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# Radioactive Materials Released from Nuclear Power Plants

Annual Report 1981

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Prepared by J. Tichler, C. Benkovitz

Brookhaven National Laboratory

Prepared for  
U.S. Nuclear Regulatory  
Commission

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Annual Report 1981

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**Prepared for**  
**Division of Budget and Analysis**  
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**U.S. Nuclear Regulatory Commission**  
**Washington, D.C. 20555**  
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PREVIOUS REPORTS IN THIS SERIES

1. "Report on Releases of Radioactivity in Effluents and Solid Wastes from Nuclear Power Plants for 1972," Directorate of Regulatory Operations, August 1973.
2. "Summary of Radioactivity Releases in Effluents from Nuclear Power Plants During 1973," NUREG-75/001, January 1975.
3. "Radioactive Materials Released from Nuclear Power Plants, 1974," NUREG-0077, June 1976.
4. "Radioactive Materials Released from Nuclear Power Plants, 1975," NUREG-0218, March 1977.
5. "Radioactive Materials Released from Nuclear Power Plants, 1976," NUREG-0367, March 1978.
6. "Radioactive Materials Released from Nuclear Power Plants, 1977," NUREG-0521, January 1979.
7. "Radioactive Materials Released from Nuclear Power Plants, 1978," NUREG/CR-1497, BNL-NUREG-51192, March 1981.
8. "Radioactive Materials Released from Nuclear Power Plants, 1979," NUREG/CR-2227, BNL-NUREG-51416, November 1981.
9. "Radioactive Materials Released from Nuclear Power Plants, 1980," NUREG/CR-2907, BNL-NUREG-51581, Vol. 1, January 1983.

#### ABSTRACT

Releases of radioactive materials in airborne and liquid effluents from commercial light water reactors during 1981 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 1981 release data are summarized 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 released from licensed commercial reactor power plants. These data were reported by licensees for plant operations during 1981. This information supplements earlier annual reports issued by the former Atomic Energy Commission and Nuclear Regulatory Commission.<sup>1</sup>

### 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 71 licensed nuclear power plants that were declared by the utilities to be in commercial operation as of December 31, 1981. Data are included for several licensed facilities which are permanently or indefinitely shut down (Dresden 1, Humboldt Bay, Indian Point 1, Three Mile Island 2).

### 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 nine previous annual summaries.<sup>1</sup>

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<sup>1</sup>"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 1973," NUREG-75/001, January 1975. "Radioactive Materials Released from Nuclear Power Plants 1974," NUREG-0077, June 1976. "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. "Radioactive Materials Released from Nuclear Power Plants, 1978," NUREG/CR-1497, BNL-NUREG-51192, March, 1981. "Radioactive Materials Released from Nuclear Power Plants, 1979," NUREG/CR-2227, BNL-NUREG-51416, November 1981. "Radioactive Materials Released from Nuclear Power Plants, 1980," NUREG/CR-20107, BNL-NUREG-51581, Vol. 1, January 1983.

## 2.0 Tabulated Data

### 2.1 Airborne and Liquid Effluents

Table 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 1981. 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.

### 2.2 Solid Waste

The total volumes, activity and the number of shipments of solid waste for each plant during 1981 are summarized in Tables 9 and 10. A comparison for the years 1972 through 1981 is made in Tables 11 and 12.

### 2.3 Energy Generation

Tables 15 and 16 present a summary of the thermal energy generated by each plant during 1981 and previous years from 1970. Tables 13 and 14 present a summary of net electrical energy generated by each plant during 1978-1981. The reader is cautioned against making simplistic comparisons of radioactive releases with the energy generated because of the many factors which affect the amount of radioactive materials released; factors such as the condition of the fuel, primary system integrity, effluent and radioactive waste treatment systems, and the extent to which these systems are used.

### 2.4 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. When the only type of solid waste reported is type "A", this may be because the plant did not break solid waste into different types but reported all types together. The activity released for each nuclide for the year for both airborne and liquid effluents is calculated by summing releases for each quarter. More detailed summaries in the format of Regulatory Guide 1.21 such as were used in the 1978 report<sup>2</sup> can be made available since all the data for 1978-1981 are stored in a computerized data base. Individuals interested in obtaining the more detailed summaries should contact the Office of Management and Program Analysis of the Nuclear Regulatory Commission.

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<sup>2</sup>"Radioactive Materials Released from Nuclear Power Plants, 1978," NUREG/CR-1497, BNL-NUREG-51192, March, 1981.

## 2.5 Notation

The following notation is used:

$$1.86E+06 = 1.86 \times 10^6$$

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

N/R = Not Reported

N/D = Not Detected

< may actually mean  $\leq$

## 3.0 Summary

Nearly all of the radioactive material reported as being released in effluents is planned and results from normal operation or is the result of anticipated operational occurrences, i.e., unplanned releases of radioactive materials from miscellaneous actions such as equipment failure, operator error, or procedure error that are not of such consequence so as to be considered an accident.

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.

Though perhaps not identifiable as an important factor at any specific plant from the data in this report, the generic improvement in fuel performance over the last several years has either reduced or has had the potential to reduce the amount of radioactive material released in effluents from most plants. In addition, at Boiling Water Reactors (BWRs), the reduction in the amount of airborne radioactive materials being released at some plants since the early and mid-1970s is due in large part to the installation of augmented offgas (AOG) systems.

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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	1979
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	6.67E+03
BROWNS FERRY					6.40E+04	9.24E+04	<8.05E+04	<1.66E+05	1.57E+05	<2.71E+05
BRUNSWICK						1.90E+02	1.50E+04	2.46E+05	9.14E+04	1.16E+05
COOPER					2.00E+03	1.98E+04	3.80E+04	1.27E+03	4.09E+03	3.04E+04
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	1.83E+02
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	6.91E+04
DUANE ARNOLD						1.58E+03	5.26E+03	3.87E+03	1.56E+03	8.71E+03
EDWIN I. HATCH 1						2.70E+02	2.80E+03	1.90E+03	1.62E+03	1.71E+03
EDWIN I. HATCH 2										
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	<4.40E-05
JAMES A. FITZPATRICK						4.08E+03	4.41E+04	2.33E+04	5.88E+03	3.38E+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	1.04E+04
MILLSTONE 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	2.06E+04
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	4.03E+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	1.04E+03
OYSTER CREEK	1.10E+05	5.16E+05	8.66E+05	8.10E+05	2.79E+05	2.05E+05	1.67E+05	1.77E+05	9.98E+05	1.01E+06
PEACH BOTTOM				<1.00E+03	<1.00E+00	1.30E+04	2.09E+05	7.11E+04	3.85E+04	1.90E+05
PILGRIM			1.80E+04	2.30E+05	5.46E+05	4.60E+04	1.83E+05	4.13E+05	3.27E+04	1.39E+04
QUAD-CITIES			1.32E+05	9.00E+05	9.50E+05	1.10E+05	3.36E+04	2.56E+04	3.24E+04	3.48E+04
VERMONT YANKEE			5.50E+04	1.80E+05	6.40E+04	4.08E+03	3.03E+03	3.35E+03	4.94E+03	<8.08E+03
FORT ST. VRAIN*										9.30E+01

TABLE 1

## AIRBORNE EFFLUENTS COMPARISON BY YEAR

## BOILING WATER REACTORS

## FISSION AND ACTIVATION GASES (TOTAL CURIES)

FACILITY	1980	1981
BIG ROCK POINT	2.15E+04	1.97E+04
BROWNS FERRY	<1.66E+05	4.52E+04
BRUNSWICK	6.95E+04	5.22E+05
COOPER	5.03E+03	2.48E+03
DRESDEN 1	7.03E+01	N/D
DRESDEN 2-3	4.30E+04	3.74E+04
DUANE ARNOLD	2.70E+03	<4.87E+02
EDWIN I. HATCH 1	3.82E+04	2.77E+04
EDWIN I. HATCH 2	2.95E+02	2.06E+02
HUMBOLDT BAY	<4.40E-05	<4.40E-05
JAMES A. FITZPATRICK	7.68E+04	2.00E+05
LACROSSE	4.71E+03	5.03E+03
MILLSTONE 1	1.19E+04	1.43E+04
MONTICELLO	3.83E+03	3.74E+03
NINE MILE POINT	5.87E+02	6.10E+02
OYSTER CREEK	3.12E+04	5.28E+04
PEACH BOTTOM	1.53E+04	1.58E+04
PILGRIM	2.62E+04	<5.30E+03
QUAD-CITIES	2.15E+04	3.20E+04
VERMONT YANKEE	1.63E+03	<3.17E+03
FORT ST. VRAIN*	9.13E+01	4.34E+01

TABLE 2

## AIRBORNE EFFLUENTS COMPARISON BY YEAR

FACILITY	FISSION AND ACTIVATION GASES (TOTAL CURIES)									
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
ARKANSAS ONE 1					1.96E+02	1.03E+03	5.69E+03	1.39E+04	7.50E+03	8.51E+03
ARKANSAS ONE 2										4.53E+03
BEAVER VALLEY							1.07E+00	4.73E+01	3.90E+02	1.75E+03
CALVERT CLIFFS						7.72E+03	9.40E+03	2.23E+04	2.76E+04	1.02E+04
CRYSTAL RIVER								3.35E+03	6.86E+03	7.26E+04
DAVIS-BESSE								1.27E+03	2.10E+03	<1.68E+03
DONALD C. COOK						2.64E+00	9.75E+02	3.80E+03	4.85E+04	1.09E+04
FORT CALHOUN				6.70E+01	3.03E+02	4.29E+02	1.94E+03	3.81E+03	1.36E+03	7.06E+02
H. B. ROBINSON		1.00E+00	<1.00E+00	3.10E+03	2.31E+03	1.17E+03	0.40E+02	4.76E+02	8.84E+02	1.52E+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	5.53E+03
INDIAN POINT 1-2				1.50E+01	5.58E+03	8.20E+03	1.16E+04	1.60E+04	1.41E+04	9.03E+03
INDIAN POINT 3									8.09E+02	2.47E+02
JOSEPH M. FARLEY 1									3.53E+03	3.18E+03
JOSEPH M. FARLEY 2										
KEWAUNEE					3.35E+03	2.45E+03	1.40E+03	2.43E+03	4.44E+02	1.52E+02
MAINE YANKEE			<1.00E+00	1.64E+02	6.36E+03	4.09E+03	1.30E+03	2.86E+02	1.43E+03	1.98E+03
MCGUIRE										
MILLSTONE 2							1.57E+03	2.28E+03	7.64E+02	3.59E+02
NORTH ANNA									1.51E+04	6.28E+03
OCONEE				9.30E+03	1.94E+04	1.51E+04	4.39E+04	3.56E+04	4.33E+04	4.79E+04
PALISADES			1.00E+00	4.54E+02	<1.00E+00	2.61E+03	2.99E+01	5.99E+01	3.23E+02	6.84E+01
POINT BEACH		<1.00E+00	3.00E+00	5.75E+03	9.74E+03	4.45E+04	1.91E+03	1.13E+03	5.16E+02	9.68E+02
PRAIRIE ISLAND				8.72E+00	3.52E+02	2.17E+03	1.74E+03	6.73E+02	1.26E+03	6.97E+02
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	7.62E+02
RANCHO SECO						1.18E+02	1.27E+02	2.00E+03	7.10E+03	8.81E+03
SALEM 1							<1.00E-02	1.96E+01	1.02E+01	2.49E+02
SALEM 2										
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	6.37E+02
SEQUOYAH										
ST. LUCIE							1.72E+03	2.54E+04	2.93E+04	1.54E+04
SURRY			<1.00E+00	8.66E+02	6.86E+03	8.04E+03	1.91E+04	1.90E+04	4.36E+03	1.78E+03
THREE MILE ISLAND 1					9.16E+02	3.63E+03	2.76E+03	1.66E+04	1.57E+04	2.24E+03
THREE MILE ISLAND 2									8.73E+00	9.97E+06
TMI 2/EPICOR										
TROJAN							6.66E+02	3.07E+03	3.05E+02	9.27E+02
TURKEY POINT				5.30E+02	4.66E+03	1.34E+04	1.56E+04	2.33E+04	2.35E+04	1.06E+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	1.82E+02
ZION				4.00E+00	2.99E+03	4.88E+04	1.14E+05	3.22E+04	6.77E+04	3.41E+04

