLING WATER SOURCE BARNEGAT BAY

LICENSEE JERSEY CENTRAL POWER & LIGHT

LICENSED POWER (MWT) 1930.0

INITIAL CRITICALITY 05/03/69

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) *

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

THE INCORPORATION OF A WEEKLY GRAB SAMPLE ANALYSIS USING GAMMA RAY SPECTROMETRY WITH A GELI DETECTOR, A CONVERSION FACTOR, AND THE CONTINUOUS RECORDING OF THE STACK EFFLUENT ON A CONTINUOUS ACTIVITY MONITOR.

IODINES

SEMI-WEEKLY SAMPLE ANALYSIS-GAMMA RAY SPECTROMETRY WITH A GELI DETECTOR.

PARTICULATES

SEMI-WEEKLY SAMPLE ANALYSIS-GAMMA RAY SPECTROMETRY WITH A GELI DETECTOR, A LOW BACKGROUND BETA COUNTER, INTERNAL PROPORTIONAL BETA COUNTER, AND SINGLE CHANNEL GAMMA COUNTER.

LIQUID EFFLUENTS

ANALYSIS PER BATCH RELEASE-GAMMA RAY SPECTROMETRY WITH A GELI DETECTOR, A LOW BACKGROUND BETA COUNTER, AND A LIQUID SCINTILLATION COUNTER.

*=Tech Spec 3.6.A and 10CFR20

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INSTALLATION OYSTER CREEK

LOCATION 9 MI S TOMS RIVER, NJ

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
1	2	1	2
		7.20E-01	7.44E-01
BATCH RELEASES		QUARTER	QUARTER
A. LIQUID		1	2
1. NUMBER OF BATCH RELEASES-		NONE	2
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-			1.05E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			1.04E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			5.27E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			9.00E 00
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-			2.70E 06
B. GASEOUS			
NUMBER OF BATCH RELEASES-		N/A	N/A
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-			
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-			
ABNORMAL RELEASES			
A. LIQUID			
NUMBER OF RELEASES		NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			
B. GASEOUS			
1. NUMBER OF RELEASES		N/A	N/A
2. TOTAL ACTIVITY RELEASED (CURIES)			

N/A=NOT APPLICABLE
N/D=NOT DETECTED
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INSTALLATION OYSTER CREEK

LOCATION 9 MI S TOMS RIVER, NJ

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4
		7.89E-01	8.48E-01
BATCH RELEASES		QUARTER	QUARTER
A. LIQUID		3	4
1. NUMBER OF BATCH RELEASES-		1	20
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-		4.15E 02	7.04E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		4.15E 02	9.14E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-		4.15E 02	3.52E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		4.15E 02	1.25E 02
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-		1.86E 06	2.04E 06
B. GASEOUS			
1. NUMBER OF BATCH RELEASES-		N/A	N/A
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-			
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-			
ABNORMAL RELEASES			
A. LIQUID			
1. NUMBER OF RELEASES		NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			
B. GASEOUS			
1. NUMBER OF RELEASES		N/A	N/A
2. TOTAL ACTIVITY RELEASED (CURIES)			

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INSTALLATION=OYSTER CREEK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR,%
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	2.61E 05	3.91E 05	3.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.36E 04	5.08E 04	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.15E 01	1.78E 01	
B. IODINES				
1.TOTAL IODINE-131	CI	3.02E 00	3.38E 00	2.50E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.88E-01	4.31E-01	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	9.70E 00	1.08E 01	
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.06E 00	3.27E 00	2.50E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.36E-01	4.17E-01	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.40E 00	1.04E 01	
4.GROSS ALPHA RADIOACTIVITY	CI	3.02E-06	2.44E-05	
D. TRITIUM				
1.TOTAL RELEASE	CI	4.43E-01	2.42E 01	4.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.70E-02	3.08E 00	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=OYSTER CREEK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.76E 05	6.96E 04	3.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.24E 04	3.78E 04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.59E 01	1.52E 01	
B. IODINES				
1. TOTAL IODINE-131	CI	2.97E 00	7.10E-01	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.73E-01	8.92E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	9.33E 00	2.23E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.57E 00	1.06E-01	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.49E-01	1.33E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.12E 01	3.33E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	5.14E-05	9.49E-05	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.15E 01	1.99E 00	4.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.45E 00	2.50E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=OYSTER CREEK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85M	CI	1.39E 04	2.19E 04		
KR-87	CI	3.54E 04	6.72E 04		
KR-88	CI	3.59E 04	5.82E 04		
KR-89	CI	<3.00E 00	<3.00E 00		
XE-133	CI	2.15E 04	2.70E 04		
XE-133M	CI	<2.00E-07	3.01E 02		
XE-135	CI	7.36E 04	1.07E 05		
XE-135M	CI	2.27E 04	2.60E 04		
XE-137	CI	8.70E 01	5.00E 01		
XE-138	CI	5.76E 04	8.31E 04		
IODINES					
I-131	CI	3.02E 00	3.38E 00		
I-133	CI	4.16E 00	8.66E 00		
I-135	CI	3.77E 00	1.01E 01		
PARTICULATES					
BA-140	CI	5.45E-01	2.98E 00		
CE-141	CI	1.37E-03	4.32E-03		
CE-143	CI	1.30E-05	<2.19E-09		
CE-144	CI	8.02E-03	<3.99E-09		
CO-60	CI	1.38E-03	4.13E-03		
CR-51	CI	<3.20E-10	4.34E-03		
CS-134	CI	<5.73E-10	2.55E-03		
CS-137	CI	1.14E-02	1.63E-02		
I-131	CI	3.40E-02	4.50E-02		
I-133	CI	1.37E-01	4.01E-01		
I-135	CI	1.03E-01	7.62E-01		
LA-140	CI	6.60E-01	2.46E 00		
MN-54	CI	1.31E-03	1.62E-03		
MO-99	CI	1.43E-02	9.28E-01		
NB-99	CI	7.93E-04	<2.60E-10		
NP-239	CI	3.25E-02	5.02E-01		
SR-89	CI	3.37E-01	7.19E-01		
SR-90	CI	1.70E-03	7.98E-03		
SR-91	CI	4.53E 00	1.88E 01		
TC-99M	CI	1.43E-02	9.28E-01		
ZN-65	CI	<2.20E-09	6.60E-03		

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N/R=NOT REPORTED

INSTALLATION=OYSTER CREEK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85M	CI	1.72E 04	3.48E 03		
KR-87	CI	4.99E 04	1.22E 04		
KR-88	CI	5.53E 04	1.18E 04		
KR-89	CI	3.00E 00	1.00E 00		
XE-133	CI	1.87E 04	1.52E 03		
XE-133M	CI	1.67E 02	<1.47E-08		
XE-135	CI	8.61E 04	1.59E 04		
XE-135M	CI	1.30E 04	5.38E 04		
XE-137	CI	6.00E 00	2.70E 01		
XE-138	CI	3.53E 04	1.93E 04		
IODINES					
I-131	CI	2.97E 00	7.10E-01		
I-133	CI	8.75E 00	2.33E 00		
I-135	CI	7.08E 00	7.41E 00		
PARTICULATES					
BA-140	CI	2.73E 00	5.39E-02		
CE-141	CI	1.79E-03	4.83E-04		
CE-143	CI	9.11E-03	1.01E-04		
CE-144	CI	1.45E-02	2.40E-04		
CO-58	CI	<4.75E-11	2.30E-05		
CO-60	CI	1.33E-05	4.16E-03		
CR-51	CI	2.82E-03	9.36E-05		
CS-134	CI	1.00E-03	1.17E-04		
CS-137	CI	9.63E-03	1.26E-03		
FE-59	CI	<1.96E-10	4.12E-04		
I-131	CI	4.05E-02	2.76E-03		
I-133	CI	4.03E-01	2.79E-02		
I-135	CI	5.48E-01	5.67E-02		
LA-140	CI	2.28E 00	3.69E-02		
MN-54	CI	4.53E-04	1.46E-02		
MO-99	CI	3.35E-02	1.02E-02		
NB-95	CI	<9.19E-11	3.36E-04		
NP-239	CI	1.03E-02	3.44E-03		
PA-233	CI	1.39E-03	4.11E-04		
RU-103	CI	<6.78E-11	3.40E-05		
RU-106	CI	<1.05E-09	8.33E-04		
SR-89	CI	7.58E-01	2.62E-02		
SR-90	CI	6.53E-03	2.92E-04		
SR-91	CI	1.66E-01	2.52E-01		
TC-99M	CI	3.35E-02	1.02E-02		
ZN-65	CI	9.08E-04	<1.77E-09		
ZR-95	CI	<1.09E-10	4.30E-05		

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-INSTALLATION=OYSTER CREEK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI		5.71E-03	3.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML		4.75E-11	
3. PERCENT OF APPLICABLE LIMIT	%		6.71E-04	
B. TRITIUM				
1. TOTAL RELEASE	CI		7.21E-02	3.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML		6.00E-10	
3. PERCENT OF APPLICABLE LIMIT	%		2.00E-05	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI		3.44E-03	3.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML		2.86E-11	
3. PERCENT OF APPLICABLE LIMIT	%		9.53E-04	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI			
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS		9.12E 03	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	4.61E 11	4.52E 11	1.00E 01

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EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	9.62E-03	8.74E-06	3.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.68E-11	1.32E-09	
3. PERCENT OF APPLICABLE LIMIT	%	2.04E-03	5.00E-03	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.05E 00	1.85E 01	3.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	9.47E-09	2.79E-07	
3. PERCENT OF APPLICABLE LIMIT	%	3.16E-04	9.31E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	3.38E-03		3.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.05E-11		
3. PERCENT OF APPLICABLE LIMIT	%	1.02E-03		
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI		1.08E-03	3.00E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	7.10E 04	1.64E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	4.17E 11	2.49E 11	1.00E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
				NONE	
CS-134	CI				1.17E-04
CS-137	CI				6.17E-04
I-131	CI				1.49E-04
SR-89	CI				1.94E-04
SR-90	CI				2.00E-06
CO-58	CI				<8.19E-10
CO-60	CI				7.40E-05
CR-51	CI				9.88E-04
FE-59	CI				<1.44E-09
MN-54	CI				2.40E-05
ZN-65	CI				<1.60E-09
BA-140	CI				1.43E-04
I-133	CI				1.26E-04
LA-140	CI				4.45E-04
MO-99	CI				3.50E-05
NB-95	CI				1.30E-05
NP-239	CI				9.54E-04
SR-91	CI				5.30E-05
TC-99M	CI				3.50E-05
Y-92	CI				1.36E-03
ZR-95	CI				3.84E-04
XE-133	CI				4.48E-04
XE-135	CI				2.99E-03

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INSTALLATION=OYSTER CREEK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CS-134	CI			<7.16E-10	4.80E-03
CS-137	CI			<6.75E-10	6.92E-03
I-131	CI			4.90E-04	<8.86E-10
SR-89	CI			4.52E-04	1.00E-03
SR-90	CI			1.40E-05	1.31E-04
CO-58	CI			<7.39E-10	2.65E-04
CO-60	CI			1.41E-03	4.21E-02
CR-51	CI			1.14E-03	<9.48E-09
FE-59	CI			<1.30E-09	8.33E-04
MN-54	CI			5.48E-04	1.40E-02
ZN-65	CI			2.99E-04	<1.44E-09
BA-140	CI			7.81E-04	1.85E-04
LA-140	CI			3.00E-03	5.01E-04
MO-99	CI			2.90E-04	<1.77E-09
SR-91	CI			<2.24E-09	6.68E-04
TC-99M	CI			2.90E-04	<1.77E-09
CE-141	CI			3.91E-04	6.63E-03
CE-143	CI			<1.42E-09	1.71E-04
CE-144	CI			<4.69E-09	4.10E-03
CO-57	CI			<6.66E-10	1.20E-04
CS-136	CI			<7.39E-10	1.38E-04
I-133	CI			2.13E-04	<6.79E-10
NB-95	CI			1.70E-04	2.22E-03
NB-95M	CI			<5.88E-09	1.82E-04
RU-103	CI			1.27E-04	8.01E-04
SB-124	CI			<6.81E-10	3.25E-04
ZR-95	CI			<1.09E-09	1.34E-03
XE-133	CI			2.88E-03	<6.61E-10
XE-135	CI			5.03E-04	<1.19E-09

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	2.97E 02	
	CI	2.59E 02	5.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.71E 02	
	CI	9.91E 01	5.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI	NONE	
D. OTHER (DESCRIBE)	M3	NONE	
	CI		

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

A		
CO-60	X	2.59E 01
CS-137	X	2.05E 01
I-131	X	1.97E 01
CS-134	X	7.40E 00
SR-89	X	6.60E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
40	TRUCK	BARNWELL S.C.
8	TRUCK	SHEFFIELD ILL.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
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INSTALLATION= OYSTER CREEK

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.62E 02	
	CI	7.85E 02	5.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	7.14E 02	
	CI	1.00E 01	5.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI	NONE	
D. OTHER (DESCRIBE)	M3	NONE	
	CI		

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

A

CO-60	X	3.24E 01
CS-137	X	2.59E 01
SR-89	X	9.90E 00
MN-54	X	9.00E 00
CS-134	X	9.00E 00

B

CO-60	X	6.19E 01
MN-54	X	3.07E 01
CS-137	X	4.00E 00
CE-144	X	1.70E 00
CS-134	X	9.00E-01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
82	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
---------------------	------------------------	-------------

0

N/A=NOT APPLICABLE
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INSTALLATION PALISADES

LOCATION 5 MI S SOUTH HAVEN MI

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

TYPE PWR

DOCKET NO. 50-255

COOLING WATER SOURCE LAKE MICHIGAN

LICENSEE CONSUMERS POWER

LICENSED POWER (MWT) 2530.0

INITIAL CRITICALITY 05/24/71

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY N/R

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INSTALLATION PALISADES

LOCATION 5 MI S SOUTH HAVEN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)	N/R		BETA		GAMMA	
	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
BATCH RELEASES						
A. LIQUID			QUARTER 1	QUARTER 2		
1. NUMBER OF BATCH RELEASES-						
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-						
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-						
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-						
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-						
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-						
B. GASEOUS						
1. NUMBER OF BATCH RELEASES-						
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-						
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-						
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-						
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-						
ABNORMAL RELEASES						
A. LIQUID						
1. NUMBER OF RELEASES						
2. TOTAL ACTIVITY RELEASED (CURIES)						
B. GASEOUS						
1. NUMBER OF RELEASES						
2. TOTAL ACTIVITY RELEASED (CURIES)						

N/A=NOT APPLICABLE
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INSTALLATION PALISADES

LOCATION 5 MI S SOUTH HAVEN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION) N/R

	BETA QUARTER 3	QUARTER 4	GAMMA QUARTER 3	QUARTER 4
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BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-

QUARTER 3	QUARTER 4
--------------	--------------

2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-

17

3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

9.62E 03

4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-

2.67E 03

5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

5.66E 02

6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

8.20E 01

N/A

B. GASEOUS

NUMBER OF BATCH RELEASES-

23

2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-

6.12E 03

3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

5.75E 02

4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-

2.66E 02

5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

9.50E 01

ABNORMAL RELEASES

A. LIQUID

NUMBER OF RELEASES

NONE

2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES

2

2. TOTAL ACTIVITY RELEASED (CURIES)

4.33E 00

N/A=NOT APPLICABLE

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N/R=NOT REPORTED

INSTALLATION=PALISADES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	7.38E 01	4.24E 01	2.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	9.39E 00	5.39E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.22E-03	4.21E-03	
B. IODINES				
1. TOTAL IODINE-131	CI	3.66E-03	4.28E-03	4.00E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.66E-04	5.44E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.33E-02	3.88E-02	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.38E-04	3.88E-03	1.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.76E-05	4.93E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.27E-04	6.61E-03	
4. GROSS ALPHA RADIOACTIVITY	CI	2.53E-06	9.97E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.36E 00	1.28E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.73E-01	1.62E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.73E-04	1.62E-04	

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INSTALLATION=PALISADES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

		GAS EFFLUENTS		GROUND		RELEASE	
NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE			
		QUARTER	QUARTER	QUARTER	QUARTER		
		1	2	1	2		
FISSION GASES							
AR-41	CI	3.90E-03	2.80E-03				
KR-85	CI	2.61E-01	3.19E-01				
XE-133	CI	2.06E-02	4.04E-01				
XE-133M	CI	1.70E-02					
XE-135	CI	1.43E-01	4.60E-03				
IODINES							
I-131	CI	5.77E-03	1.45E-03				
I-133	CI	7.02E-04	7.11E-04				
I-135	CI	9.00E-05					
PARTICULATES							
CO-57	CI		2.68E-06				
CO-58	CI	2.20E-04	5.03E-04				
CO-60	CI	5.09E-05	3.62E-04				
CR-51	CI	6.12E-05					
CS-134	CI	1.68E-06	1.77E-05				
CS-137	CI	2.06E-05	5.64E-05				
FE-59	CI		4.34E-06				
LA-140	CI	3.18E-06					
MN-54	CI	2.15E-05	1.12E-04				
NB-95	CI	1.14E-05	2.15E-05				
UNIDENTIFIED	CI	3.63E-06	7.92E-06				
ZR-95	CI		7.66E-06				

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INSTALLATION=PALISADES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

NUCLIDES RELEASED	UNIT	GAS EFFLUENTS		GROUND		RELEASE	
		CONTINUOUS MODE		BATCH MODE			
		QUARTER	QUARTER	QUARTER	QUARTER	QUARTER	QUARTER
		3	4	3	4		
FISSION GASES							
AR-41	CI		7.10E-02				
KR-85	CI	4.34E-01	3.69E-01				
KR-85M	CI		1.12E-01				
KR-87	CI		7.20E-02				
KR-88	CI		1.84E-01				
XE-131M	CI	1.75E 00	3.11E-01				
XE-133	CI	7.04E 01	3.97E 01				
XE-133M	CI	1.21E 00	4.00E-02				
XE-135	CI	1.70E-02	1.56E-02				
IODINES							
I-131	CI	3.66E-03	4.28E-03				
I-133	CI	1.58E-03	1.76E-03				
I-135	CI	5.03E-04	6.82E-04				
PARTICULATES							
CO-57	CI		3.55E-06				
CO-58	CI	5.15E-05	1.63E-03				
CO-60	CI	4.38E-05	9.63E-04				
CR-51	CI		6.27E-04				
CS-134	CI	1.58E-06	1.31E-05				
CS-137	CI	5.67E-06	1.26E-04				
FE-59	CI		1.92E-05				
MN-54	CI	1.35E-05	3.38E-04				
NA-24	CI	6.04E-06					
NB-95	CI		6.45E-05				
UNIDENTIFIED	CI	2.16E-05	7.97E-05				
ZR-95	CI		1.88E-05				

N/A=NOT APPLICABLE
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INSTALLATION=PALISADES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

NUCLIDES RELEASED	UNIT	GAS EFFLUENTS		GROUND		RELEASE	
		CONTINUOUS MODE		BATCH MODE			
		QUARTER	QUARTER	QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2		
FISSION GASES							
AR-41	CI			3.90E-03	2.80E-03		
KR-85	CI			2.61E-01	3.19E-01		
XE-133	CI			2.06E-02	4.04E-01		
XE-133M	CI			1.70E-02			
XE-135	CI			1.43E-01	4.60E-03		
IODINES							
I-131	CI			5.77E-03	1.45E-03		
I-133	CI			7.02E-04	7.11E-04		
I-135	CI			9.00E-05			
PARTICULATES							
CO-57	CI				2.68E-06		
CO-58	CI			2.20E-04	5.03E-04		
CO-60	CI			5.09E-05	3.62E-04		
CR-51	CI			6.12E-05			
CS-134	CI			1.68E-06	1.77E-05		
CS-137	CI			2.06E-05	5.64E-05		
FE-59	CI				4.34E-06		
LA-140	CI			3.18E-06			
MN-54	CI			2.15E-05	1.12E-04		
NB-95	CI			1.14E-05	2.15E-05		
UNIDENTIFIED	CI			3.63E-06	7.92E-06		
ZR-95	CI				7.66E-06		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=PALISADES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI				7.10E-02
KR-85	CI			4.34E-01	3.69E-01
KR-85M	CI				1.12E-01
KR-87	CI				7.20E-02
KR-88	CI				1.84E-01
XE-131M	CI			1.75E 00	3.11E-01
XE-133	CI			7.04E 01	3.97E 01
XE-133M	CI			1.21E 00	4.00E-02
XE-135	CI			1.70E-02	1.56E 00
IODINES					
I-131	CI			3.66E-03	4.28E-03
I-133	CI			1.58E-03	1.76E-03
I-135	CI			5.03E-04	6.82E-04
PARTICULATES					
CO-57	CI				3.55E-06
CO-58	CI			5.15E-05	1.63E-03
CO-60	CI			4.38E-05	9.63E-04
CR-51	CI				6.27E-04
CS-134	CI			1.58E-06	1.31E-05
CS-137	CI			5.67E-06	1.26E-04
FE-59	CI				1.92E-05
MN-54	CI			1.35E-05	3.38E-04
NA-24	CI			6.04E-06	
NB-95	CI				6.45E-05
UNIDENTIFIED	CI			2.16E-05	7.97E-05
ZR-95	CI				1.88E-05

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INSTALLATION=PALISADES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	5.44E-02	4.18E-03	1.09E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.27E-09	1.69E-10	
3. PERCENT OF APPLICABLE LIMIT	%	1.79E 00	7.66E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.76E 01	6.12E 00	4.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.15E-06	2.48E-07	
3. PERCENT OF APPLICABLE LIMIT	%	3.83E 00	8.27E-01	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.13E-03		4.30E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.69E-11		
3. PERCENT OF APPLICABLE LIMIT	%	2.04E-03		
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI			
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	4.99E 06	6.65E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.40E 10	2.47E 10	

N/A=NOT APPLICABLE
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INSTALLATION=PALISADES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	5.93E-03	3.20E-02	4.30E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.36E-10	1.35E-09	
3. PERCENT OF APPLICABLE LIMIT	%	1.17E 00	4.27E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.91E 01	3.86E 01	4.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.16E-06	1.63E-06	
3. PERCENT OF APPLICABLE LIMIT	%	3.86E 00	5.43E 00	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	3.94E-04	6.20E-05	5.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.57E-11	2.62E-12	
3. PERCENT OF APPLICABLE LIMIT	%	6.80E-04	1.14E-04	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI			
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.07E 06	5.57E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.51E 10	2.37E 10	

N/A=NOT APPLICABLE
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INSTALLATION=PALISADES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CO-57	CI	2.40E-05			
CO-58	CI	2.60E-02	1.42E-03		
CO-60	CI	5.17E-03	7.90E-04		
CR-51	CI		2.23E-04		
CS-134	CI	1.02E-03	1.18E-04		
CS-137	CI	3.38E-03	7.62E-04		
FE-59	CI	5.73E-04	4.90E-05		
I-131	CI	1.70E-04			
LA-140	CI	3.70E-05			
MN-54	CI	1.80E-03	3.37E-04		
MO-99-TC-99M	CI	8.20E-05			
NB-95	CI	1.15E-03	4.22E-04		
UNIDENTIFIED	CI	8.79E-04	2.60E-05		
ZN-65	CI	1.40E-05			
ZR-95	CI	7.12E-04	2.90E-05		
XE-133	CI	1.13E-03			

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INSTALLATION=PALISADES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CO-57	CI	7.00E-06	1.15E-04		
CO-58	CI	1.47E-03	1.21E-02		
CO-60	CI	1.05E-03	8.65E-03		
CR-51	CI	7.05E-04	1.92E-03		
CS-134	CI	1.92E-04	9.40E-05		
CS-137	CI	1.11E-03	3.68E-03		
FE-59	CI	2.30E-05	3.40E-04		
I-131	CI	1.83E-04	3.80E-05		
LA-140	CI	3.00E-06	4.26E-04		
MN-54	CI	3.86E-04	4.28E-03		
NB-95	CI	8.50E-05	2.58E-04		
UNIDENTIFIED	CI	6.61E-04	5.80E-05		
ZR-95	CI	5.10E-05	1.90E-05		
XE-133	CI	3.94E-04	6.20E-05		

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INSTALLATION= PALISADES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.47E 02	
	CI	4.91E 01	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.26E 02	
	CI	1.27E 01	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	1.06E 01	
	CI	3.19E 03	
D. OTHER (DESCRIBE)	M3		
	CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
6	TRUCK	SHEFFIELD IL.
15	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION= PALISADES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	2.24E 02	
	CI	1.42E 02	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.09E 02	
	CI	2.73E 00	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	2.00E-01	
	CI	5.00E-01	
D. OTHER (DESCRIBE)	M3		
	CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
24	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
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0

N/A=NOT APPLICABLE
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INSTALLATION PEACH BOTTOM

LOCATION 17.9 MI S LANCASTER PA

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 2	LICENSEE PHILADELPHIA ELECTRIC
TYPE BWR	LICENSED POWER (MWT) 3293.0
DOCKET NO. 50-277	INITIAL CRITICALITY 09/16/73
COOLING WATER SOURCE CONOWINGO POND/SUSQUEHANNA RIVER	
UNIT NUMBER 3	LICENSEE PHILADELPHIA ELECTRIC
TYPE BWR	LICENSED POWER (MWT) 3293.0
DOCKET NO. 50-278	INITIAL CRITICALITY 08/07/74
COOLING WATER SOURCE CONOWINGO POND/SUSQUEHANNA RIVER	

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY N/R

N/A=NOT APPLICABLE
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INSTALLATION PEACH BOTTOM

LOCATION 17.9 MI S LANCASTER PA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
1	2	1	2

BATCH RELEASES

QUARTER	QUARTER
1	2

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION PEACH BOTTOM

LOCATION 17.9 MI S LANCASTER PA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER 3	BETA QUARTER 4	QUARTER 3	GAMMA QUARTER 4
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BATCH RELEASES

QUARTER 3	QUARTER 4
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A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
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INSTALLATION=PEACH BOTTOM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	9.15E 03	4.57E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.78E 00	3.11E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	1.39E-02	3.21E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.22E 00	2.90E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	2.36E-03	3.93E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.24E-01	3.81E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	<2.27E-06	<2.88E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.59E 00	1.46E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=PEACH BOTTOM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	9.74E 03	1.50E 04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.19E 00	5.72E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	1.70E-02	2.09E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.52E 00	1.77E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.03E-03	3.00E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.97E-01	2.98E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	<4.98E-06	<2.65E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.04E 01	6.50E 00	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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N/R-NOT REPORTED

INSTALLATION=PEACH BOTTOM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85M	CI	4.19E 01	1.79E 00		
XE-133	CI	9.55E 03	1.91E 03		
XE-135	CI	2.52E 03	1.71E 02		
IODINES					
I-131	CI	1.39E-02	3.21E-02		
I-133	CI	2.31E-01	2.27E-02		
I-135	CI	<1.05E-01	<1.13E-01		
PARTICULATES					
AG-110M	CI		1.56E-04		
BA-140	CI	8.55E-05			
CO-60	CI	8.77E-04	1.26E-03		
CR-51	CI	2.88E-04			
CS-134	CI	2.81E-05	1.28E-04		
CS-137	CI	2.41E-04	1.79E-04		
CS-138	CI	2.50E-03	1.21E-04		
LA-140	CI	9.12E-04			
MO-99	CI	2.90E-05	2.50E-05		
NA-24	CI	2.28E-04			
NP-239	CI	6.87E-05			
SR-89	CI	6.92E-04	4.99E-04		
SR-90	CI	<1.96E-05	<3.97E-05		
SR-91	CI	1.18E-03			
Y-91M	CI	9.17E-04			
ZN-65	CI	1.97E-04	1.69E-03		

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INSTALLATION=PEACH BOTTOM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI		1.91E 00		
KR-85M	CI	5.69E 00	1.42E 01		
XE-133	CI	1.08E-02	2.31E 04		
XE-135	CI	4.60E 02	1.05E 02		
IODINES					
I-131	CI	1.70E-02	2.09E-02		
I-133	CI	2.03E-01	1.89E-01		
I-135	CI	<2.22E-01	<2.71E-01		
PARTICULATES					
CO-60	CI	1.41E-03	1.15E-03		
CS-134	CI	2.21E-04	1.93E-04		
CS-137	CI	3.87E-04	1.36E-04		
CS-138	CI	1.37E-03	1.71E-02		
LA-140	CI		1.92E-04		
MO-99	CI	2.07E-05			
NA-24	CI	9.13E-05	6.14E-05		
SR-89	CI	3.80E-04	8.37E-04		
SR-90	CI	<1.79E-05	<2.91E-05		
SR-91	CI	1.40E-04	8.78E-04		
ZN-65	CI	6.10E-04	6.07E-04		

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INSTALLATION=PEACH BOTTOM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.84E-01	3.35E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.85E-09	5.27E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	6.98E 00	9.90E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.31E-07	1.53E-07	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	4.74E-01	2.45E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	9.82E-09	3.35E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	2.38E-06	<3.30E-06	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.53E 06	9.52E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.47E 10	6.61E 10	