TABLE 2

## AIRBORNE EFFLUENTS COMPARISON BY YEAR

## PRESSURIZED WATER REACTORS

## FISSION AND ACTIVATION GASES (TOTAL CURIES)

FACILITY	1980	1981
ARKANSAS ONE 1	3.80E+04	3.73E+03
ARKANSAS ONE 2	9.37E+03	4.35E+03
BEAVER VALLEY	8.64E+01	8.06E+02
CALVERT CLIFFS	2.96E+03	2.18E+03
CRYSTAL RIVER	3.65E+04	3.96E+04
DAVIS-BESSE	<3.35E+03	1.01E+03
DONALD C. COOK	3.76E+03	5.42E+03
FORT CALHOUN	2.97E+02	1.22E+03
H. B. ROBINSON	5.82E+02	5.13E+02
HADDAM NECK	2.68E+03	1.83E+03
INDIAN POINT 1-2	9.38E+03	9.13E+03
INDIAN POINT 3	1.11E+03	6.57E+03
JOSEPH M. FARLEY 1	1.92E+04	2.21E+02
JOSEPH M. FARLEY 2		2.60E+00
KEWAUNEE	1.22E+02	1.18E+02
MAINE YANKEE	3.87E+03	3.28E+02
MCGUIRE		1.58E-01
MILLSTONE 2	1.33E+03	2.24E+03
NORTH ANNA	3.50E+03	5.30E+03
OGONEE	1.92E+04	1.63E+04
PALISADES	1.40E+02	3.00E+03
POINT BEACH	6.41E+02	6.11E+02
PRAIRIE ISLAND	2.60E+02	4.65E+01
R. E. GINNA	8.61E+02	5.46E+02
RANCHO SECO	1.58E+03	1.37E+03
SALEM 1	7.82E+01	1.06E+03
SALEM 2	7.74E+00	6.09E+02
SAN ONOFRE	1.05E+03	4.17E+02
SEQUOYAH	3.01E+03	9.03E+03
ST. LUCIE	8.97E+03	2.30E+04
SURRY	6.17E+03	1.41E+04
THREE MILE ISLAND 1	4.64E-03	5.81E-02
THREE MILE ISLAND 2	4.72E+04	2.88E+02
TWI 2/EPICOR	2.16E+00	1.84E+02
TROJAN	3.91E+02	1.16E+03
TURKEY POINT	4.24E+03	4.33E+03
YANKEE ROWE	7.07E+01	1.72E+02
ZION	5.78E+03	6.91E+03



TABLE 3

## AIRBORNE EFFLUENTS COMPARISON BY YEAR (CURIES)

## I-131 AND PARTICULATES

## BOILING WATER REACTORS

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

FACILITY	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
BIG ROCK POINT	1.50E-01	6.10E-01	1.50E-01	4.60E+00	1.60E-01	1.20E-01	5.00E-02	1.00E-02	8.91E-03	1.90E-03
BROWNS FERRY					1.20E-01	2.70E-01	<7.00E-02	1.04E-01	2.27E-01	5.03E-02
BRUNSWICK						<1.00E-02	4.60E-01	9.32E-01	4.07E-01	9.52E-01
COOPER					2.40E-01	5.00E-02	<4.00E-02	<1.91E-02	5.41E-03	<1.79E-01
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	2.28E+00	2.38E-02
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	3.13E+00	6.97E+00
DUANE ARNOLD						1.10E-03	8.18E-02	2.29E-02	3.65E-02	3.35E-02
EDWIN I. HATCH 1						<1.00E-02	<1.00E-02	5.67E-03	4.13E-03	2.59E-02
EDWIN I. HATCH 2										
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	7.26E-04	1.07E-04
JAMES A. FITZPATRICK						<4.00E-02	6.80E-01	1.73E-01	2.79E-01	1.42E-02
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	2.79E-02	2.53E-02
MILLSTONE 1		4.00E+00	1.32E+00	2.00E-01	3.26E+00	9.98E+00	2.33E+00	4.86E+00	4.55E+00	5.90E-01
MONTICELLO		3.60E-02	5.78E-01	1.20E+00	5.70E+00	3.71E+00	1.71E-01	8.51E-02	5.49E-02	3.39E-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	1.35E-01	4.71E-02
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	1.81E+01	9.32E+00
PEACH BOTTOM				<1.00E-02	1.00E-02	4.00E-02	9.75E-01	2.73E-01	9.62E-02	2.58E-01
PILGRIM			3.00E-02	4.70E-01	1.45E+00	2.58E+00	6.74E-01	6.90E-01	1.81E-01	1.45E-01
QUAD-CITIES			7.50E-01	5.50E+00	8.88E+00	1.31E+00	1.33E+00	1.69E+00	2.15E+00	1.57E+00
VERMONT YANKEE			1.70E-01	7.00E-02	3.60E-01	1.00E-02	<1.00E-02	1.44E-02	2.18E-01	4.43E-01
FORT ST. VRAIN*										6.89E-07

TABLE 3

## AIRBORNE EFFLUENTS COMPARISON BY YEAR (CURIES)

## I-131 AND PARTICULATES

## BOILING WATER REACTORS

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

FACILITY	1980	1981
BIG ROCK POINT	2.94E-02	6.10E-03
BROWNS FERRY	1.05E-01	4.00E-02
BRUNSWICK	2.12E+00	8.89E-01
COOPER	<1.52E-01	<1.09E-02
DRESDEN 1	1.46E-02	9.94E-03
DRESDEN 2-3	1.10E+01	9.87E+00
DUANE ARNOLD	8.50E-02	3.25E-02
EDWIN I. HATCH 1	4.29E-01	2.12E-01
EDWIN I. HATCH 2	1.33E-02	9.42E-03
HUMBOLDT BAY	5.11E-04	<3.82E-04
JAMES A. FITZPATRICK	1.25E-01	2.80E-01
LACROSSE	1.32E-02	1.69E-02
MILLSTONE 1	3.32E-01	1.48E-01
MONTICELLO	2.83E-02	3.45E-02
NINE MILE POINT	2.55E-02	1.49E-02
OYSTER CREEK	1.25E+00	2.24E+00
PEACH BOTTOM	2.94E-02	<4.19E-02
PILGRIM	1.04E-01	<6.87E-02
QUAD-CITIES	5.90E-01	1.27E+00
VERMONT YANKEE	1.70E-02	4.53E-03
FORT ST. VRAIN*	1.25E-06	1.40E-06

TABLE 4

## AIRBORNE EFFLUENTS COMPARISON BY YEAR (CURIES)

## I-131 AND PARTICULATES

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

FACILITY	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
ARKANSAS ONE 1				5.00E-02	7.40E-01	5.73E-02	9.04E-03	3.19E-03	4.47E-03	4.65E-03
ARKANSAS ONE 2										
BEAVER VALLEY				7.00E-02	1.58E-01			1.52E-04	7.21E-02	4.07E-04
CALVERT CLIFFS								3.07E-01	1.35E-01	2.05E+00
CRYSTAL RIVER								2.53E-03	1.05E-03	1.88E-02
DAVIS-BESSE								2.37E-04	4.30E-04	5.69E-03
DONALD C. COOK								7.45E-02	1.10E-01	7.36E-02
FORT CALHOUN								1.34E-02	8.30E-03	1.58E-03
H. B. ROBINSON								3.88E-03	9.26E-04	4.10E-04
HADDAM NECK								1.74E-03	5.21E-03	4.77E-02
INDIAN POINT 1-2								5.59E-02	2.05E-01	4.50E-01
INDIAN POINT 3								1.29E-02	3.89E-03	
JOSEPH M. FARLEY 1								4.11E-02	2.20E-02	
JOSEPH M. FARLEY 2										
KEWAUNEE								2.40E-02	5.48E-03	6.18E-04
MAINE YANKEE								5.05E-03	2.07E-03	5.52E-02
MCGUIRE										
MILLSTONE 2								4.47E-03	2.97E-03	9.79E-03
NORTH ANNA								3.19E-02	5.71E-02	
OCONEE								2.22E-01	2.28E-01	
PALISADES								1.63E-02	2.07E-02	2.46E-02
POINT BEACH								5.02E-03	2.88E-02	1.55E-02
PRAIRIE ISLAND								7.56E-03	8.96E-04	3.86E-03
R. E. GINNA								2.55E-02	1.04E-02	1.88E-02
RANCHO SECO								5.02E-03	3.21E-02	5.75E-03
SALEM 1								2.34E-07	4.01E-02	7.68E-03
SALEM 2										
SAN ONOFRE								1.86E-04	2.71E-03	1.43E-04
SEQUOYAH										
ST. LUCIE								1.48E-01	5.17E-01	2.02E-01
SURRY								1.20E-01	6.49E-02	7.61E-03
THREE MILE ISLAND 1								3.39E-02	1.35E-01	1.24E-02
THREE MILE ISLAND 2								2.30E-03	1.42E+01	
TMI 2/EPICOR										
TROJAN								5.05E-02	1.03E-02	3.39E-02
TURKEY POINT								1.04E+00	4.59E-01	7.91E-02
YANKEE ROWE								8.70E-05	2.25E-04	2.49E-04
ZION								5.38E-02	8.91E-02	6.74E-02

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	1980	1981
ARKANSAS ONE 1	1.66E-01	5.58E-03
ARKANSAS ONE 2	6.90E-03	1.41E-02
BEAVER VALLEY	1.91E-03	6.85E-03
CALVERT CLIFFS	7.44E-02	4.69E-02
CRYSTAL RIVER	6.77E-03	1.78E-02
DAVIS-BESSE	2.01E-03	5.79E-02
DONALD C. COOK	6.88E-02	3.55E-01
FORT CALHOUN	2.42E-03	3.59E-03
H. B. ROBINSON	1.13E-03	3.32E-04
HADDAM NECK	8.01E-03	<1.28E-02
INDIAN POINT 1-2	6.42E-02	4.42E-02
INDIAN POINT 3	2.53E-02	3.63E-03
JOSEPH M. FARLEY 1	2.37E-03	6.24E-01
JOSEPH M. FARLEY 2		3.22E-03
KEWAUNEE	2.61E-04	1.21E-04
MAINE YANKEE	1.88E-03	6.13E-04
MCGUIRE		1.21E-11
MILLSTONE 2	1.94E-02	1.06E-01
NORTH ANNA	1.26E-02	4.81E-01
OCONEE	1.33E-01	3.24E-01
PALISADES	2.76E-02	4.15E-02
POINT BEACH	1.28E-03	2.03E-01
PRAIRIE ISLAND	1.83E-03	4.49E-04
R. E. GINNA	9.00E-03	5.88E-03
RANCHO SECO	9.96E-03	4.65E-03
SALEM 1	2.17E-01	4.84E-01
SALEM 2	5.44E-05	6.31E-03
SAN ONOFRE	8.41E-01	1.18E-02
SEQUOYAH	2.57E-03	1.30E-02
ST. LUCIE	6.20E-02	7.69E-02
SURRY	1.85E-02	6.53E-02
THREE MILE ISLAND 1	2.93E-04	5.05E-04
THREE MILE ISLAND 2	5.67E-04	3.69E-05
TMI 2/EPICOR	6.83E-06	2.63E-06
TROJAN	2.51E-02	7.67E-02
TURKEY POINT	7.05E-02	2.94E-02
YANKEE ROWE	9.56E-05	2.13E-04
ZION	3.00E-03	1.25E-02

TABLE 5  
LIQUID EFFLUENTS COMPARISON BY YEAR (CURIES)

FACILITY	TRITIUM										
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	
BOILING WATER REACTORS											
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	5.45E+00	
BROWNS FERRY					2.80E+00	1.04E+01	<4.02E+00	2.40E+01	3.08E+01	1.32E+01	
BRUNSWICK						3.20E+00	5.90E+00	8.93E+00	1.41E+01	3.09E+01	
COOPER					1.70E+00	8.25E+00	8.43E+00	9.04E+00	7.51E+00	6.63E+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	1.50E+00	
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	1.93E+01	
DUANE ARNOLD						3.30E-01	3.40E-01	2.13E-01	1.19E+02	2.90E-01	
EDWIN I. HATCH 1						6.12E+00	8.98E+00	1.20E+01	9.00E+00	1.23E+01	
EDWIN I. HATCH 2											
HUMBOLDT BAY	7.00E+00	7.50E+00	1.30E+00	5.13E+01	3.17E+01	2.01E+01	1.30E+01	5.26E-01	3.63E-02	3.91E-02	
JAMES A. FITZPATRICK						5.03E+00	4.20E+00	3.35E+00	1.90E+00	1.52E+00	
LACROSSE	2.00E+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	3.54E+01	
MILLSTONE 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	7.92E+00	
MONTICELLO		5.92E-01	<1.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
NINE MILE POINT		1.24E+01	2.78E+01	4.65E+01	1.87E+01	2.81E+01	2.46E+00	2.49E+00	N/R	6.78E+00	
OYSTER CREEK	2.00E+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	1.40E+00	
PEACH BOTTOM				<1.00E-01	1.00E-01	3.08E+01	7.37E+01	7.09E+01	3.24E+01	4.28E+01	
PILGRIM			4.20E+00	4.00E-01	1.05E+01	1.82E+01	4.67E+01	3.27E+01	2.98E+00	1.34E+01	
QUAD-CITIES			4.70E+00	2.45E+01	3.40E+01	5.37E+01	4.98E+01	2.64E+01	1.72E+01	1.76E+01	
VERMONT YANKEE				1.00E-01	0.00E+00	0.00E+00	1.60E+00	8.44E-01	N/R	4.04E+00	
FORT ST. VRAIN*										1.23E+02	

TABLE 5

## LIQUID EFFLUENTS COMPARISON BY YEAR (CURIES)

## TRITIUM

## BOILING WATER REACTORS

FACILITY	1980	1981
BIG ROCK POINT	6.18E+00	3.13E+00
BROWNS FERRY	2.18E+01	2.42E+01
BRUNSWICK	1.28E+01	2.26E+01
COOPER	8.77E+00	<8.37E+00
DRESDEN 1	N/R	0.00E+00
DRESDEN 2-3	6.20E+01	6.05E+00
DUANE ARNOLD	N/R	0.00E+00
EDWIN I. HATCH 1	1.42E+01	1.16E+01
EDWIN I. HATCH 2	1.07E+01	9.28E+00
HUMBOLDT BAY	9.70E-02	<1.62E-01
JAMES A. FITZPATRICK	2.81E+00	4.11E+00
LACROSSE	7.20E+01	7.74E+01
MILLSTONE 1	2.75E+01	2.62E+00
MONTICELLO	0.00E+00	4.17E-03
NINE MILE POINT	N/R	5.05E+00
OYSTER CREEK	1.54E+02	2.67E+01
PEACH BOTTOM	5.75E+01	5.68E+01
PILGRIM	4.00E+01	3.41E+01
QUAD-CITIES	1.05E+01	1.19E+01
VERMONT YANKEE	N/R	5.70E-01
FORT ST. VRAIN*	2.06E+02	2.19E+02

TABLE 6

## LIQUID EFFLUENTS COMPARISON BY YEAR (CURIES)

## TRITIUM

## PRESSURIZED WATER REACTORS

FACILITY	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
ARKANSAS ONE 1					2.56E+01	4.60E+02	2.12E+02	2.45E+02	2.94E+02	1.68E+02
ARKANSAS ONE 2										5.27E+01
BEAVER VALLEY							8.60E+00	1.08E+02	3.49E+02	9.59E+01
CALVERT CLIFFS						2.63E+02	2.74E+02	5.75E+02	4.56E+02	5.14E+02
CRYSTAL RIVER								1.66E+02	1.54E+02	1.66E+02
DAVIS-BESSE								9.01E+00	2.15E+02	2.45E+02
DONALD C. COOK						5.64E+01	1.92E+02	2.86E+02	6.24E+02	1.22E+03
FORT CALHOUN				1.58E+01	1.24E+02	1.11E+02	1.22E+02	1.57E+02	1.50E+02	2.58E+02
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	4.29E+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	3.55E+03
INDIAN POINT 1-2				2.75E+01	4.79E+01	7.94E+01	3.32E+02	3.71E+02		
INDIAN POINT 3									2.56E+02	1.15E+02
JOSEPH W. FARLEY 1									5.91E+01	9.40E+01
JOSEPH W. FARLEY 2										
KEWAUNEE					9.24E+01	2.77E+02	1.80E+02	2.95E+02	2.96E+02	2.49E+02
MAINE YANKEE			9.20E+00	1.54E+02	2.19E+02	1.77E+02	3.67E+02	1.53E+02	3.15E+02	2.02E+02
MCGUIRE										
MILLSTONE 2						7.60E+00	2.77E+02	2.11E+02	2.01E+02	2.54E+02
NORTH ANNA									2.82E+02	3.13E+02
OCONEE				7.7E+01	3.50E+02	3.55E+03	2.19E+03	1.92E+03	1.17E+03	8.94E+02
PALISADES			2.08E+02	1.85E+02	8.10E+00	4.16E+01	9.63E+00	5.58E+01	1.01E+02	1.26E+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	8.92E+02
PRAIRIE ISLAND				<1.00E-01	1.42E+02	4.54E-01	1.00E-01	1.55E+03	5.51E+02	6.25E+02
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	2.40E+02
RANCHO SECO						1.32E+02	0.00E+00	8.55E-02	N/R	N/R
SALEM 1							4.00E-02	2.96E+02	4.46E+02	7.26E+02
SALEM 2										
SAN ONOFRE	4.80E+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	2.32E+03
SEQUOYAH										
ST. LUCIE							1.53E+01	2.42E+02	1.28E+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	3.57E+02
THREE MILE ISLAND 1					1.30E+02	4.63E+02	1.89E+02	1.92E+02	1.55E+02	5.59E+01
THREE MILE ISLAND 2									3.83E+01	7.81E+01
TMI 2/EPICOR										
TROJAN							3.60E+01	3.11E+02	1.59E+02	6.80E+01
TURKEY POINT				3.29E+02	5.80E+02	7.97E+02	7.71E+02	9.24E+02	1.17E+03	9.40E+02
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	1.73E+02
ZION 1				1.00E-01	2.74E+02	1.03E+03	7.47E+02	7.24E+02	7.25E+02	6.01E+02
ZION 2										

TABLE 6

## LIQUID EFFLUENTS COMPARISON BY YEAR (CURIES)

## TRITIUM

## PRESSURIZED WATER REACTORS

FACILITY	1980	1981
ARKANSAS ONE 1	2.12E+02	4.42E+02
ARKANSAS ONE 2	2.89E+02	2.44E+02
BEAVER VALLEY	5.98E+01	1.40E+02
CALVERT CLIFFS	4.91E+02	1.00E+03
CRYSTAL RIVER	1.95E+02	2.71E+02
DAVIS-BESSE	1.08E+02	1.57E+02
DONALD C. COOK	7.82E+02	9.15E+02
FORT CALHOUN	5.44E+01	2.42E+02
H. B. ROBINSON	1.89E+02	1.86E+02
HADDAM NECK	5.29E+03	5.29E+03
INDIAN POINT 1-2	2.76E+02	2.41E+02
INDIAN POINT 3	4.27E+02	6.42E+02
JOSEPH M. FARLEY 1	5.70E+02	1.65E+02
JOSEPH M. FARLEY 2		6.34E+02
KEWAUNEE	2.55E+02	2.51E+02
MAINE YANKEE	2.18E+02	2.16E+02
MCGUIRE		6.25E+00
MILLSTONE 2	2.68E+02	5.71E+02
NORTH ANNA	4.05E+02	1.28E+03
OCONEE	7.12E+02	5.07E+02
PALISADES	7.47E+01	2.78E+02
POINT BEACH	7.61E+02	6.52E+02
PRAIRIE ISLAND	5.45E+02	5.62E+02
R. E. GINNA	1.60E+02	2.40E+02
RANCHO SECO	1.47E-02	8.35E+01
SALEM 1	0.00E+00	4.95E+02
SALEM 2	N/R	8.42E+02
SAN ONOFRE	1.05E+03	2.97E+02
SEQUOYAH	5.25E-01	7.65E+01
ST. LUCIE	2.72E+02	5.25E+02
SURRY	5.85E+02	5.31E+02
THREE MILE ISLAND 1	5.26E+01	7.11E+00
THREE MILE ISLAND 2	6.10E-04	5.06E-02
TWI 2/EPICOR	N/R	0.00E+00
TROJAN	1.24E+02	1.05E+02
TURKEY POINT	7.49E+02	1.95E+02
YANKEE ROWE	5.84E+01	1.05E+02
ZION 1	7.45E+02	6.04E+02
ZION 2		2.66E+02



TABLE 7

## LIQUID EFFLUENTS COMPARISON BY YEAR (CURIES)

FACILITY	MIXED FISSION AND ACTIVATION PRODUCTS									
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
<b>BOILING WATER REACTORS</b>										
BIG ROCK POINT	4.70E+00	3.50E+00	1.10E+00	2.70E+00	1.10E+00	2.32E+00	7.70E-01	3.52E-01	2.74E-01	9.03E-01
BROWNS FERRY			8.00E-01			2.70E+00	3.95E+00	1.19E+00	1.52E+01	1.02E+01
BRUNSWICK					1.40E+00	1.89E+00	3.29E+00	6.22E+00	3.48E+00	5.10E+00
COOPER	8.20E+00	6.20E+00	6.80E+00	9.20E+00	6.90E+00	1.74E+00	7.00E-02	7.50E-01	3.05E+00	<2.48E+00
DRESDEN 1		3.30E+01	3.20E+01	7.59E+01	5.31E+01	8.40E-01	3.60E-01	6.00E-01	3.26E-01	2.65E-02
DRESDEN 2-3						8.10E-01	1.21E+00	4.40E-01	3.99E-01	2.65E-01
DUANE ARNOLD						<1.90E-02	1.00E-02	2.32E-03	2.73E-01	5.10E-04
EDWIN I. HATCH 1						6.00E-02	4.39E-02	2.50E+01	4.03E-02	7.32E-02
EDWIN I. HATCH 2										
HUMBOLDT BAY	2.40E+00	1.80E+00	1.40E+00	3.40E+00	4.40E+00	3.79E+00	9.90E-01	9.17E-01	1.95E-01	9.55E-02
JAMES A. FITZPATRICK						5.32E+00	3.01E+00	8.85E-01	1.59E+00	6.46E-01
LACROSSE	6.50E+00	1.11E+01	4.85E+01	3.59E+01	1.31E+01	1.82E+01	<5.78E+00	2.17E+01	9.86E+00	1.67E+00
MILLSTONE 1	1.97E+01	5.15E+01	3.34E+01	3.34E+01	1.98E+02	1.93E+02	9.65E+00	5.27E-01	1.75E-01	2.10E-01
MONTICELLO	<1.00E-01	<1.00E-01	3.00E+00	3.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NINE MILE POINT	2.80E+01	3.25E+01	3.46E+01	4.02E+01	2.56E+01	2.10E+01	2.14E+00	2.63E-01	N/R	1.89E+00
GUYSTER CREEK	1.85E+01	1.20E+01	1.00E+01	4.20E+00	7.00E-01	4.10E-01	2.20E-01	9.87E-02	1.53E-02	6.59E-05
PEACH BOTTOM						<1.00E-01	9.80E-01	3.33E+00	5.17E+00	1.95E+01
PILGRIM			1.50E+00	3.00E-01	4.20E+00	8.01E+00	2.33E+00	2.41E+00	1.77E+00	5.12E-01
QUAD-CITIES	2.40E+00	2.14E+01	3.88E+01	1.71E+01	6.99E+00	1.71E+01	6.99E+00	1.34E+00	5.24E+00	1.31E+00
VERMONT YANKEE						<1.00E-01	<1.00E-02	1.55E-01	N/R	2.40E-04
FORT ST. VRAIN*										1.89E-04

TABLE 7

## LIQUID EFFLUENTS COMPARISON BY YEAR (CURIES)

## BOILING WATER REACTORS

## MIXED FISSION AND ACTIVATION PRODUCTS

FACILITY	1980	1981
BIG ROCK POINT	7.82E-01	5.91E-01
BROWNS FERRY	9.38E+00	2.24E+00
BRUNSWICK	1.26E+00	2.20E+00
COOPER	<1.10E+01	<3.61E+00
DRESDEN 1	N/R	0.00E+00
DRESDEN 2-3	7.16E-01	6.12E-02
DUANE ARNOLD	N/R	0.00E+00
EDWIN I. HATCH 1	6.83E-02	3.73E-01
EDWIN I. HATCH 2	4.57E-02	1.63E-01
HUMBOLDT BAY	1.39E-01	1.55E-01
JAMES A. FITZPATRICK	1.51E+00	2.51E+00
LACROSSE	2.13E+00	2.26E-01
MILLSTONE 1	7.24E-01	3.94E-01
MONTICELLO	0.00E+00	3.11E-06
NINE MILE POINT	N/R	5.35E+00
OYSTER CREEK	5.06E-01	2.48E-01
PEACH BOTTOM	1.90E+00	1.97E+00
PILGRIM	2.73E+00	1.94E+00
QUAD-CITIES	1.31E+01	3.27E+00
VERMONT YANKEE	N/R	1.02E-02
FORT ST. VRAIN*	6.37E-05	3.64E-04

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	1979
ARKANSAS ONE 1					6.50E+00	3.11E+00	1.31E+01	4.50E+00	6.05E+00	3.09E+00
ARKANSAS ONE 2										1.30E+00
BEAVER VALLEY							1.70E-01	6.52E-01	2.63E-01	1.21E-01
CALVERT CLIFFS						1.44E+00	1.18E+00	3.48E+00	6.13E+00	7.80E+00
CRYSTAL RIVER								1.54E-02	2.96E-02	4.16E-01
DAVIS-BESSE								2.60E-02	9.01E-02	4.28E-02
DONALD C. COOK						2.60E-01	1.87E+00	1.52E+00	1.48E+00	2.58E+00
FORT CALHOUN				<1.00E-01	2.30E+00	3.60E-01	5.50E-01	3.63E-01	5.95E-01	2.45E-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	2.99E-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	8.67E-01
INDIAN POINT 1-2				2.20E+00	4.20E+00	4.93E+00	<4.98E+00	3.02E+00	1.99E+00	1.94E+00
INDIAN POINT 3									1.03E+00	4.02E-01
JOSEPH M. FARLEY 1									1.03E-01	5.86E-02
JOSEPH M. FARLEY 2										
KEWAUNEE					4.00E-01	7.20E-01	2.83E+00	1.26E+00	6.99E-01	8.94E-01
MAINE YANKEE			<1.00E-01	<1.00E-01	4.00E+00	3.21E+00	<2.84E+00	4.42E-01	1.04E-01	4.63E-01
MCCUIRE										
MILLSTONE 2						2.00E-02	2.60E-01	1.56E+00	2.79E+00	4.87E+00
NORTH ANNA									2.68E-01	5.89E-01
OCONEE				2.80E+00	1.90E+00	5.05E+00	7.93E+00	3.62E+01	6.51E+00	9.24E-01
PALISADES			6.80E+00	2.78E+01	5.90E+00	3.45E+00	4.40E-01	9.29E-02	9.65E-02	1.28E-01
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	7.25E-01
PRAIRIE ISLAND				<1.00E-01	<1.00E-01	4.50E-01	1.00E-01	1.33E-02	4.94E-03	9.00E-03
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	8.63E-02
RANCHO SECO						<1.00E-02	0.00E+00	0.00E+00	N/R	N/R
SALEM 1							<1.00E-02	2.88E+00	4.02E+00	3.98E+00
SALEM 2										
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	1.10E+01
SEQUOYAH										
ST. LUCIE							8.00E-02	5.80E+00	2.80E+00	2.67E+00
SURRY			2.00E-01	1.00E-01	3.80E+00	9.27E+00	3.37E+01	6.55E+01	2.41E+00	2.53E+00
THREE MILE ISLAND 1					1.30E+00	7.00E-02	1.00E-01	1.94E-01	6.14E-01	4.91E-01
THREE MILE ISLAND 2									3.92E-01	3.31E-01
TMI 2/EPICOR										
TROJAN							2.77E+00	4.19E+00	7.07E-01	5.55E-01
TURKEY POINT				<1.00E-01	1.50E+00	3.07E+00	<8.65E+00	8.90E+00	3.32E+00	4.10E-01
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	1.17E-02
ZION 1				<1.00E-01	<1.00E-01	<1.00E-02	1.60E-01	9.50E-01	9.51E-01	7.00E-01
ZION 2										