N/A=NOT APPLICABLE
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INSTALLATION=PEACH BOTTOM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.18E 00	3.41E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.67E-08	2.93E-08	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	6.68E 00	8.84E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.23E-07	7.61E-08	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	5.75E 00	5.81E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.09E-07	4.93E-07	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	5.58E-06	4.59E-06	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.92E 06	9.34E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.62E 10	1.18E 11	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=PEACH BOTTOM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CO-58	CI	5.97E-03	3.39E-03		
CO-60	CI	8.64E-03	2.57E-02		
CR-51	CI		3.72E-04		
CS-134	CI	2.07E-02	9.34E-02		
CS-137	CI	3.18E-02	1.44E-01		
I-131	CI	5.65E-02	2.45E-02		
I-133	CI	1.63E-02	3.74E-03		
I-135	CI	8.86E-03	4.96E-04		
MN-54	CI		2.25E-03		
MO-99	CI	4.16E-04			
NA-24	CI	4.18E-02	4.21E-02		
NP-239	CI	4.08E-03			
SR-89	CI	1.42E-04	7.61E-04		
SR-90	CI	1.36E-05	1.32E-04		
ZN-65	CI	1.17E-02	1.36E-01		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=PEACH BOTTOM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CO-58	CI	8.22E-03	9.72E-03		
CO-60	CI	4.96E-02	7.07E-02		
CR-51	CI	1.20E-03	2.88E-03		
CS-134	CI	1.88E-01	2.56E 00		
CS-137	CI	2.90E-01	3.44E-01		
I-131	CI	5.16E-02	9.44E-02		
I-132	CI		7.46E-03		
I-133	CI	4.92E-02	2.30E-01		
I-135	CI	6.37E-03	1.24E-01		
MN-54	CI	2.00E-02	6.52E-02		
NA-24	CI	6.43E-01	3.72E 00		
NP-239	CI	3.30E-03	1.08E-01		
SR-89	CI	8.97E-03	9.00E-03		
SR-90	CI	3.94E-04	<4.00E-04		
SR-92	CI		1.27E-04		
TC-99M	CI	2.62E-03			
TE-132	CI		5.05E-02		
ZN-65	CI	9.08E-02	1.86E-01		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= PEACH BOTTOM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	9.37E 02	
	CI	1.80E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3		
	CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
127	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= PEACH BOTTOM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.02E 03	
	CI	3.17E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3		
	CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
148	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION PILGRIM

LOCATION 25 MI SE BOSTON, MA

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

TYPE BWR

DOCKET NO. 50-293

COOLING WATER SOURCE CAPE COD BAY

LICENSEE BOSTON EDISON

LICENSED POWER (MWT) 1998.0

INITIAL CRITICALITY 06/16/72

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) *

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES
GELI ISOTOPIC ANALYSIS

IODINES
GELI ISOTOPIC ANALYSIS

PARTICULATES
GELI ISOTOPIC ANALYSIS

LIQUID EFFLUENTS
GELI ISOTOPIC ANALYSIS

*10CFR20 Appendix B, Table 2

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION PILGRIM

LOCATION 25 MI SE BOSTON, MA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER	BETA QUARTER	QUARTER	GAMMA QUARTER
1	2	1	2
N/A	N/A	N/A	N/A

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-

2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-

3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-

5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-

2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-

3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-

4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-

5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

QUARTER	QUARTER
1	2

&

125

3.16E 03

1.24E 01

7.48E 01

5.00E 00

N/A

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES

2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

B. GASEOUS

1. NUMBER OF RELEASES

2. TOTAL ACTIVITY RELEASED (CURIES)

N/A

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION PILGRIM

LOCATION 25 MI SE BOSTON, MA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4
N/A	N/A	N/A	N/A

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-

2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-

3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-

4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-

5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-

6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-

B. GASEOUS

NUMBER OF BATCH RELEASES-

2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-

3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-

4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-

5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-

ABNORMAL RELEASES

A. LIQUID

NUMBER OF RELEASES

2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES

2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=PILGRIM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT, 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.67E 04	8.92E 03	2.75E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.15E 03	1.13E 03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.96E-01	4.98E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	1.96E-02	3.80E-02	3.91E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.57E-03	4.83E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.23E-01	3.92E-01	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.77E-02	1.77E-02	3.75E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.28E-03	2.25E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.99E-01	1.81E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	<7.10E-07	<2.72E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.12E 01	2.06E 01	4.90E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.44E 00	2.62E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=PILGRIM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	4.24E 03	2.83E 03	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.33E 02	3.56E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.33E-01	1.54E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	2.66E-02	4.00E-02	3.75E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.35E-03	5.03E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.33E 00	2.00E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	9.84E-03	1.11E-02	3.75E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.24E-03	1.40E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.19E-01	1.71E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	<4.43E-07	<5.10E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	2.61E 01	3.76E 01	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.28E 00	4.73E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

N/A=NOT APPLICABLE
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INSTALLATION=PILGRIM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

NUCLIDES RELEASED	UNIT	GAS EFFLUENTS		GROUND		RELEASE	
		CONTINUOUS MODE				BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER	QUARTER	QUARTER
		1	2			1	2
FISSION GASES							
XE-135	CI	4.45E 02	5.82E 02				
IODINES							
I-131	CI	9.73E-03	1.04E-02				
I-133	CI	7.21E-02	7.05E-02				
I-135	CI	1.37E-01	5.87E-02				
PARTICULATES							
BA-LA-140	CI	1.69E-03	1.99E-03				
CE-141	CI	2.64E-05	3.05E-05				
CE-144	CI	1.15E-05	7.54E-05				
CO-58	CI	6.53E-06	3.34E-05				
CO-60	CI	1.81E-03	1.40E-03				
CR-51	CI	4.49E-05	1.97E-04				
CS-134	CI	7.03E-05	6.43E-05				
CS-137	CI	3.52E-04	1.88E-04				
MN-54	CI	4.25E-04	2.91E-04				
SR-89	CI	9.28E-04	4.78E-04				
SR-90	CI	7.05E-06	3.28E-06				
ZN-65	CI	1.12E-05	9.33E-06				
ZR-NB-95	CI	6.04E-06	1.94E-05				

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INSTALLATION=PILGRIM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

NUCLIDES RELEASED	UNIT	GAS EFFLUENTS GROUND RELEASE			
		CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
XE-133	CI		5.49E 01		
XE-135	CI	2.59E 02	9.57E 01		
IODINES					
I-131	CI	9.67E-03	1.56E-02		
I-133	CI	7.08E-02	1.14E-01		
I-135	CI	1.32E-01	1.99E-01		
PARTICULATES					
BA-LA-140	CI	2.36E-03	3.99E-03		
CE-141	CI	2.45E-05	8.85E-05		
CE-144	CI	9.46E-06			
CO-58	CI	2.26E-06	1.58E-06		
CO-60	CI	1.33E-04	8.86E-05		
CR-51	CI	5.80E-05	6.73E-05		
CS-134	CI	2.38E-05	2.95E-05		
CS-137	CI	9.59E-05	1.06E-04		
MN-54	CI	1.58E-05	1.17E-05		
SR-89	CI	6.75E-04	8.25E-04		
SR-90	CI	3.30E-06	4.96E-06		
ZN-65	CI		8.58E-06		

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N/R=NOT REPORTED

INSTALLATION=PILGRIM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85	CI	4.98E-02	3.22E-02		
KR-85M	CI	2.83E 03	1.83E 03		
KR-87	CI	2.66E 03	8.43E 02		
KR-88	CI	6.77E 03	3.37E 03		
XE-133	CI	1.94E 03	1.27E 03		
XE-135	CI	1.18E 03	1.21E 02		
XE-135M	CI	2.24E 02	1.79E 02		
XE-138	CI	6.85E 02	7.31E 02		
IODINES					
I-131	CI	9.91E-03	2.76E-02		
I-133	CI	4.83E-02	1.49E-01		
I-135	CI	7.20E-02	1.93E-01		
PARTICULATES					
BA-LA-140	CI	7.66E-03	7.52E-03		
CE-141	CI	9.91E-07	1.07E-05		
CE-144	CI		7.73E-05		
CO-58	CI	9.33E-07			
CO-60	CI	5.84E-04	2.92E-04		
CR-51	CI		3.64E-05		
CS-134	CI	6.63E-06	7.34E-07		
CS-137	CI	1.16E-04	1.42E-04		
MN-54	CI	1.67E-04	1.31E-04		
NB-95	CI	3.39E-06	4.41E-06		
RU-106	CI		1.29E-04		
SR-89	CI	3.69E-03	4.48E-03		
SR-90	CI	2.73E-05	2.83E-05		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
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INSTALLATION=PILGRIM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI	1.25E-02	7.98E-03		
KR-85M	CI	9.52E 02	6.06E 02		
KR-87	CI	5.06E 02	2.27E 02		
KR-88	CI	1.74E 03	1.06E 03		
XE-133	CI	5.86E 02	4.07E 02		
XE-135	CI	7.45E 01	4.76E 01		
XE-135M	CI	4.33E 01	7.54E 01		
XE-138	CI	8.02E 01	2.61E 02		
IODINES					
I-131	CI	1.69E-02	2.44E-02		
I-133	CI	6.47E-02	8.08E-02		
I-135	CI	7.53E-02	6.00E-02		
PARTICULATES					
BA-LA-140	CI	4.86E-03	4.22E-03		
CE-141	CI	8.59E-06	4.66E-06		
CE-144	CI	1.67E-05	4.10E-06		
CO-60	CI	3.27E-05	4.11E-05		
CR-51	CI		1.49E-05		
CS-134	CI	2.30E-06	2.49E-06		
CS-137	CI	3.31E-05	4.04E-05		
MN-54	CI	9.19E-06	1.09E-05		
RU-103	CI	3.19E-06	1.28E-06		
RU-106	CI	4.48E-05	3.12E-05		
SR-89	CI	1.40E-03	1.45E-03		
SR-90	CI	2.83E-05	1.29E-05		

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=PILGRIM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.07E 00	3.36E-01	3.20E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.79E-07	1.56E-07	
3. PERCENT OF APPLICABLE LIMIT	%	1.07E 01	3.63E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.96E 00	4.91E-03	3.25E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.96E-07	2.11E-09	
3. PERCENT OF APPLICABLE LIMIT	%	4.96E 00	2.11E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.09E-03	8.44E-06	4.38E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.83E-10	3.62E-12	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<2.07E-05	<2.49E-05	4.36E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	8.69E 05	2.33E 09	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.97E 09	2.33E 09	1.00E 01

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=PILGRIM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	<2.34E-01	<1.30E-01	3.20E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.46E-07	3.88E-08	
3. PERCENT OF APPLICABLE LIMIT	%	2.34E 00	1.30E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.39E-03	1.44E-02	3.30E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.49E-09	4.30E-09	
3. PERCENT OF APPLICABLE LIMIT	%	1.49E-02	4.30E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	<3.00E-05	<6.75E-05	4.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	<1.88E-11	<2.01E-11	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<2.77E-06	<8.49E-06	4.40E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.97E 04	9.01E 04	2.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.60E 09	3.35E 09	1.00E 01

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=PILGRIM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CS-134	CI			2.05E-02	7.15E-03
CS-137	CI			4.80E-02	1.65E-02
I-131	CI			8.45E-05	2.99E-05
SR-89	CI			1.43E-03	2.30E-04
SR-90	CI			1.26E-03	3.53E-04
BA-LA-140	CI			1.85E-03	5.32E-05
CE-141	CI			6.72E-04	9.84E-05
CO-58	CI			7.84E-03	1.69E-04
CO-60	CI			4.04E-01	7.75E-02
CR-51	CI			4.15E-04	2.39E-04
FE-59	CI			3.76E-03	3.59E-05
MN-54	CI			1.08E-01	2.23E-02
MO-99-TC-99M	CI			5.33E-05	3.75E-05
ZN-65	CI			1.07E-02	2.37E-03
ZR-NB-95	CI			5.45E-03	7.96E-04
CE-144	CI			1.05E-02	2.10E-03
FE-55	CI			3.71E-01	2.07E-01
NP-239	CI			1.14E-03	
UNIDENTIFIED	CI			7.82E-02	2.61E-02
XE-133	CI			4.08E-04	8.44E-06
XE-135	CI			6.85E-04	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=PILGRIM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CS-134	CI			2.41E-03	1.10E-03
CS-137	CI			8.46E-03	5.88E-03
I-131	CI			3.76E-06	<1.80E-05
SR-89	CI			<2.33E-05	<1.68E-04
SR-90	CI			2.06E-04	4.67E-04
BA-LA-140	CI			1.84E-04	<6.31E-05
CE-141	CI				<1.89E-05
CO-58	CI			4.81E-04	1.09E-04
CO-60	CI			5.95E-02	2.39E-02
CR-51	CI			6.07E-05	1.06E-04
MN-54	CI			1.43E-02	4.81E-03
MO-99-TC-99M	CI			2.13E-05	7.80E-07
ZN-65	CI			1.10E-03	3.68E-04
ZR-NB-95	CI			5.38E-05	7.13E-07
CE-144	CI			1.21E-03	3.49E-04
FE-55	CI			1.06E-01	8.11E-02
I-133	CI			2.18E-06	<2.25E-05
UNIDENTIFIED	CI			3.97E-02	1.18E-02
XE-133	CI			<2.00E-05	<4.50E-05
XE-135	CI			<9.93E-06	<2.25E-05

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INSTALLATION= PILGRIM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	2.29E 02	
	CI	4.17E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	3.17E 02	
	CI	1.35E 02	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	2.88E 00	
	CI	3.58E 03	
D. OTHER (DESCRIBE)	M3	NONE	
	CI	NONE	

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

A

DIATOMACEOUS EARTH		
OTHERS	X	6.20E 00
MN-54	X	9.13E 00
FE-55	X	3.62E 01
CS-137	X	1.29E 01
CS-134	X	7.42E 00
CO-60	X	2.83E 01
SPENT RESIN		
OTHERS	X	6.47E 00
MN-54	X	8.22E 00
FE-55	X	3.27E 01
CS-137	X	1.68E 01
CS-134	X	8.52E 00
CO-60	X	2.73E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
68	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
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0

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION= PILGRIM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.11E 02	
	CI	1.68E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.31E 03	
	CI	7.58E 01	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	2.52E 00	
	CI	3.96E 04	
D. OTHER (DESCRIBE)	M3	NONE	
	CI	NONE	

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

A		
CS-137	%	1.48E 01
CO-60	%	2.47E 01
MN-54	%	5.25E 00
CS-134	%	5.38E 00
LA-140	%	8.94E 00
FE-55	%	2.61E 01
B		
LA-140	%	8.94E 00
CO-60	%	2.47E 01
MN-54	%	5.25E 00
CS-137	%	1.48E 01
CS-134	%	5.38E 00
CR-51	%	5.89E 00
FE-55	%	2.61E 01
C		
CO-60	%	3.77E 01
MN-54	%	8.00E 00
CR-51	%	8.98E 00
FE-55	%	3.98E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
93	TRUCK	BARNWELL S.C.
1	TRUCK	HANFORD WA.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

0

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION POINT BEACH

LOCATION 15 MI N MANITOWOC WI

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1
TYPE PWR
DOCKET NO. 50-266
COOLING WATER SOURCE LAKE MICHIGAN
UNIT NUMBER 2
TYPE PWR
DOCKET NO. 50-301
COOLING WATER SOURCE LAKE MICHIGAN

LICENSEE WISCONSIN ELECTRIC POWER COMPANY
LICENSED POWER (MWT) 1518.5
INITIAL CRITICALITY 11/02/70
LICENSEE WISCONSIN ELECTRIC POWER COMPANY
LICENSED POWER (MWT) 1518.5
INITIAL CRITICALITY 05/30/72

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURIES/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY N/R

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION POINT BEACH

LOCATION 15 MI N MANITOWOC

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)	N/R		BETA		GAMMA	
	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
BATCH RELEASES						
A. LIQUID						
1. NUMBER OF BATCH RELEASES-						
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-						
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-						
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-						
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-						
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-						
B. GASEOUS						
1. NUMBER OF BATCH RELEASES-						
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-						
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-						
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-						
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-						
ABNORMAL RELEASES						
A. LIQUID						
1. NUMBER OF RELEASES						
2. TOTAL ACTIVITY RELEASED (CURIES)						
B. GASEOUS						
1. NUMBER OF RELEASES						
2. TOTAL ACTIVITY RELEASED (CURIES)						

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION POINT BEACH

LOCATION 15 MI N. MANITOWOC

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

	N/R			
AVERAGE ENERGY (MEV/DISINTEGRATION)	QUARTER 3	BETA QUARTER 4	QUARTER 3	GAMMA QUARTER 4
BATCH RELEASES			QUARTER 3	QUARTER 4
A. LIQUID				
1. NUMBER OF BATCH RELEASES-				
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-				
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-				
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-				
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-				
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-				
B. GASEOUS				
1. NUMBER OF BATCH RELEASES-				
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-				
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-				
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-				
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-				
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

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INSTALLATION=POINT BEACH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.22E 02	1.78E 02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	*	+	
B. IODINES				
1. TOTAL IODINE-131	CI	2.87E-03	3.22E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	*	+	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.83E-04	9.42E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	*	+	
4. GROSS ALPHA RADIOACTIVITY	CI	1.88E-06	4.29E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	2.76E 01	8.65E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	*	+	

* MAXIMUM PERCENTAGE OF TECHNICAL SPECIFICATION LIMITS
FOR ANY MONTH = 0.76% FOR ALL NUCLIDES.

+ MAXIMUM PERCENTAGE OF TECHNICAL SPECIFICATION LIMITS
FOR ANY MONTH = 0.85% FOR ALL NUCLIDES.

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	8.07E 01	3.57E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	*	+	
B. IODINES				
1. TOTAL IODINE-131	CI	5.23E-03	7.49E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	*	+	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.14E-04	1.11E-04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	*	+	
4. GROSS ALPHA RADIOACTIVITY	CI	3.16E-06	3.78E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.75E 01	3.76E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	*	+	

* MAXIMUM PERCENTAGE OF TECHNICAL SPECIFICATION LIMITS FOR ANY MONTH=0.50% FOR ALL NUCLIDES
+ MAXIMUM PERCENTAGE OF TECHNICAL SPECIFICATION LIMITS FOR ANY MONTH=1.14% FOR ALL NUCLIDES

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	1.36E 01	1.30E 01	*	*
KR-85	CI	8.20E 00	3.88E 00		
KR-85M	CI	1.41E 01	9.50E 00		
KR-87	CI	1.49E 01	1.13E 01		
KR-88	CI	2.43E 01	1.69E 01		
XE-131M	CI	N/D	4.94E-03		
XE-133	CI	2.17E 01	2.85E 01		
XE-133M	CI	4.06E-01	4.62E-01		
XE-135	CI	6.12E 01	4.68E 01		
XE-135M	CI	3.63E 01	1.84E 01		
XE-138	CI	2.74E 01	2.94E 01		
IODINES					
I-131	CI	1.99E-03	1.87E-03		
I-132	CI	8.28E-05	7.01E-05		
I-133	CI	5.41E-04	1.18E-03		
I-134	CI	6.99E-05	1.74E-07		
I-135	CI	1.81E-04	9.86E-05		
PARTICULATES					
AG-110M	CI	N/D	3.93E-05		
BA-140	CI	5.20E-07	N/D		
CE-139	CI	8.54E-07	2.55E-07		
CE-144	CI	3.01E-05	N/D		
CO-57	CI	4.12E-08	3.13E-05		
CO-58	CI	4.47E-05	4.21E-03		
CO-60	CI	2.17E-04	1.80E-03		
CR-51	CI	N/D	2.45E-03		
CS-134	CI	6.89E-06	8.17E-06		
CS-137	CI	4.90E-05	5.41E-05		
CS-138	CI	2.96E-01	3.06E-02		
FE-59	CI	N/D	3.31E-05		
F-18	CI	1.02E-04	3.87E-05		
LA-140	CI	3.12E-06	2.16E-08		
MN-54	CI	1.05E-05	1.78E-04		
MO-99	CI	N/D	1.46E-07		
NA-24	CI	2.97E-06	N/D		
NB-95	CI	9.85E-06	2.50E-04		
RB-88	CI	1.51E 00	1.11E 00		
RU-103	CI	2.80E-06	1.04E-05		
RU-106	CI	N/D	2.97E-05		
SB-124	CI	N/D	7.52E-05		
SB-125	CI	N/D	9.44E-06		
SN-113M	CI	7.58E-06	3.87E-05		
SR-89	CI	4.06E-07	2.39E-07		
SR-90	CI	N/D	1.46E-08		

* BATCH RELEASES ARE INCLUDED WITH CONTINUOUS RELEASES

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N/R=NOT REPORTED

INSTALLATION=POINT BEACH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
TA-182	CI	4.50E-08	N/D	*	*
TE-132	CI	2.59E-05	1.58E-06		
ZR-95	CI	N/D	1.98E-04		

* BATCH RELEASES ARE INCLUDED WITH CONTINUOUS RELEASES

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INSTALLATION=POINT BEACH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES				*	*
AR-41	CI	1.43E 00	1.95E 00		
KR-85	CI	8.21E-01	8.07E-01		
KR-85M	CI	5.10E 00	2.63E 00		
KR-87	CI	5.53E 00	2.30E 00		
KR-88	CI	7.98E 00	4.11E 00		
XE-131M	CI	N/D	2.50E-02		
XE-133	CI	1.36E 01	2.84E 00		
XE-133M	CI	3.08E-01	8.50E-02		
XE-135	CI	1.97E 01	9.88E 00		
XE-135M	CI	9.32E 00	4.58E 00		
XE-138	CI	1.69E 01	6.53E 00		
IODINES					
I-131	CI	7.07E-04	2.94E-03		
I-132	CI	1.07E-03	2.80E-04		
I-133	CI	3.46E-03	3.15E-03		
I-134	CI	N/D	4.97E-04		
I-135	CI	2.32E-08	6.24E-04		
PARTICULATES					
AG-110M	CI	N/D	1.03E-07		
CD-109	CI	1.00E-05	N/D		
CE-139	CI	N/D	5.07E-09		
CE-141	CI	N/D	7.56E-11		
CE-144	CI	6.37E-05	1.06E-05		
CO-58	CI	3.22E-05	3.36E-10		
CO-60	CI	4.72E-06	9.07E-05		
CR-51	CI	N/D	9.91E-09		
CS-134	CI	1.35E-07	3.06E-07		
CS-137	CI	3.42E-06	1.90E-06		
CS-138	CI	8.02E-02	4.56E-03		
LA-140	CI	N/D	7.04E-06		
RB-88	CI	3.05E-02	2.56E-03		
SR-89	CI	1.48E-10	6.91E-07		
SR-90	CI	2.95E-11	N/D		
TE-132	CI	2.45E-08	1.57E-08		

* BATCH RELEASES ARE INCLUDED WITH CONTINUOUS RELEASES.

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INSTALLATION=POINT BEACH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	5.26E-01	8.14E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.13E-09	5.50E-10	
3. PERCENT OF APPLICABLE LIMIT	%	2.55E-01	2.06E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	5.41E 02	1.68E 02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.30E-06	1.13E-06	
3. PERCENT OF APPLICABLE LIMIT	%	2.06E-01	3.76E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	3.59E-02	1.49E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.19E-10	1.01E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.14E-05	N/D	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.19E 07	5.66E 07	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	8.57E 10	1.48E 11	

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INSTALLATION=POINT BEACH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.86E-02	6.00E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.18E-10	4.96E-10	
3. PERCENT OF APPLICABLE LIMIT	%	2.25E-02	3.69E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.59E 02	3.19E 02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.65E-06	2.64E-06	
3. PERCENT OF APPLICABLE LIMIT	%	6.15E-02	1.00E-01	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.57E-02	2.18E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.00E-10	1.80E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	4.17E-06	1.54E-05	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.34E 07	6.42E 07	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.57E 11	1.21E 11	

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N/R=NOT REPORTED

INSTALLATION=POINT BEACH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-110M	CI	7.58E-05	N/D	*	*
ALPHA	CI	1.14E-05	N/D		
BA-140	CI	5.37E-03	1.12E-03		
CE-141	CI	6.36E-07	N/D		
CE-144	CI	1.68E-04	2.38E-05		
CO-57	CI	N/D	1.82E-07		
CO-58	CI	6.08E-03	2.30E-03		
CO-60	CI	2.33E-03	3.66E-03		
CS-134	CI	7.43E-03	5.70E-03		
CS-136	CI	6.78E-06	6.87E-05		
CS-137	CI	2.31E-02	1.61E-02		
CS-138	CI	1.64E-02	1.80E-03		
F-18	CI	1.78E-03	2.00E-04		
H-3	CI	5.41E-02	1.68E-02		
I-131	CI	1.54E-02	1.18E-02		
I-132	CI	2.10E-01	5.23E-03		
I-133	CI	8.85E-02	1.58E-02		
I-134	CI	3.99E-02	4.37E-03		
I-135	CI	8.38E-02	1.02E-02		
KR-85M	CI	N/D	3.18E-06		
KR-87	CI	4.88E-04	N/D		
LA-140	CI	1.68E-02	1.26E-03		
MN-54	CI	1.94E-04	7.36E-04		
MO-99	CI	1.59E-03	7.19E-04		
NA-24	CI	2.56E-03	2.33E-05		
NB-95	CI	5.30E-04	6.96E-06		
RU-103	CI	1.71E-04	N/D		
RU-106	CI	7.88E-06	1.66E-04		
SB-125	CI	1.16E-05	4.03E-06		
SN-113	CI	1.14E-05	N/D		
SR-89	CI	1.71E-06	5.27E-06		
SR-90	CI	N/D	N/D		
SR-91	CI	1.83E-03	4.45E-05		
TE-132	CI	1.90E-04	1.76E-05		
XE-131M	CI	1.72E-02	5.22E-03		
XE-133	CI	5.23E-03	5.04E-03		
XE-133M	CI	2.08E-04	N/D		
XE-135	CI	1.28E-02	1.95E-03		
XE-135M	CI	4.70E-08	2.70E-03		
Y-91M	CI	1.94E-03	4.74E-05		
ZN-65	CI	2.56E-06	N/D		
ZR-95	CI	2.03E-04	4.72E-06		

* BATCH RELEASES ARE INCLUDED WITH CONTINUOUS RELEASES

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION=POINT BEACH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
ALPHA	CI	4.17E-06	1.54E-05	*	*
BA-140	CI	3.43E-03	5.19E-03		
CE-144	CI	N/D	1.76E-05		
CO-56	CI	N/D	1.65E-04		
CO-58	CI	4.81E-04	9.68E-03		
CO-60	CI	7.12E-03	5.67E-04		
CR-51	CI	N/D	6.36E-04		
CS-134	CI	1.46E-04	1.40E-03		
CS-136	CI	N/D	5.67E-04		
CS-137	CI	2.92E-04	4.67E-03		
CS-138	CI	5.27E-04	N/D		
F-18	CI	N/D	1.63E-03		
H-3	CI	2.59E 02	3.19E 02		
I-131	CI	5.94E-03	4.11E-03		
I-132	CI	5.02E-04	3.42E-03		
I-133	CI	1.17E-03	1.64E-02		
I-134	CI	6.47E-05	2.79E-04		
I-135	CI	N/D	7.54E-03		
LA-140	CI	3.05E-03	3.13E-03		
MN-54	CI	N/D	7.31E-05		
NB-95	CI	2.79E-06	N/D		
RU-103	CI	3.33E-04	1.09E-04		
SB-125	CI	N/D	2.16E-04		
SN-113	CI	N/D	3.96E-05		
SR-89	CI	6.33E-04	7.94E-06		
SR-90	CI	7.06E-04	N/D		
SR-91	CI	4.16E-05	N/D		
TE-132	CI	1.16E-04	3.13E-05		
XE-131M	CI	2.05E-03	1.91E-02		
XE-133	CI	1.19E-02	1.98E-03		
XE-133M	CI	2.58E-05	N/D		
XE-135	CI	1.77E-03	6.73E-04		
Y-91M	CI	3.07E-05	N/D		
ZR-95	CI	N/D	1.04E-04		

* BATCH RELEASES ARE INCLUDED WITH CONTINUOUS RELEASES

N/A=NOT APPLICABLE

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INSTALLATION= POINT BEACH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	9.80E 00*	
	CI	9.29E 02*	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	9.01E 01+	
	CI	1.58E 01+	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI		
D. OTHER (DESCRIBE)	M3	NONE	
	CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
13	TRUCK	BARNWELL SC

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

* INCLUDES SPENT RESINS ONLY

+ INCLUDES SOLIDIFIED BOTTOMS AND COMPRESSIBLE WASTES

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION= POINT BEACH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	8.10E 00*	
	CI	5.45E 02*	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	5.33E 01+	
	CI	1.78E 01+	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI		
D. OTHER (DESCRIBE)	M3	NONE	
	CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
9	TRUCK	BARNWELL SC