TABLE 8

## LIQUID EFFLUENTS COMPARISON BY YEAR (CURIES)

## PRESSURIZED WATER REACTORS

## MIXED FISSION AND ACTIVATION PRODUCTS

FACILITY	1980	1981
ARKANSAS ONE 1	3.42E+00	7.50E+00
ARKANSAS ONE 2	4.13E+00	2.95E+00
BEAVER VALLEY	1.04E-01	1.44E-01
CALVERT CLIFFS	4.53E+00	2.68E+00
CRYSTAL RIVER	1.46E-01	1.29E-01
DAVIS-BESSE	2.07E-01	7.92E-01
DONALD C. COOK	1.37E+00	1.86E+00
FORT CALHOUN	5.04E-01	1.65E-01
H. B. ROBINSON	3.58E-01	1.84E+00
HADDAM NECK	2.76E-01	7.12E-01
INDIAN POINT 1-2	1.26E+00	5.67E+00
INDIAN POINT 3	2.90E+00	2.62E+00
JOSEPH M. FARLEY 1	6.18E-02	1.31E-01
JOSEPH M. FARLEY 2		2.69E-02
KEWAUNEE	6.17E-01	8.15E-01
MAINE YANKEE	2.97E-01	4.36E-01
MCGUIRE		3.94E-01
MILLSTONE 2	2.81E+00	4.18E+00
NORTH ANNA	1.05E+00	6.76E-01
OCONEE	1.54E+00	1.75E+00
PALISADES	8.73E-03	3.31E-02
POINT BEACH	6.29E-01	1.01E+00
PRAIRIE ISLAND	1.32E-02	9.12E-03
R. E. GINNA	1.96E-02	3.85E-02
RANCHO SECO	3.78E-03	5.92E-01
SALEM 1	2.65E+00	2.80E+00
SALEM 2	3.89E-01	1.51E+00
SAN ONOFRE	1.12E+01	3.64E+00
SEQUOYAH	N/R	2.76E+00
ST. LUCIE	2.36E+00	2.46E+00
SURRY	3.85E+00	6.11E+00
THREE MILE ISLAND 1	1.83E-01	8.69E-02
THREE MILE ISLAND 2	1.45E-05	2.22E-05
TMI 2/EPICOR	N/R	0.00E+00
TROJAN	7.87E-01	9.94E-01
TURKEY POINT	6.78E-01	3.03E-01
YANKEE ROWE	1.75E-02	1.43E-02
ZION 1	4.74E-01	1.61E+00
ZION 2		1.05E+00

TABLE 9

## BOILING WATER REACTORS

## SOLID WASTE SUMMARY 1981

FACILITY	VOLUME (CUBIC METERS)	ACTIVITY (CURIES)	NO. OF SHIPMENTS
BIG ROCK POINT	1.44E+02	3.17E+02	14
BROWNS FERRY	N/R	N/R	N/R
BRUNSWICK	4.30E+03	7.47E+03	374
COOPER	4.99E+02	4.43E+02	74
DRESDEN	1.14E+03	4.59E+03	230
DUANE ARNOLD	6.97E+02	1.07E+03	118
EDWIN I. HATCH 1	1.29E+03	4.46E+03	128
EDWIN I. HATCH 2	1.40E+03	3.05E+02	92
HUMBOLDT BAY	8.43E+01	5.46E-01	3
JAMES A. FITZPATRICK	8.61E+02	1.63E+03	102
LACROSSE	4.82E+00	6.11E+01	2
MILLSTONE 1	1.96E+03	1.82E+03	129
MONTICELLO	5.54E+02	4.42E+02	52
NINE MILE POINT	5.31E+02	1.72E+03	76
OYSTER CREEK	1.78E+03	4.21E+02	156
PEACH BOTTOM	2.34E+03	5.33E+03	335
PILGRIM	1.06E+03	9.38E+02	78
QUAD-CITIES	1.72E+03	5.16E+03	335
VERMONT YANKEE	4.39E+02	1.11E+03	44
FORT ST. VRAIN*	0.00E+00	0.00E+00	0

TABLE 10

PRESSURIZED WATER REACTORS

SOLID WASTE SUMMARY 1981

FACILITY	VOLUME (CUBIC METERS)	ACTIVITY (CURIES)	NO. OF SHIPMENTS
ARKANSAS ONE 1	N/R	N/R	N/R
ARKANSAS ONE 2	N/R	N/R	N/R
BEAVER VALLEY	2.13E+02	9.30E+01	36
CALVERT CLIFFS	5.00E+02	9.86E+01	42
CRYSTAL RIVER	1.27E+03	1.38E+03	81
DAVIS-BESSE	3.25E+02	3.95E+01	30
DONALD C. COOK	9.63E+02	1.43E+03	89
FORT CALHOUN	2.53E+02	1.01E+02	19
H. B. ROBINSON	9.02E+02	1.88E+01	56
HADDAM NECK	4.38E+02	6.61E+02	48
INDIAN POINT 1-2	1.58E+03	1.71E+03	112
INDIAN POINT 3	3.17E+02	6.40E+01	25
JOSEPH M. FARLEY	5.64E+02	7.20E+02	38
KEWAUNEE	7.38E+01	1.98E+02	14
MAINE YANKEE	4.14E+02	1.67E+03	32
MCGUIRE	1.98E+01	1.31E-01	1
MILLSTONE 2	1.63E+01	3.21E+02	7
NORTH ANNA	3.02E+02	2.62E+03	97
OCONEE	2.48E+03	1.12E+04	198
PALISADES	8.54E+02	1.57E+04	39
POINT BEACH	1.77E+02	4.87E+02	24
PRAIRIE ISLAND	2.97E+02	5.64E+01	18
R. E. GINNA	3.76E+02	6.35E+02	22
RANCHO SECO	2.31E+02	1.44E+02	15
SALEM 1&2	9.36E+02	1.14E+03	90
SAN ONOFRE	1.62E+03	1.26E+03	82
SEQUOYAH	1.61E+02	2.92E+01	12
ST. LUCIE	2.50E+02	2.96E+02	15
SURRY	2.80E+03	1.36E+03	138
THREE MILE ISLAND 1	7.98E+02	2.34E+02	56
THREE MILE ISLAND 2	2.74E+02	5.11E+01	8
TMI 2/EPICOR	1.51E+02	3.50E+02	46
TROJAN	3.75E+02	1.04E+03	27
TURKEY POINT	1.25E+03	1.17E+02	82
YANKEE ROWE	3.08E+02	6.79E+01	26
ZION	1.53E+03	3.44E+03	167

TABLE 11

## SOLID WASTE COMPARISON BY YEAR

## BOILING WATER REACTORS

## VOLUME (CUBIC METERS) - ACTIVITY (CURIES)

FACILITY	1975	1976	1977	1978	1979			
BIG ROCK POINT	2.88E+01	3.69E+00	7.22E+01	9.68E+02	3.10E+01	2.56E+01	8.99E+01	2.77E+02
BROWNS FERRY	3.20E+02	1.03E+02	1.82E+03	1.10E+04	2.90E+03	1.33E+03	2.29E+03	4.17E+03
BRUNSWICK	1.79E+03	6.46E+02	2.47E+03	3.24E+03	2.02E+03	2.14E+03	3.09E+03	4.29E+03
COOPER	3.91E+02	3.20E+02	2.83E+02	2.85E+02	3.29E+02	3.84E+02	5.65E+02	9.69E+01
DRESDEN	7.12E+03	4.33E+03	2.25E+03	1.13E+04	1.77E+03	1.88E+03	1.04E+03	8.45E+02
DUANE ARNOLD	5.95E+02	1.87E+02	5.45E+02	4.98E+02	1.10E+03	1.86E+03	7.99E+02	8.01E+02
EDWIN I. HATCH 1	4.12E+02	2.91E+02	5.39E+02	3.81E+02	7.50E+02	1.09E+04	9.78E+02	2.70E+02
EDWIN I. HATCH 2								
HUMBOLDT BAY	8.49E+01	4.09E+00	3.77E+02	2.00E+01	1.78E+02	7.91E-01	9.06E+01	3.35E+03
JAMES A. FITZPATRICK	6.19E+02	3.41E+02	1.23E+03	6.17E+03	8.70E+02	3.19E+02	8.04E+02	1.06E+03
LACROSSE	N/R	N/R	4.65E+00	5.88E+02	3.80E+01	6.18E+01	5.09E+00	1.25E+02
MILLSTONE 1	1.33E+03	1.70E+03	1.77E+03	3.03E+03	2.00E+03	8.15E+04	2.11E+03	1.16E+03
MONTICELLO	2.85E+02	3.79E+03	5.73E+02	2.91E+04	4.99E+02	6.35E+04	4.74E+02	1.31E+04
NINE MILE POINT	5.38E+02	2.51E+03	6.65E+02	2.51E+04	3.85E+02	2.24E+04	4.97E+02	1.52E+03
OYSTER CREEK	1.20E+03	1.29E+03	1.74E+03	2.73E+02	1.54E+03	1.15E+03	1.13E+03	1.34E+03
PEACH BOTTOM	1.20E+03	5.85E+02	2.52E+03	1.82E+03	1.96E+03	4.97E+03	2.40E+03	8.03E+03
PILGRIM	9.12E+02	3.69E+04	5.84E+02	5.70E+03	1.97E+03	4.92E+04	3.03E+03	2.22E+04
QUAD-CITIES	1.00E+03	2.35E+03	1.20E+03	7.53E+03	1.34E+03	3.27E+03	7.82E+02	4.06E+03
VERMONT YANKEE	2.38E+02	2.93E+01	1.08E+02	1.76E+02	3.99E+02	5.39E+04	2.71E+02	9.99E+02
FORT ST. VRAIN*							0.00E+00	0.00E+00

TABLE 11

## SOLID WASTE COMPARISON BY YEAR

BOILING WATER REACTORS	VOLUME(CUBIC METERS) - ACTIVITY(CURIES)			
	1980		1981	
FACILITY				
BIG ROCK POINT	4.20E+01	3.09E+01	1.44E+02	3.17E+02
BROWNS FERRY	2.49E+03	6.46E+03	N/R	N/R
BRUNSWICK	6.73E+03	7.55E+03	4.30E+03	7.47E+03
COOPER	4.35E+02	7.05E+02	4.99E+02	4.43E+02
DRESDEN	1.16E+03	4.46E+03	1.14E+03	4.59E+03
DUANE ARNOLD	7.35E+02	7.00E+02	6.97E+02	1.07E+03
EDWIN I. HATCH 1	4.64E+02	9.62E+02	1.29E+03	4.46E+03
EDWIN I. HATCH 2	2.59E+02	8.27E+01	1.40E+03	3.05E+02
HUMBOLDT BAY	8.20E+01	6.95E+01	8.43E+01	5.46E-01
JAMES A. FITZPATRICK	7.50E+02	8.86E+02	8.61E+02	1.63E+03
LACROSSE	4.32E+01	2.02E+01	4.82E+00	6.11E+01
MILLSTONE 1	2.30E+03	2.36E+03	1.96E+03	1.82E+03
MONTICELLO	7.42E+02	7.57E+02	5.54E+02	4.42E+02
NINE MILE POINT	8.14E+02	2.32E+04	5.31E+02	1.72E+03
OYSTER CREEK	2.03E+03	1.32E+03	1.78E+03	4.21E+02
PEACH BOTTOM	2.64E+03	6.69E+03	2.34E+03	5.33E+03
PILGRIM	2.94E+03	1.60E+03	1.06E+03	9.38E+02
QUAD-CITIES	1.67E+03	4.07E+03	1.72E+03	5.16E+03
VERMONT YANKEE	4.84E+02	9.20E+02	4.39E+02	1.11E+03
FORT ST. VRAIN*	0.00E+00	0.00E+00	0.00E+00	0.00E+00



TABLE 12

## SOLID WASTE COMPARISON BY YEAR

## PRESSURIZED WATER REACTORS

## VOLUME(CUBIC METERS) - ACTIVITY(CURIES)

FACILITY	1975		1976		1977		1978		1979	
	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
ARKANSAS ONE 1					5.17E+02	1.26E+02				
ARKANSAS ONE 2										
BEAVER VALLEY	4.50E+01	4.26E-02	2.67E+02	8.18E+00	4.39E+02	2.25E+02	2.44E+02	2.95E+02		
CALVERT CLIFFS	1.18E+02	1.22E+02	3.09E+02	9.83E+02	6.03E+02	1.12E+03	4.32E+02	9.71E+02		
CRYSTAL RIVER			4.48E+02	3.48E+00	6.87E+02	2.72E+04	1.24E+03	1.20E+03		
DAVIS-BESSE			0.00E+00	0.00E+00	3.40E+02	3.30E+00	2.60E+02	2.86E+00		
DONALD C. COOK	1.69E+02	2.62E-01	6.84E+02	8.28E+01	1.28E+03	2.25E+02	1.09E+03	3.37E+02		
FORT CALHOUN	7.57E+02	1.27E+02	5.97E+02	6.46E+02	5.84E+02	1.06E+02	2.44E+02	2.99E+01		
H. B. ROBINSON	3.16E+02	6.29E+01	2.59E+02	1.24E+03	8.22E+02	2.40E+02	8.34E+02	8.72E+01		
HADDON NECK	7.67E+02	7.46E+02	1.68E+03	8.41E+02	2.29E+02	1.44E+02	1.29E+03	3.05E+02		
INDIAN POINT 1-2	9.19E+02	9.46E+02	1.06E+03	1.45E+03	8.43E+03	2.37E+03	1.17E+03	2.16E+03		
INDIAN POINT 3					5.94E+02	6.49E+01	2.25E+02	1.63E+02		
JOSEPH M. FARLEY					2.69E+02	5.72E+00	1.11E+03	2.32E+02		
KEWAUNEE	5.94E+02	4.94E+01	3.37E+01	3.66E+02	7.98E+01	1.50E+03	1.70E+02	3.54E+02		
MAINE YANKEE	1.84E+02	5.04E+02	1.84E+02	1.53E+04	5.81E+02	4.14E+03	3.63E+02	2.77E+03		
MCGUIRE										
MILLSTONE 2	2.80E+02	1.80E+00	9.35E+01	5.80E+01	1.55E+02	1.70E+01	2.46E+02	1.78E+03		
NORTH ANNA					2.14E+01	3.59E+00	2.95E+02	5.89E+01		
OCONEE	2.22E+03	7.83E+02	1.07E+03	7.37E+03	1.58E+03	5.93E+03	1.63E+03	2.59E+03		
PALISADES	6.81E+01	9.58E+01	4.43E+02	8.71E+01	7.17E+02	3.40E+03	6.84E+02	3.92E+02		
POINT BEACH	1.99E+02	3.04E+02	6.84E+03	5.68E+02	1.61E+02	1.51E+03	2.69E+02	1.22E+03		
PRAIRIE ISLAND	1.52E+02	6.53E+01	6.43E+02	2.46E+02	1.95E+02	1.53E+02	1.99E+01	8.83E+01		
R. E. GINNA	2.80E+02	9.78E+01	3.49E+02	6.90E+02	5.96E+01	6.27E+02	3.08E+02	1.53E+02		
RANCHO SECO	1.11E+02	2.80E+01	5.06E+01	1.21E+03	1.29E+02	1.27E+03	1.01E+02	4.03E+00		
SALEM 1&2	0.00E+00	0.00E+00	4.25E+02	2.20E+00	2.27E+02	1.94E+02	6.86E+02	1.28E+02		
SAN ONOFRE	1.45E+02	6.98E+02	3.68E+02	6.02E+01	1.31E+02	7.17E+00	8.35E+01	9.24E+01		
SEQUOYAH										
ST. LUCIE	8.68E+01	1.57E+00	3.85E+02	3.27E+03	3.58E+02	1.26E+04	3.08E+02	1.79E+02		
SURRY	7.00E+02	6.17E+02	7.93E+02	6.10E+02	6.03E+02	5.66E+02	2.74E+03	3.45E+02		
THREE MILE ISLAND 1	4.06E+02	1.85E+02	2.18E+02	4.73E+01	3.89E+02	2.34E+02	7.51E+02	3.12E+01		
THREE MILE ISLAND 2										
TMI 2/EPICOR										
TROJAN	4.37E+01	4.32E+00	1.01E+02	8.31E+01	2.26E+02	4.48E+02	6.37E+02	3.30E+02		
TURKEY POINT	1.44E+03	4.77E+02	1.07E+03	4.26E+02	1.75E+03	1.72E+03	9.20E+02	2.48E+02		
YANKEE ROWE	3.60E+02	2.65E+01	2.81E+02	3.54E+00	2.60E+02	9.75E+00	2.36E+02	1.63E+02		
ZION	2.06E+03	6.82E+01	1.97E+03	2.25E+02	1.63E+03	1.86E+03	5.97E+02	2.69E+03		

TABLE 12

## SOLID WASTE COMPARISON BY YEAR

PRESSURIZED WATER REACTORS

VOLUME(CUBIC METERS) - ACTIVITY(CURIES)

FACILITY	1980		1981	
	N/R	N/R	N/R	N/R
ARKANSAS ONE 1	N/R	N/R	N/R	N/R
ARKANSAS ONE 2	N/R	N/R	N/R	N/R
BEAVER VALLEY	2.84E+02	5.34E+02	2.13E+02	9.30E+01
CALVERT CLIFFS	2.51E+02	1.48E+04	5.00E+02	9.86E+01
CRYSTAL RIVER	9.27E+02	2.05E+03	1.27E+03	1.38E+03
DAVIS-BESSE	3.30E+02	3.00E+01	3.25E+02	3.95E+01
DONALD C. COOK	2.10E+03	1.04E+03	9.63E+02	1.43E+03
FORT CALHOUN	4.06E+02	1.32E+03	2.53E+02	1.01E+02
H. B. ROBINSON	3.99E+03	3.08E+02	9.02E+02	1.88E+01
HADDAM NECK	1.26E+03	4.89E+02	4.38E+02	6.61E+02
INDIAN POINT 1-2	1.03E+03	3.32E+02	1.58E+03	1.71E+03
INDIAN POINT 3	3.47E+02	2.02E+02	3.17E+02	6.40E+01
JOSEPH W. FARLEY	4.41E+02	2.26E+02	5.64E+02	7.20E+02
KEWAUNEE	1.03E+02	1.37E+03	7.38E+01	1.98E+02
MAINE YANKEE	4.57E+02	4.79E+03	4.14E+02	1.67E+03
MCGUIRE			1.98E+01	1.31E-01
MILLSTONE 2	7.51E+00	2.28E+02	1.63E+01	3.21E+02
NORTH ANNA	2.64E+02	1.54E+02	3.02E+02	2.62E+03
OCONEE	1.32E+03	2.91E+03	2.48E+03	1.12E+04
PALISADES	7.31E+02	1.18E+02	8.54E+02	1.57E+04
POINT BEACH	4.49E+02	9.35E+02	1.77E+02	4.87E+02
PRAIRIE ISLAND	5.25E+02	1.98E+02	2.97E+02	5.64E+01
R. E. GINNA	4.00E+02	4.60E+02	3.76E+02	6.35E+02
RANCHO SECO	4.60E+02	1.12E+02	2.31E+02	1.44E+02
SALEM 1&2	1.01E+03	4.59E+02	9.36E+02	1.14E+03
SAN ONOFRE	7.12E+02	4.35E+02	1.62E+03	1.26E+03
SEQUOYAH	N/R	N/R	1.61E+02	2.92E+01
ST. LUCIE	3.12E+02	7.46E+02	2.50E+02	2.96E+02
SURRY	2.01E+03	7.06E+02	2.80E+03	1.36E+03
THREE MILE ISLAND 1	4.62E+02	2.30E+02	7.98E+02	2.34E+02
THREE MILE ISLAND 2	7.67E+02	1.26E+02	2.74E+02	5.11E+01
TMI 2/EPICOR	N/R	N/R	1.51E+02	3.50E+02
TROJAN	5.14E+02	4.59E+01	3.75E+02	1.04E+03
TURKEY POINT	7.24E+02	1.61E+02	1.25E+03	1.17E+02
YANKEE ROWE	2.07E+02	9.57E+01	3.08E+02	6.79E+01
ZION	1.64E+03	2.55E+03	1.53E+03	3.44E+03

TABLE 15

## NET ELECTRICAL ENERGY GENERATION COMPARISON BY YEAR

BOILING WATER REACTORS		MEGAWATT HOURS									
FACILITY	INITIAL CRITICALITY	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
BIG ROCK POINT	09/27/62									4.01E+05	1.14E+05
BROWNS FERRY	08/17/73									1.69E+07	2.04E+07
BROWNS FERRY	07/20/74										
BROWNS FERRY	08/08/76										
BRUNSWICK	10/08/76									9.91E+06	6.82E+06
BRUNSWICK	03/20/75										
COOPER	02/21/74									4.89E+06	4.99E+06
DRESDEN 1	10/15/59									7.59E+05	0.00E+00
DRESDEN 2-3	01/07/70									9.53E+06	8.42E+06
DRESDEN 2-3	01/31/71										
DUANE ARNOLD	03/23/74									1.23E+06	2.90E+06
EDWIN I. HATCH 1	09/12/74									4.77E+06	5.10E+06
EDWIN I. HATCH 2	07/04/78										
HUMBOLDT BAY	02/16/63									0.00E+00	0.00E+00
JAMES A. FITZPATRICK	11/17/74									4.20E+06	2.96E+06
LACROSSE	07/11/67									1.74E+05	2.01E+05
MILLSTONE 1	10/26/70									4.65E+06	4.22E+06
MONTICELLO	12/10/70									3.86E+06	4.40E+06
NINE MILE POINT	09/05/69									4.47E+06	3.00E+06
OYSTER CREEK	05/03/69									3.65E+06	4.56E+06
PEACH BOTTOM	09/16/73									1.38E+07	1.47E+07
PEACH BOTTOM	08/07/74										
PILGRIM	06/16/72									4.38E+06	4.84E+06
QUAD-CITIES	10/18/71									9.15E+06	8.76E+06
QUAD-CITIES	04/26/72										
VERMONT YANKEE	03/24/72									3.24E+06	3.45E+06
FORT ST. VRAIN*	01/31/74									6.09E+05	1.24E+05

TABLE 13

## NET ELECTRICAL ENERGY GENERATION COMPARISON BY YEAR

BOILING WATER REACTORS		MEGAWATT HOURS	
FACILITY	INITIAL CRITICALITY	1980	1981
BIG ROCK POINT	09/27/62	4.05E+05	4.70E+05
BROWNS FERRY	08/17/75	6.06E+06	4.41E+06
BROWNS FERRY	07/20/74	5.62E+06	7.47E+06
BROWNS FERRY	08/08/76	6.94E+06	6.26E+06
BRUNSWICK	10/08/76	3.94E+06	2.56E+06
BRUNSWICK	03/20/75	1.86E+05	3.28E+06
COOPER	02/21/74	3.79E+06	3.85E+06
DRESDEN 1	10/15/59	0.00E+00	0.00E+00
DRESDEN 2-3	01/07/70	4.58E+06	3.41E+06
DRESDEN 2-3	01/31/71	4.33E+06	5.18E+06
DUANE ARNOLD	03/23/74	2.80E+06	2.22E+06
EDWIN I. HATCH 1	09/12/74	4.79E+06	2.76E+06
EDWIN I. HATCH 2	07/04/78	3.64E+06	4.48E+06
HUMBOLDT BAY	02/16/63	0.00E+00	0.00E+00
JAMES A. FITZPATRICK	11/17/74	4.33E+06	4.78E+06
LACROSSE	07/11/67	2.15E+06	2.41E+05
MILLSTONE 1	10/26/70	3.40E+06	2.52E+06
MONTICELLO	12/10/70	3.45E+06	3.26E+06
NINE MILE POINT	09/05/69	4.54E+06	3.27E+06
OYSTER CREEK	05/03/69	1.96E+06	2.63E+06
PEACH BOTTOM	09/16/73	4.34E+06	6.63E+06
PEACH BOTTOM	08/07/74	7.23E+06	3.13E+06
PILGRIM	06/16/72	3.04E+06	3.44E+06
QUAD-CITIES	10/18/71	3.44E+06	5.73E+06
QUAD-CITIES	04/26/72	3.61E+06	3.77E+06
VERMONT YANKEE	03/24/72	2.98E+06	3.57E+06
FORT ST. VRAIN*	01/31/74	6.76E+05	7.55E+05

TABLE 14

## NET ELECTRICAL ENERGY GENERATION COMPARISON BY YEAR

PRESSURIZED WATER REACTORS		MEGAWATT HOURS									
FACILITY	INITIAL CRITICALITY	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
ARKANSAS ONE 1	08/06/74									5.25E+06	5.32E+06
ARKANSAS ONE 2	12/05/78									3.98E+03	8.81E+05
BEAVER VALLEY	05/10/76									2.48E+06	1.79E+06
CALVERT CLIFFS	10/07/74									9.91E+06	9.68E+06
CALVERT CLIFFS	11/30/76										
CRYSTAL RIVER	01/14/77									2.59E+06	5.76E+06
DAVIS-BESSE	08/12/77									2.61E+06	5.13E+06
DONALD C. COOK	01/18/75									1.01E+07	1.16E+07
DONALD C. COOK	07/01/78										
FORT CALHOUN	08/06/73									2.85E+06	5.67E+06
H. B. ROBINSON	09/20/70									3.98E+06	4.00E+06
HADDAM NECK	07/24/67									4.71E+06	4.12E+06
INDIAN POINT 1-2	08/02/62									4.37E+06	4.80E+06
INDIAN POINT 1-2	05/22/73										
INDIAN POINT 3	04/06/76									5.46E+06	4.79E+06
JOSEPH W. FARLEY 1	08/09/77									5.92E+06	1.74E+06
JOSEPH W. FARLEY 2	05/05/81										
KEWAUNEE	05/07/74									3.89E+06	3.44E+06
MAINE YANKEE	10/23/72									3.35E+06	4.54E+06
MCGUIRE	08/08/81										
MILLSTONE 2	10/17/75									4.50E+06	4.36E+06
NORTH ANNA	04/05/78									3.66E+06	4.19E+06
NORTH ANNA	06/12/80										
OCONEE	04/19/73									1.59E+07	1.32E+07
OCONEE	11/11/73										
OCONEE	09/05/74										
PALISADES	05/24/71									2.62E+06	3.43E+06
POINT BEACH	11/02/70									7.65E+06	6.77E+06
POINT BEACH	05/30/72										
PRAIRIE ISLAND	12/01/73									7.73E+06	7.10E+06
PRAIRIE ISLAND	12/17/74										
R. E. GINNA	11/08/69									3.22E+06	2.96E+06
RANCHO SEC0	09/16/74									4.99E+06	5.71E+06
SALEM 1	12/11/76									4.53E+06	2.04E+06
SALEM 2	08/02/80										
SAN ONOFRE	06/14/67									2.68E+06	3.36E+06
SEQUOYAH	07/05/80										
ST. LUCIE	04/22/76									5.00E+06	4.88E+06
SURRY	07/01/72									1.01E+07	2.87E+06
SURRY	05/07/73										
THREE MILE ISLAND 1	06/05/74									5.67E+06	8.48E+05
THREE MILE ISLAND 2	05/28/78									5.77E+05	N/R
TMI 2/EPICOR	05/28/78										
TROJAN	12/15/75									1.67E+06	5.27E+06
TURKEY POINT	10/20/72									8.29E+06	6.71E+06
TURKEY POINT	06/11/73										
YANKEE ROWE	08/19/60									1.19E+06	1.23E+06
ZION 1	06/19/73									1.35E+07	1.03E+07
ZION 2	12/24/73										