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

* INCLUDES SPENT RESINS ONLY

+ INCLUDES SOLIDIFIED BOTTOMS AND COMPRESSIBLE WASTES

N/A=NOT APPLICABLE

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N/R=NOT REPORTED

INSTALLATION= POINT BEACH

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	8.10E 00	
	CI	5.45E 02	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3		
	CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3	5.33E 01	
	CI	1.80E 01	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
---------------------	------------------------	-------------

9

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
---------------------	------------------------	-------------

0

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION PRAIRIE ISLAND LOCATION 26 MI SE MINNEAPOLIS MN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1	LICENSEE NORTHERN STATES POWER
TYPE PWR	LICENSED POWER (MWT) 1650.0
DOCKET NO. 50-282	INITIAL CRITICALITY 12/01/73
COOLING WATER SOURCE MISSISSIPPI RIVER	
UNIT NUMBER 2	LICENSEE NORTHERN STATES POWER
TYPE PWR	LICENSED POWER (MWT) 1650.0
DOCKET NO. 50-306	INITIAL CRITICALITY 12/17/74
COOLING WATER SOURCE MISSISSIPPI RIVER	

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURIES/ML) *

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES
TOTAL-----GELI
NUCLIDE--GELI

IODINES
TOTAL-----GELI
NUCLIDE--GELI

PARTICULATES
TOTAL-----GELI
NUCLIDE--GELI

LIQUID EFFLUENTS
TOTAL-----GROSS BETA GAMMA
NUCLIDE--GELI

*=10CFR20, Appendix B. Table 2.
N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION PRAIRIE ISLAND

LOCATION 26 MI SE MINNEAPOLIS

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
1	2	1	2
N/A	N/A	N/A	N/A
BATCH RELEASES		QUARTER	QUARTER
A. LIQUID		1	2
1. NUMBER OF BATCH RELEASES-		61	70
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-		5.17E 03	6.78E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		1.55E 02	3.28E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-		8.64E 01	9.66E 01
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		5.50E 01	7.02E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-		1.70E 07	5.63E 07
B. GASEOUS			
NUMBER OF BATCH RELEASES-		5	3
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-		3.46E 03	4.89E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		1.89E 03	3.63E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-		6.90E 02	1.63E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-		1.22E 02	2.40E 02
ABNORMAL RELEASES			
A. LIQUID			
NUMBER OF RELEASES		NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			
B. GASEOUS			
1. NUMBER OF RELEASES		NONE	1
2. TOTAL ACTIVITY RELEASED (CURIES)			9.70E-01

N/A=NOT APPLICABLE
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INSTALLATION PRAIRIE ISLAND

LOCATION 26 MI SE MINNEAPOLIS

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4
N/A	N/A	N/A	N/A
BATCH RELEASES		QUARTER	QUARTER
A. LIQUID		3	4
1. NUMBER OF BATCH RELEASES-		78	48
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-		6.84E 03	4.15E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		1.50E 02	1.50E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-		9.00E 01	8.40E 01
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		7.20E 01	3.60E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-		4.06E 07	1.66E 07
B. GASEOUS			
NUMBER OF BATCH RELEASES-		7	3
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-		4.84E 03	4.81E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		2.23E 03	2.42E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-		6.90E 02	1.60E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-		4.20E 01	8.10E 02
ABNORMAL RELEASES			
A. LIQUID			
NUMBER OF RELEASES		NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			
B. GASEOUS			
1. NUMBER OF RELEASES		2	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)		1.05E 01	

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INSTALLATION=PRAIRIE ISLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.04E 00	3.30E 02	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.32E-01	4.20E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
B. IODINES				
1. TOTAL IODINE-131	CI	6.84E-05	5.80E-04	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.70E-06	7.38E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.88E-05	0.00E 00	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.39E-06	0.00E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI			
D. TRITIUM				
1. TOTAL RELEASE	CI	4.99E 01	4.13E 01	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.35E 00	5.25E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=PRAIRIE ISLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	8.78E 02	5.42E 01	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.13E 02	6.97E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
B. IODINES				
1. TOTAL IODINE-131	CI	9.88E-05	1.11E-04	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.27E-05	1.42E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	2.25E-07	1.90E-05	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.89E-08	2.42E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI			
D. TRITIUM				
1. TOTAL RELEASE	CI	2.74E 01	2.48E 01	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.48E 00	3.15E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=PRAIRIE ISLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	<1.40E 01	<1.26E 01	1.30E-01	1.88E-01
KR-85	CI	<3.29E 03	<3.25E 03	<1.24E 00	<9.00E-01
KR-85M	CI	<1.95E 01	<1.77E 01	<7.05E-03	<5.00E-03
KR-87	CI	<2.34E 01	<2.07E 01	<8.44E-03	<6.10E-03
KR-88	CI	<3.85E 01	<3.37E 01	<1.39E-02	<1.00E-02
XE-131M	CI	<6.68E 02	<5.85E 02	<2.41E-01	<5.74E-01
XE-133	CI	<8.85E 01	<7.76E 01	9.46E-01	1.07E 02
XE-133M	CI	<1.43E 02	<1.25E 02	<5.16E-02	4.65E-01
XE-135	CI	<1.45E 01	<1.32E 01	<5.97E-03	6.43E-02
XE-135M	CI	<1.66E 01	<1.48E 01	<6.00E-03	<4.34E-03
XE-138	CI	<1.43E 01	<1.25E 01	<5.15E-03	<3.72E-03
IODINES					
I-131	CI	<8.31E-05	5.94E-04	5.29E-06	<3.83E-06
I-133	CI	<4.61E-05	<4.05E-05	<1.94E-05	<1.20E-05
I-135	CI	<4.72E-05	<4.13E-05	1.70E-05	<1.23E-05
PARTICULATES					
BA-LA-140	CI	<3.18E-05	<2.79E-05	<1.15E-05	<8.31E-06
CD-109	CI	<1.13E-05	<9.89E-06	<4.07E-06	<2.95E-06
CE-144	CI	<7.62E-05	<6.68E-05	<2.75E-05	<1.99E-05
CO-57	CI	<9.87E-06	<8.65E-06	<3.56E-06	<2.58E-06
CO-58	CI	<2.13E-05	<9.79E-06	<4.03E-06	<2.92E-06
CO-60	CI	<1.90E-05	<1.37E-05	<5.65E-06	<4.09E-06
CR-51	CI	<1.06E-05	<9.06E-06	<3.73E-06	<2.70E-06
CS-134	CI	<1.62E-05	<1.21E-05	<4.98E-06	<3.60E-06
CS-137	CI	<1.51E-05	<1.08E-05	<4.44E-06	<3.21E-06
CS-138	CI	<1.45E-05	<1.27E-05	<5.24E-06	<3.79E-06
MN-54	CI	<1.06E-05	<9.29E-06	<3.83E-06	<2.77E-06
NA-24	CI	<8.75E-06	<7.66E-06	<3.16E-06	<2.28E-06
RB-88	CI	<3.17E-05	<2.77E-05	<1.14E-05	<9.61E-06
SB-124	CI	<1.66E-05	<1.45E-05	<5.97E-06	<4.31E-06
SR-85	CI	<1.15E-05	<1.01E-05	<4.17E-06	<3.01E-06
SR-89	CI	<3.37E-07	<2.95E-08	<1.21E-10	<8.79E-11
SR-90	CI	<5.66E-07	<4.96E-07	<2.04E-10	<1.48E-10
Y-88	CI	<1.15E-05	<1.00E-05	<4.17E-06	<3.73E-06
ZR-NB-95	CI	<1.01E-05	<8.87E-06	<3.65E-06	<2.64E-06

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INSTALLATION=PRAIRIE ISLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	<3.50E 01	<3.63E 01	<7.56E-01	<6.38E-01
KR-85	CI	<8.75E 00	<2.35E 00	<1.63E-01	<2.40E-02
KR-85M	CI	<6.51E 00	<1.76E 00	<1.22E-01	<1.80E-02
KR-87	CI	<3.25E 00	<8.82E-01	<6.10E-02	<9.01E-03
KR-88	CI	<1.19E 01	<3.23E 00	<2.23E-01	<3.30E-02
XE-131M	CI	<6.51E 00	<1.76E 00	<1.22E-01	<1.80E-02
XE-133	CI	<1.09E 03	<2.94E 02	<2.03E 01	<3.01E 00
XE-133M	CI	<1.30E 01	<3.53E 00	<2.49E-01	<3.60E-02
XE-135	CI	<2.64E 01	<5.59E 00	<4.59E-01	<5.71E-02
XE-135M	CI	<7.60E-01	<2.06E-01	<1.40E-02	<2.10E-03
XE-138	CI	<2.16E 00	<5.88E-01	<4.10E-02	<6.01E-03
IODINES					
I-131	CI	<1.37E-04	<1.47E-04	<4.08E-07	<2.99E-06
I-133	CI	<3.35E-05	<3.45E-05	1.01E-05	8.01E-06
I-135	CI	<1.04E-04	<1.08E-04	<1.12E-06	<1.34E-06
PARTICULATES					
BA-LA-140	CI	<1.02E-04	<1.06E-04	<1.10E-06	<1.33E-06
CD-109	CI	<4.33E-05	<4.50E-05	<4.66E-07	<5.62E-07
CE-144	CI	<2.80E-04	<2.91E-04	<3.03E-06	<3.63E-06
CO-57	CI	<3.63E-05	<3.77E-05	<3.91E-07	<4.71E-07
CO-58	CI	<3.31E-05	<4.60E-05	<3.56E-07	<4.29E-07
CO-60	CI	<4.57E-05	<5.49E-05	<4.94E-07	<5.94E-07
CS-134	CI	<4.31E-05	<4.47E-05	<4.66E-07	<5.59E-07
CS-137	CI	<4.23E-05	<4.38E-05	<4.54E-07	<5.48E-07
CS-138	CI	<4.31E-05	<4.47E-05	<4.64E-07	<5.59E-07
MN-54	CI	<3.50E-05	<3.72E-05	<3.75E-07	<4.52E-07
NA-24	CI	<3.01E-05	<3.12E-05	<3.24E-07	<3.89E-07
RB-88	CI	<8.60E-05	<8.92E-05	<9.25E-07	<1.12E-06
SB-124	CI	<4.80E-05	<4.99E-05	<5.20E-07	<6.24E-07
SR-85	CI	<3.56E-05	<3.70E-05	<3.84E-07	<4.64E-07
SR-89	CI	<7.69E-08	<7.97E-08	<4.31E-06	<5.20E-06
SR-90	CI	<1.36E-07	<1.41E-07	<7.64E-06	<9.20E-06
Y-88	CI	<1.98E-05	<2.05E-05	<2.13E-07	<2.56E-07
ZR-NB-95	CI	<6.90E-05	<7.15E-05	<7.43E-07	<8.95E-07

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INSTALLATION=PRAIRIE ISLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.22E-03	1.55E-03	5.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.42E-12	2.24E-12	
3. PERCENT OF APPLICABLE LIMIT	%	1.22E-02	1.55E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.63E 02	1.95E 02	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.58E-07	2.82E-07	
3. PERCENT OF APPLICABLE LIMIT	%	1.72E 01	5.64E 00	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	2.15E-02	4.52E-02	5.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.13E-10	6.54E-11	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	4.11E-08	0.00E 00	5.00E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	8.58E 07	7.15E 07	2.50E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.90E 11	6.91E 11	5.00E 01

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=PRAIRIE ISLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.33E-03	8.45E-04	5.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.61E-12	4.29E-12	
3. PERCENT OF APPLICABLE LIMIT	%	1.33E-02	8.45E-03	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.07E 02	8.61E 01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.10E-07	4.37E-07	
3. PERCENT OF APPLICABLE LIMIT	%	4.20E 00	8.74E 00	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	7.14E-02	1.08E-01	5.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.40E-10	5.48E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	5.00E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	7.08E 07	5.92E 07	2.50E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.09E 11	1.97E 11	5.00E 01

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=PRAIRIE ISLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-110M	CI	<1.97E-03	<1.63E-03	<1.04E-04	<4.26E-05
BA-LA-140	CI	<6.48E-03	<5.37E-03	<1.19E-04	<1.40E-04
CD-109	CI	<4.77E-03	<3.95E-03	<8.79E-05	<1.03E-04
CO-58	CI	<2.11E-03	<1.69E-03	4.54E-04	9.29E-04
CO-60	CI	<2.69E-03	<2.18E-03	<4.20E-04	<5.70E-05
CR-51	CI	<2.44E-03	<2.02E-03	<4.50E-05	<5.28E-05
CS-134	CI	<2.53E-03	<2.10E-03	<6.85E-05	<6.89E-05
CS-136	CI	<1.89E-03	<1.56E-03	<3.47E-05	<4.08E-05
CS-137	CI	<2.57E-03	<1.97E-03	<5.30E-05	<6.56E-05
FE-59	CI	<5.24E-03	<4.34E-03	<9.64E-05	<1.13E-04
I-131	CI	<2.48E-03	<2.05E-03	<5.81E-05	<5.35E-05
MN-54	CI	<1.93E-03	<1.60E-03	<1.04E-04	<4.99E-05
MO-99	CI	<2.77E-03	<2.29E-03	<5.10E-05	<5.99E-05
NA-24	CI	<1.42E-03	<1.18E-03	<2.62E-05	<3.08E-05
RB-88	CI	<4.87E-03	<4.03E-03	<8.96E-05	<1.05E-04
SB-124	CI	<2.58E-03	<2.14E-03	<4.76E-05	<1.24E-04
SR-85	CI	<2.45E-03	<2.05E-03	<4.55E-05	<5.35E-05
SR-89	CI	<7.81E-04	<6.46E-04	<1.44E-05	<1.69E-05
SR-90	CI	<1.31E-03	<1.09E-03	<2.42E-04	<2.84E-04
W-187	CI	<1.92E-03	<1.59E-03	<3.53E-05	<4.15E-05
ZN-65	CI	<4.43E-03	<3.61E-03	<8.15E-05	<9.57E-05
ZR-NB-95	CI	<3.91E-03	<3.23E-03	<8.22E-05	<8.45E-05
ZR-NB-97	CI	<1.94E-03	<1.60E-03	<3.57E-05	<4.19E-05
KR-85	CI	<5.91E-01	<4.89E-01	<1.09E-02	<1.28E-02
KR-85M	CI	<3.07E-03	<2.54E-03	<5.66E-05	<6.64E-05
KR-87	CI	<3.69E-03	<3.05E-03	<6.79E-05	<1.29E-04
KR-88	CI	<7.41E-03	<6.13E-03	<1.36E-04	<1.60E-04
XE-131M	CI	<1.20E-01	<9.89E-01	<2.20E-03	<2.58E-03
XE-133	CI	<1.60E-02	<1.32E-02	<5.10E-04	5.14E-02
XE-133M	CI	<2.58E-02	<2.13E-02	<4.74E-04	<6.15E-04
XE-135	CI	<2.66E-03	<2.20E-03	<6.74E-05	<1.08E-04

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INSTALLATION=PRAIRIE ISLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI	<1.92E-03	<1.62E-03	<3.61E-04	<7.48E-05
BA-LA-140	CI	<6.20E-03	<5.24E-03	<1.95E-04	<1.05E-04
CD-109	CI	<5.59E-03	<4.75E-03	<1.77E-04	<9.53E-05
CE-139	CI	<3.22E-03	<2.73E-03	<1.02E-04	<5.45E-05
CO-58	CI	<1.74E-03	<1.47E-03	<1.14E-04	2.00E-04
CO-60	CI	<2.19E-03	<1.85E-03	6.87E-04	4.85E-04
CR-51	CI	<2.33E-03	<1.98E-03	<7.67E-05	<3.98E-05
CS-134	CI	<2.14E-03	<1.81E-03	<1.06E-04	<4.35E-05
CS-136	CI	<1.69E-03	<1.43E-03	<6.93E-05	<2.87E-05
CS-137	CI	<2.21E-03	<1.87E-03	<1.20E-04	<4.29E-05
FE-59	CI	<4.03E-03	<3.45E-03	<1.27E-04	<6.87E-05
I-131	CI	<2.40E-03	<2.02E-03	<7.96E-05	<4.05E-05
MN-54	CI	<1.78E-03	<1.51E-03	<8.35E-05	<7.69E-05
MO-99	CI	<3.05E-03	<2.59E-03	<9.60E-05	<5.17E-05
NA-24	CI	<1.46E-03	<1.23E-03	<4.59E-05	<2.47E-05
RB-88	CI	<4.17E-03	<3.54E-03	<1.37E-04	<7.11E-05
SB-124	CI	<2.09E-03	<1.77E-03	<1.51E-04	<4.80E-05
SR-85	CI	<2.12E-03	<1.79E-03	<6.69E-05	<3.61E-05
SR-89	CI	<1.41E-03	<1.19E-03	<4.45E-05	<2.40E-05
SR-90	CI	<2.49E-03	<2.12E-03	<7.88E-05	<4.29E-05
W-187	CI	<1.78E-03	<1.51E-03	<6.36E-05	<3.03E-05
Y-88	CI	<9.60E-04	<8.13E-04	<3.36E-05	<1.63E-05
ZN-65	CI	<3.70E-03	<3.12E-03	<1.17E-04	<6.29E-05
ZR-NB-95	CI	<3.61E-03	<3.05E-03	<1.15E-04	<6.91E-05
ZR-NB-97	CI	<1.84E-03	<1.55E-03	<6.50E-05	<3.12E-05
KR-85	CI	<5.27E 00	<4.45E 00	<1.66E-02	<8.95E-03
KR-85M	CI	<3.47E-03	<2.94E-03	<1.09E-04	<5.87E-05
KR-88	CI	<7.25E-03	<6.13E-03	<2.28E-03	<1.23E-03
XE-131M	CI	<1.28E-01	<1.09E-01	<6.00E-03	<2.18E-03
XE-133	CI	<1.75E-02	<1.48E-02	7.02E-02	1.08E-01
XE-133M	CI	<2.49E-02	<2.12E-02	<1.03E-03	<9.67E-03
XE-135	CI	<2.59E-03	<2.19E-03	<9.30E-04	<1.18E-04

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N/R=NOT REPORTED

INSTALLATION QUAD-CITIES

LOCATION 20 MI NE MOLINE IL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

TYPE BWR

DOCKET NO. 50-254

COOLING WATER SOURCE MISSISSIPPI RIVER

UNIT NUMBER 2

TYPE BWR

DOCKET NO. 50-265

COOLING WATER SOURCE MISSISSIPPI RIVER

LICENSEE COMMONWEALTH EDISON AND IOWA-ILLINOIS GAS

LICENSED POWER (MWT) 2511.0

INITIAL CRITICALITY 10/18/71

LICENSEE COMMONWEALTH EDISON AND IOWA-ILLINOIS GAS

LICENSED POWER (MWT) 2511.0

INITIAL CRITICALITY 04/26/72

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY N/R

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INSTALLATION QUAD-CITIES

LOCATION 20 MI NE MOLINE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER 1	BETA QUARTER 2	QUARTER 1	GAMMA QUARTER 2
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BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION QUAD-CITIES

LOCATION 20 MI NE MOLINE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4

BATCH RELEASES

A. LIQUID

QUARTER	QUARTER
3	4

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=QUAD-CITIES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	4.99E 03	1.42E 04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.42E 02	1.79E 03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.32E 01	2.71E 01	
B. IODINES				
1. TOTAL IODINE-131	CI	1.62E-01	1.51E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.08E-02	1.92E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.93E 00	1.81E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.96E-01	1.32E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.52E-02	1.68E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	1.61E-02	1.39E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	2.14E 01	4.81E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.75E 00	6.12E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=QUAD-CITIES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	7.90E 03	5.30E 03	
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	9.94E 02	6.66E 02	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.17E-01	1.11E 00	
B. IODINES				
1.TOTAL IODINE-131	CI	4.01E-01	3.15E-01	
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.04E-02	3.95E-02	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.06E 00	3.19E 00	
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	4.83E-01	3.14E-01	
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.08E-02	3.96E-02	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4.GROSS ALPHA RADIOACTIVITY	CI	4.94E-05	1.83E-05	
D. TRITIUM				
1.TOTAL RELEASE	CI	1.70E 01	1.29E 01	
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.14E 00	1.62E 00	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=QUAD-CITIES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
FISSION GASES					
KR-85M	CI	1.08E 00	2.38E 01		
KR-87	CI		7.08E 00		
KR-88	CI	1.16E 00	2.70E 01		
XE-133	CI	1.48E 01	2.92E 02		
XE-135	CI	4.36E 00	1.02E 02		
XE-138	CI	5.27E 01			
IODINES					
I-131	CI	4.81E-02	4.82E-02		
I-133	CI	5.56E-02	2.92E 02		
I-135	CI	1.07E-01	1.86E-01		
PARTICULATES					
AG-110M	CI	5.55E-05	5.29E-05		
BA-140	CI	1.95E-03	1.41E-02		
CE-141	CI	1.38E-03			
CO-58	CI	4.14E-03	1.28E-04		
CO-60	CI	1.50E-01	3.24E-03		
CR-51	CI	3.12E-03	3.78E-03		
CS-134	CI	2.65E-03	1.47E-03		
CS-137	CI	3.39E-03	2.11E-03		
I-131	CI	5.08E-03	4.68E-03		
LA-140	CI	3.27E-03	6.97E-03		
MN-54	CI	2.39E-03	8.30E-05		
NB-95	CI	1.15E-03			
SR-89	CI	1.12E-03	1.66E-03		
SR-90	CI	8.42E-05	1.91E-04		
ZN-65	CI	3.57E-03	3.40E-05		

N/A=NOT APPLICABLE

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N/R=NOT REPORTED

INSTALLATION=QUAD-CITIES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85M	CI	2.17E-01	4.94E-01		
KR-88	CI	6.30E-02	3.11E-02		
XE-133	CI	3.31E 00	4.86E 00		
XE-135	CI	4.04E-01	6.90E-01		
XE-138	CI		2.37E 00		
IODINES					
I-131	CI	4.62E-02	3.17E-02		
I-133	CI	1.74E-01	1.14E-01		
I-135	CI	5.09E-01	3.63E-01		
PARTICULATES					
AG-110M	CI	3.89E-05	5.83E-06		
BA-140	CI	1.95E-02	7.07E-03		
CE-141	CI	3.15E-04	8.34E-05		
CO-58	CI	7.46E-04	5.64E-05		
CO-60	CI	6.44E-03	8.24E-04		
CR-51	CI	1.73E-02	2.11E-03		
CS-134	CI	2.95E-03	9.71E-04		
CS-136	CI	1.07E-03	1.24E-04		
CS-137	CI	5.60E-03	1.67E-03		
I-131	CI	1.30E-03	7.01E-03		
LA-140	CI	2.70E-02	8.63E-03		
MN-54	CI	3.17E-04	2.46E-05		
NB-95	CI		4.45E-05		
RU-103	CI		2.82E-05		
SR-89	CI	8.10E-03	1.93E-03		
SR-90	CI	2.06E-04	2.13E-04		
UNIDENTIFIED	CI	5.66E-02	3.00E-02		
ZN-65	CI	4.58E-04	8.18E-05		

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N/R=NOT REPORTED

INSTALLATION=QUAD-CITIES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85M	CI	4.24E 02	8.38E 02		
KR-87	CI	1.55E 00	1.38E 02		
KR-88	CI	1.84E 02	6.07E 02		
XE-133	CI	3.01E 03	1.01E 04		
XE-135	CI	9.61E 02	2.36E 03		
XE-138	CI	3.31E 02	1.87E 01		
IODINES					
I-131	CI	1.16E-01	1.54E-01		
I-133	CI	2.79E-01	5.32E-01		
I-135	CI	5.02E-01	6.39E-01		
PARTICULATES					
BA-140	CI	1.60E-02	1.49E-02		
CE-141	CI	1.99E-04	1.19E-04		
CO-60	CI	1.53E-03	8.36E-04		
CS-134	CI	4.14E-04	2.26E-04		
CS-137	CI	1.19E-03	6.10E-04		
I-131	CI	9.28E-03	9.01E-03		
LA-140	CI	2.17E-02	2.11E-02		
MN-54	CI	3.26E-05			
SR-89	CI	1.57E-02	1.87E-02		
SR-90	CI	1.00E-04	4.98E-05		
UNIDENTIFIED	CI	5.48E-02	6.04E-02		

N/A=NOT APPLICABLE
 N/D=NOT DETECTED
 N/R=NOT REPORTED

INSTALLATION=QUAD-CITIES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85M	CI	3.91E 02	3.29E 02		
KR-87	CI		1.32E 01		
KR-88	CI	8.18E 01	5.33E 01		
XE-133	CI	6.86E 03	3.96E 03		
XE-135	CI	5.16E 02	5.12E 02		
XE-138	CI	3.94E 01	4.19E 02		
IODINES					
I-131	CI	3.72E-01	2.83E-01		
I-133	CI	1.69E 00	1.91E 00		
I-135	CI	1.90E 00	2.13E 00		
PARTICULATES					
BA-140	CI	5.28E-02	1.23E-01		
CE-141	CI	6.82E-04	1.75E-03		
CO-60	CI	1.51E-03	1.43E-03		
CS-134	CI	6.35E-04	7.67E-04		
CS-137	CI	1.73E-03	2.36E-03		
I-131	CI	6.33E-02	8.17E-02		
LA-140	CI	7.45E-02	1.43E-01		
MN-54	CI	3.87E-05	2.87E-05		
SR-89	CI	1.62E-02	3.00E-02		
SR-90	CI	1.89E-04	1.11E-04		
UNIDENTIFIED	CI	1.21E-01			

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INSTALLATION=QUAD-CITIES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	8.03E-01	7.67E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.01E-09	3.91E-09	
3. PERCENT OF APPLICABLE LIMIT	%	4.01E 00	3.91E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	7.76E 00	5.42E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.88E-08	2.77E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.29E-03	9.23E-04	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	3.67E-03	2.13E-04	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	8.14E 06	5.97E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.00E 11	1.96E 11	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	3.67E-01	3.05E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.26E-09	2.90E-09	
3. PERCENT OF APPLICABLE LIMIT	%	1.26E 00	2.90E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.89E 00	1.15E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	9.96E-09	1.69E-08	
3. PERCENT OF APPLICABLE LIMIT	%	3.32E-04	3.63E-04	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	2.44E-04	2.70E-04	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.18E 06	9.11E 05	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.90E 11	1.05E 11	

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INSTALLATION=QUAD-CITIES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CE-141	CI			8.09E-04	
CO-58	CI			6.87E-04	
CO-60	CI			1.34E-01	8.68E-02
CR-51	CI			1.57E-03	
CS-134	CI			1.89E-01	2.53E-01
CS-137	CI			3.10E-01	3.49E-01
I-131	CI			4.77E-03	
LA-140	CI			3.43E-03	1.70E-02
MN-54	CI			1.81E-03	1.37E-04
SR-89	CI			4.17E-03	1.36E-03
SR-90	CI			6.38E-04	2.85E-04
TC-99M	CI			8.40E-03	
UNIDENTIFIED	CI			1.43E-01	

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INSTALLATION=QUAD-CITIES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
BA-140	CI				6.98E-03
CO-58	CI			1.50E-02	
CO-60	CI			2.36E-02	2.68E-02
CS-134	CI			4.21E-02	1.72E-02
CS-137	CI			8.38E-02	3.77E-02
LA-140	CI			1.89E-02	1.04E-02
MN-54	CI				5.14E-04
SR-89	CI			3.75E-03	2.53E-03
SR-90	CI			6.47E-04	3.32E-04
UNIDENTIFIED	CI			1.79E-01	2.02E-01

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INSTALLATION= QUAD-CITIES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	9.05E 02	
	CI	2.21E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3		
	CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

3. SOLID WASTE DISPOSITION-		
NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
67	TRUCK	SHEFFIELD IL
54	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= QUAD-CITIES

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3 CI	4.38E 02 1.06E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 CI		
D. OTHER (DESCRIBE)	M3 CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
51	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
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INSTALLATION RANCHO SECO

LOCATION 25 MI SE SACRAMENTO CA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1 LICENSEE SACRAMENTO MUNICIPAL UTILITY
TYPE PWR LICENSED POWER (MWT) 2772.0
DOCKET NO. 50-312 INITIAL CRITICALITY 09/16/74
COOLING WATER SOURCE COOLING TOWERS-FOLSOM CANAL

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES
GAMMA SPECTROMETRY (GELI) AND LIQUID SCINTILLATION (FOR H-3).

IODINES
GAMMA SPECTROMETRY (GELI).

PARTICULATES
GAMMA SPECTROMETRY (GELI) AND BETA PROPORTIONAL COUNTING (FOR SR-89 AND 90) AND ALPHA
PROPORTIONAL COUNTING (FOR GROSS ALPHA).

LIQUID EFFLUENTS
GAMMA SPECTROMETRY (GELI) AND LIQUID SCINTILLATION (FOR H-3) AND BETA PROPORTIONAL
COUNTING (FOR SR-89 AND 90 AND GROSS BETA) AND ALPHA PROPORTIONAL COUNTING (FOR GROSS
ALPHA).