TABLE 14

## NET ELECTRICAL ENERGY GENERATION COMPARISON BY YEAR

PRESSURIZED WATER REACTORS		MEGAWATT HOURS	
FACILITY	INITIAL CRITICALITY	1980	1981
ARKANSAS ONE 1	08/06/74	3.78E+06	4.90E+06
ARKANSAS ONE 2	12/05/78	3.65E+06	4.32E+06
BEAVER VALLEY	05/10/76	3.01E+05	4.66E+06
CALVERT CLIFFS	10/07/74	4.53E+06	6.11E+06
CALVERT CLIFFS	11/30/76	6.41E+06	5.42E+06
CRYSTAL RIVER	01/14/77	3.35E+06	4.01E+06
DAVIS-BESSE	08/12/77	2.09E+06	4.36E+06
DONALD C. COOK	01/18/75	6.46E+06	6.78E+06
DONALD C. COOK	07/01/78	6.70E+06	6.38E+06
FORT CALHOUN	08/06/73	2.01E+06	2.15E+06
H. B. ROBINSON	09/20/70	3.21E+06	3.50E+06
HADDAM NECK	07/24/67	3.56E+06	4.06E+06
INDIAN POINT 1-2	08/02/62	0.00E+00	0.00E+00
INDIAN POINT 1-2	05/22/73	4.26E+06	3.06E+06
INDIAN POINT 3	04/06/76	3.07E+06	3.03E+06
JOSEPH M. FARLEY 1	08/09/77	4.60E+06	2.62E+06
JOSEPH M. FARLEY 2	05/05/81		2.92E+06
KEWAUNEE	03/07/74	3.63E+06	3.77E+06
MAINE YANKEE	10/23/72	4.40E+06	5.21E+06
MCGUIRE	08/08/81		1.91E+04
MILLSTONE 2	10/17/75	4.88E+06	6.09E+06
NORTH ANNA	04/05/78	5.63E+06	4.64E+06
NORTH ANNA	06/12/80	3.50E+05	5.65E+06
OCONEE	04/19/73	5.12E+06	3.00E+06
OCONEE	11/11/73	3.88E+06	3.19E+06
OCONEE	09/05/74	5.22E+06	5.64E+06
PALISADES	05/24/71	2.38E+06	3.46E+06
POINT BEACH	11/02/70	2.48E+06	2.61E+06
POINT BEACH	05/30/72	3.59E+06	3.72E+06
PRAIRIE ISLAND	12/01/73	3.11E+06	3.84E+06
PRAIRIE ISLAND	12/17/74	3.47E+06	3.09E+06
R. E. GINNA	11/08/69	3.09E+06	3.32E+06
RANCHO SECO	09/16/74	4.42E+06	2.63E+06
SALEM 1	12/11/76	5.68E+06	6.19E+06
SALEM 2	08/02/80	0.00E+00	1.63E+06
SAN ONOFRE	06/14/67	8.17E+05	7.79E+05
SEQUOYAH	07/05/80	5.18E+05	2.53E+06
ST. LUCIE	04/22/76	5.20E+06	4.95E+06
SURRY	07/01/72	2.47E+06	2.38E+06
SURRY	03/07/73	2.24E+06	3.15E+06
THREE MILE ISLAND 1	06/05/74	0.00E+00	0.00E+00
THREE MILE ISLAND 2	03/28/78	0.00E+00	0.00E+00
TMI 2/EPICOR	03/28/78	0.00E+00	0.00E+00
TROJAN	12/15/75	6.07E+06	6.42E+06
TURKEY POINT	10/20/72	4.39E+06	9.12E+05
TURKEY POINT	06/11/73	3.85E+06	4.50E+06
YANKEE ROWE	08/19/60	2.92E+05	8.85E+05
ZION 1	06/19/73	6.51E+06	6.19E+06
ZION 2	12/24/73	5.28E+06	5.26E+06

TABLE 15

## THERMAL ENERGY GENERATION COMPARISON BY YEAR

BOILING WATER REACTORS		MEGAWATT HOURS									
FACILITY	INITIAL CRITICALITY	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
BIG ROCK POINT	09/27/62	1.18E+06	1.21E+06	1.20E+06	1.41E+06	1.13E+06	9.80E+05	8.30E+05	1.23E+06	1.37E+06	3.96E+05
BROWNS FERRY	08/17/73				1.37E+06	1.64E+07	8.75E+06	1.34E+07	5.37E+07	5.32E+07	6.31E+07
BROWNS FERRY	07/20/74										
BROWNS FERRY	08/08/76										
BRUNSWICK	10/08/76						4.72E+06	7.81E+06	1.59E+07	3.07E+07	2.12E+07
BRUNSWICK	03/20/75										
COOPER	02/21/74					6.90E+06	1.24E+07	1.19E+07	1.45E+07	1.54E+07	1.58E+07
DRESDEN 1	10/15/59	4.77E+06	2.38E+06	3.76E+06	2.43E+06	1.36E+06	2.56E+06	3.42E+06	2.21E+06	2.73E+06	0.00E+00
DRESDEN 2-3	01/07/70	4.11E+06	1.23E+07	2.52E+07	2.83E+07	2.18E+07	1.70E+07	2.74E+07	2.89E+07	3.13E+07	2.77E+07
DRESDEN 2-3	01/31/71										
DUANE ARNOLD	03/23/74						7.42E+06	8.02E+06	9.32E+06	3.96E+06	3.07E+06
EDWIN I. HATCH 1	09/12/74						9.75E+06	1.38E+07	1.22E+07	3.37E+07	1.62E+07
EDWIN I. HATCH 2	07/04/78										
HUMBOLDT BAY	02/16/65	1.40E+06	1.14E+06	1.25E+06	1.47E+06	1.27E+06	1.32E+06	6.80E+05	0.00E+00	0.00E+00	0.00E+00
JAMES A. FITZPATRICK	11/17/74						6.81E+06	1.26E+07	1.18E+07	1.30E+07	3.97E+06
LACROSSE	07/11/67	4.50E+05	7.10E+05	8.20E+05	6.90E+05	1.08E+06	9.20E+05	6.10E+05	3.43E+05	6.54E+05	7.48E+05
MILLSTONE 1	10/26/70	2.60E+05	1.11E+07	9.69E+06	5.96E+06	1.12E+07	1.21E+07	1.16E+07	1.48E+07	1.43E+07	1.30E+07
MONTICELLO	12/10/70		4.37E+06	1.10E+07	9.90E+06	8.28E+06	8.88E+06	1.23E+07	1.10E+07	1.18E+07	1.35E+07
NINE MILE POINT	09/05/69	5.94E+06	9.94E+06	1.00E+07	1.10E+07	1.05E+07	9.68E+06	1.31E+07	9.15E+06	1.39E+07	9.67E+06
OYSTER CREEK	05/03/69	1.06E+07	1.17E+07	1.30E+07	1.09E+07	1.13E+07	9.81E+06	1.18E+07	9.82E+06	1.10E+07	1.38E+07
PEACH BOTTOM	09/16/73					1.23E+07	3.34E+07	3.72E+07	2.86E+07	4.39E+07	4.58E+07
PEACH BOTTOM	08/07/74										
PILGRIM	06/16/72			2.65E+06	1.25E+07	6.00E+06	8.10E+06	7.60E+06	8.26E+06	1.33E+07	1.47E+07
QUAD-CITIES	10/18/71			1.25E+07	3.17E+07	2.61E+07	2.31E+07	2.59E+07	2.68E+07	3.14E+07	3.00E+07
QUAD-CITIES	04/26/72										
VERMONT YANKEE	03/24/72			1.48E+06	6.08E+06	8.20E+06	1.13E+07	1.02E+07	1.11E+07	1.00E+07	1.08E+07
FORT ST. VRAIN*	01/31/74									2.04E+06	4.78E+05

TABLE 15

## THERMAL ENERGY GENERATION COMPARISON BY YEAR

BOILING WATER REACTORS		MEGAWATT HOURS	
FACILITY	INITIAL CRITICALITY	1980	1981
BIG ROCK POINT	09/27/62	1.40E+06	1.63E+06
BROWNS FERRY	08/17/75	1.92E+07	1.36E+07
BROWNS FERRY	07/20/74	1.74E+07	2.31E+07
BROWNS FERRY	08/08/76	2.13E+07	1.95E+07
BRUNSWICK	10/08/76	1.23E+07	8.29E+06
BRUNSWICK	05/20/75	5.38E+06	1.04E+07
COOPER	02/21/74	1.56E+07	1.39E+07
DRESDEN 1	10/15/59	0.00E+00	0.00E+00
DRESDEN 2-3	01/07/70	1.57E+07	1.13E+07
DRESDEN 2-3	01/31/71	1.42E+07	1.71E+07
DUANE ARNOLD	03/23/74	8.87E+06	7.05E+06
EDWIN I. HATCH 1	09/12/74	1.54E+07	8.97E+06
EDWIN I. HATCH 2	07/04/78	1.16E+07	1.47E+07
HUMBOLDT BAY	02/16/63	0.00E+00	0.00E+00
JAMES A. FITZPATRICK	11/17/74	1.30E+07	1.42E+07
LACROSSE	07/11/67	8.00E+05	9.11E+05
MILLSTONE 1	10/26/70	1.04E+07	8.60E+06
MONTICELLO	12/10/70	1.07E+07	1.01E+07
NINE MILE POINT	09/05/69	1.41E+07	1.01E+07
OYSTER CREEK	05/03/69	6.27E+06	8.44E+06
PEACH BOTTOM	09/16/73	1.37E+07	2.08E+07
PEACH BOTTOM	08/07/74	2.26E+07	9.85E+06
PILGRIM	06/16/72	9.20E+06	1.05E+07
QUAD-CITIES	10/18/71	1.17E+07	1.88E+07
QUAD-CITIES	04/26/72	1.22E+07	1.27E+07
VERMONT YANKEE	03/24/72	9.38E+06	1.13E+07
FORT ST. VRAIN*	01/31/74	2.23E+06	2.23E+06



TABLE 16

## THERMAL ENERGY GENERATION COMPARISON BY YEAR

PRESSURIZED WATER REACTORS		MEGAWATT HOURS									
FACILITY	INITIAL CRITICALITY	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
ARKANSAS ONE 1	08/06/74					1.99E+06	1.54E+07	1.21E+07	1.64E+07	1.64E+07	1.05E+07
ARKANSAS ONE 2	12/05/78									4.45E+04	3.45E+06
BEAVER VALLEY	05/10/76							1.97E+06	1.01E+07	8.80E+06	6.11E+06
CALVERT CLIFFS	10/07/74						1.40E+07	1.98E+07	2.97E+07	3.14E+07	3.15E+07
CALVERT CLIFFS	11/30/76										
CRYSTAL RIVER	01/14/77								1.26E+07	7.97E+06	1.17E+07
DAVIS-BESSE	08/12/77								1.66E+06	8.52E+06	1.00E+07
DONALD C. COOK	01/18/75						1.46E+07	2.15E+07	1.55E+07	3.29E+07	3.68E+07
DONALD C. COOK	07/01/78										
FORT CALHOUN	08/06/73				2.03E+06	7.58E+06	6.71E+06	7.15E+06	9.40E+06	8.98E+06	1.16E+07
H. B. ROBINSON	09/20/70	6.00E+04	7.85E+06	1.55E+07	1.25E+07	1.56E+07	1.36E+07	1.59E+07	1.43E+07	1.33E+07	1.30E+07
HADDAM NECK	07/24/67	1.14E+07	1.34E+07	1.38E+07	7.73E+06	1.42E+07	1.34E+07	1.30E+07	1.31E+07	1.51E+07	1.32E+07
INDIAN POINT 1-2	08/02/62				1.47E+06	1.15E+07	1.64E+07	7.60E+06	3.50E+07	1.48E+07	1.61E+07
INDIAN POINT 1-2	05/22/73										
INDIAN POINT 3	04/06/76									1.70E+07	1.57E+07
JOSEPH M. FARLEY 1	08/09/77									1.95E+07	5.77E+06
JOSEPH M. FARLEY 2	05/05/81										
KEWAUNEE	03/07/74					5.03E+06	1.08E+07	1.08E+07	1.11E+07	1.24E+07	1.09E+07
MAINE YANKEE	10/23/72			1.44E+06	1.08E+07	1.14E+07	1.47E+07	1.94E+07	1.65E+07	1.69E+07	1.41E+07
MCGUIRE	08/08/81										
MILLSTONE 2	10/17/75						6.40E+05	1.52E+07	1.42E+07	1.44E+07	1.38E+07
NORTH ANNA	04/05/78									1.22E+07	1.41E+07
NORTH ANNA	06/12/80										
OCONEE	04/19/75				6.62E+06	1.70E+07	4.68E+07	3.97E+07	4.00E+07	4.84E+07	4.37E+07
OCONEE	11/11/75										
OCONEE	09/05/74										
PALISADES	05/24/71			5.91E+06	7.80E+06	4.00E+05	8.91E+06	9.66E+06	1.73E+07	9.44E+06	1.20E+07
POINT BEACH	11/02/70	6.30E+05	1.00E+07	9.96E+06	1.84E+07	2.04E+07	2.09E+07	2.18E+07	2.23E+07	2.33E+07	2.08E+07
POINT BEACH	05/30/72										
PRAIRIE ISLAND	12/01/75				1.28E+05	5.26E+06	2.25E+07	2.06E+07	2.46E+07	2.52E+07	1.12E+08
PRAIRIE ISLAND	12/17/74										
R. E. GINNA	11/08/69	6.84E+06	8.50E+06	7.71E+06	1.08E+07	6.71E+06	9.71E+06	6.98E+06	1.11E+07	1.05E+07	9.35E+06
RANCHO SECO	09/16/74						4.11E+06	6.91E+06	1.81E+07	1.59E+07	1.79E+07
SALEM 1	12/11/76							5.00E+04	6.70E+06	1.43E+07	6.60E+06
SALEM 2	08/02/80										
SAN ONOFRE	06/14/67	9.19E+06	9.60E+06	8.53E+06	7.09E+06	9.73E+06	1.00E+07	7.75E+06	7.29E+06	8.54E+06	1.05E+07
SEQUOYAH	07/05/80										
ST. LUCIE	04/22/76							3.50E+05	1.75E+07	1.64E+07	1.60E+07
SURRY	07/01/72			1.29E+06	2.25E+07	1.92E+07	2.90E+07	2.51E+07	3.10E+07	3.27E+07	9.32E+06
SURRY	03/07/73										
THREE MILE ISLAND 1	06/05/74					6.20E+06	1.76E+07	1.39E+07	1.76E+07	1.83E+07	2.83E+06
THREE MILE ISLAND 2	03/28/78									3.16E+06	N/R
TMI 2/EPICOR	03/28/78										
TROJAN	12/15/75							7.54E+06	2.12E+07	5.63E+06	1.70E+07
TURKEY POINT	10/30/72			2.90E+05	1.53E+07	2.55E+07	2.78E+07	2.68E+07	2.70E+07	2.81E+07	2.28E+07
TURKEY POINT	06/11/73										
YANKEE ROWE	08/19/60	4.13E+06	5.02E+06	2.40E+06	3.57E+06	3.07E+06	4.02E+06	4.25E+06	3.52E+06	4.16E+06	4.17E+06
ZION 1	06/19/73				2.73E+06	1.69E+07	3.28E+07	3.11E+07	3.66E+07	4.30E+07	3.31E+07
ZION 2	12/24/73										

TABLE 16

## THERMAL ENERGY GENERATION COMPARISON BY YEAR

PRESSURIZED WATER REACTORS		MEGAWATT HOURS	
FACILITY	INITIAL CRITICALITY	1980	1981
ARKANSAS ONE 1	08/06/74	1.29E+07	1.54E+07
ARKANSAS ONE 2	12/05/78	1.18E+07	1.39E+07
BLAVER VALLEY	05/10/76	1.15E+06	1.55E+07
CALVERT CLIFFS	10/07/74	1.52E+07	1.96E+07
CALVERT CLIFFS	11/30/76	2.05E+07	1.71E+07
CRYSTAL RIVER	01/14/77	1.04E+07	1.27E+07
DAVIS-BESSE	08/12/77	6.71E+06	1.40E+07
DONALD C. COOK	01/18/75	2.02E+07	2.11E+07
DONALD C. COOK	07/01/78	2.14E+07	2.04E+07
FORT CALHOUN	08/06/75	6.48E+06	6.98E+06
H. B. ROBINSON	09/20/70	1.07E+07	1.19E+07
HADDAM NECK	07/24/67	1.14E+07	1.31E+07
INDIAN POINT 1-2	08/02/62	0.00E+00	0.00E+00
INDIAN POINT 1-2	05/22/75	1.50E+07	1.05E+07
INDIAN POINT 5	04/06/76	1.15E+07	1.14E+07
JOSEPH W. FARLEY 1	08/09/77	1.54E+07	8.96E+06
JOSEPH W. FARLEY 2	05/05/81		9.47E+06
KEWAUNEE	03/07/74	1.15E+07	1.21E+07
MAINE YANKEE	10/23/72	1.41E+07	1.67E+07
MCGUIRE	08/08/81		8.50E+04
MILLSTONE 2	10/17/75	1.55E+07	1.92E+07
NORTH ANNA	04/05/78	1.89E+07	1.51E+07
NORTH ANNA	06/12/80	1.12E+06	1.77E+07
OCONEE	04/19/75	1.52E+07	9.00E+06
OCONEE	11/11/75	1.20E+07	1.59E+07
OCONEE	09/05/74	1.59E+07	1.72E+07
PALISADES	05/24/71	8.19E+06	1.17E+07
POINT BEACH	11/02/70	8.09E+06	8.51E+06
POINT BEACH	05/30/72	1.11E+07	1.15E+07
PRAIRIE ISLAND	12/01/75	1.06E+07	1.25E+07
PRAIRIE ISLAND	12/17/74	1.14E+07	1.01E+07
R. E. GINNA	11/08/69	9.93E+06	1.07E+07
RANCHO SECO	09/16/74	1.59E+07	8.92E+06
SALEM 1	12/11/76	1.84E+07	2.02E+07
SALEM 2	08/02/80	0.00E+00	5.11E+06
SAN ONOFRE	06/14/67	2.55E+06	2.59E+06
SEQUOYAH	07/05/80	1.67E+06	8.06E+06
ST. LUCIE	04/22/76	1.70E+07	1.61E+07
SURRY	07/01/72	8.67E+06	7.94E+06
SURRY	03/07/75	7.26E+06	1.68E+07
THREE MILE ISLAND 1	06/05/74	0.00E+00	0.00E+00
THREE MILE ISLAND 2	03/28/78	0.00E+00	0.00E+00
TWI 2/EPICOR	03/28/78	0.00E+00	0.00E+00
TROJAN	12/13/75	1.97E+07	2.10E+07
TURKEY POINT	10/20/72	1.47E+07	3.03E+06
TURKEY POINT	06/11/75	1.52E+07	1.48E+07
YANKEE ROWE	08/19/60	1.13E+06	5.63E+06
ZION 1	06/19/75	2.22E+07	1.98E+07
ZION 2	12/24/75	1.75E+07	1.77E+07

APPENDIX A

INDIVIDUAL PLANT SUMMARIES

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: PWR  
 DOCKET NO.: 50-313  
 COOLING WATER SOURCE: DARDANELLE RESERVOIR

LICENSEE: ARKANSAS POWER & LIGHT  
 LICENSED POWER (MWT): 2568.00  
 INITIAL CRITICALITY: 08/06/74

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
K-40	1.56E-05
AR-41	0.00E+00
MN-54	7.14E-07
CO-58	1.45E-05
CO-60	6.36E-06
KR-85	5.40E+01
KR-85M	1.41E-02
KR-87	0.00E+00
KR-88	1.41E-03
SR-89	7.16E-07
SR-90	6.95E-07
NB-95	3.40E-07
I-131	5.52E-03
XE-131M	1.45E+02
I-133	7.10E-05
XE-133	3.43E+03
XE-133M	5.70E+00
CS-134	3.12E-06
XE-135	9.91E+01
CS-137	1.42E-05
BA-140	2.02E-07
TH-228	3.02E-06

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
BE-7	6.68E-03
NA-24	6.51E-04
CR-51	2.18E-01
MN-54	4.98E-02
MN-56	0.00E+00
CO-57	3.24E-03
CO-58	1.80E+00
FE-59	3.36E-02
CO-60	9.50E-01
NI-65	0.00E+00
ZN-65	2.35E-04
SE-75	2.68E-04
KR-85	8.15E-02
KR-85M	8.06E-05
KR-87	4.53E-06
KR-88	1.60E-03
SR-89	4.16E-03
SR-90	1.01E-03
SR-91	7.50E-05

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
SR-92	6.15E-04
NB-95	8.60E-02
ZR-95	4.65E-02
NB-97	7.18E-02
ZR-97	4.29E-03
MO-99	3.89E-04
RU-103	2.17E-02
RU-106	5.83E-02
AG-110M	1.46E-01
I-131	1.13E-01
XE-131M	4.80E-01
BA-133	3.15E-03
I-133	7.73E-05
XE-133	5.60E+01
XE-133M	3.60E-01
CS-134	6.30E-01
I-134	3.95E-05
XE-135	5.75E-02
CS-136	4.70E-04
CS-137	1.24E+00
CS-138	1.18E-05
BA-140	9.93E-04
LA-140	8.64E-02
CE-144	3.48E-02
EU-152	1.35E-05
W-187	1.13E-04
NP-239	1.56E-04

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	1.25E+02
TOTAL LIQUID RELEASE	4.42E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.95E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.71E+12

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 2  
TYPE: PWR  
DOCKET NO.: 50-368  
COOLING WATER SOURCE: COOLING TOWER

LICENSEE: ARKANSAS POWER & LIGHT  
LICENSED POWER (MWT): 2815.00  
INITIAL CRITICALITY: 12/05/78

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
BE-7	2.72E-06
K-40	1.90E-05
AR-41	1.97E-05
MN-54	1.74E-07
CO-58	2.21E-05
CO-60	4.10E-06
SE-75	1.99E-07
KR-85	2.70E+00
KR-85M	6.50E+00
KR-87	0.00E+00
KR-88	4.10E+00
SR-89	7.37E-06
SR-90	1.30E-06
NB-95	6.94E-06
ZR-95	1.62E-06
NB-97	1.14E-07
TC-99M	4.14E-07
RU-103	1.91E-06
AG-110M	1.85E-07
SN-113	4.32E-08
I-131	1.37E-02
XE-131M	3.90E+01
TE-132	2.02E-07
I-133	3.53E-04
XE-133	4.03E+03
XE-133M	1.90E+00
CS-134	2.02E-06
I-135	6.14E-06
XE-135	2.75E+02
CS-137	4.54E-06
CE-144	1.28E-06
BI-214	6.62E-05
PB-214	4.23E-06
RA-226	1.98E-07
TH-228	6.54E-05

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
BE-7	1.45E-03
NA-24	1.85E-03
CR-51	1.19E-01
MN-54	2.55E-02
CO-57	5.37E-04
CO-58	4.40E-01

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
FE-59	3.08E-02
CO-60	6.72E-02
NI-65	4.00E-05
ZN-65	7.86E-04
SE-75	4.94E-05
KR-85	1.60E-01
KR-85M	1.11E-02
KR-87	1.81E-04
KR-88	5.41E-03
SR-89	2.22E-03
SR-90	0.00E+00
SR-91	1.79E-05
SR-92	1.87E-04
NB-95	4.15E-02
ZR-95	2.68E-02
NB-97	7.62E-03
ZR-97	7.35E-05
MO-99	5.06E-03
RU-103	1.49E-02
RU-106	2.39E-03
AG-110M	1.63E-02
I-131	1.27E+00
XE-131M	6.10E-01
I-132	3.87E-05
BA-133	5.32E-05
I-133	4.42E-02
XE-133	1.43E+02
XE-133M	7.60E-01
CS-134	1.99E-01
I-135	1.05E-03
XE-135	4.00E-01
CS-136	4.83E-03
CS-137	5.70E-01
CS-138	1.25E-04
BA-140	9.26E-05
LA-140	1.13E-02
CE-144	3.02E-03
W-187	1.78E-05
NP-239	8.88E-05

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	3.10E+00
TOTAL LIQUID RELEASE	2.44E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	9.25E+06
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.09E+12

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

INSTALLATION: BEAVER VALLEY

LOCATION: SHIPPINGPORT, PA

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
TYPE: PWR  
DOCKET NO.: 50-324  
COOLING WATER SOURCE: OHIO RIVER

LICENSEE: DUQUESNE LIGHT + OHIO EDISON + PENNSYLVANIA POWER  
LICENSED POWER (MWT): 2652.00  
INITIAL CRITICALITY: 05/10/76

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
MN-54	4.43E-07
CO-58	1.50E-05
CO-60	5.52E-05
KR-85	<6.58E+00
KR-85M	<4.50E-01
KR-87	<1.17E-01
KR-88	<1.94E-01
SR-89	<1.27E-05
SR-90	<1.02E-04
I-131	<6.41E-03
XE-131M	8.33E+00
I-133	<2.77E-04
XE-133	<7.82E+02
XE-133M	4.76E+00
CS-134	<1.03E-07
I-135	<9.28E-05
XE-135	<3.77E+00
XE-135M	<1.76E-01
CS-137	<5.16E-05
XE-138	<6.64E-07
BA-LA-140	<1.62E-07

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	<2.84E-05
MN-54	6.05E-03
CO-58	2.50E-02
FE-59	<2.09E-06
CO-60	8.99E-02
ZN-65	<6.60E-07
SR-89	5.40E-04
SR-90	1.07E-05
ZR-NB-95	<8.90E-04
MO-99	<7.69E-07
TC-99M	<3.06E-06
I-131	2.90E-03
I-133	1.65E-04
XE-133	3.07E-02
CS-134	5.10E-03
XE-135	<1.63E-04
CS-137	1.33E-02
BA-140	<2.64E-07
LA-140	<1.24E-07
CE-141	<4.11E-07

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



EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTSLIQUID EFFLUENTS  
NUCLIDES RELEASED

ACTIVITY (CI)

## TRITIUM

(CI)

TOTAL AIRBORNE RELEASE 9.49E-02

TOTAL LIQUID RELEASE 1.40E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	4.30E+06
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	4.29E+09

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION: BEAVER VALLEY

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
36	TRUCK	BARNWELL, S.C.