N/A=NOT APPLICABLE
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INSTALLATION RANCHO SECO

LOCATION 25 MI SE SACRAMENTO CA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER	BETA QUARTER	QUARTER	GAMMA QUARTER
1	2	1	2
N/A	N/A	N/A	N/A

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

QUARTER	QUARTER
1	2
	NONE

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

15
5.31E 04
2.61E 04
3.54E 03
5.52E 02

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION RANCHO SECO

LOCATION 25 MI SE SACRAMENTO CA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

BETA		GAMMA	
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4
N/A	N/A	N/A	N/A

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

QUARTER	QUARTER
3	4
	NONE

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

17
7.69E 04
2.61E 04
4.05E 03
5.52E 02

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

N/A=NOT APPLICABLE
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INSTALLATION=RANCHO SECO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.82E 02	4.27E 02	2.22E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.58E 01	5.41E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.19E 00	1.78E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	1.93E-03	3.37E-05	6.91E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.45E-04	4.28E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.87E-01	6.70E-03	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	2.25E-03	7.10E-05	5.89E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.85E-04	9.00E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.44E-01	7.70E-03	
4. GROSS ALPHA RADIOACTIVITY	CI	3.16E-05	5.41E-06	5.11E 00
D. TRITIUM				
1. TOTAL RELEASE	CI	3.77E 01	1.35E 02	4.09E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.78E 00	1.71E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=RANCHO SECO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, % *
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	1.07E 03	5.32E 03	1.25E 00
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.26E 02	6.72E 02	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.80E 00	2.86E 01	
B. IODINES				
1.TOTAL IODINE-131	CI	1.10E-03	1.49E-02	8.16E 00
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.40E-04	1.88E-03	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.20E-01	2.97E 00	
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	7.00E-05	1.17E-02	7.43E 00
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.49E-04	3.37E-03	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.26E-01	2.88E 00	
4.GROSS ALPHA RADIOACTIVITY	CI	4.64E-08	9.48E-07	4.98E 00
D. TRITIUM				
1.TOTAL RELEASE	CI	1.54E 01	5.25E 01	3.03E 00
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.96E 00	6.65E 00	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

* Yearly value

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI			1.21E 00	5.86E-01
KR-85	CI			4.76E 00	1.35E 00
KR-85M	CI			8.61E-02	4.33E-01
KR-87	CI			3.25E-02	6.45E-02
KR-88	CI			4.44E-01	4.92E-01
UNIDENTIFIED	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
XE-131M	CI			1.68E-01	1.48E-01
XE-133	CI	3.86E 01	7.95E 01	2.08E 02	2.98E 02
XE-133M	CI			1.95E 00	2.81E 00
XE-135	CI	1.17E 01	1.61E 01	1.54E 01	2.73E 01
XE-135M	CI				9.25E-01
IODINES					
I-131	CI	7.21E-05		1.86E-03	3.37E-05
I-132	CI				0.00E 00
I-133	CI			1.30E-04	
PARTICULATES					
BA-LA-140	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
C058-C060-MN54	CI	1.40E-05	0.00E 00		3.73E-05
CO-60-MN-54	CI			0.00E 00	
CS-134	CI	0.00E 00	0.00E 00	4.25E-05	0.00E 00
CS-137	CI	0.00E 00	0.00E 00	6.13E-05	0.00E 00
SR-89	CI	6.22E-06	0.00E 00	1.29E-05	0.00E 00
SR-90	CI	7.05E-05	0.00E 00	6.87E-05	0.00E 00
UNIDENTIFIED	CI	0.00E 00	0.00E 00		0.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI			4.13E-01	7.55E 01
KR-85	CI			1.84E-01	2.95E-01
KR-85M	CI			4.46E 00	1.80E 01
KR-87	CI			7.88E-01	
KR-88	CI			2.87E 00	4.24E-01
UNIDENTIFIED	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
XE-131M	CI			2.34E 01	
XE-133	CI	2.44E 02	1.08E 03	6.86E 02	2.89E 03
XE-133M	CI			6.09E 01	3.31E 01
XE-135	CI	1.58E 01	1.67E 02	3.02E 01	1.05E 03
XE-135M	CI			4.17E-01	
IODINES					
I-131	CI	2.18E-05	3.23E-04	1.08E-03	1.45E-02
I-132	CI			3.20E-03	4.20E-01
I-133	CI		2.64E-04	2.21E-03	1.98E-02
I-135	CI			3.28E-03	7.98E-02
PARTICULATES					
BA-LA-140	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CO58-CO60-MN54	CI	3.94E-06	4.44E-05	4.04E-05	1.16E-02
CS-134	CI	0.00E 00	0.00E 00	8.66E-06	0.00E 00
CS-137	CI	0.00E 00	0.00E 00	1.15E-05	7.62E-06
SR-89	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SR-90	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
UNIDENTIFIED	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00

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INSTALLATION=RANCHO SECO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES N/R

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
B. IRIIUM				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI			
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS			
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS			

N/A=NOT APPLICABLE
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INSTALLATION=RANCHO SECO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES N/R

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI			
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS			
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS			

N/A=NOT APPLICABLE
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INSTALLATION= RANCHO SECO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	NONE	
	CI	NONE	0.00E 00
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.08E 01	
	CI	2.27E 00	6.65E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI	NONE	0.00E 00
D. OTHER (DESCRIBE)	M3	1.32E 01	
	CI	3.46E 02	1.01E 02

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

B

CO-58	X	6.30E 01
CO-60	X	2.00E 01
MN-54	X	1.60E 01

D

CO-58	X	6.30E 01
CO-60	X	2.00E 01
MN-54	X	1.60E 01
ZR-NB-95	X	1.00E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
8	TRUCK	BEATTY, NV

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= RANCHO SECO

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	9.06E 00	
	CI	8.76E 02	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.16E 01	
	CI	4.50E-01	6.65E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI		0.00E 00
D. OTHER (DESCRIBE)	M3	6.42E 01	
MISC. NONCOMPRESSIBLE MATERIAL	CI	4.60E 01	1.01E 02

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

A		
CO-58	X	1.53E 01
CO-60	X	3.24E 01
MN-54	X	2.43E 01
CS-134	X	9.30E 00
CS-137	X	1.79E 01
B		
CO-58	X	6.30E 01
CO-60	X	2.00E 01
MN-54	X	1.60E 01
D		
CO-58	X	6.30E 01
CO-60	X	2.00E 01
MN-54	X	1.60E 01
ZR-NB-95	X	1.00E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
5	TRUCK	BEATTY NEVADA

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
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INSTALLATION H.B.ROBINSON

LOCATION 4.5 MI WNW HARTSVILLE S.C.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 2

TYPE PWR

DOCKET NO. 50-261

COOLING WATER SOURCE ROBINSON INPOUNDMENT

LICENSEE CAROLINA POWER & LIGHT

LICENSED POWER (MWT) 2200.0

INITIAL CRITICALITY 09/20/70

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURIES/ML)

GASES

KR-85	3.00E-07
XE-133	3.00E-07

IODINES

I-131	1.43E-13
I-133	4.00E-10
I-135	1.00E-09

PARTICULATES

HALF-LIVES > 8 DAYS	1.43E-13
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LIQUIDS

TRITIUM	3.00E-03
UNIDENTIFIED	1.00E-07

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

MEASURED BY CONTINUOUS MONITORS. RADIONUCLIDES DETERMINED BY PERIODIC GRAB SAMPLES, GAMMA SCAN, GROSS BETA COUNT TRI-CARB.

IODINES

MEASURED BY CONTINUOUS MONITORS AND SAMPLER. RADIONUCLIDES DETERMINED BY GAMMA SCAN.

PARTICULATES HALF-LIVES > 8 DAYS

MEASURED BY CONTINUOUS SAMPLER. RADIONUCLIDES DETERMINED BY GAMMA SCAN, GROSS BETA COUNT.

LIQUID EFFLUENTS

MEASURED BY COMPOSITES. RADIONUCLIDES DETERMINED BY GAMMA SCAN, GROSS BETA COUNT, TRITIUM COUNT.

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INSTALLATION H.B.ROBINSON

LOCATION 4.5 MI WNW HARTSVILLE S.C.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	QUARTER 1	BETA QUARTER 2 4.67E-01	QUARTER 1	GAMMA QUARTER 2
BATCH RELEASES			QUARTER 1	QUARTER 2
A.LIQUID			150	39
1.NUMBER OF BATCH RELEASES-			4.62E 04	1.48E 04
2.TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-			2.91E 03	7.16E 02
3.MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			3.08E 02	3.79E 02
4.AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			5.00E 00	1.40E 02
5.MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				
6.AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-			3.33E 06	1.17E 07
B.GASEOUS			57	60
NUMBER OF BATCH RELEASES-			8.31E 04	2.39E 04
2.TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-			3.00E 03	2.88E 03
3.MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			1.46E 03	3.98E 02
4.AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			1.00E 00	1.00E 00
5.MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-				
ABNORMAL RELEASES				
A.LIQUID				
NUMBER OF RELEASES			NONE	NONE
2.TOTAL ACTIVITY RELEASED (CURIES)				
B.GASEOUS				
1.NUMBER OF RELEASES			NONE	NONE
2.TOTAL ACTIVITY RELEASED (CURIES)				

N/A=NOT APPLICABLE
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INSTALLATION H.B.ROBINSON

LOCATION 4.5 MI WNW HARTSVILLE S.C.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
	QUARTER	QUARTER	QUARTER
	3	4	3
	5.68E-01	2.52E-01	
BATCH RELEASES			
A.LIQUID			
1.NUMBER OF BATCH RELEASES-			
2.TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-			
3.MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			
4.AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			
5.MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			
6.AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-			
B.GASEOUS			
1.NUMBER OF BATCH RELEASES-			
2.TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-			
3.MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			
4.AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			
5.MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-			
ABNORMAL RELEASES			
A.LIQUID			
1.NUMBER OF RELEASES			
2.TOTAL ACTIVITY RELEASED (CURIES)			
B.GASEOUS			
1.NUMBER OF RELEASES			
2.TOTAL ACTIVITY RELEASED (CURIES)			

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INSTALLATION=H.B.ROBINSON

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR,%
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	4.22E 01	7.02E 01	1.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.42E 00	8.93E 00	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.61E-02	5.99E-02	
B. IODINES				
1.TOTAL IODINE-131	CI	3.10E-04	2.23E-04	8.00E 00
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.98E-05	2.84E-05	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.58E-01	3.97E-01	
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.74E-04	6.14E-05	1.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.24E-05	7.81E-06	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.13E-01	1.09E-01	
4.GROSS ALPHA RADIOACTIVITY	CI	0.00E 00	0.00E 00	
D. TRITIUM				
1.TOTAL RELEASE	CI	2.66E 00	6.43E 00	5.00E 00
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.42E-01	8.18E-01	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.42E-03	8.18E-03	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	6.53E 02	1.19E 02	1.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.31E 01	1.51E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.55E 00	1.47E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	2.16E-05	1.05E-05	1.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.75E-06	1.34E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.84E-02	1.87E-02	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	4.94E-05	7.65E-05	5.00E 00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.28E-06	9.73E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.52E-02	2.51E-02	
4. GROSS ALPHA RADIOACTIVITY	CI	0.00E 00	0.00E 00	
D. TRITIUM				
1. TOTAL RELEASE	CI	3.20E 01	3.33E 00	1.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.07E 00	4.24E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.07E-02	4.24E-03	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	1.81E 00	3.44E 01	9.92E 00	1.24E-01
KR-85	CI	1.12E-02	6.74E-02	1.37E-02	1.59E-03
KR-85M	CI	4.85E-02	2.93E-01	5.97E-02	6.93E-03
KR-87	CI	3.61E-01	0.00E 00	5.65E 00	1.29E-02
KR-88	CI	3.51E-02	0.00E 00	0.00E 00	0.00E 00
XE-133	CI	3.78E 01	3.25E 01	1.87E 02	6.74E-02
XE-135	CI	1.83E 00	9.00E-01	1.43E 01	8.91E-03
XE-135M	CI	7.87E-02	2.40E 00	0.00E 00	3.68E-02
IODINES					
I-131	CI	3.10E-04	2.23E-04	2.79E-04	9.02E-07
I-133	CI	7.91E-05	9.07E-04	6.74E-05	4.38E-07
I-135	CI	0.00E 00	2.25E-03	1.20E-05	1.68E-07
PARTICULATES					
AG-110M	CI	0.00E 00	0.00E 00	4.18E-11	0.00E 00
BA-LA-140	CI	1.76E-06	0.00E 00	0.00E 00	2.14E-07
CD-109	CI	7.86E-06	4.45E-06	3.21E-05	1.05E-08
CE-139	CI	7.92E-07	7.21E-07	0.00E 00	9.06E-10
CE-141	CI	1.65E-06	1.12E-06	7.52E-06	1.61E-10
CE-144	CI	3.47E-06	0.00E 00	7.90E-11	1.39E-08
CO-57	CI	5.93E-07	2.77E-07	2.16E-06	7.32E-08
CO-58	CI	3.66E-05	5.27E-06	1.64E-04	7.04E-06
CO-60	CI	1.13E-04	4.31E-05	2.48E-04	4.88E-06
CR-51	CI	2.32E-06	2.63E-07	8.20E-05	2.93E-06
CS-134	CI	0.00E 00	0.00E 00	1.90E-07	0.00E 00
CS-137	CI	6.81E-06	1.86E-06	3.18E-06	1.30E-09
HG-203	CI	0.00E 00	0.00E 00	0.00E 00	5.94E-10
MN-54	CI	3.56E-07	1.29E-06	1.27E-06	9.59E-07
NB-95	CI	4.23E-07	1.47E-06	2.30E-06	0.00E 00
SB-125	CI	8.70E-07	1.95E-08	2.35E-06	0.00E 00
SN-113	CI	0.00E 00	0.00E 00	0.00E 00	4.26E-10
SR-89	CI	0.00E 00	0.00E 00	2.00E-10	0.00E 00
SR-90	CI	0.00E 00	0.00E 00	3.80E-11	0.00E 00
ZN-65	CI	1.01E-06	1.34E-06	0.00E 00	1.26E-09

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	1.71E 02	7.89E 00	2.19E 00	5.25E-02
KR-85	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
KR-85M	CI	5.91E-01	0.00E 00	0.00E 00	0.00E 00
KR-87	CI	3.26E 00	0.00E 00	8.00E-03	0.00E 00
KR-88	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
XE-133	CI	4.64E 02	1.09E 02	8.90E 00	1.22E 01
XE-135	CI	1.08E 01	1.51E 00	1.79E-03	1.09E 02
XE-135M	CI	1.67E 00	0.00E 00	3.96E-03	0.00E 00
IODINES					
I-131	CI	2.16E-05	1.05E-05	6.70E-05	1.53E-05
I-133	CI	2.35E-05	3.27E-05	0.00E 00	4.79E-05
I-135	CI	1.79E-05	1.26E-04	2.66E-05	8.41E-07
PARTICULATES					
AG-110M	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
BA-LA-140	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CD-109	CI	3.12E-06	0.00E 00	5.63E-10	0.00E 00
CE-139	CI	3.58E-06	0.00E 00	8.15E-08	5.13E-08
CE-141	CI	0.00E 00	0.00E 00	7.72E-11	1.47E-07
CE-144	CI	3.09E-06	0.00E 00	2.76E-09	0.00E 00
CO-57	CI	0.00E 00	0.00E 00	1.74E-06	0.00E 00
CO-58	CI	2.15E-06	4.03E-05	1.12E-08	1.57E-06
CO-60	CI	2.34E-05	3.62E-05	2.98E-06	7.05E-06
CR-51	CI	4.70E-06	0.00E 00	0.00E 00	0.00E 00
CS-134	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
CS-137	CI	3.30E-06	0.00E 00	3.06E-07	0.00E 00
HG-203	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
MN-54	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
NB-95	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SB-125	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SN-113	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SR-89	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SR-90	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
ZN-65	CI	6.19E-06	0.00E 00	3.33E-09	0.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	8.61E-02	4.02E-02	5.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.59E-10	2.32E-10	
3. PERCENT OF APPLICABLE LIMIT	%	2.00E-02	1.62E-03	
B. TRITIUM				
1. TOTAL RELEASE	CI	4.86E 01	5.09E 01	3.00E 00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.16E-07	2.94E-07	
3. PERCENT OF APPLICABLE LIMIT	%	1.05E-02	9.80E-03	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	3.54E-02	2.59E-03	1.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.30E-10	1.50E-11	
3. PERCENT OF APPLICABLE LIMIT	%	7.67E-03	5.00E-04	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	0.00E 00
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.06E 07	3.01E 07	5.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.54E 11	1.73E 11	5.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR,%
A. FISSION AND ACTIVATION PRODUCTS				
1.TOTAL RELEASE(NOT INCLUDING TRITIUM, GASES,ALPHA)	CI	3.07E-02	2.12E-02	5.00E 00
2.AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.60E-10	1.08E-10	
3.PERCENT OF APPLICABLE LIMIT	%	1.90E-02	4.82E-04	
B. TRITIUM				
1.TOTAL RELEASE	CI	1.88E 02	1.85E 02	5.00E 00
2.AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	9.79E-07	9.39E-07	
3.PERCENT OF APPLICABLE LIMIT	%	3.26E-02	3.13E-02	
C. DISSOLVED AND ENTRAINED GASES				
1.TOTAL RELEASE	CI	2.67E-02	1.26E-03	1.00E 01
2.AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.39E-10	6.40E-12	
3.PERCENT OF APPLICABLE LIMIT	%	4.64E-03	2.13E-04	
D. GROSS ALPHA RADIOACTIVITY				
1.TOTAL RELEASE	CI	0.00E 00	0.00E 00	0.00E 00
E. VOLUME OF WASTE RELEASED(PRIOR TO DILUTION)	LITERS	3.09E 07	2.91E 07	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.92E 11	1.97E 11	1.00E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-110M	CI	0.00E 00	0.00E 00	8.12E-05	1.11E-04
BA-LA-140	CI	0.00E 00	0.00E 00	5.43E-04	2.52E-04
CD-109	CI	0.00E 00	0.00E 00	9.10E-04	0.00E 00
CE-141	CI	0.00E 00	0.00E 00	1.32E-05	0.00E 00
CO-57	CI	0.00E 00	0.00E 00	4.60E-05	1.01E-05
CO-58	CI	0.00E 00	1.35E-03	1.67E-02	1.74E-03
CO-60	CI	2.68E-04	3.45E-03	2.43E-02	3.02E-03
CR-51	CI	0.00E 00	0.00E 00	0.00E 00	8.76E-05
CS-134	CI	6.80E-03	1.37E-02	8.77E-03	3.27E-04
CS-137	CI	6.62E-03	1.49E-02	8.53E-03	3.82E-04
FE-59	CI	0.00E 00	0.00E 00	1.67E-04	2.41E-05
I-131	CI	1.81E-03	3.37E-04	6.75E-03	8.02E-05
MN-54	CI	0.00E 00	0.00E 00	6.54E-04	6.82E-05
MO-99	CI	9.30E-04	0.00E 00	0.00E 00	0.00E 00
SB-124	CI	3.11E-05	0.00E 00	2.22E-04	3.16E-04
SB-125	CI	0.00E 00	0.00E 00	4.43E-04	4.09E-04
SR-89	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SR-90	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
TC-99M	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
XE-133	CI	1.01E-02	8.12E-04	1.71E-02	1.52E-04
XE-135	CI	8.18E-03	1.41E-03	5.20E-04	2.12E-04
ZN-65	CI	0.00E 00	3.19E-04	6.00E-04	0.00E 00
ZR-NB-95	CI	0.00E 00	1.39E-04	6.55E-05	3.51E-06

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI	2.96E-04	0.00E 00	0.00E 00	0.00E 00
BA-LA-140	CI	4.30E-04	0.00E 00	0.00E 00	0.00E 00
CD-109	CI	6.98E-04	0.00E 00	0.00E 00	0.00E 00
CE-139	CI	0.00E 00	3.73E-05	0.00E 00	0.00E 00
CE-141	CI	9.60E-04	0.00E 00	0.00E 00	0.00E 00
CO-57	CI	0.00E 00	0.00E 00	3.30E-06	0.00E 00
CO-58	CI	3.05E-04	4.85E-03	8.70E-04	2.80E-03
CO-60	CI	2.62E-03	1.25E-04	8.58E-03	9.86E-03
CR-51	CI	0.00E 00	0.00E 00	8.01E-05	0.00E 00
CS-134	CI	1.09E-03	0.00E 00	1.68E-04	0.00E 00
CS-137	CI	3.19E-03	3.20E-03	8.63E-04	0.00E 00
FE-59	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
I-131	CI	9.80E-03	0.00E 00	8.76E-04	0.00E 00
MN-54	CI	7.41E-05	0.00E 00	4.38E-04	0.00E 00
MO-99	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SB-124	CI	0.00E 00	0.00E 00	1.42E-05	0.00E 00
SB-125	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SR-89	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
SR-90	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
TC-99M	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
ZN-65	CI	4.13E-04	0.00E 00	2.77E-05	0.00E 00
ZR-NB-95	CI	0.00E 00	0.00E 00	4.75E-05	0.00E 00
XE-133	CI	9.31E-03	0.00E 00	1.11E-03	1.26E-03
XE-135	CI	1.60E-02	0.00E 00	2.81E-04	0.00E 00

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION= H.B.ROBINSON

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.00E 02	
	CI	1.37E 02	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.73E 02	
	CI	2.01E 01	1.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI	NONE	0.00E 00
D. OTHER (DESCRIBE)	M3	1.40E 01	
IRRADIATED FUEL SHIPMENTS	CI	4.20E 06	1.00E 01

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

A

EVAPORATOR BOTTOMS		
SB-125	X	7.32E 00
CO-58	X	1.25E 01
CS-134	X	8.45E 00
SB-124	X	3.71E 00
CS-137	X	6.33E 00
MN-54	X	1.97E 00
CO-60	X	6.05E 01
SPENT RESINS		
CO-57	X	1.08E-01
HG-203	X	3.45E-01
CR-51	X	4.12E 00
CO-58	X	1.37E 01
AG-110M	X	2.14E 00
NB-97	X	3.80E 00
NB-95	X	1.76E 00
MN-54	X	1.07E 00
CO-60	X	7.29E 01

B

CO-60	X	3.15E 01
CO-58	X	2.89E 01
MN-54	X	3.33E 00
CS-137	X	4.01E 00
CS-134	X	1.96E 00
CR-51	X	3.03E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
36	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
2	RAIL	SOUTHPORT N.C.

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INSTALLATION= H.B.ROBINSON

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.68E 02	
	CI	8.05E 01	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	6.91E 01	
	CI	2.72E 00	1.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	NONE	
	CI	NONE	0.00E 00
D. OTHER (DESCRIBE)	M3	9.80E 01	
IRRADIATED FUEL SHIPMENTS	CI	2.41E 07	1.00E 01

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

A	%	
CO-58	%	2.40E 01
CO-60	%	5.05E 01
MN-54	%	1.28E 00
CS-134	%	4.04E 00
CS-137	%	1.38E 01
CR-51	%	3.46E 00
CO-57	%	9.20E-01
OTHERS	%	2.00E 00
B		
CO-60	%	6.50E 01
CO-58	%	2.70E 01
CR-51	%	4.00E 00
MN-54	%	2.00E 00
CS-134	%	1.00E 00
CS-137	%	1.00E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
18	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
14	RAIL	SOUTHPORT N.C.

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INSTALLATION SALEM

LOCATION 20 MI S WILMINGTON, NJ

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE PSEvG

TYPE PWR

LICENSED POWER (MWT) 3338.0

DOCKET NO. 50-272

INITIAL CRITICALITY 12/11/76

COOLING WATER SOURCE DELAWARE RIVER

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

GASEOUS EFFLUENT STREAMS ARE MONITORED IN ACCORDANCE WITH TABLE 2.3-4 OF THE ENVIRONMENTAL TECHNICAL SPECIFICATIONS. THE PLANT VENT IS THE FINAL RELEASE POINT OF ALL PLANNED GASEOUS EFFLUENTS AND IS CONTINUALLY MONITORED BY FOUR VERY SENSITIVE GEIGER-MUELLER TUBES. SAMPLING IS ALSO PERFORMED ON ALL GAS DECAY TANKS PRIOR TO RELEASE TO THE ENVIRONMENT. THE RESULTS OF THESE ANALYSES ARE USED AS THE BASIS FOR THE CUMULATIVE RELEASE OF GASEOUS EFFLUENTS INTO THE ENVIRONMENT. ALL TRITIUM SAMPLES WERE TAKEN BY BUBBLING GAS THROUGH WATER AND THEN COUNTING THE TRITIATED WATER ON A LIQUID SCINTILLATION COUNTER.

IODINES

THE PLANT VENT IS CONTINUALLY MONITORED BY FOUR VERY SENSITIVE GEIGER-MUELLER TUBES. THE VENT IS ALSO SAMPLED FOR IODINE WITH A CHARCOAL CARTRIDGE AND CESCO FILTER PAPER CONNECTED IN SERIES TO A LOW VOLUME AIR SAMPLER. THE FILTER AND CHARCOAL ARE CHANGED WEEKLY AND ANALYZED ON A MULTICHANNEL ANALYZER IN THE LABORATORY.

PARTICULATES

THE PLANT VENT IS CONTINUALLY MONITORED BY FOUR VERY SENSITIVE GEIGER-MUELLER TUBES. THE VENT IS ALSO SAMPLED FOR PARTICULATES WITH A CHARCOAL CARTRIDGE AND CESCO FILTER PAPER CONNECTED IN SERIES TO A LOW VOLUME AIR SAMPLER. THE FILTER AND CHARCOAL ARE CHANGED WEEKLY AND ANALYZED ON A MULTICHANNEL ANALYZER IN THE LABORATORY.

LIQUID EFFLUENTS

LIQUID EFFLUENTS ARE MONITORED IN ACCORDANCE WITH TABLE 2.3-3 OF THE ENVIRONMENTAL TECHNICAL SPECIFICATIONS. DURING THE PERIOD OF RECORD, ALL WASTES FROM THE CHEMICAL DRAIN TANK AND THE LAUNDRY AND HOT SHOWER TANKS WERE ROUTED TO THE HOLD-UP TANKS FOR MONITORING. THESE TANKS WERE THEN RECIRCULATED THE EQUIVALENT OF TWO TANK VOLUMES TO PRODUCE UNIFORM MIXING AND A SAMPLE WAS EXTRACTED AND ANALYZED BEFORE ANY RELEASE WAS MADE. BATCH RELEASES INCLUDED RELEASES FROM THE WASTE MONITOR TANKS, WASTE MONITOR HOLD-UP TANKS, AND THE CHEMICAL AND VOLUME CONTROL TANKS. CONTINUOUS RELEASES INCLUDED RELEASES FROM THE INTERMITTENT BLOWDOWN OF THE STEAM GENERATORS. THE PREDOMINATE ISOTOPE DETECTED CONTINUED TO BE COBALT 58. OTHER ISOTOPES DETECTED INCLUDED CO60, MN54, AND H3 (TRITIUM). AT NO TIME DID RELEASES EXCEED LIMITS.

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INSTALLATION SALEM

LOCATION 20 MI S WILMINGTON, DL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
1	2	1	2
N/A	N/A	N/A	N/A
BATCH RELEASES		QUARTER	QUARTER
A. LIQUID		1	2
1. NUMBER OF BATCH RELEASES-		55	35
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-		2.75E 04	2.09E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-		1.07E 03	1.75E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-		4.99E 02	5.97E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-		2.30E 01	1.50E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-		8.02E 05	7.57E 05
B. GASEOUS			
NUMBER OF BATCH RELEASES-		13	5
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-		2.09E 03	1.95E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-		4.60E 02	1.20E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-		1.61E 02	3.90E 02
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-		8.90E 01	1.18E 02
ABNORMAL RELEASES			
A. LIQUID			
NUMBER OF RELEASES		NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			
B. GASEOUS			
1. NUMBER OF RELEASES		NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			

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INSTALLATION SALEM

LOCATION 20 MI S WILMINGTON, DL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4
N/A	N/A	N/A	N/A
BATCH RELEASES		QUARTER	QUARTER
A.LIQUID		3	4
1.NUMBER OF BATCH RELEASES-		82	95
2.TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-		4.54E 04	4.27E 04
3.MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		1.50E 03	1.72E 03
4.AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-		5.54E 02	4.49E 02
5.MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		2.30E 01	2.30E 01
6.AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-		1.28E 06	7.38E 05
B.GASEOUS			
NUMBER OF BATCH RELEASES-		7	8
2.TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-		2.80E 03	3.39E 03
3.MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-		1.55E 03	2.10E 03
4.AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-		4.00E 02	4.23E 02
5.MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-		1.01E 02	7.20E 01
ABNORMAL RELEASES			
A.LIQUID			
NUMBER OF RELEASES			NONE
2.TOTAL ACTIVITY RELEASED (CURIES)			
B.GASEOUS			
1.NUMBER OF RELEASES			1
2.TOTAL ACTIVITY RELEASED (CURIES)			2.36E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.85E 00	4.49E 04	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.38E-01	5.71E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.19E-04	2.16E-07	
B. IODINES				
1. TOTAL IODINE-131	CI	N/D	6.11E-05	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	N/D	7.77E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	1.51E-03	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.12E-05	0.00E 00	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.01E-06	0.00E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	7.82E-04	0.00E 00	
4. GROSS ALPHA RADIOACTIVITY	CI	4.98E-08	3.07E-06	2.50E 01
D. TRITIUM				
1. TOTAL RELEASE	CI	1.29E 02	0.00E 00	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.66E 01	0.00E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	0.00E 00	

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INSTALLATION=SALEM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.36E-01	8.21E 00	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.65E-03	5.22E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.53E-05	9.21E-04	
B. IODINES				
1. TOTAL IODINE-131	CI	2.13E-03	3.10E-03	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.35E-04	1.97E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.33E-02	7.75E-02	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.48E-02	2.00E-02	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	9.41E-04	1.27E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	1.37E-05		
D. TRITIUM				
1. TOTAL RELEASE	CI	1.23E 00	1.22E 01	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	7.82E-02	7.76E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI			1.28E-03	
KR-85M	CI			1.38E-03	
XE-133	CI			1.78E-00	
XE-133M	CI			2.66E-03	
XE-135	CI		2.96E-05	6.45E-02	4.19E-04
IODINES					
I-131	CI		6.11E-05		
I-133	CI		6.68E-05		
PARTICULATES					
GROSS ALPHA	CI	4.98E-08	1.24E-07		2.95E-06
SR-89	CI	3.09E-05			
SR-90	CI			2.50E-07	
TRITIUM	CI	1.29E 02		3.86E-01	1.97E-01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI			7.50E-04	
KR-85M	CI			4.38E-04	3.48E-02
KR-87	CI				6.81E-03
KR-88	CI				2.97E-02
XE-133	CI	3.71E-05	9.84E-05	1.21E-01	4.79E 00
XE-133M	CI			7.62E-04	3.95E-02
XE-135	CI	1.06E-04	2.93E 00	1.26E-02	3.79E-01
IODINES					
I-131	CI	3.82E-04	2.56E-04		1.58E-05
I-133	CI	1.75E-03	2.82E-03		
PARTICULATES					
CO-58	CI	7.32E-06	3.34E-05		2.50E-04
CO-60	CI		1.06E-04	5.46E-06	6.46E-04
CS-134	CI		1.49E-07	1.48E-02	1.91E-02
CS-137	CI		3.09E-05		1.73E-05
GROSS ALPHA	CI	1.37E-05			
SR-89	CI				2.43E-06
TRITIUM	CI	8.61E-01	1.19E 01	3.71E-01	3.26E-01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	8.61E-01	7.96E-01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.93E-08	5.07E-08	
3. PERCENT OF APPLICABLE LIMIT	%	8.61E 00	7.96E-00	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.13E 02	6.90E 01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.16E-06	4.39E-06	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	3.34E-02	2.04E-03	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.55E-08	1.27E-10	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	2.00E-07	1.58E-05	2.50E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.56E 06	2.29E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.19E 10	1.57E 10	2.50E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.20E 00	1.16E 00	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.05E-12	3.55E-12	
3. PERCENT OF APPLICABLE LIMIT	%	1.20E 01	1.12E 01	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.78E 02	8.59E 01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.04E-10	2.63E-10	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	3.78E-03	1.30E-01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.45E-15	3.98E-13	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	2.50E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.10E 06	6.37E 06	1.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.86E 14	3.27E 14	2.50E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CO-58	CI			5.18E-01	4.67E-01
CO-60	CI			2.42E-01	2.06E-01
CR-51	CI			8.99E-04	6.53E-03
GROSS ALPHA	CI			2.00E-07	1.58E-05
I-131	CI			1.38E-03	2.87E-04
I-133	CI			4.00E-03	3.35E-03
MN-54	CI			5.54E-02	8.16E-02
NA-24	CI			3.79E-02	2.86E-02
SR-89	CI	9.27E-05		6.26E-05	1.30E-04
TRITIUM	CI	9.86E-03		1.13E 02	6.90E 01
XE-133	CI			3.15E-02	1.03E-03
XE-135	CI			1.94E-03	1.01E-03
ZR-NB-95	CI			1.08E-03	1.37E-03

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N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=SALEM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
BA-140	CI			6.30E-04	4.05E-04
CO-57	CI			5.63E-04	
CO-58	CI			2.82E-01	7.70E-01
CO-60	CI			9.61E-02	1.65E-01
CR-51	CI			2.61E-02	3.78E-02
CS-134	CI			9.96E-05	1.40E-03
CS-136	CI			9.34E-04	
CS-137	CI			2.08E-03	4.68E-04
FE-59	CI			6.52E-03	2.96E-02
I-131	CI			9.86E-03	3.12E-03
I-133	CI			2.43E-02	1.74E-03
LA-140	CI			1.37E-02	4.27E-03
MN-54	CI			1.87E-01	9.15E-02
NA-24	CI			5.40E-01	1.35E-02
NB-95	CI			6.48E-03	2.16E-04
PB-214	CI			7.44E-04	
RB-88	CI			1.69E-04	
SB-124	CI				1.78E-03
SN-113	CI			4.37E-04	
SR-89	CI				8.04E-04
SR-90	CI			2.48E-03	
TRITIUM	CI		4.47E-02	1.78E-02	8.59E-01
W-187	CI			4.82E-03	2.29E-04
ZR-95	CI			3.13E-03	1.97E-03
KR-88	CI			3.78E-03	
XE-133	CI			2.50E-02	1.26E-01
XE-135	CI			7.73E-03	4.60E-03

N/A=NOT APPLICABLE
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INSTALLATION= SALEM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	8.50E 00	
	CI	2.27E-02	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.00E 02	
	CI	4.27E-01	1.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
I-131	%	1.60E 01
I-133	%	1.50E 01
CO-58	%	1.90E 01
OTHERS	%	5.00E 01
B		
CO-58	%	6.87E 01
CO-60	%	2.94E 01
MN-54	%	1.92E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
4	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= SALEM

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.08E 02	
	C1	3.12E 01	1.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.09E 01	
	C1	1.62E 02	1.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	C1		
D. OTHER (DESCRIBE)	M3		
	C1		

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

A		
CO-58	x	5.80E 01
CO-60	x	2.80E 01
MN-54	x	9.00E 00
OTHERS	x	5.00E 00
B		
CO-58	x	7.80E 01
CO-60	x	1.30E 01
MN-54	x	9.00E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
17	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION SAN ONOFRE

LOCATION 2.5 MI S SAN CLEMENTE CA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

TYPE PWR

DOCKET NO. 50-206

COOLING WATER SOURCE PACIFIC OCEAN

LICENSEE SOUTHERN CALIFORNIA EDISON AND SAN DIEGO GAS & EL*

LICENSED POWER (MWT) 1347.0

INITIAL CRITICALITY 06/14/67

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY N/R

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION SAN ONOFRE

LOCATION 2.5 MI S SAN CLEMENTE CA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
1	2	1	2

BATCH RELEASES

QUARTER	QUARTER
1	2

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION SAN ONOFRE

LOCATION 2.5 MI S SAN CLEMENTE CA

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER 3	BETA QUARTER 4	QUARTER 3	GAMMA QUARTER 4
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BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=SAN ONOFRE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.03E 02	1.22E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.48E-01	8.08E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	9.42E-05	5.18E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.93E-04	1.03E-04	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	2.48E-03	1.77E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.02E-04	6.46E-06	
4. GROSS ALPHA RADIOACTIVITY	CI			
D. TRITIUM				
1. TOTAL RELEASE	CI	5.12E 00	2.14E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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N/R=NOT REPORTED

INSTALLATION=SAN ONOFRE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.68E 01	3.62E 02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.78E-02	2.47E-02	
B. IODINES				
1. TOTAL IODINE-131	CI	N/D	6.46E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%		1.32E-04	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	N/D	N/D	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	CI	N/D	3.10E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=SAN ONOFRE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

NUCLIDES RELEASED	UNIT	GAS EFFLUENTS		GROUND		RELEASE	
		CONTINUOUS MODE				BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2	1	2
FISSION GASES							
KR-85	CI					3.80E-01	6.81E-02
KR-85M	CI					4.12E-01	N/D
XE-131M	CI					N/D	5.82E-02
XE-133	CI					2.57E 01	6.77E 00
XE-133M	CI					2.06E-01	2.89E 00
XE-135	CI					1.17E-01	4.79E-01
IODINES							
I-131	CI					N/D	6.46E-05

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INSTALLATION=SAN. ONOFRE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI			1.80E-02	N/D
KR-85	CI			7.41E-01	5.72E 02
KR-85M	CI			2.68E-01	2.56E-01
KR-88	CI			9.99E-02	2.54E-02
XE-131M	CI			6.94E-04	N/D
XE-133	CI			1.92E 02	6.36E 02
XE-133M	CI			2.45E 00	1.07E-02
XE-135	CI			7.50E 00	5.28E 00
IODINES					
I-131	CI			9.42E-05	6.18E-05
PARTICULATES					
CO-58	CI			N/D	9.34E-06
CO-60	CI			N/D	8.38E-06
CS-134	CI			5.96E-05	N/D
CS-137	CI			3.42E-04	N/D
RU-103	CI			2.07E-03	N/D

N/A=NOT APPLICABLE

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N/R=NOT REPORTED

INSTALLATION=SAN ONOFRE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	5.25E-02	3.95E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.60E-10	3.20E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	5.95E 02	1.23E 03	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.21E-05	3.19E-05	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	3.13E-02	3.33E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.75E-10	9.54E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	N/D	N/D	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.01E 06	2.17E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.46E 11	1.23E 11	

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INSTALLATION=SAN ONOFRE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	8.52E-01	1.05E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.65E-09	1.37E-07	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	5.84E 02	8.81E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.56E-06	1.11E-06	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.04E 01	2.52E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.14E-08	3.18E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	N/D	5.89E-05	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.98E 06	7.81E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.28E 11	7.93E 10	

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N/R=NOT REPORTED

INSTALLATION=SAN ONOFRE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-110M	CI			N/D	6.48E-02
CO-57	CI			2.76E-05	N/D
CO-58	CI			1.06E-03	1.72E-01
CO-60	CI			1.14E-02	6.60E-03
CR-51	CI			N/D	5.78E-02
CS-134	CI			4.21E-03	2.39E-02
CS-137	CI			3.57E-02	6.72E-02
I-131	CI			N/D	2.18E-03
MN-54	CI			3.10E-04	1.21E-04
SR-89	CI			9.57E-06	N/D
SR-90	CI			2.62E-05	N/D
XE-133	CI			5.30E-03	3.33E-01

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N/R=NOT REPORTED

INSTALLATION=SAN ONOFRE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI			N/D	6.16E-02
BA-140	CI			4.84E-03	N/D
CO-58	CI			1.70E-01	6.63E-01
CO-60	CI			3.18E-02	1.71E-01
CR-51	CI			3.40E-02	1.37E-01
CS-134	CI			1.15E-01	2.78E 00
CS-136	CI			N/D	3.11E-02
CS-137	CI			2.10E-01	3.70E 00
FE-59	CI			1.59E-02	1.51E-02
I-131	CI			6.39E-02	7.95E-02
LA-140	CI			5.17E-03	N/D
MN-54	CI			1.01E-04	1.44E-02
MO-99	CI			7.67E-02	N/D
NB-95	CI			N/D	1.59E-02
SB-124	CI			N/D	2.77E 00
SR-89	CI			N/D	1.47E-05
SR-90	CI			7.32E-05	4.78E-05
TC-99M	CI			1.24E-01	N/D
XE-131M	CI			1.71E-02	N/D
XE-133	CI			1.03E 01	2.52E-02
XE-133M	CI			9.93E-02	N/D
XE-135	CI			3.77E-03	N/D

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= SAN ONOFRE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3 N1	N/R N/R	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 C1	5.18E 01 1.61E 00	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 C1	N/R N/R	
D. OTHER (DESCRIBE)	M3 C1	N/R N/R	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
2	TRUCK	BEATTY NEVADA

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= SAN ONOFRE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3 CI	N/R N/R	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 CI	7.87E 01 5.56E 00	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 CI	N/R N/R	
D. OTHER (DESCRIBE)	M3 CI	N/R N/R	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
2	TRUCK	BEATTY NEVADA

N/A=NOT APPLICABLE
N/D=NOT DETECTED
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INSTALLATION ST. LUCIE

LOCATION 8 MI S FT. PIERCE FL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE FLORIDA POWER & LIGHT

TYPE PWR

LICENSED POWER (MWT) 2560.0

DOCKET NO. 50-335

INITIAL CRITICALITY 04/22/76

COOLING WATER SOURCE ATLANTIC OCEAN

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML): *

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

PRINCIPAL GAMMA EMITTERS ARE ANALYZED BY GASEOUS GRAB SAMPLES USING GAMMA SPECTRUM PULSE HEIGHT ANALYSES USING LITHIUM-GERMANIUM DETECTORS. ALL PEAKS ARE IDENTIFIED AND QUANTIFIED. TRITIUM IS ANALYZED USING LIQUID SCINTILLATION COUNTING.

IODINES

IODINES ARE ANALYZED USING CHARCOAL FILTER SAMPLES BY GAMMA SPECTRUM PULSE HEIGHT ANALYSES USING LITHIUM-GERMANIUM DETECTORS. ALL PEAKS ARE IDENTIFIED AND QUANTIFIED.

PARTICULATES

PARTICULATES ARE ANALYZED BY PARTICULATE FILTER SAMPLES USING GAMMA SPECTRUM PULSE HEIGHT ANALYSES USING LITHIUM-GERMANIUM DETECTORS. ALL PEAKS ARE IDENTIFIED AND QUANTIFIED. SR-90 AND 89 ARE ANALYZED BY CHEMICAL SEPARATION AND LIQUID SCINTILLATION COUNTING. GROSS ALPHA PARTICULATES ARE ANALYZED BY PARTICULATE FILTER SAMPLES USING GAS FLOW PROPORTIONAL COUNTING.

LIQUID EFFLUENTS

PRINCIPAL GAMMA EMITTERS ARE ANALYZED USING GAMMA SPECTRUM PULSE HEIGHT ANALYSES USING LITHIUM-GERMANIUM DETECTORS. TRITIUM IS ANALYZED USING LIQUID SCINTILLATION COUNTING. GROSS ALPHA IS ANALYZED USING GAS FLOW PROPORTIONAL COUNTING. SR-90 AND 89 ARE ANALYZED USING CHEMICAL SEPARATION AND LIQUID SCINTILLATION COUNTING.

* 10 CFR PART 20

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION ST. LUCIE

LOCATION 8 MI S FT. PIERCE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA QUARTER	QUARTER	GAMMA QUARTER
	1	2	1
	N/A	N/A	N/A
BATCH RELEASES			
A. LIQUID			
1. NUMBER OF BATCH RELEASES-			41
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-			2.45E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			1.24E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			5.97E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			1.50E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-			1.32E 06
B. GASEOUS			
NUMBER OF BATCH RELEASES-			53
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-			1.18E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			6.00E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			2.22E 02
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-			2.00E 00
ABNORMAL RELEASES			
A. LIQUID			
NUMBER OF RELEASES			NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			
B. GASEOUS			
1. NUMBER OF RELEASES			NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION ST. LUCIE

LOCATION 8 MI S FT. PIERCE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
	QUARTER	QUARTER	QUARTER
	3	4	3
	N/A	N/A	N/A
BATCH RELEASES			
A. LIQUID			
1. NUMBER OF BATCH RELEASES-			27
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-			1.43E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			7.10E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			5.28E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			2.45E 02
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-			1.77E 06
B. GASEOUS			
1. NUMBER OF BATCH RELEASES-			65
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-			1.54E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-			6.00E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-			2.36E 02
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-			1.30E 01
ABNORMAL RELEASES			
A. LIQUID			
1. NUMBER OF RELEASES			NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			
B. GASEOUS			
1. NUMBER OF RELEASES			NONE
2. TOTAL ACTIVITY RELEASED (CURIES)			

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.00E 04	2.49E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.27E 03	3.16E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.81E 00	5.42E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	4.49E-02	1.45E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.70E-03	1.83E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.25E 00	7.23E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	4.68E-02	1.48E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.93E-03	1.87E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.51E-02	2.55E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	0.00E 00	4.60E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	8.19E 01	7.54E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.04E 01	9.56E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	7.08E 03	9.76E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.98E 02	1.24E 03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.68E 00	1.92E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	1.98E-02	4.66E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.51E-03	5.91E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	9.88E-01	2.33E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.98E-02	4.66E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.51E-03	5.91E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.15E-01	2.49E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	0.00E 00	0.00E 00	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.26E 02	2.53E 02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.60E 01	3.20E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
FISSION GASES					
AR-41	CI	0.00E 00	0.00E 00	1.08E 00	1.60E-01
KR-85	CI	4.44E 00	4.54E-01	3.25E 00	1.18E 01
KR-85M	CI	1.15E 01	0.00E 00	1.94E 01	7.66E 01
KR-87	CI	0.00E 00	0.00E 00	3.39E-02	1.71E 01
KR-88	CI	0.00E 00	0.00E 00	1.96E 00	1.11E 02
UNIDENTIFIED	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
XE-131M	CI	1.29E 01	1.72E 00	1.05E 01	5.77E 00
XE-133	CI	5.50E 03	7.83E 02	4.24E 03	1.41E 03
XE-133M	CI	1.44E 01	0.00E 00	2.96E 01	2.10E 01
XE-135	CI	1.34E 02	4.08E 00	3.97E 01	6.13E 00
XE-135M	CI	0.00E 00	0.00E 00	6.58E-03	0.00E 00
XE-138	CI	0.00E 00	0.00E 00	8.17E-02	3.91E 01
IODINES					
I-131	CI	2.87E-02	1.44E-01	1.62E-02	5.36E-04
I-132	CI	1.10E-03	0.00E 00	0.00E 00	0.00E 00
I-133	CI	8.08E-03	1.34E-01	4.79E-03	7.80E-06
I-135	CI	0.00E 00	0.00E 00	2.85E-05	0.00E 00
PARTICULATES					
CO-58	CI	7.00E-05	6.11E-04	1.36E-03	7.71E-04
CR-51	CI	4.10E-04	0.00E 00	0.00E 00	0.00E 00
CS-134	CI	0.00E 00	0.00E 00	0.00E 00	1.07E-03
CS-137	CI	0.00E 00	5.00E-05	0.00E 00	6.70E-04
RB-88	CI	0.00E 00	0.00E 00	4.28E-01	6.53E-03
SR-89	CI	4.61E-06	4.50E-06	0.00E 00	0.00E 00
SR-90	CI	0.00E 00	8.23E-06	0.00E 00	0.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	0.00E 00	0.00E 00	3.43E 00	3.18E 00
KR-85	CI	0.00E 00	0.00E 00	1.94E 01	2.90E 01
KR-85M	CI	0.00E 00	1.42E 00	3.46E 02	9.02E 01
KR-87	CI	0.00E 00	0.00E 00	7.48E 01	3.90E 01
KR-88	CI	0.00E 00	2.74E 00	4.14E 02	1.37E 02
UNIDENTIFIED	CI	0.00E 00	0.00E 00	0.00E 00	0.00E 00
XE-131M	CI	0.00E 00	0.00E 00	4.81E 01	3.56E 02
XE-133	CI	7.90E 02	4.11E 03	5.04E 03	4.70E 03
XE-133M	CI	3.57E 00	4.40E 01	2.85E 01	3.71E 01
XE-135	CI	3.67E 01	1.09E 02	1.05E 02	4.94E 01
XE-135M	CI	0.00E 00	0.00E 00	2.44E 01	2.12E 00
XE-138	CI	0.00E 00	0.00E 00	1.46E 02	5.18E 01
IODINES					
I-131	CI	1.23E-02	2.05E-02	7.46E-03	2.61E-02
I-133	CI	4.38E-01	2.28E-01	4.57E-06	8.43E-05
I-135	CI	0.00E 00	0.00E 00	0.00E 00	1.12E-05
PARTICULATES					
CO-58	CI	0.00E 00	3.49E-06	0.00E 00	0.00E 00
SR-89	CI	4.80E-06	0.00E 00	0.00E 00	0.00E 00
SR-90	CI	8.22E-06	0.00E 00	0.00E 00	0.00E 00

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	8.88E-01	6.93E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.67E-08	5.17E-08	
3. PERCENT OF APPLICABLE LIMIT	%	8.88E 00	6.93E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	4.28E 01	2.01E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.25E-06	1.50E-06	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.88E 01	1.92E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	9.91E-07	1.43E-08	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.78E 06	2.46E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.90E 10	1.34E 10	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	2.38E-01	9.82E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.98E-08	7.44E-08	
3. PERCENT OF APPLICABLE LIMIT	%	2.38E 00	9.82E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.03E 01	4.51E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.69E-06	3.42E-06	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	7.38E-01	2.92E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.15E-08	2.21E-08	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.19E 06	1.56E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.20E 10	1.32E 10	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
		NONE	NONE		
AG-110M	CI			8.17E-03	3.93E-03
BA-140-LA-140	CI			1.98E-03	1.12E-03
BR-82	CI			1.57E-03	3.77E-04
CE-144-PR-144	CI			3.43E-03	5.22E-03
CO-57	CI			7.77E-04	6.58E-04
CO-58	CI			3.39E-01	3.61E-01
CO-60	CI			2.48E-02	4.27E-02
CR-51	CI			4.26E-02	6.17E-02
CS-134	CI			7.89E-02	1.39E-02
CS-136	CI			8.01E-04	1.31E-03
CS-137	CI			2.17E-01	2.57E-02
FE-59	CI			3.97E-03	1.00E-02
I-131	CI			7.22E-02	5.12E-02
I-132	CI			6.52E-04	9.11E-04
I-133	CI			5.96E-03	7.98E-03
I-135	CI			1.46E-03	2.00E-03
MN-54	CI			5.71E-03	8.11E-03
MN-56	CI			7.77E-06	0.00E 00
MO-99-TC-99M	CI			2.41E-03	9.26E-03
NA-24	CI			9.15E-04	8.69E-05
NI-65	CI			2.93E-03	1.41E-03
NP-239	CI			4.33E-04	2.35E-04
RU-103	CI			0.00E 00	1.26E-04
SB-122	CI			9.83E-03	5.19E-04
SB-124	CI			1.20E-02	1.31E-02
SB-125	CI			1.37E-04	1.00E-02
SN-113-IN-113M	CI			3.38E-04	9.21E-04
SR-89	CI			1.73E-07	0.00E 00
SR-90	CI			0.00E 00	5.10E-04
UNIDENTIFIED	CI			0.00E 00	0.00E 00
W-187	CI			1.13E-02	4.22E-03
ZN-65	CI			8.13E-04	6.14E-04
ZR-NB-97	CI			9.71E-03	8.00E-03
ZR-95-NB-95	CI			2.56E-02	5.15E-02
AR-41	CI			1.20E-04	0.00E 00
KR-85	CI			2.04E-01	5.73E-02
KR-85M	CI			3.02E-05	1.81E-05
XE-131M	CI			7.89E-02	1.34E-03
XE-133	CI			1.85E 01	1.32E-01
XE-133M	CI			3.40E-02	8.38E-04
XE-135	CI			1.47E-02	1.17E-04
XE-138	CI			0.00E 00	1.29E-04

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
		NONE	NONE		
AG-110M	CI			9.99E-04	5.97E-04
BA-140	CI			4.61E-05	1.36E-03
BR-82	CI			0.00E 00	5.98E-04
CE-141	CI			2.60E-05	1.87E-04
CE-144	CI			1.69E-03	6.22E-03
CO-57	CI			4.27E-04	7.23E-04
CO-58	CI			7.54E-02	2.79E-01
CO-60	CI			6.20E-02	1.27E-01
CR-51	CI			7.72E-03	6.38E-02
CS-134	CI			4.60E-03	5.22E-02
CS-136	CI			3.04E-04	3.06E-03
CS-137	CI			9.15E-03	8.79E-02
FE-59	CI			2.21E-03	4.28E-03
I-131	CI			1.56E-02	1.71E-01
I-133	CI			8.08E-04	7.42E-03
I-135	CI			4.17E-05	5.67E-03
MN-54	CI			9.48E-03	1.62E-02
MO-99	CI			2.68E-05	1.10E-02
NA-24	CI			1.64E-04	3.90E-05
NI-65	CI			4.11E-04	1.01E-03
NP-239	CI			7.10E-05	3.57E-04
RU-103	CI			0.00E 00	1.43E-04
SB-122	CI			3.00E-04	4.44E-03
SB-124	CI			5.43E-04	3.32E-02
SB-125	CI			9.21E-04	4.77E-03
SN-113	CI			9.83E-04	1.78E-03
SR-89	CI			0.00E 00	1.76E-04
GR-90	CI			6.60E-08	1.61E-04
UNIDENTIFIED	CI			0.00E 00	0.00E 00
W-187	CI			1.23E-03	7.86E-03
ZN-65	CI			4.20E-04	1.34E-03
ZR-95	CI			4.04E-02	8.01E-02
ZR-97	CI			1.57E-03	9.05E-03
AR-41	CI			1.39E-04	1.35E-03
KR-85	CI			6.69E-04	1.72E-03
XE-131M	CI			5.75E-05	1.18E-02
XE-133	CI			7.35E-01	2.76E-01
XE-133M	CI			2.45E-03	6.68E-04
XE-135	CI			6.86E-05	4.69E-04

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	2.20E 01	
	CI	1.00E 02	2.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	9.80E 01	
	CI	3.20E 01	2.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	2.00E-01	
	CI	1.23E 04	
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
CO-58	x	7.70E 01
CS-137	x	1.00E 01
CO-60	x	5.00E 00
B		
CO-58	x	7.70E 01
CS-137	x	1.00E 01
CO-60	x	5.00E 00
C		
CR-51	x	4.60E 01
FE-55	x	1.50E 01
CO-58	x	1.20E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
1	TRUCK	W. JEFFERSON OH
7	TRUCK	BARNWELL SC

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	9.86E 01	
	CI	1.35E 02	2.00E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.39E 02	
	CI	1.64E 01	2.00E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A			
CO-58	%	4.80E 01	
CO-60	%	2.00E 01	
CS-137	%	9.00E 00	
MN-54	%	8.00E 00	
B			
CO-58	%	3.10E 01	
CO-60	%	3.30E 01	
CS-137	%	1.20E 01	
ZR-95	%	1.30E 01	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
7	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION SURRY

LOCATION 19 MI NW NEWPORT NEWS VA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1
TYPE PWR
DOCKET NO. 50-280
COOLING WATER SOURCE JAMES RIVER
UNIT NUMBER 2
TYPE PWR
DOCKET NO. 50-281
COOLING WATER SOURCE JAMES RIVER

LICENSEE VIRGINIA ELECTRIC ✓POWER
LICENSED POWER (MWT) 2441.0
INITIAL CRITICALITY 07/01/72

LICENSEE VIRGINIA ELECTRIC ✓POWER
LICENSED POWER (MWT) 2441.0
INITIAL CRITICALITY 03/07/73

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURIES/ML) N/R

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY N/R

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION SURRY

LOCATION 19 MI NW NEWPORT NEWS

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
1	2	1	2

BATCH RELEASES

QUARTER	QUARTER
1	2

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION SURRY

LOCATION 19 MI NW NEWPORT NEWS

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4

BATCH RELEASES

QUARTER	QUARTER
3	4

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=SURRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	7.70E 02	1.70E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.77E-01	3.71E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	2.88E-04	5.93E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.44E-04	2.22E-01	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.69E-05	3.03E-04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.74E-04	1.23E-03	
4. GROSS ALPHA RADIOACTIVITY	CI	2.37E-05	1.45E-05	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.32E 02	1.43E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

N A=NOT APPLICABLE
N D=NOT DETECTED
N R=NOT REPORTED

INSTALLATION=SURRY.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.34E 02	1.66E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.92E-02	3.58E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	3.93E-05	1.74E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.26E-04	1.78E-02	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	2.96E-03	2.13E-04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	7.08E-02	2.37E-03	
4. GROSS ALPHA RADIOACTIVITY	CI	3.66E-05	9.75E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	5.01E 01	2.36E 01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=SURRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	6.50E-01	4.45E-03		
KR-85	CI	7.07E-01	2.59E-01		
KR-85M	CI	3.87E-02	3.15E-04		
KR-87	CI	3.95E-02			
KR-88	CI	7.21E-02			
XE-133	CI	7.51E-02	1.63E-03		
XE-133M	CI	1.21E-00	1.19E-01		
XE-135	CI	1.42E-01	2.16E-01		
IODINES					
I-131	CI	1.69E-04	5.92E-02		
I-132	CI	1.04E-06	2.93E-04		
I-133	CI	4.69E-06	1.68E-04		
I-135	CI	1.78E-07			
PARTICULATES					
CO-58	CI	4.64E-05	1.79E-04		
CO-60	CI	7.71E-05	1.21E-04		
CS-134	CI	2.14E-05	2.28E-06		
CS-137	CI	3.58E-06	1.91E-05		
CS-138	CI	5.43E-03	5.13E-06		
MN-54	CI	3.35E-06	2.49E-06		
RB-88	CI	2.51E-04			

N A=NOT APPLICABLE
N D=NOT DETECTED
N R=NOT REPORTED

INSTALLATION=SURRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	1.26E 00	5.03E-01		
KR-85	CI		2.27E-01		
KR-85M	CI	9.72E-02	8.18E-01		
KR-87	CI	5.54E-03	5.29E-01		
KR-88	CI		9.23E-01		
XE-133	CI	6.76E 01	1.62E 03		
XE-133M	CI	3.90E-06	7.56E 00		
XE-135	CI	4.73E 00	2.01E 01		
IODINES					
I-131	CI	3.77E-05	1.59E-03		
I-132	CI		8.47E-05		
I-133	CI	1.57E-06	4.05E-05		
I-134	CI		4.42E-06		
I-135	CI		1.54E-05		
PARTICULATES					
CO-58	CI	5.27E-03	8.90E-05		
CO-60	CI	9.83E-04	8.94E-05		
CS-134	CI	2.98E-06	1.63E-07		
CS-137	CI	2.09E-05	6.98E-06		
CS-138	CI	3.51E-04	1.82E-02		
MN-54	CI	2.47E-05	2.57E-05		
RB-88	CI	1.09E-05	6.69E-03		

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INSTALLATION=SURRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	7.10E-01	4.44E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	9.33E-10	7.77E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	2.27E 02	1.32E 02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.25E-07	2.14E-07	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.79E 00	1.14E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.72E-09	1.67E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.38E-05	3.98E-05	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.39E 08	1.27E 08	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.92E 11	5.77E 11	

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=SURRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	5.35E-01	7.20E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.48E-10	1.27E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	1.62E 02	2.26E 02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.76E-07	3.72E-07	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.98E-01	1.43E 00	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.99E-10	2.48E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	2.48E-05	1.98E-05	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.23E 08	1.95E 08	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.39E 11	5.93E 11	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=SURRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AR-41	CI	4.74E-05	6.45E-04		
BA-LA-140	CI	2.69E-03	2.48E-05		
CE-141	CI	2.57E-04	1.53E-04		
CE-144	CI		5.36E-04		
CO-57	CI	1.95E-03	1.30E-03		
CO-58	CI	2.42E-01	6.15E-01		
CO-60	CI	2.45E-01	4.25E-01		
CR-51	CI	7.54E-02	3.01E-01		
CS-134	CI	5.71E-02	4.03E-02		
CS-136	CI	1.44E-03			
CS-137	CI	1.19E-01	9.48E-02		
CS-138	CI	1.88E-02			
C-14	CI	4.88E-03	1.82E-03		
FE-59	CI	1.17E-03	1.22E-03		
I-131	CI	3.34E-02	2.54E-02		
I-132	CI	4.31E-02	7.46E-04		
I-133	CI	4.49E-02	5.07E-03		
I-134	CI	4.30E-02			
I-135	CI	5.27E-02	5.16E-04		
MN-54	CI	1.46E-02	4.65E-02		
NA-24	CI	5.92E-01	1.58E-03		
NB-95	CI	7.35E-03	2.48E-02		
RB-88	CI	3.46E-03			
SR-89	CI	2.60E-04			
SR-90	CI	4.46E-04	2.38E-05		
XE-133	CI	6.09E-01	9.81E-01		
XE-135	CI	8.91E-02	4.98E-02		

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N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=SURRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AR-41	CI	2.06E-04	1.82E-02		
BA-LA-140	CI	3.44E-05	2.41E-05		
CE-141	CI		3.04E-06		
CE-144	CI	2.79E-04	4.07E-04		
CO-57	CI	6.62E-04	6.53E-04		
CO-58	CI	7.62E-01	5.57E-01		
CO-60	CI	5.62E-01	4.66E-01		
CR-51	CI	4.50E-02	1.05E-02		
CS-134	CI	2.66E-01	2.67E-01		
CS-136	CI		9.48E-03		
CS-137	CI	5.43E-01	6.21E-01		
C-14	CI	1.91E-03	4.10E-03		
FE-59	CI	4.44E-04	6.58E-04		
I-131	CI	2.06E-03	7.79E-01		
I-132	CI	8.63E-03	7.92E-01		
I-133	CI	3.22E-03	5.38E-01		
I-134	CI	1.10E-02	1.20E-01		
I-135	CI	6.05E-03	3.42E-01		
KR-85	CI	6.56E-02	3.05E-01		
MN-54	CI	1.64E-02	7.69E-03		
NA-24	CI	4.77E-02	2.64E-01		
NB-95	CI	7.09E-03	7.13E-04		
RB-88	CI		1.68E-02		
SR-89	CI		4.32E-04		
XE-133	CI	8.65E-02	8.85E-01		
XE-135	CI	2.63E-02	1.90E-01		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= SURRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

1. TYPE OF WASTE	UNIT	6-MONTH PERIOD	EST. TOTAL ERROR, %
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	2.89E 02	
	CI	3.06E 02	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3		
	CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
30		BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= SURRY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	3.14E 02	
	CI	2.60E 02	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3		
	CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

3. SOLID WASTE DISPOSITION-		
NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
32		BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION THREE MILE ISLAND **

LOCATION 10 MI SE HARRISBURG PA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1
TYPE PWR
DOCKET NO. 50-289
COOLING WATER SOURCE SUSQUEHANNA RIVER
UNIT NUMBER 2
TYPE PWR
DOCKET NO. 50-320
COOLING WATER SOURCE SUSQUEHANNA RIVER

LICENSEE METROPOLITAN EDISON & JERSEY CENTRAL POWER & LIGHT
LICENSED POWER (MWT) 2535.0
INITIAL CRITICALITY 06/05/74
LICENSEE METROPOLITAN EDISON & JERSEY CENTRAL POWER & LIGHT
LICENSED POWER (MWT) 2772.0
INITIAL CRITICALITY 03/28/78

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURIES/ML)*

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

GAMMA SPECTROMETRY, GE-LI DETECTOR, LIQUID SCINTILLATION COUNTER

IODINES

GAMMA SPECTROMETRY, GE-LI DETECTOR

PARTICULATES

GAMMA SPECTROMETRY, GE-LI DETECTOR, BETA COUNTER

LIQUID EFFLUENTS

GAMMA SPECTROMETRY, GE-LI DETECTOR, LIQUID SCINTILLATION COUNTER

** SOLID WASTE FOR QUARTERS 1&2 INCLUDES UNIT 2 REST OF REPORT IS ONLY FOR UNIT 1

* 10 CFR 20, APPENDIX 3

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION THREE MILE ISLAND

LOCATION 10 MI SE HARRISBURG PA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER	BETA QUARTER	QUARTER	GAMMA QUARTER
1	2	1	2
	1.50E-01		5.92E-02

BATCH RELEASES

A. LIQUID

	QUARTER 1	QUARTER 2
1. NUMBER OF BATCH RELEASES-	54	65
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-	2.95E 04	2.97E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.55E 03	1.48E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	5.46E 02	4.58E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.75E 02	1.35E 02
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-	2.15E 06	1.70E 06

B. GASEOUS

	QUARTER 1	QUARTER 2
1. NUMBER OF BATCH RELEASES-	42	33
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	5.11E 04	1.13E 05
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	4.31E 03	2.74E 04
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	1.22E 03	3.42E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-	5.10E 02	1.35E 02

ABNORMAL RELEASES

A. LIQUID

	QUARTER 1	QUARTER 2
1. NUMBER OF RELEASES	NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)		

B. GASEOUS

	QUARTER 1	QUARTER 2
1. NUMBER OF RELEASES	NONE	2
2. TOTAL ACTIVITY RELEASED (CURIES)		4.92E 00

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION THREE MILE ISLAND

LOCATION 10 MI SE HARRISBURG PA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	QUARTER 3	BETA QUARTER 4 1.50E-01	QUARTER 3	GAMMA QUARTER 4 5.92E-02
BATCH RELEASES			QUARTER 3	QUARTER 4
A. LIQUID			37	37
1. NUMBER OF BATCH RELEASES-			1.55E 04	2.03E 04
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-			9.95E 02	1.67E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-			4.18E 02	5.49E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-			1.35E 02	1.60E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-			2.13E 07	3.00E 07
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-				
B. GASEOUS			28	22
1. NUMBER OF BATCH RELEASES-			4.54E 04	8.89E 04
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-			2.35E 04	1.79E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-			1.62E 02	4.04E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-			5.25E 02	4.40E 02
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-				
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES			NONE	1
2. TOTAL ACTIVITY RELEASED (CURIES)				7.94E 00

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=THREE MILE ISLAND

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	6.47E 03	3.62E 03	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.23E 02	4.60E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.76E 01	6.72E 01	
B. IODINES				
1. TOTAL IODINE-131	CI	9.57E-04	1.45E-02	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.22E-04	1.84E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.07E 01	3.07E 01	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	2.33E-03	3.07E-03	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.97E-04	3.91E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.24E 00	6.51E 00	
4. GROSS ALPHA RADIOACTIVITY	CI	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	CI	6.14E 01	3.46E 01	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	7.81E 00	4.40E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

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INSTALLATION=THREE MILE ISLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.29E 03	3.36E 03	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.90E 02	4.26E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.63E 01	4.38E 01	
B. IODINES				
1. TOTAL IODINE-131	CI	1.15E-02	1.82E-04	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.46E-03	2.31E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.08E 00	9.63E-02	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.02E-01	2.96E-04	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.29E-02	3.34E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.38E 01	1.39E 00	
4. GROSS ALPHA RADIOACTIVITY	CI	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	CI	8.47E 01	3.27E 01	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.07E 01	4.15E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	<1.00E-05*	<1.00E-05*	3.56E 01	1.09E 01
KR-85	CI	<3.76E-05*	<3.76E-05*	<3.76E-05*	<3.76E-05*
KR-85M	CI	<1.00E-05*	<1.00E-05*	2.47E-01	7.07E-01
KR-87	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
KR-88	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
UNIDENTIFIED	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
XE-131M	CI	<1.00E-05*	<1.00E-05*	3.96E 00	1.52E 00
XE-133	CI	<4.27E-07*	<4.27E-07*	6.34E 03	3.54E 03
XE-133M	CI	<1.00E-05*	<1.00E-05*	1.76E 01	1.64E 01
XE-135	CI	<1.00E-05*	<1.00E-05*	8.05E 01	4.77E 01
XE-135M	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
XE-138	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
IODINES					
I-131	CI	5.45E-04	7.87E-03	4.12E-04	6.64E-03
I-133	CI	<2.70E-13*	<2.70E-13*	<2.70E-13*	<2.70E-13*
I-135	CI	<4.07E-12*	<4.07E-12*	<4.07E-12*	<4.07E-12*
PARTICULATES					
BA-LA-140	CI	<5.28E-13*	5.45E-06	<5.28E-13*	<5.28E-13*
CO-58	CI	1.83E-04	8.04E-04	<3.27E-13*	<3.27E-13*
CO-60	CI	<4.97E-13*	6.96E-06	<4.97E-13*	5.70E-06
CS-134	CI	1.36E-04	5.13E-04	9.08E-06	1.13E-04
CS-137	CI	7.56E-04	9.39E-04	1.37E-05	1.92E-04
K-40	CI	1.23E-03	4.87E-04	3.44E-06	
NB-95	CI				5.55E-06
SR-89	CI	<2.31E-14*	<2.31E-14*	<2.31E-14*	<2.31E-14*
SR-90	CI	<1.00E-14*	<1.00E-14*	4.77E-08	<1.00E-14*

* MINIMUM DETECTABLE ACTIVITY IN UCI/CC

N/A=NOT APPLICABLE
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INSTALLATION=THREE MILE ISLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	<1.00E-05*	<1.00E-05*	1.29E 01	3.76E 01
KR-85	CI	<3.76E-05*	<3.76E-05*	<3.76E-05*	4.39E-01
KR-85M	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	7.36E-02
KR-87	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
KR-88	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
UNIDENTIFIED	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
XE-131M	CI	<1.00E-05*	<1.00E-05*	9.65E-01	4.95E 00
XE-133	CI	<4.27E-07*	<4.27E-07*	2.24E 03	3.28E 03
XE-133M	CI	<1.00E-05*	<1.00E-05*	7.34E 00	8.47E 00
XE-135	CI	<1.00E-05*	<1.00E-05*	2.29E 01	3.19E 01
XE-135M	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
XE-138	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
IODINES					
I-131	CI	1.11E-02	1.72E-05	4.36E-04	1.65E-04
I-133	CI	<2.70E-13*	<2.70E-13*	<2.70E-13*	<2.70E-13*
I-135	CI	<4.07E-12*	<4.07E-12*	<4.07E-12*	<4.07E-12*
PARTICULATES					
BA-LA-140	CI	<5.28E-13*	<5.28E-13*	<5.28E-13*	<5.28E-13*
CO-58	CI	2.98E-02	<3.27E-13*	5.31E-05	<3.27E-13*
CO-60	CI	<4.97E-13*	6.13E-07	<4.97E-13*	<4.97E-13*
CS-134	CI	7.50E-03	6.31E-07	3.55E-05	<4.99E-13*
CS-137	CI	6.50E-02	2.91E-04	6.70E-05	2.99E-06
SR-89	CI	<2.31E-14*	<2.31E-14*	<2.31E-14*	<2.31E-14*
SR-90	CI	<1.02E-14*	1.08E-06	5.69E-08	<1.02E-14*

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.27E-01	2.80E-01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.53E-09	1.19E-08	
3. PERCENT OF APPLICABLE LIMIT	%	5.08E 00	1.12E 01	
B. TRITIUM				
1. TOTAL RELEASE	CI	4.92E 01	3.12E 01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.53E-06	1.33E-06	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	2.59E-01	2.12E-02	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.33E-08	9.07E-10	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	N/D	N/D	2.50E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.31E 06	1.58E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.95E 10	2.34E 10	1.00E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.13E-01	9.38E-02	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.65E-09	4.00E-09	
3. PERCENT OF APPLICABLE LIMIT	%	4.52E 00	3.75E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	3.59E 01	3.91E 01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.80E-06	1.71E-06	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	4.19E-03	3.58E-02	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.10E-10	1.56E-09	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	N/D	N/D	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	8.65E 05	8.72E 05	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.00E 10	2.29E 10	1.00E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
		N/A	N/A		
CS-134	CI			4.33E-02	3.29E-02
CS-137	CI			6.52E-02	4.12E-02
I-131	CI			3.08E-03	<1.90E-07*
SR-89	CI			2.23E-05	4.16E-04
SR-90	CI			4.21E-06	4.41E-05
CO-58	CI			8.23E-03	1.59E-01
CO-60	CI			3.68E-03	7.12E-03
CR-51	CI			3.33E-04	4.45E-03
FE-59	CI			<2.92E-07*	9.85E-05
MN-54	CI			1.20E-03	2.05E-03
ZN-65	CI			<3.31E-07*	<3.31E-07*
BA-LA-140	CI			5.89E-04	1.01E-04
CE-141	CI			<3.68E-07*	5.39E-05
MO-99	CI			1.26E-05	<1.85E-07*
ZR-NB-95	CI			3.32E-04	9.66E-03
AG-110M	CI			1.11E-04	1.00E-02
CE-144	CI				1.02E-03
CS-136	CI			5.24E-05	3.14E-04
GA-72	CI			4.79E-05	6.73E-04
I-134	CI				9.63E-03
I-135	CI			5.93E-04	<7.14E-07*
RU-103	CI				2.92E-04
SB-122	CI			1.64E-04	1.27E-04
W-187	CI				1.01E-04
ZR-97	CI				2.12E-04
KR-85	CI			9.88E-04	
KR-88	CI			1.18E-04	
XE-133	CI			2.55E-01	2.08E-02
XE-133M	CI			8.09E-04	
XE-135	CI			1.54E-03	3.97E-04

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
		N/A	N/A		
CS-134	CI			3.56E-02	2.98E-02
CS-137	CI			3.20E-02	4.96E-02
I-131	CI			1.90E-02	<1.00E-07*
SR-89	CI			1.10E-04	6.69E-04
SR-90	CI			4.63E-05	4.84E-05
CO-58	CI			2.25E-02	1.03E-02
CO-60	CI			2.13E-03	2.25E-03
CR-51	CI			6.64E-05	<5.95E-07*
FE-59	CI			<2.92E-07*	<2.92E-07*
MN-54	CI			4.30E-04	4.19E-04
ZN-65	CI			<3.31E-07*	<3.37E-07*
BA-LA-140	CI			<5.61E-07*	<5.61E-07*
CE-141	CI			<3.68E-07*	<3.68E-07*
MO-99	CI			<1.85E-07*	<1.85E-07*
ZR-NB-95	CI			7.10E-04	1.09E-04
AG-110M	CI			1.06E-04	8.90E-05
CO-57	CI			8.60E-06	
I-135	CI			<7.14E-07*	1.50E-05
NA-24	CI			<1.49E-07*	3.82E-04
RB-88	CI				1.14E-04
SB-122	CI				3.53E-05
XE-133	CI			4.19E-03	3.50E-02
XE-135	CI				8.33E-04

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.31E 02	
	CI	1.20E 02	2.50E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	6.51E 01	
	CI	3.86E 00	2.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A+B		
CS-134	X	2.40E 01
CO-58	X	3.11E 01
CS-137	X	3.24E 01
B		
CO-60	X	8.13E-01
I-135	X	2.84E 00
I-131	X	7.85E 00
C		
CS-136	X	4.49E-01
OTHERS	X	<1.00E 00
MN-54	X	6.29E-01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
20	TRUCK	BARNWELL S.C.
4	TRUCK	SHEFFIELD ILL.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= THREE MILE ISLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.30E 02	
	CI	1.09E 02	2.50E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	6.30E 01	
	CI	1.27E 00	2.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A+B		
OTHERS	X	<2.00E 00
CS-137	X	5.35E 01
CS-134	X	2.65E 01
CO-60	X	1.93E 00
CO-58	X	1.57E 01
MN-54	X	1.19E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
18	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
---------------------	------------------------	-------------

0

N/A=NOT APPLICABLE
N/D=NOT DETECTED
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INSTALLATION THREE MILE ISLAND 2 ** LOCATION 10 MI SE HARRISBURG PA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 2	LICENSEE METROPOLITAN EDISON & JERSEY CENTRAL POWER & LIGHT
TYPE PWR	LICENSED POWER (MW) 2772.0
DOCKET NO. 50-320	INITIAL CRITICALITY 03/28/78
COOLING WATER SOURCE SUSQUEHANNA RIVER	

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)*

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES
GAMMA SPECTROMETRY, GE-LI DETECTOR, LIQUID SCINTILLATION COUNTER

IODINES
GAMMA SPECTROMETRY, GE-LI DETECTOR

PARTICULATES
GAMMA SPECTROMETRY, GE-LI DETECTOR, BETA COUNTER

LIQUID EFFLUENTS
GAMMA SPECTROMETRY, GE-LI DETECTOR, LIQUID SCINTILLATION COUNTER

** SOLID WASTE FOR QUARTERS 1 AND 2 REPORTED WITH OTHER UNIT

• 10 CFR 20 APPENDIX B

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION THREE MILE ISLAND 2 LOCATION 10 MI SE HARRISBURG PA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	QUARTER 1	BETA QUARTER 2 1.38E-01	QUARTER 1	GAMMA QUARTER 2 5.63E-02
BATCH RELEASES			QUARTER 1	QUARTER 2
A. LIQUID			1	2
1. NUMBER OF BATCH RELEASES-				73
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-				2.25E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				2.28E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				3.09E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				1.31E 02
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-				1.70E 06
B. GASEOUS				5
1. NUMBER OF BATCH RELEASES-				2.14E 04
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-				7.95E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				4.28E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				1.58E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-				
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION THREE MILE ISLAND 2 LOCATION 10 MI SE HARRISBURG PA
 EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
 SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA QUARTER 3	QUARTER 4	GAMMA QUARTER 3	QUARTER 4
		1.38E-01		5.63E-02
BATCH RELEASES			QUARTER 3	QUARTER 4
A. LIQUID			48	48
1. NUMBER OF BATCH RELEASES-				
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-			1.26E 04	4.78E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-			7.35E 02	1.47E 04
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-			2.63E 02	9.95E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-			1.10E 02	1.90E 02
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-			2.13E 07	3.00E 07
B. GASEOUS			7	9
1. NUMBER OF BATCH RELEASES-				
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-			9.76E 03	1.72E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-			2.88E 03	1.41E 04
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-			1.39E 03	1.91E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-			7.00E 00	1.00E 01
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES			NONE	NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES			NONE	1
2. TOTAL ACTIVITY RELEASED (CURIES)				8.44E 00

N/A=NOT APPLICABLE
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 N/R=NOT REPORTED

INSTALLATION=THREE MILE ISLAND 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	N/D	2.56E-01	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	0.00E 00	3.26E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	0.00E 00	5.21E-03	
B. IODINES				
1. TOTAL IODINE-131	CI	N/D	8.01E-06	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	0.00E 00	1.02E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	0.00E 00	4.25E-03	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	4.04E-05	2.58E-04	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.14E-06	3.28E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.14E-02	1.37E 00	
4. GROSS ALPHA RADIOACTIVITY	CI	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	CI	N/D	4.13E-02	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	0.00E 00	5.25E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	0.00E 00	N/A	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	3.43E-02	8.44E 00	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.35E-03	1.07E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.41E-02	7.85E-02	
B. IODINES				
1. TOTAL IODINE-131	CI	4.67E-06	4.32E-06	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.92E-07	5.48E-07	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	9.87E-03	9.13E-03	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.90E-03	8.72E-05	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.41E-04	1.11E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.02E 00	1.84E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.84E 01	2.00E 00	2.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.33E 00	2.54E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85	CI	<3.75E-05*	<3.75E-05*	<3.75E-05*	<3.75E-05*
KR-85M	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
KR-87	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
KR-88	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
UNIDENTIFIED	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
XE-133	CI	<4.27E-07*	<4.27E-07*	<4.27E-07*	2.36E-01
XE-135	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	2.03E-02
XE-135M	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
XE-138	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
IODINES					
I-131	CI	<3.32E-13*	8.01E-06	<3.32E-13*	<3.32E-13*
I-133	CI	<2.70E-13*	<2.70E-13*	<2.70E-13*	<2.70E-13*
I-135	CI	<4.07E-12*	<4.07E-12*	<4.07E-12*	<4.07E-12*
PARTICULATES					
BA-140	CI	<1.31E-12*	<1.31E-12*	<1.31E-12*	<1.31E-12*
CO-58	CI	<3.27E-13*	9.08E-05	<3.27E-13*	<3.27E-13*
CS-134	CI	1.15E-05	9.29E-05	<4.99E-13*	<4.99E-13*
CS-137	CI	2.84E-05	1.08E-04	<6.04E-13*	<6.04E-13*
LA-140	CI	<5.28E-13*	<5.28E-13*	<5.28E-13*	<5.28E-13*
RU-103	CI	N/D	5.74E-05	N/D	N/D
SR-89	CI	2.65E-01	<2.31E-14*	<2.31E-04*	<2.31E-04*
SR-90	CI	2.10E-07	<1.02E-14*	<1.02E-14*	<1.02E-14*

* MINIMUM DETECTABLE ACTIVITY IN UCI/CC

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INSTALLATION=THREE MILE ISLAND 2

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	<1.00E-05*	<1.00E-05*	3.43E-02	<1.00E-05*
KR-85	CI	<3.75E-05*	<3.75E-05*	<3.75E-05*	<3.75E-05*
KR-85M	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
KR-87	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
KR-88	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
UNIDENTIFIED	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
XE-133	CI	<4.27E-07*	<4.27E-07*	<4.27E-07*	<8.44E 00
XE-135	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
XE-135M	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
XE-138	CI	<1.00E-05*	<1.00E-05*	<1.00E-05*	<1.00E-05*
IODINES					
I-131	CI	4.67E-06	4.32E-06	<3.32E-13*	<3.32E-13*
I-133	CI	<2.70E-13*	<2.70E-13*	<2.70E-13*	<2.70E-13*
I-135	CI	<4.07E-12*	<4.07E-12*	<4.07E-12*	<4.07E-12*
PARTICULATES					
BA-140	CI	<1.31E-12*	<1.31E-12*	<1.31E-12*	<1.31E-12*
CO-58	CI	1.21E-03	<3.27E-13*	4.47E-06	<3.27E-13*
CS-134	CI	5.20E-04	2.68E-05	2.14E-06	2.28E-06
CS-137	CI	1.62E-04	5.40E-05	4.17E-06	4.14E-06
LA-140	CI	<5.28E-13*	<5.28E-13*	<5.28E-13*	<5.28E-13*
SR-89	CI	<2.31E-14*	<2.31E-14*	<2.31E-14*	<2.31E-14*
SR-90	CI	<1.02E-14*	<1.02E-14*	<1.02E-14*	<1.02E-14*

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	N/D	3.08E-02	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	1.32E-09	
3. PERCENT OF APPLICABLE LIMIT	%	0.00E 00	3.08E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	N/D	1.01E 00	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	4.32E-08	
3. PERCENT OF APPLICABLE LIMIT	%	0.00E 00	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	N/D	6.17E-03	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	2.64E-10	
3. PERCENT OF APPLICABLE LIMIT	%	0.00E 00	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	N/D	N/D	2.50E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	0.00E 00	2.19E 06	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.95E 10	2.34E 10	1.00E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	8.19E-03	3.53E-01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.10E-10	1.54E-08	
3. PERCENT OF APPLICABLE LIMIT	%	3.28E-01	1.41E 01	
B. TRITIUM				
1. TOTAL RELEASE	CI	8.41E 00	2.89E 01	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.21E-07	1.26E-06	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	4.48E-04	3.14E-02	2.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.24E-11	1.37E-09	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	N/D	N/D	2.50E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.36E 06	1.76E 05	1.00E 01
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.00E 10	2.29E 10	1.00E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	2
		NONE	NONE		
CS-134	CI			<1.34E-07*	9.17E-04
CS-137	CI			<1.20E-07*	1.51E-03
I-131	CI			<1.90E-07*	<1.90E-07*
CO-58	CI			<1.34E-07*	1.33E-02
CO-60	CI			<2.35E-07*	6.00E-04
CR-51	CI			<5.95E-07*	4.07E-05
FE-59	CI			<2.92E-07*	<2.92E-07*
MN-54	CI			<1.67E-07*	4.42E-04
ZN-65	CI			<3.31E-07*	<3.31E-07*
BA-LA-140	CI			<5.61E-07*	<5.61E-07*
CE-141	CI			<3.68E-07*	<3.68E-07*
MO-99	CI			<1.85E-07*	4.89E-04
ZR-NB-95	CI			<2.29E-07*	7.63E-05
MN-56	CI			N/D	3.00E-03
NA-24	CI			<1.49E-07*	9.72E-03
W-187	CI			N/D	6.53E-04
ZR-97	CI			N/D	6.37E-06
AR-41	CI			N/D	3.56E-03
XE-133	CI			N/D	2.21E-03
XE-135	CI			N/D	3.95E-04

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1979

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
		NONE	NONE		
CS-134	CI			4.67E-04	1.38E-03
CS-137	CI			6.80E-04	1.13E-03
I-131	CI			1.38E-04	1.26E-03
SR-89	CI			1.25E-05	1.14E-04
SR-90	CI			2.16E-06	N/D
CO-58	CI			5.56E-03	2.62E-01
CO-60	CI			1.54E-04	4.49E-03
CR-51	CI			<5.95E-07*	7.61E-05
FE-59	CI			<2.92E-07*	3.88E-03
MN-54	CI			2.66E-04	3.14E-02
ZN-65	CI			<3.31E-07*	<3.31E-07*
BA-LA-140	CI			<5.61E-07*	<5.61E-07*
CE-141	CI			<3.68E-07*	<3.68E-07*
MO-99	CI			<1.85E-07*	<1.85E-07*
ZR-NB-95	CI			3.69E-05	<2.29E-07*
AG-110M	CI			<1.50E-07*	1.95E-03
CS-136	CI			4.61E-05	4.61E-05
I-131	CI			1.38E-04	1.26E-03
NA-24	CI			6.85E-04	4.25E-02
W-187	CI			N/D	1.76E-03
ZR-97	CI			N/D	8.43E-05
XE-133	CI			3.99E-04	3.12E-02
XE-135	CI			4.85E-05	1.52E-04

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INSTALLATION TROJAN

LOCATION 35 MI NW PORTLAND OR

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

LICENSEE PORTLAND GENERAL ELECTRIC

TYPE PWR

LICENSED POWER (MWT) 3411.0

DOCKET NO. 50-344

INITIAL CRITICALITY 12/15/72

COOLING WATER SOURCE COLUMBIA RIVER

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

LIQUIDS

AG-110	3.00E-05
AG-110M	3.00E-05
ALPHA	3.00E-08
BA-140	2.00E-05
CO-57	4.00E-04
CO-58	9.00E-05
CO-60	3.00E-05
CR-51	2.00E-03
CS-134	9.00E-06
CS-137	2.00E-05
FE-59	5.00E-05
I-131	3.00E-07
I-132	8.00E-04
I-133	1.00E-06
I-135	4.00E-06
KR-85M	4.00E-05
LA-140	2.00E-05
MN-54	1.00E-04
MO-99	4.00E-05
NA-24	3.00E-05
NB-95	1.00E-04
SB-124	2.00E-05
SB-125	1.00E-04
SN-113	8.00E-05
SR-89	3.00E-06
SR-90	3.00E-07
TC-99M	3.00E-03
TRITIUM	3.00E-03
UNIDENTIFIED	3.00E-08
XE-131M	4.00E-05
XE-133	4.00E-05
XE-133M	4.00E-05
XE-135	4.00E-05
XE-135M	4.00E-05
ZR-95	6.00E-05

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

GAMMA SPECTROMETRIC ANALYSIS OF GASEOUS GRAB SAMPLES DEFINE RADIONUCLIDE DISTRIBUTION AT LEAST MONTHLY ON MONITORED GASEOUS RELEASE POINTS. USING THE KNOWN NUCLIDE DISTRIBUTIONS AND PROCESS RADIATION MONITOR READINGS, THE ACTUAL QUANTITIES OF GASEOUS RELEASES ARE CALCULATED.

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LOCATION 35 MI NW PORTLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

IODINES

WEEKLY COMPOSITE FILTER AND ACTIVATED CHARCOAL SAMPLES ARE ANALYZED BY GAMMA SPECTROSCOPY TO DETERMINE THE CONCENTRATIONS OF IODINE ISOTOPES RELEASED FROM EACH EFFLUENT STREAM. MONTHLY COMPOSITE FILTERS AND ACTIVATED CHARCOAL SAMPLES ARE ALSO ANALYZED.

PARTICULATES

WEEKLY COMPOSITE FILTER SAMPLES ARE ANALYZED BY GAMMA SPECTROSCOPY TO DETERMINE THE CONCENTRATIONS OF PARTICULATE ISOTOPES. MONTHLY COMPOSITE SAMPLES ARE ANALYZED FOR BETA AND ALPHA EMITTING ISOTOPES BY COUNTING WITH A GAS FLOW PROPORTIONAL COUNTER USING CHEMICAL SEPARATION TECHNIQUES WHEN NECESSARY.

LIQUID EFFLUENTS

FISSION AND ACTIVATION PRODUCTS-GAMMA SPECTROMETRIC ANALYSIS OF EACH BATCH IS PERFORMED. MONTHLY COMPOSITE SAMPLES ARE MAINTAINED FOR CONTINUOUS AND BATCH RELEASES AND THE COMPOSITES ARE ANALYZED FOR SPECIFIC NUCLIDES AS REQUIRED. TRITIUM-MONTHLY COMPOSITE SAMPLES ARE DISTILLED AND DEIONIZED AS NECESSARY TO REMOVE CONTAMINATION AND COUNTED BY LIQUID SCINTILLATION TECHNIQUES. DISSOLVED AND ENTRAINED GASES-GASEOUS ISOTOPES ARE DETERMINED BY GAMMA SPECTROMETRIC ANALYSIS OF EACH BATCH. MONTHLY COMPOSITE SAMPLES ARE ALSO ANALYZED FOR GASEOUS ISOTOPES.

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INSTALLATION TROJAN

LOCATION 35 MI NW PORTLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA	
	QUARTER 1 N/A	QUARTER 2 N/A	QUARTER 1 N/A	QUARTER 2 N/A
BATCH RELEASES			QUARTER 1	QUARTER 2
A. LIQUID				
1. NUMBER OF BATCH RELEASES-				119
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-				2.57E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-				2.14E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-				2.16E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-				2.40E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-				1.01E 05
B. GASEOUS				
1. NUMBER OF BATCH RELEASES-				50
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-				9.03E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-				4.99E 04
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-				1.81E 03
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-				3.00E 00
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES				2
2. TOTAL ACTIVITY RELEASED (CURIES)				3.10E-01

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INSTALLATION TROJAN

LOCATION 35 MI NW PORTLAND

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

	QUARTER 3	BETA QUARTER 4	QUARTER 3	GAMMA QUARTER 4
	N/A	N/A	N/A	N/A
BATCH RELEASES			QUARTER 3	QUARTER 4
A. LIQUID				
1. NUMBER OF BATCH RELEASES-				53
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-				3.92E 04
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				7.07E 03
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				7.38E 02
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				2.40E 01
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-				1.05E 05
B. GASEOUS				
1. NUMBER OF BATCH RELEASES-				7
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-				1.20E 03
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-				3.84E 02
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-				1.74E 02
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-				3.00E 00
ABNORMAL RELEASES				
A. LIQUID				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				
B. GASEOUS				
1. NUMBER OF RELEASES				NONE
2. TOTAL ACTIVITY RELEASED (CURIES)				

N/A=NOT APPLICABLE
N/D=NOT DETECTED
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INSTALLATION=TROJAN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.90E 02	1.29E 01	3.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.74E 01	1.64E 00	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.60E-01	2.66E-02	
B. IODINES				
1. TOTAL IODINE-131	CI	2.74E-03	8.61E-04	3.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.53E-04	1.10E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.37E-01	4.31E-02	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.62E-03	2.03E-03	3.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.65E-04	2.58E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.44E 00	8.00E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	<1.81E-05	<5.30E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	2.99E 00	8.79E-01	3.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.85E-01	1.12E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=TROJAN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.08E 00	1.39E 00	3.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.36E-01	1.75E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.25E-03	2.87E-03	
B. IODINES				
1. TOTAL IODINE-131	CI	1.01E-04	6.54E-05	3.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.27E-05	8.23E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.05E-03	3.27E-03	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	5.42E-04	3.77E-04	3.50E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.82E-05	4.74E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.14E-01	1.47E-01	
4. GROSS ALPHA RADIOACTIVITY	CI	3.50E-06	8.79E-06	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.58E-01	1.13E-01	3.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.99E-02	1.42E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

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INSTALLATION=TROJAN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS GROUND RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI			1.76E-01	
KR-85	CI			3.64E-01	4.60E-01
KR-85M	CI	4.26E-04		1.14E-01	
KR-87	CI			2.39E-07	
KR-88	CI			3.29E-01	
UNIDENTIFIED	CI	1.96E 01	6.18E 00	1.01E-01	5.93E 00
XE-131M	CI			1.21E 00	4.72E-02
XE-133	CI	4.09E 01		2.20E 02	2.61E-01
XE-133M	CI	7.97E-05		1.88E 00	
XE-135	CI	2.38E-01		6.20E 00	3.85E-03
XE-135M	CI	9.86E-04		1.07E-02	
IODINES					
I-131	CI	1.37E-03	2.17E-04	1.37E-03	6.44E-04
I-133	CI	3.51E-04	4.97E-04	2.60E-04	<1.37E-04
I-135	CI	5.55E-04	5.02E-03	1.26E-04	<2.35E-03
PARTICULATES					
BA-140	CI	<2.30E-04	<1.80E-04	<2.19E-05	<8.48E-05
CO-58	CI	1.58E-05	6.08E-05		6.68E-05
CO-60	CI	1.23E-05	2.40E-05	4.28E-06	2.22E-05
CS-134	CI		7.51E-06	9.90E-08	2.89E-05
CS-137	CI		1.70E-05	2.56E-07	9.96E-05
GROSS ALPHA	CI	<1.51E-05	<2.78E-06	<3.04E-06	<1.75E-06
LA-140	CI	<7.66E-05	<2.56E-04	<6.91E-06	<1.18E-04
MN-54	CI			2.00E-08	4.26E-06
SB-124	CI			1.60E-05	2.41E-06
SR-89	CI	<9.15E-05	8.67E-05	1.83E-04	2.99E-05
SR-90	CI	<9.15E-05	5.54E-05	1.82E-04	2.40E-05
UNIDENTIFIED	CI	8.23E-06	1.07E-06	3.59E-07	3.91E-04

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INSTALLATION=TROJAN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

		GAS EFFLUENTS GROUND		RELEASE	
NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI				9.87E-02
UNIDENTIFIED	CI	9.31E-01	1.29E 00	1.53E-01	
IODINES					
I-131	CI	<9.23E-05	<6.14E-05	<8.31E-06	<4.04E-06
I-133	CI	<3.37E-04	<1.89E-04	<7.19E-06	<5.23E-06
I-135	CI	<1.04E-02	<3.77E-03	<4.14E-05	<1.97E-05
PARTICULATES					
BA-140	CI	<2.27E-04	<1.76E-04	<2.19E-05	<9.59E-06
CS-137	CI	1.11E-05		1.16E-05	1.39E-08
LA-140	CI	<1.41E-04	<1.46E-04	<5.42E-06	<2.08E-06
SR-89	CI	<7.43E-05	<4.04E-05	<3.24E-06	<1.17E-05
SR-90	CI	<7.43E-05	<4.04E-05	<3.24E-06	<1.17E-05
UNIDENTIFIED	CI	1.85E-06	3.45E-06	8.73E-07	8.82E-06

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N/R=NOT REPORTED

INSTALLATION=TROJAN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	2.79E-01	1.65E-01	3.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.31E-08	1.11E-08	
3. PERCENT OF APPLICABLE LIMIT	%	2.79E 00	1.65E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.47E 02	6.82E 00	3.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.21E-05	4.58E-07	
3. PERCENT OF APPLICABLE LIMIT	%	4.03E-01	1.53E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	2.77E 00	1.76E-04	3.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.29E-07	1.18E-11	
3. PERCENT OF APPLICABLE LIMIT	%	5.73E-01	2.95E-05	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<3.11E-04	<1.87E-04	3.00E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.53E 07	1.91E 06	5.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.21E 10	1.49E 10	1.50E 01

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	7.82E-02	1.85E-01	3.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.11E-09	1.39E-08	
3. PERCENT OF APPLICABLE LIMIT	%	7.82E-01	1.85E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.41E 00	2.44E 00	3.00E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.58E-07	1.83E-07	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	3.50E 01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	0.00E 00	0.00E 00	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<1.18E-05	<1.97E-05	3.00E 01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	7.79E 05	1.10E 06	5.00E 00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.53E 10	1.33E 10	1.50E 01

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INSTALLATION=TROJAN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
BA-140	CI	<1.13E-02	<2.46E-03	<7.13E-03	<5.52E-03
CO-58	CI	4.57E-03	1.82E-02	9.68E-02	7.03E-02
CO-60	CI	3.72E-03	2.78E-03	6.33E-02	1.83E-02
CR-51	CI			8.28E-03	1.98E-02
CS-134	CI	1.20E-04	2.41E-03	2.26E-03	3.13E-05
CS-137	CI	1.69E-03	2.69E-03	6.18E-03	3.82E-04
FE-59	CI			3.26E-03	6.44E-03
I-131	CI	4.98E-03	<5.57E-04	1.10E-02	<1.43E-03
LA-140	CI	<2.85E-03	<2.08E-04	<8.74E-04	<1.63E-03
MN-54	CI	2.39E-04	9.93E-04	3.72E-02	4.48E-03
MO-99	CI			1.38E-05	
NA-24	CI			1.02E-03	
NB-95	CI	1.88E-06		2.52E-03	1.80E-03
SR-89	CI	9.31E-04	5.96E-05	2.81E-04	5.93E-05
SR-90	CI	<9.31E-04	9.38E-06	<2.81E-04	9.34E-06
TC-99M	CI			1.44E-05	
ZR-95	CI			1.15E-03	1.79E-03
AG-110M	CI				1.35E-03
CO-57	CI			8.17E-04	3.11E-04
I-133	CI			1.78E-03	
I-135	CI			1.32E-04	
SB-124	CI			1.75E-03	3.41E-04
SB-125	CI				2.54E-04
UNIDENTIFIED	CI	3.50E-04		1.11E-03	3.86E-04
XE-133	CI	1.21E-05		2.73E-03	1.76E-04
XE-133M	CI			3.35E-02	
XE-135	CI			9.26E-03	
KR-85M	CI			2.70E-05	
XE-135M	CI			4.75E-05	

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
		NONE			
AG-110M	CI			9.74E-04	1.59E-03
BA-140	CI		<2.94E-04	<3.42E-03	<3.73E-03
CO-58	CI			3.43E-02	6.32E-02
CO-60	CI			2.20E-02	7.05E-02
CR-51	CI				4.32E-04
CS-134	CI			2.24E-03	2.53E-03
CS-137	CI			3.34E-03	4.51E-03
FE-59	CI			7.16E-04	9.98E-04
I-131	CI		<7.71E-05	<9.11E-04	<7.90E-04
LA-140	CI		<1.30E-04	<1.32E-03	<3.45E-04
MN-54	CI			4.02E-03	2.02E-03
NB-95	CI			7.31E-04	4.46E-03
SR-89	CI		5.67E-05	1.13E-05	1.30E-04
SR-90	CI		4.73E-06	8.34E-07	1.08E-05
ZR-95	CI				5.01E-03
CO-57	CI			2.02E-04	1.94E-03
SB-124	CI			2.34E-03	2.50E-03
SB-125	CI			1.42E-03	1.17E-03
SN-113	CI			1.12E-04	
UNIDENTIFIED	CI		9.20E-05	3.17E-05	7.68E-05

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INSTALLATION= TROJAN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	2.76E 00	
	CI	7.30E-02	2.50E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.33E 02	
	CI	1.31E 00	2.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A		
CO-58	%	7.00E 01
CO-60	%	3.00E 01
B		
CO-58	%	7.00E 01
CO-60	%	3.00E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
7	TRUCK	RICHLAND WA.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= TROJAN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3 CI	1.78E 01 4.45E 02	2.50E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 CI	7.23E 01 1.13E 00	2.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 CI		
D. OTHER (DESCRIBE)	M3 CI		

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

A		
CO-58	X	8.70E 01
CO-60	X	1.20E 01
MN-54	X	1.00E 00
B		
CO-58	X	4.60E 01
CO-60	X	5.40E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
10	TRUCK	RICHLAND WA.
1	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION TURKEY POINT

LOCATION 10 MI E FLORIDA CITY FL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 3	LICENSEE FLORIDA POWER & LIGHT
TYPE PWR	LICENSED POWER (MWT) 2200.0
DOCKET NO. 50-250	INITIAL CRITICALITY 10/20/72
COOLING WATER SOURCE BISCAYNE BAY (CLOSED COOLING CANAL SYSTEM)	
UNIT NUMBER 4	LICENSEE FLORIDA POWER & LIGHT
TYPE PWR	LICENSED POWER (MWT) 2200.0
DOCKET NO. 50-251	INITIAL CRITICALITY 06/11/73
COOLING WATER SOURCE BISCAYNE BAY (CLOSED COOLING CANAL SYSTEM)	

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES
GAMMA SPECTRUM ANALYSIS

IODINES

ABSORPTION OF HALOGEN RADIONUCLIDES ON A CHARCOAL FILTER AND SUBSEQUENT GAMMA-SPECTRUM ANALYSIS.

PARTICULATES

REMOVAL OF PARTICULATE MATERIAL BY FILTRATION AND SUBSEQUENT GAMMA-SPECTRUM ANALYSIS, SR-89-90 DETERMINATION, GROSS ALPHA ANALYSIS AND GROSS BETA-GAMMA ANALYSIS.

LIQUID EFFLUENTS

ALIQOTS OF REPRESENTATIVE PRE-RELEASE SAMPLES WERE EITHER ISOTOPICALLY ANALYZED FOR GAMMA EMITTING ISOTOPES ON A MULTICHANNEL ANALYZER OR EVAPORATED AND ANALYZED FOR GROSS BETA-GAMMA ACTIVITY IN A 2 PI GAS FLOW PROPORTIONAL COUNTER. THE EFFICIENCY OF THE GAS FLOW PROPORTIONAL COUNTER IS ADJUSTED SO THAT THE ACTIVITY DETERMINED BY GROSS BETA-GAMMA ANALYSIS APPROXIMATES THE ISOTOPIC ACTIVITIES DETERMINED BY GAMMA SPECTRUM ANALYSIS AND SELECTED BETA DETERMINATIONS, EXCLUSIVE OF TRITIUM AND DISSOLVED GASES. THE ABOVE PROCEDURE WAS FOLLOWED FOR ALL RELEASES FROM THE WASTE DISPOSAL SYSTEM AND FOR SECONDARY SYSTEM BATCH RELEASES. FREQUENT PERIODIC SAMPLING AND ANALYSIS WERE USED TO CONSERVATIVELY ESTIMATE THE QUANTITY OF RADIOACTIVITY RELEASED VIA THE STEAM GENERATOR BLOWDOWN SYSTEM.

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INSTALLATION TURKEY POINT

LOCATION 10 MI E FLORIDA CITY

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA	
	QUARTER		QUARTER	
	1	2	1	2

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION TURKEY POINT LOCATION 10 MI E FLORIDA CITY
 EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
 SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4

BATCH RELEASES

QUARTER	QUARTER
3	4

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
 N/D=NOT DETECTED
 N/R=NOT REPORTED

INSTALLATION=TURKEY POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	4.33E 03	5.82E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.53E 02	7.37E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.60E 00	6.20E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	2.68E-01	7.52E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.47E-02	9.59E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	4.99E-02	1.05E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.63E-03	1.34E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	3.18E-07	8.20E-09	
D. TRITIUM				
1. TOTAL RELEASE	CI	2.15E 00	5.60E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.89E-01	7.10E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=TURKEY POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	6.60E 03	6.74E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.23E 02	8.43E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	6.90E 00	7.00E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	1.57E-02	2.18E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.94E-03	2.71E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	2.72E-02	5.06E-04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	3.42E-03	6.13E-05	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	1.13E-07	<8.70E-12	
D. TRITIUM				
1. TOTAL RELEASE	CI	3.98E-01	3.43E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.97E-02	4.30E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=TURKEY POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	9.66E 00	2.31E 01		
KR-85	CI	1.61E 00	5.73E-01		
KR-85M	CI	4.83E 00	9.80E-01		
KR-87	CI	5.04E 00	<3.00E-06*		
KR-88	CI	5.86E 00	5.97E-01		
XE-131M	CI	6.18E 00	2.66E 00		
XE-133	CI	4.23E 03	5.76E 03		
XE-133M	CI	6.62E 00	8.33E 00		
XE-135	CI	3.28E 01	2.07E 01		
XE-135M	CI	9.46E 00	1.74E-01		
XE-138	CI	5.68E 00	<1.10E-05*		
IODINES					
BR-82	CI	9.60E-04	1.30E-03		
I-131	CI	2.68E-01	7.52E-02		
I-133	CI	7.50E-02	2.35E-02		
I-135	CI	2.05E-02	7.60E-03		
PARTICULATES					
AG-110M	CI	1.50E-04	<9.10E-14*		
BA-140	CI	3.60E-05	3.20E-05		
CE-141	CI	6.20E-05	<4.80E-14*		
CE-144	CI	3.50E-05	<2.10E-13*		
CO-57	CI	8.11E-05	<3.00E-14*		
CO-58	CI	3.28E-02	5.44E-04		
CO-60	CI	9.10E-03	2.48E-04		
CR-51	CI	4.12E-03	<4.80E-13*		
CS-134	CI	5.60E-05	4.92E-05		
CS-136	CI	1.79E-05	<6.10E-14*		
CS-137	CI	1.10E-04	9.37E-05		
FE-59	CI	3.40E-04	<1.50E-13*		
I-131	CI	1.53E-04	2.75E-05		
LA-140	CI	2.00E-05	2.99E-05*		
MN-54	CI	9.16E-04	1.57E-05		
NB-95	CI	7.70E-04	<8.30E-14*		
RU-103	CI	1.50E-04	<7.10E-14*		
SB-124	CI	4.20E-04	<8.90E-14*		
SB-125	CI	1.30E-04	<1.90E-13*		
SR-89	CI	2.47E-05	4.87E-06		
SR-90	CI	1.13E-06	1.10E-07*		
ZR-95	CI	3.71E-04	<1.20E-13*		

* REPRESENTS MAXIMUM SENSITIVITY IN UCI/CC

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INSTALLATION=TURKEY POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	3.65E 01	3.99E 01		
KR-85	CI	3.34E-02	6.64E-02		
KR-85M	CI	3.58E-01	1.18E 00		
KR-87	CI	<3.00E-06*	6.17E-01		
KR-88	CI	1.38E-01	9.59E-01		
XE-131M	CI	3.62E 00	1.10E-02		
XE-133	CI	6.54E 03	6.66E 03		
XE-133M	CI	4.32E 00	6.10E 00		
XE-135	CI	8.70E 00	2.25E 01		
XE-135M	CI	9.81E-02	<3.25E-06*		
XE-138	CI	<6.10E-06*	<5.72E-06*		
IODINES					
BR-82	CI	3.50E-04	7.60E-04		
I-131	CI	1.57E-02	2.18E-02		
I-133	CI	1.44E-02	1.68E-02		
I-135	CI	7.90E-03	8.08E-03		
PARTICULATES					
AG-110M	CI	4.80E-05	<1.02E-13*		
BA-140	CI	7.50E-06	2.00E-05		
CE-141	CI	2.60E-05	<6.00E-14*		
CO-57	CI	5.30E-05	<3.64E-14*		
CO-58	CI	2.02E-02	1.61E-04		
CO-60	CI	2.99E-03	6.90E-05		
CR-51	CI	2.10E-03	1.50E-05		
CS-134	CI	6.90E-05	7.40E-05		
CS-136	CI	<7.58E-13*	6.90E-06		
CS-137	CI	1.12E-04	1.09E-04		
FE-59	CI	1.82E-04	<1.35E-13*		
I-131	CI	2.49E-05	2.70E-05		
LA-140	CI	7.50E-06	1.20E-05		
MN-54	CI	5.40E-04	7.10E-06		
NB-95	CI	3.90E-04	<6.70E-14*		
RU-103	CI	8.30E-05	<6.90E-14*		
SB-124	CI	2.32E-04	<1.04E-13*		
SR-89	CI	1.38E-05	5.47E-06		
SR-90	CI	1.19E-06	<3.35E-15*		
ZR-95	CI	1.72E-04	<1.06E-13*		

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INSTALLATION=TURKEY POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	2.78E 00	8.63E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.30E-09	6.80E-10	
3. PERCENT OF APPLICABLE LIMIT	%	5.55E 01	1.73E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.92E 02	3.62E 02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.80E-07	2.97E-06	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	5.03E-02	7.03E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.40E-10	5.50E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.49E-05	<2.20E-08*	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.14E 07	5.36E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.38E 11	1.28E 11	

* REPRESENTS MAXIMUM SENSITIVITY IN UCI/CC

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N/R=NOT REPORTED

INSTALLATION=TURKEY POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	3.20E 02	1.35E 02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.23E-09	9.33E-10	
3. PERCENT OF APPLICABLE LIMIT	%	6.40E 00	2.70E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	3.52E 02	2.66E 02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.34E-06	1.90E-06	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	9.03E 01	2.03E 02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.12E-10	1.28E-09	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<5.60E-08*	<4.50E-08*	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.60E 07	6.88E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.90E 11	1.43E 11	

* REPRESENTS MAXIMUM SENSITIVITY IN UCI/CC

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INSTALLATION=TURKEY POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-110M	CI	1.69E-03	5.46E-04		
BA-140	CI	7.95E-04	<4.10E-07*		
CO-58	CI	4.00E-02	7.97E-03		
CO-60	CI	2.40E-02	1.67E-02		
CR-51	CI	4.40E-03	1.03E-03		
CS-134	CI	5.36E-02	1.77E-04		
CS-136	CI	3.13E-03			
CS-137	CI	9.78E-02	1.09E-03		
CS-138	CI	1.36E-01			
FE-59	CI	2.78E-04			
F-18	CI	4.64E-01			
I-131	CI	5.95E-01	1.07E-02		
I-132	CI	1.89E-01			
I-133	CI	5.82E-01			
I-134	CI	7.69E-02			
I-135	CI	2.85E-01			
LA-140	CI	<2.10E-08*	<1.60E-08*		
MN-54	CI	4.96E-03	8.32E-04		
NA-24	CI	1.37E-01			
NB-95	CI	1.31E-03	4.40E-04		
RU-103	CI	7.10E-05			
SB-124	CI	5.30E-03	1.21E-03		
SB-125	CI	5.35E-03	2.31E-03		
SR-89	CI	6.25E-03	1.80E-04		
SR-90	CI	<3.10E-09*	2.50E-05		
UNIDENTIFIED	CI	5.93E-02	4.31E-02		
ZR-95	CI	9.80E-04			

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INSTALLATION=TURKEY POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI	2.24E 00	2.27E 00		
BA-140	CI	<1.10E-06*	<6.19E-07*		
CO-58	CI	7.11E 01	1.70E 01		
CO-60	CI	1.00E 02	6.53E 01		
CR-51	CI	8.63E 00	8.06E-01		
CS-134	CI	1.24E 01	5.52E 00		
CS-136	CI	4.90E-01	<8.80E-08*		
CS-137	CI	2.33E 01	1.11E 01		
CS-138	CI	2.06E 00			
FE-59	CI	6.01E-01	<1.62E-07		
F-18	CI	3.92E-01			
I-131	CI	3.35E 01	6.14E 00		
I-132	CI	7.92E 00			
I-133	CI	1.67E 01	6.64E 00		
I-134	CI	7.29E 00			
I-135	CI	9.10E 00			
LA-140	CI	<6.00E-08*	8.51E-01		
MN-54	CI	1.83E 00	3.27E-01		
MO99-TC99M	CI	9.34E-01	<5.40E-07*		
NA-24	CI	1.48E 00			
NB-95	CI	9.92E-01	<9.70E-08*		
RU-103	CI	3.06E-01	<8.80E-08*		
SB-124	CI	4.58E 00	5.60E-01		
SB-125	CI	1.73E 00	6.47E-01		
SR-89	CI	1.44E 00	1.02E-01		
SR-90	CI	<1.26E-08*	7.30E-03		
UNIDENTIFIED	CI	9.87E 00	1.72E 01		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	1.13E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	C1	4.19E 02	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
D. OTHER (DESCRIBE)	C1		

3. SOLID WASTE DISPOSITION-		
NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
59	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= TURKEY POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	6.23E 02	
	CI	1.30E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3		
	CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
47	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION VERMONT YANKEE

LOCATION 5 MI S BRATTLEBORO VT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1
TYPE BWR
DOCKET NO. 50-271
COOLING WATER SOURCE CONNECTICUT RIVER

LICENSEE VERMONT YANKEE NUCLEAR POWER
LICENSED POWER (MWT) 1593.0
INITIAL CRITICALITY 03/24/72

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

DAILY SAMPLES ARE DRAWN AT THE DISCHARGE OF THE AIR EJECTOR. ISOTOPIC BREAKDOWN OF THE RELEASES ARE DETERMINED FROM THESE SAMPLES. A LOGARITHMIC CHART OF THE STACK GAS MONITOR IS READ DAILY TO DETERMINE THE GROSS RELEASE RATE. AT THE VERY LOW RELEASE RATES NORMALLY ENCOUNTERED DURING OPERATION WITH THE AUGMENTED OFF GAS SYSTEM THE ERROR OF RELEASE RATES MAY BE APPROXIMATELY 100 PERCENT.

IODINES

CONTINUOUS ISOKINETIC SAMPLES ARE DRAWN FROM THE PLANT STACK THROUGH A PARTICULATE FILTER AND CHARCOAL CARTRIDGE. THE FILTERS AND CARTRIDGE ARE REMOVED WEEKLY (IF RELEASES ARE LESS THAN 4 PERCENT OF THE TECH SPEC LIMIT), OR DAILY (IF THEY ARE GREATER THAN 4 PERCENT OF THE LIMIT), AND ARE ANALYZED FOR RADIO-IODINE 131, 132, 133, 134, AND 135. THE IODINES FOUND ON THE FILTER ARE ADDED TO THOSE ON THE CHARCOAL CARTRIDGE. THE ERROR INVOLVED IN THESE STEPS MAY BE APPROXIMATELY FIFTY PERCENT.

PARTICULATES

THE PARTICULATE FILTERS DESCRIBED ABOVE ARE ALSO COUNTED FOR PARTICULATE RADIOACTIVITY. THE ERROR INVOLVED IN THIS SAMPLE IS ALSO APPROXIMATELY 50 PERCENT.

LIQUID EFFLUENTS

RADIOACTIVE LIQUID EFFLUENTS RELEASED FROM THE FACILITY ARE CONTINUOUSLY MONITORED. MEASUREMENTS ARE ALSO MADE ON A REPRESENTATIVE SAMPLE OF EACH BATCH OF RADIOACTIVE LIQUID EFFLUENTS RELEASED. FOR EACH BATCH, STATION RECORDS ARE RETAINED OF THE TOTAL ACTIVITY (MCI) RELEASED, CONCENTRATION (UCI/ML) OF GROSS RADIOACTIVITY, VOLUME (LITERS), AND APPROXIMATE TOTAL QUANTITY OF WATER (LITERS) USED TO DILUTE THE LIQUID EFFLUENT PRIOR TO RELEASE TO THE CONNECTICUT RIVER. EACH BATCH OF RADIOACTIVE LIQUID EFFLUENT RELEASED IS ANALYZED FOR GROSS GAMMA AND GAMMA ISOTOPIC RADIOACTIVITY. A MONTHLY PROPORTIONAL COMPOSITE SAMPLE, COMPRISING AN ALIQUOT OF EACH BATCH RELEASED DURING A MONTH, IS ALSO ANALYZED FOR TRITIUM, SR-89, SR-90, GROSS BETA AND GROSS ALPHA RADIOACTIVITY, IN ADDITION TO GAMMA SPECTROSCOPY.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION VERMONT YANKEE

LOCATION 5 MI S BRATTLEBORO VT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER 1	BETA QUARTER 2	QUARTER 1	GAMMA QUARTER 2
N/A	N/A	1.04E 00	6.80E-01

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

QUARTER 1	&	QUARTER 2
		NONE

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

NONE

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION VERMONT YANKEE

LOCATION 5 MI S BRATTLEBORO VT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER 3	BETA QUARTER 4	QUARTER 3	GAMMA QUARTER 4
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BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

QUARTER 3	QUARTER 4
	& NONE

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

NONE

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

NONE

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=VERMONT YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1.TOTAL RELEASE	CI	<7.72E 02	<7.85E 02	1.00E 02
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<1.00E 02	<1.00E 02	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	<1.32E-01	<8.50E-02	
B. IODINES				
1.TOTAL IODINE-131	CI	1.10E-03	3.55E-03	5.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.40E-04	4.73E-04	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	2.91E-02	9.84E-02	
C. PARTICULATES				
1.PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	8.63E-04	6.92E-04	5.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.10E-04	8.80E-05	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	8.33E-03	1.03E-02	
4.GROSS ALPHA RADIOACTIVITY	CI	1.19E-08	5.46E-08	
D. TRITIUM				
1.TOTAL RELEASE	CI	1.49E 00	3.68E 00	5.00E 01
2.AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.90E-01	4.68E-01	
3.PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=VERMONT YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	<1.60E 03	<1.78E 03	1.00E 02
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	<2.03E 02	<2.26E 02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	<7.61E-02	<2.87E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	1.61E-01	4.68E-02	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.05E-02	5.95E-03	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.27E 00	1.24E 00	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.46E-03	2.47E-03	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.87E-04	3.15E-04	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.54E-02	2.15E-02	
4. GROSS ALPHA RADIOACTIVITY	CI	6.40E-08	1.87E-07	
D. TRITIUM				
1. TOTAL RELEASE	CI	2.17E 00	4.73E 00	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.76E-01	5.50E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	N/A	N/A	

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=VERMONT YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
KR-85	CI	<1.05E-07*	<1.05E-07*		
KR-85M	CI	<4.64E 00	<7.74E 00		
KR-87	CI	<1.63E 01	<1.59E 01		
KR-88	CI	<9.67E 00	<1.27E 01		
XE-133	CI	<2.22E 01	<2.29E 02		
XE-135	CI	<1.38E 02	<1.50E 02		
XE-135M	CI	<2.13E 01	<3.05E 01		
XE-138	CI	<5.60E 02	<3.39E 02		
IODINES					
I-131	CI	1.10E-03	3.55E-03		
I-133	CI	6.41E-04	4.36E-03		
I-135	CI	<5.04E-02	<5.05E-02		
PARTICULATES					
BA-LA-140	CI	3.23E-04	1.46E-04		
CE-141	CI	<8.63E-06	<8.63E-06		
CO-58	CI	<3.85E-05	<3.85E-05		
CO-60	CI	2.49E-04	1.48E-04		
CS-134	CI	<3.85E-05	<3.85E-05		
CS-137	CI	2.62E-05	3.03E-05		
SB-124	CI	<2.40E-05	<2.40E-05		
SR-89	CI	1.74E-04	3.33E-04		
SR-90	CI	1.54E-06	3.59E-06		
ZN-65	CI	8.63E-05	3.15E-05		
ZR-95	CI	<6.81E-05	<6.81E-05		

* KR-85 NOT DETECTED IN OFF GAS MIX; LIMIT OF DETECTABILITY = 1.05E-07 uCi/cc

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=VERMONT YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85	CI	<1.05E-07*	<1.05E-07*		
KR-85M	CI	<1.44E 01	<1.43E 01		
KR-87	CI	<4.30E 01	<3.72E 01		
KR-88	CI	<3.64E 01	<3.24E 01		
XE-133	CI	<5.25E 02	<6.55E 02		
XE-135	CI	<1.05E 02	<8.01E 01		
XE-135M	CI	<4.16E 02	<2.66E 02		
XE-138	CI	<4.50E 02	<6.96E 02		
IODINES					
I-131	CI	1.61E-01	4.68E-02		
I-133	CI	8.50E-02	5.84E-02		
I-135	CI	1.70E-02	1.81E-02		
PARTICULATES					
BA-LA-140	CI	1.38E-04	1.95E-04		
CO-58	CI	1.09E-05	1.72E-05		
CO-60	CI	2.48E-04	5.97E-04		
CS-134	CI	4.76E-05	2.13E-04		
CS-137	CI	1.43E-04	3.83E-04		
MN-54	CI	7.94E-06	<4.33E-06		
SR-89	CI	7.99E-04	9.90E-04		
SR-90	CI	3.12E-06	4.20E-06		
ZN-65	CI	5.92E-05	5.32E-05		

* KR-85 NOT DETECTED IN OFF GAS MIX; LIMIT OF DETECTABILITY = 1.05E-07 $\mu\text{Ci/cc}$

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=VERMONT YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES - No Releases

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI			
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS			
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS			

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=VERMONT YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES - NO RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI			
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI			
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS			
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS			

N/A=NOT APPLICABLE
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INSTALLATION= VERMONT YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3 C1	4.56E 01 1.57E 02	7.50E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 C1	NONE NONE	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 C1	1.70E 00 5.36E 04	7.50E 01
D. OTHER (DESCRIBE) SPENT FUEL RACKS	M3 C1	1.99E 02 7.56E-01	7.50E 01

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

A		
CR-51	X	3.00E 01
ZN-65	X	2.00E 01
CO-60	X	3.00E 01
I-131	X	2.00E 01
C		
CO-60	X	3.00E 01
MN-54	X	2.00E 01
CS-137	X	3.00E 01
ZN-65	X	2.00E 01
D		
CO-60	X	3.00E 01
CS-137	X	3.00E 01
ZR-95	X	2.00E 01
ZN-65	X	2.00E 01

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
18	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION= VERMONT YANKEE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	6.71E 01	
	CI	1.71E 02	7.50E 01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	8.53E 01	
	CI	9.21E 00	7.50E 01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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

A+B

CS-137	X	4.86E 01
CS-134	X	3.44E 01
CO-60	X	7.60E 00
ZN-65	X	4.10E 00
I-131	X	3.10E 00

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
17	TRUCK	BARNWELL S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION YANKEE ROWE

LOCATION 20 MILES NW GREENFIELD MA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1	LICENSEE YANKEE ATOMIC ELECTRIC
TYPE PWR	LICENSED POWER (MWT) 600.0
DOCKET NO. 50-29	INITIAL CRITICALITY 08/19/60
COOLING WATER SOURCE DEERFIELD RIVER	

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURIES/ML) *

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES

CONTINUOUS DISCHARGES-INDIRECT MEASUREMENT. PRIMARY GAS SAMPLES ARE TAKEN PERIODICALLY AND ANALYZED. ASSUMPTIONS-THAT IN PRIMARY TO SECONDARY LEAKAGE ALL GASES ARE EJECTED THROUGH THE AIR EJECTOR. IN PRIMARY COOLANT CHARGING PUMP LEAKAGE ALL GASES ARE EJECTED TO THE PRIMARY VENT STACK EITHER DURING FLASHING OR LIQUID WASTE PROCESSING. BATCH DISCHARGES-DIRECT MEASUREMENT.

IODINES

CONTINUOUS MONITORING. SAMPLE DRAWN FROM THE PRIMARY VENT STACK THROUGH A PARTICULATE FILTER AND CHARCOAL CARTRIDGE. THE FILTER AND CHARCOAL CARTRIDGE ARE REMOVED WEEKLY.

PARTICULATES

THE PARTICULATE FILTER AS DESCRIBED IN IODINES ABOVE IS ANALYZED WEEKLY.

LIQUID EFFLUENTS

DIRECT MEASUREMENT. COMPOSITING FOR SR-89, 90, ALPHA AND CARBON-14 ANALYSIS. NO COMPOSITING FOR BETA, TRITIUM AND DISSOLVED GASES. GAMMA ISOTOPIC ANALYSIS (RESIN METHOD)-COMPOSITING FOR CONTINUOUS DISCHARGES AND NO COMPOSITING FOR BATCH DISCHARGES.

*10 CFR 20
N/A=NOT APPLICABLE
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INSTALLATION YANKEE ROWE

LOCATION 20 MILES NW GREENFIELD MA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER 1	BETA QUARTER 2	QUARTER 1	GAMMA QUARTER 2
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BATCH RELEASES

QUARTER 1	QUARTER 2
--------------	--------------

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION YANKEE ROWE

LOCATION 20 MILES NW GREENFIELD MA

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
3	4	3	4

BATCH RELEASES

QUARTER	QUARTER
3	4

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
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INSTALLATION=YANKEE ROWE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.07E 02	1.71E 02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.41E 01	2.18E 01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	9.03E-01	1.38E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	7.50E-05	1.71E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	9.86E-06	2.18E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	7.16E-01	1.51E-01	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	3.32E-06	5.18E-07	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.37E-07	6.52E-08	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.38E-02	9.34E-03	
4. GROSS ALPHA RADIOACTIVITY	CI	2.26E-08	1.32E-08	
D. TRITIUM				
1. TOTAL RELEASE	CI	7.06E-01	5.36E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	9.28E-02	6.82E-02	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.82E-03	3.38E-03	

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INSTALLATION=YANKEE ROWE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.03E 02	1.75E 02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.59E 01	2.22E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.49E 00	7.17E-01	
B. IODINES				
1. TOTAL IODINE-131	CI	6.33E-06	5.90E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.05E-07	7.51E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	5.48E-02	3.32E-01	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	1.01E-06	6.25E-05	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.28E-07	7.94E-06	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.16E-02	1.10E-08	
4. GROSS ALPHA RADIOACTIVITY	CI	1.21E-07	1.10E-08	
D. TRITIUM				
1. TOTAL RELEASE	CI	6.84E-01	9.67E-01	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.70E-02	1.23E-01	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	4.23E-03	3.90E-03	

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N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=YANKEE ~~ROME~~

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS' ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-37	CI	3.56E-02	5.95E-02		
AR-41	CI	1.39E-01	3.27E-01		
C-14	CI	8.39E-02	4.68E-03		
KR-85	CI	6.61E-01	4.16E-01		
KR-85M	CI	1.30E 00	2.19E 00		
KR-87	CI	7.25E-01	1.62E 00		
KR-88	CI	1.69E 00	3.21E 00		
TRITIUM	CI	7.06E-01	5.36E-01		
XE-131M	CI	3.02E-01	8.13E-01		
XE-133	CI	8.39E 01	1.31E 02		
XE-133M	CI	1.45E 00	2.21E 00		
XE-135	CI	1.36E 01	2.17E 01		
XE-135M	CI	2.95E 00	4.18E 00		
XE-138	CI	7.86E-02	2.90E-01		
IODINES					
I-131	CI	7.50E-05	1.71E-05		
I-133	CI	6.50E-05	3.01E-05		
I-135	CI	3.79E-05	1.34E-05		
PARTICULATES					
AG-110M	CI	<2.19E-07	<2.89E-07		
BA-LA-140	CI	<5.42E-07	<6.87E-07		
CE-141	CI	<2.06E-07	<2.74E-07		
CE-144	CI	<9.53E-07	<1.27E-06		
CO-58	CI	<1.40E-07	<1.89E-07		
CO-60	CI	<1.85E-07	<2.50E-07		
CR-51	CI	<1.20E-06	<1.33E-06		
CS-134	CI	8.16E-07	1.08E-07		
CS-137	CI	2.38E-06	8.75E-08		
FE-59	CI	<3.00E-07	<4.07E-07		
MN-54	CI	<1.53E-07	<2.05E-07		
SB-124	CI	<2.24E-07	<3.06E-07		
SR-89	CI	1.23E-07	1.85E-07		
SR-90	CI	<3.24E-09	<4.11E-09		
ZR-NB-95	CI	<2.53E-07	1.38E-07		

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INSTALLATION=YANKEE ROWE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-37	CI	1.02E-01	3.72E-01		
AR-41	CI	7.27E-01	5.96E-01		
C-14	CI	2.30E-03	2.40E-01		
KR-85	CI	5.06E-01	6.00E 00		
KR-85M	CI	2.68E 00	1.51E 00		
KR-87	CI	1.83E 00	1.20E 00		
KR-88	CI	3.93E 00	2.40E 00		
TRITIUM	CI	6.84E-01	9.67E-01		
XE-131M	CI	1.55E 00	4.96E 00		
XE-133	CI	1.64E 02	1.41E 02		
XE-133M	CI	2.51E 00	2.55E 00		
XE-135	CI	2.32E 01	1.25E 01		
XE-135M	CI	2.19E 00	1.25E 00		
XE-138	CI	1.58E-01	3.40E-02		
IODINES					
I-131	CI	6.33E-06	5.90E-05		
I-133	CI	2.65E-05	1.53E-05		
I-135	CI	1.64E-05	1.13E-05		
PARTICULATES					
AG-110M	CI	<3.49E-07	2.84E-07		
BA-LA-140	CI	<8.87E-07	<1.14E-06		
CE-141	CI	<3.52E-07	<6.41E-07		
CE-144	CI	<1.62E-06	1.42E-06		
CO-58	CI	<2.29E-07	8.96E-06		
CO-60	CI	<2.82E-07	2.42E-05		
CR-51	CI	<1.99E-06	1.77E-05		
CS-134	CI	1.84E-07	1.33E-06		
CS-137	CI	2.37E-07	<5.29E-07		
FE-59	CI	5.87E-07	5.53E-06		
MN-54	CI	<2.47E-07	2.34E-06		
SB-124	CI	<3.58E-07	<6.73E-07		
SR-89	CI	<1.11E-08	<4.57E-08		
SR-90	CI	<4.96E-09	<5.74E-09		
ZR-NB-95	CI	<4.14E-07	7.00E-07		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=YANKEE ROWE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	2.37E-02	3.58E-03	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	3.88E-10	5.23E-11	
3. PERCENT OF APPLICABLE LIMIT	%	1.03E-01	2.91E-03	
B. TRITIUM				
1. TOTAL RELEASE	CI	5.79E 01	3.97E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	9.49E-07	5.79E-07	
3. PERCENT OF APPLICABLE LIMIT	%	3.11E-02	1.81E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	7.51E-01	1.35E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.23E-08	1.97E-10	
3. PERCENT OF APPLICABLE LIMIT	%	4.10E-01	6.57E-03	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.69E-07	<5.14E-06	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.24E 06	5.93E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.10E 10	6.86E 10	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=YANKEE ROWE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
CS-134	CI	3.29E-05	9.37E-06		
CS-137	CI	6.07E-05	1.46E-05		
I-131	CI	1.84E-02	3.87E-04		
SR-89	CI	7.10E-04	1.85E-03		
SR-90	CI	5.99E-06	1.86E-05		
CO-58	CI	3.59E-08	<3.04E-06		
CO-60	CI	2.16E-06	3.29E-06		
CR-51	CI	4.22E-06	<2.93E-05		
FE-59	CI	8.49E-06	1.38E-07		
MN-54	CI	<8.52E-06	6.32E-07		
ZN-65	CI	<1.82E-05	<8.06E-06		
BA-LA-140	CI	<5.08E-05	<1.20E-05		
CE-141	CI	<9.49E-05	<5.01E-06		
MO-99	CI	1.02E-06	9.82E-07		
TC-99M	CI	<1.83E-05	<3.01E-06		
ZR-NB-95	CI	2.05E-05	1.54E-07		
AG-110M	CI	5.06E-07	4.05E-07		
CE-144	CI		9.03E-07		
C-14	CI	3.89E-03	1.29E-03		
I-133	CI	4.70E-04	7.38E-06		
SB-124	CI	4.22E-07	<4.69E-06		
SE-75	CI	<3.16E-05	<5.14E-06		
UNIDENTIFIED	CI	8.27E-05	1.45E-06		
XE-133	CI	7.51E-01	1.34E-02		
XE-135	CI	7.19E-04	1.03E-04		
TRITIUM	CI	5.79E 01	3.97E 01		

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION=YANKEE ROWE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.97E-02	3.44E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.86E-10	1.32E-09	
3. PERCENT OF APPLICABLE LIMIT	%	5.65E-02	1.32E-01	
B. TRITIUM				
1. TOTAL RELEASE	CI	4.67E 01	5.17E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.81E-07	1.99E-06	
3. PERCENT OF APPLICABLE LIMIT	%	2.27E-02	6.63E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	1.31E-01	7.34E-02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.91E-09	2.82E-09	
3. PERCENT OF APPLICABLE LIMIT	%	6.37E-02	9.40E-02	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	<1.19E-06	1.24E-06	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.26E 06	4.80E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.86E 10	2.60E 10	

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION=YANKEE ROSE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CS-134	CI	1.42E-04	4.49E-03		
CS-137	CI	1.78E-04	5.37E-03		
I-131	CI	1.02E-02	9.18E-03		
SR-89	CI	1.63E-03	1.50E-03		
SR-90	CI	2.42E-05	2.54E-05		
CO-58	CI	1.56E-06	3.31E-05		
CO-60	CI	8.97E-06	1.86E-04		
CR-51	CI	1.64E-05	5.22E-05		
FE-59	CI	4.79E-06	2.10E-05		
MN-54	CI	1.36E-06	4.26E-05		
ZN-65	CI	<1.29E-05	<3.32E-05		
BA-LA-140	CI	<1.59E-05	6.93E-06		
CE-141	CI	1.08E-06	2.85E-07		
MO-99	CI	<2.25E-05	<8.72E-05		
TC-99M	CI	<7.56E-06	5.38E-05		
ZR-NB-95	CI	5.77E-07	3.35E-06		
AG-110M	CI	2.57E-06	3.68E-06		
CE-144	CI	2.48E-06	3.23E-06		
C-14	CI	4.16E-03	1.13E-02		
I-133	CI	3.19E-03	2.10E-03		
SB-124	CI	<7.99E-06	2.93E-07		
SE-75	CI	<1.33E-05	<2.50E-05		
UNIDENTIFIED	CI	8.94E-05	2.76E-05		
XE-133	CI	1.31E-01	7.30E-02		
XE-135	CI	1.55E-04	3.88E-04		
TRITIUM	CI	4.67E 01	5.17E 01		

N/A=NOT APPLICABLE
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N/R=NOT REPORTED

INSTALLATION= YANKEE ROWE

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3 CI	4.85E 01 9.89E-01	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 CI	3.13E 01 1.02E-01	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 CI		
D. OTHER (DESCRIBE)	M3 CI		

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
3	TRUCK	BARNWELL S.C.
2	TRUCK	SHEFFIELD IL.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= YANKEE ROW

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3	6.78E 01	
	C1	4.02E 00	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.01E 02	
	C1	4.35E 00	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	C1		
D. OTHER (DESCRIBE)	M3	1.10E 01	
DECONTAMINATION SOLN.	C1	2.91E-01	

3. SOLID WASTE DISPOSITION-

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
10	TRUCK	BARNWELL S.C.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION ZION

LOCATION 6 MI N WAUKEGAN IL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

UNIT NUMBER 1

TYPE PWR

DOCKET NO. 50-295

COOLING WATER SOURCE LAKE MICHIGAN

UNIT NUMBER 2

TYPE PWR

DOCKET NO. 50-304

COOLING WATER SOURCE LAKE MICHIGAN

LICENSEE COMMONWEALTH EDISON

LICENSED POWER (MWT) 3250.0

INITIAL CRITICALITY 06/19/73

LICENSEE COMMONWEALTH EDISON

LICENSED POWER (MWT) 3250.0

INITIAL CRITICALITY 12/24/73

MAXIMUM PERMISSIBLE CONCENTRATIONS (MICROCURI/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION ZION

LOCATION 6 MI N WAUKEGAN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

	BETA		GAMMA
QUARTER	QUARTER	QUARTER	QUARTER
1	2	1	2

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM (LTS/MIN)-

B. GASEOUS

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES (MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE (MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES (MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE (MIN)-

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION ZION

LOCATION 6 MI N WAUKEGAN

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR YEAR 1978
SUPPLEMENTAL INFORMATION

N/R

AVERAGE ENERGY (MEV/DISINTEGRATION)

QUARTER 3	BETA QUARTER 4	QUARTER 3	GAMMA QUARTER 4
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BATCH RELEASES

A. LIQUID

QUARTER 3	QUARTER 4
--------------	--------------

1. NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASE(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE
OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-

B. GASEOUS

- NUMBER OF BATCH RELEASES-
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-
5. MINIMUM PERIOD FOR A BATCH RELEASE(MIN)-

ABNORMAL RELEASES

A. LIQUID

- NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

B. GASEOUS

1. NUMBER OF RELEASES
2. TOTAL ACTIVITY RELEASED (CURIES)

N/A=NOT APPLICABLE
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INSTALLATION=ZION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.36E 04	1.80E 04	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	1.81E 01	2.39E 01	
B. IODINES				
1. TOTAL IODINE-131	CI	6.72E-03	1.66E-02	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	2.27E-03	2.50E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	CI			
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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N/R=NOT REPORTED

INSTALLATION=ZION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.89E 04	7.24E 03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	3.83E 01	9.61E 01	
B. IODINES				
1. TOTAL IODINE-131	CI	2.07E-02	2.22E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	CI	2.83E-02	9.81E-03	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	CI			
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC			
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION=ZION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	4.97E 01	7.07E-03		
KR-85M	CI	1.42E 01	6.88E-01		
KR-88	CI	5.02E 01	1.39E 02		
XE-131M	CI	1.60E 02	2.51E 01		
XE-133	CI	1.19E 04	1.65E 04		
XE-133M	CI	3.89E 01	5.45E 01		
XE-135	CI	1.47E 03	1.44E 03		
IODINES					
I-131	CI	6.72E-03	1.66E-02		
I-133	CI	3.38E-03	1.46E-02		
I-135	CI	N/D	1.80E-03		
PARTICULATES					
BA-140	CI	3.04E-05	1.69E-06		
CO-58	CI	1.48E-04	3.30E-06		
CO-60	CI	1.54E-05	5.09E-07		
CR-51	CI	2.91E-08			
CS-134	CI	2.50E-05	6.69E-06		
CS-137	CI	1.41E-05	5.36E-07		
I-131	CI	4.44E-04	8.10E-06		
I-133	CI		6.00E-07		
MN-54	CI	6.32E-06	1.96E-07		
NB-95	CI	2.16E-05			
SR-89	CI	4.80E-05			
SR-90	CI	4.00E-05			
ZR-95	CI	8.63E-10			

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N/R=NOT REPORTED

INSTALLATION=ZION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

GAS EFFLUENTS ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	2.17E-03	N/D		
KR-85M	CI	1.06E 02	2.10E-01		
KR-88	CI	8.15E 00	6.21E-03		
XE-131M	CI	2.68E 02	1.78E-01		
XE-133	CI	2.62E 04	6.52E 03		
XE-133M	CI	1.53E 02	8.76E-03		
XE-135	CI	2.19E 03	7.20E 02		
IODINES					
I-131	CI	2.07E-02	2.22E-03		
I-133	CI	1.80E-02	6.04E-04		
I-135	CI	7.20E-09	N/D		
PARTICULATES					
BA-LA-140	CI	1.78E-04	1.05E-06		
CO-58	CI	4.69E-04	4.13E-04		
CO-60	CI	6.29E-03	1.99E-03		
CR-51	CI	1.95E-07	3.28E-04		
CS-134	CI	8.65E-03	2.39E-03		
CS-137	CI	1.06E-02	3.58E-03		
FE-59	CI	N/D	4.90E-06		
I-131	CI	1.91E-03	7.98E-05		
I-133	CI	5.80E-05	8.09E-05		
I-135	CI	N/D	1.54E-05		
MN-54	CI	1.34E-05	6.94E-05		
MO-99	CI	4.70E-05	N/D		
NA-24	CI	1.65E-09	4.67E-04		
NB-95	CI	3.65E-05	8.90E-05		
NP-239	CI	8.33E-07	1.41E-05		
SB-124	CI	N/D	1.77E-06		
SR-89	CI	1.20E-10			
SR-90	CI	7.00E-11			
TC-99M	CI	6.52E-05	2.59E-04		
ZR-95	CI	8.88E-06	5.27E-06		

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N/R=NOT REPORTED

INSTALLATION=ZION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	2.14E-01	3.47E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	5.44E-10	8.93E-10	
3. PERCENT OF APPLICABLE LIMIT	%	4.28E 00	6.93E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	1.69E 02	2.65E 02	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	4.42E-07	6.81E-07	
3. PERCENT OF APPLICABLE LIMIT	%	1.46E-02	2.27E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	N/D	N/D	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML			
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	N/D	N/D	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.65E 07	3.71E 07	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.83E 11	3.72E 11	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=ZION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	2.61E-01	1.29E-01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.40E-10	2.33E-09	
3. PERCENT OF APPLICABLE LIMIT	%	5.22E 00	2.58E 00	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.41E 02	5.05E 01	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	9.16E-07	7.14E-07	
3. PERCENT OF APPLICABLE LIMIT	%	3.06E-02	2.38E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	N/D	7.42E-04	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	N/D	4.83E-12	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	2.08E-04	2.01E-05	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	4.95E 07	1.22E 06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.96E 11	1.03E 11	

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=ZION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-110M	CI	1.26E-03	7.79E-04		
BA-LA-140	CI	1.28E-03	4.30E-03		
CO-57	CI	1.73E-04	8.50E-05		
CO-58	CI	6.66E-02	4.32E-02		
CO-60	CI	4.20E-02	3.86E-02		
CR-51	CI	1.01E-02	2.15E-03		
CS-134	CI	3.28E-02	1.08E-01		
CS-137	CI	4.49E-02	1.34E-01		
CU-64	CI	N/D	N/D		
FE-59	CI	1.23E-03	9.42E-05		
I-131	CI	1.09E-03	4.26E-03		
I-132	CI	N/D	N/D		
I-133	CI	N/D	N/D		
MN-54	CI	5.75E-03	3.18E-03		
MN-56	CI	N/D	N/D		
MO-99	CI	2.50E-04	N/D		
NA-24	CI	2.92E-03	2.67E-03		
NB-95	CI	1.57E-03	1.10E-03		
NP-239	CI	N/D	4.66E-05		
SB-124	CI	4.04E-04	1.11E-03		
SR-89	CI	5.84E-04	2.12E-03		
SR-90	CI	7.30E-03	1.97E-04		
TC-99M	CI	N/D	N/D		
W-187	CI	N/D	9.35E-05		
XE-133	CI	N/D	N/D		
XE-135	CI	N/D	N/D		
ZR-95	CI	7.50E-04	1.51E-03		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION=ZION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
AG-110M	CI	6.18E-03	N/D		
BA-LA-140	CI	2.86E-03	2.00E-04		
CO-57	CI	N/D	3.39E-04		
CO-58	CI	1.72E-02	1.39E-02		
CO-60	CI	3.19E-02	2.25E-02		
CR-51	CI	6.43E-04	1.67E-03		
CS-134	CI	9.02E-02	3.73E-02		
CS-137	CI	1.10E-01	4.25E-02		
FE-59	CI	9.00E-04	N/D		
I-131	CI	2.24E-03	9.07E-04		
I-132	CI	N/D	N/D		
I-133	CI	N/D	N/D		
MN-54	CI	2.06E-03	2.73E-03		
MO-99	CI	N/D	2.98E-04		
NA-24	CI	N/D	3.34E-03		
NB-239	CI	5.50E-04	N/D		
NB-95	CI	1.50E-04	4.50E-04		
SB-124	CI	8.35E-04	2.59E-03		
TC-99M	CI	7.12E-05	6.28E-05		
W-187	CI	N/D	N/D		
XE-133	CI	N/D	7.05E-04		
XE-135	CI	N/D	3.73E-05		
ZR-95	CI	7.14E-05	1.55E-04		

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JULY-DECEMBER)

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, EVAPORATOR BOTTOMS, ETC.	M3 C1	7.33E 02 7.72E 02	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 C1		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 C1		
D. OTHER (DESCRIBE)	M3 C1		

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION= ZION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978
(JANUARY-JUNE)

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, EVAPORATOR BOTTOMS, ETC.	M3	8.93E 02	
	CI	1.09E 03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3		
	CI		
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
	CI		
D. OTHER (DESCRIBE)	M3		
	CI		

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Releases of radioactive materials in airborne and liquid effluents from commercial light water reactors during 1978 have been compiled and reported. Data on solid waste shipments as well as selected operating information have been included. This report supplements earlier annual reports issued by the former Atomic Energy Commission and the Nuclear Regulatory Commission. The 1978 release data are compared with previous years releases in tabular form. Data covering specific radionuclides are summarized.

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