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	CO-58	5 2.26E+01	1.16E+01
	CO-60	5 6.65E+01	6.92E+01
	CS-137	5 4.40E+00	9.10E+00
B			
	CO-58	5 2.26E+01	9.40E+00
	CO-60	5 6.09E+01	8.58E+01
	CS-137	5	2.70E+00
	KN-54	5 7.20E+00	

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.07E+02
	CI	8.73E+01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.06E+02
	CI	5.68E+00
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: BWR  
 DOCKET NO.: 50-155  
 COOLING WATER SOURCE: LAKE MICHIGAN

LICENSEE: CONSUMERS POWER  
 LICENSED POWER (MWT): 240.00  
 INITIAL CRITICALITY: 09/27/62

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
N-15	1.41E+03
NA-24	8.58E-04
CR-51	5.42E-04
MN-54	4.99E-05
CO-60	2.10E-04
BR-82	1.25E-02
KR-83M	3.09E+02
KR-85	3.63E+00
KR-85M	3.67E+02
KR-87	1.56E+03
KR-88	9.53E+02
KR-89	8.53E+02
KR-90	9.55E+02
KR-91	1.19E+01
I-131	2.58E-05
XE-131M	1.34E+00
I-135	3.59E-02
XE-135	2.52E-02
XE-135M	7.74E+00
I-135	2.79E-02
XE-135	1.50E+05
XE-135M	1.39E+05
CS-136	4.60E-05
CS-137	1.50E-04
XE-137	1.55E+05
XE-138	7.34E+05
XE-139	1.27E+05
BA-140	1.45E-05
LA-140	9.55E-05
XE-140	1.29E+02
UNIDENTIFIED	1.28E-05

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	1.91E-02
MN-54	1.59E-02
CO-58	2.25E-04
FE-59	2.37E-05
CO-60	4.99E-02
ZN-65	1.82E-04
SR-89	6.87E-04
SR-90	1.02E-05
AG-110M	1.70E-04
SB-124	1.57E-04

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: BWR  
 DOCKET NO.: 50-155  
 COOLING WATER SOURCE: LAKE MICHIGAN

LICENSEE: CONSUMERS POWER  
 LICENSED POWER (MWT): 240.00  
 INITIAL CRITICALITY: 09/27/62

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
N-13	1.81E+03
NA-24	8.58E-04
CR-51	5.42E-04
MN-54	4.99E-05
CO-60	2.10E-04
BR-82	1.25E-02
KR-83M	3.09E+02
KR-85	3.63E+00
KR-85M	3.67E+02
KR-87	1.56E+03
KR-88	9.53E+02
KR-89	8.55E+02
KR-90	9.55E+02
KR-91	1.19E+01
I-131	2.58E-03
XE-131M	1.34E+00
I-133	3.59E-02
XE-133	2.85E+02
XE-133M	7.74E+00
I-135	2.79E-02
XE-135	1.50E+03
XE-135M	1.39E+03
CS-136	4.60E-05
CS-137	1.50E-04
XE-137	1.55E+03
XE-138	7.34E+03
XE-139	1.27E+03
BA-140	1.45E-03
LA-140	9.55E-03
XE-140	1.29E+02
UNIDENTIFIED	1.28E-03

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	1.91E-02
MN-54	1.69E-02
CO-58	2.25E-04
FE-59	2.57E-03
CO-60	4.99E-02
ZN-65	1.82E-04
SR-89	6.87E-04
SR-90	1.02E-03
AG-110M	1.70E-04
SB-124	1.57E-04

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 ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
I-131	1.94E-04
XE-135	2.44E-05
CS-134	3.38E-02
CS-137	1.79E-01
LA-140	5.92E-06
UNIDENTIFIED	8.78E-02

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	<1.02E+01
TOTAL LIQUID RELEASE	3.13E+00

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.76E+05
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	9.51E+10

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

INSTALLATION:BIG ROCK POINT

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
10	TRUCK	BARNWELL, S.C.
4	TRUCK	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	4.04E+01
	CI	3.05E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	9.84E+01
	CI	4.44E+00
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	5.66E+00
	CI	8.00E+00
D. OTHER	M3	
	CI	

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1	LICENSEE: TENNESSEE VALLEY AUTHORITY
TYPE: BWR	LICENSED POWER (MWT): 3293.00
DOCKET NO.: 50-259	INITIAL CRITICALITY: 08/17/73
COOLING WATER SOURCE: TENNESSEE RIVER	
UNIT NUMBER: 2	LICENSEE: TENNESSEE VALLEY AUTHORITY
TYPE: BWR	LICENSED POWER (MWT): 3293.00
DOCKET NO.: 50-260	INITIAL CRITICALITY: 07/20/74
COOLING WATER SOURCE: TENNESSEE RIVER	
UNIT NUMBER: 3	LICENSEE: TENNESSEE VALLEY AUTHORITY
TYPE: BWR	LICENSED POWER (MWT): 3293.00
DOCKET NO.: 50-296	INITIAL CRITICALITY: 08/08/76
COOLING WATER SOURCE: TENNESSEE RIVER	

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	5.80E+01
AR-41	4.49E+02
MN-54	3.45E-03
CO-58	2.53E-03
FE-59	5.59E-03
CO-60	1.70E-02
KR-85	8.42E+02
KR-85M	2.67E+03
KR-87	1.01E+03
KR-88	1.22E+04
SR-89	3.08E-03
SR-90	3.21E-03
NB-95	2.67E-03
ZR-95	8.16E-03
I-131	4.00E-02
MI-131	4.00E-02
I-133	1.50E-02
MI-133	1.50E-02
XE-133	9.35E+03
CS-134	3.76E-03
I-135	3.73E-02
MI-135	3.73E-02
XE-135	5.48E+02
XE-135M	1.84E+03
CS-137	4.33E-03
XE-138	1.62E+04
BA-140	3.43E-03
LA-140	1.05E-02

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	2.42E+01
NA-24	9.22E-02
CR-51	2.34E-01
MN-54	7.45E-02
MN-56	2.92E-02

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

LIQUID EFFLUENTS NUCLIDES RELEASED	ACTIVITY (CI)
CO-58	1.99E-02
FE-59	1.54E-01
CO-60	3.48E-01
CU-64	1.43E-01
ZN-65	5.79E-01
BR-82	1.14E-02
SR-89	5.50E-02
SR-90	2.72E-02
NB-95	1.72E-02
ZR-95	1.72E-02
MO-99	4.73E-03
TC-99M	4.73E-03
AG-110M	3.02E-02
SB-124	9.37E-03
SB-125	1.21E-02
I-131	3.96E-02
I-133	1.45E-02
XE-133	6.90E-02
CS-134	1.38E-01
I-135	7.56E-03
XE-135	6.56E-02
CS-136	7.49E-03
CS-137	1.95E-01
BA-140	2.58E-03
LA-140	2.58E-03
CE-141	2.94E-02
SM-153	1.16E-03

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



INSTALLATION: BRUNSWICK

LOCATION: 20 MI S WILMINGTON, NC

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

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): 2436.00  
INITIAL CRITICALITY: 10/08/76

LICENSEE: CAROLINA POWER & LIGHT  
LICENSED POWER (MWT): 2436.00  
INITIAL CRITICALITY: 03/20/75

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	2.76E+03
CR-51	3.78E-02
MN-54	2.06E-03
CO-57	2.79E-08
CO-58	3.47E-04
FE-59	1.27E-04
CO-60	3.38E-03
ZN-65	3.75E-06
KR-85	N/D
KR-85M	2.64E+04
SR-85	2.79E-07
KR-87	5.73E+04
KR-88	5.95E+04
ZR-NB-95	1.62E-06
MO-99	1.65E-04
TC-99M	1.52E-03
RU-103	2.56E-07
RH-106	4.42E-04
AG-110M	1.04E-05
SN-117M	3.37E-05
I-131	2.66E-01
I-132	9.81E-02
I-133	9.93E-01
XE-133	7.83E+04
XE-133M	2.88E+03
CS-134	8.67E-04
I-134	6.36E-02
I-135	8.48E-01
XE-135	9.75E+04
XE-135M	3.54E+04
CS-136	N/D
CS-137	2.05E-03
XE-138	1.40E+05
BA-139	2.71E-03
BA-LA-140	3.32E-03
CE-141	2.72E-05
CE-144	1.47E-06
NP-239	2.00E-05
UNIDENTIFIED	2.21E+04

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

LIQUID EFFLUENTS NUCLIDES RELEASED	ACTIVITY (C1)
F-18	3.15E-02
NA-24	2.50E-01
AR-41	3.80E-04
CR-51	4.31E-01
MN-54	2.21E-01
MN-56	4.84E-05
CO-57	1.65E-05
CO-58	4.15E-02
FE-59	1.01E-02
CO-60	4.68E-01
CU-64	4.51E-02
NI-65	N/D
ZN-65	1.58E-03
AS-76	9.25E-04
KR-85	1.16E-02
KR-85M	4.06E-05
SR-85	4.68E-05
SR-89	1.02E-02
SR-90	1.36E-03
SR-91	1.10E-03
Y-91M	3.65E-04
SR-92	4.58E-04
ZR-NB-95	5.57E-05
NB-97	7.49E-04
NB-97M	2.08E-06
ZR-97	3.50E-05
MO-99	N/D
TC-99M	3.11E-03
TC-101	1.56E-05
RU-103	6.88E-05
AG-110M	1.51E-03
IN-113M	N/D
SN-113	N/D
SN-117M	1.01E-05
SB-122	1.60E-02
TE-129M	N/D
I-131	9.40E-02
XE-131M	1.21E-02
I-132	1.75E-04
TE-132	2.55E-03
I-133	2.71E-02
XE-133	2.35E-01
XE-133M	3.62E-03
CS-134	1.71E-01
I-134	1.52E-05
I-135	6.25E-04
XE-135	1.18E-01
XE-135M	1.33E-03

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CS-136	1.79E-03
CS-137	2.55E-01
CS-138	2.15E-06
BA-139	8.59E-04
CE-139	N/D
BA-LA-140	2.65E-02
CE-141	9.86E-05
CE-144	9.72E-04
W-187	N/D
NP-239	1.29E-02
UNIDENTIFIED	6.51E-02

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	1.76E+01
TOTAL LIQUID RELEASE	2.26E+01

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.20E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.63E+11

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

INSTALLATION: BRUNSWICK

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
318	SOLE USE VEHICLE	BARNWELL, S.C.
56	SOLE USE VEHICLE	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

A		JAN-JUNE	JULY-DEC
BA-140	%		7.59E-01
CO-58	%	4.00E+00	2.00E+00
CO-60	%	2.94E+01	3.16E+01
CR-51	%	2.44E+01	3.28E-01
CS-134	%	6.68E+00	5.37E+00
CS-137	%	1.09E+01	8.46E+00
FE-59	%	2.44E+00	6.65E-01
I-131	%	1.85E-01	2.52E+00
I-133	%		4.56E-02
LA-140	%		1.02E+00
MN-54	%	2.07E+01	1.35E-01
MO-99	%		6.97E-04
NA-24	%	2.46E-02	1.25E-01
NB-97	%	1.13E-03	
SB-122	%	8.45E-01	7.56E-01
SR-92	%	1.02E-01	1.01E-04
TC-99M	%		9.88E-02
TE-131	%		5.30E-02
ZN-65	%	3.36E-01	1.85E-01
ZN-69M	%		8.37E-06
B			
BA-140	%		7.59E-01
CO-58	%	4.00E+00	2.00E+00
CO-60	%	2.94E+01	3.16E+01
CR-51	%	2.44E+01	3.28E-01
CS-134	%	6.68E+00	5.37E+00
CS-137	%	1.09E+01	8.46E+00
FE-59	%	2.44E+00	6.65E-01
I-131	%	1.85E-01	2.52E+00
I-133	%		4.56E-02
LA-140	%		1.02E+00
MN-54	%	2.07E+01	1.35E-01
MO-99	%		6.97E-04
NA-24	%	2.46E-02	1.25E-01
NB-97	%	1.13E-03	
SB-122	%	8.45E-01	7.56E-01

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION: BRUNSWICK

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)		JAN-JUNE	JULY-DEC
SR-92	%	1.02E-01	1.01E-04
TC-99M	%		9.88E-02
TE-131	%		5.30E-02
ZN-65	%	3.36E-01	1.85E-01
ZN-69M	%		8.37E-06

TYPE OF WASTE		UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.		M3	1.37E+03
		CI	7.41E+03
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.		M3	2.93E+03
		CI	6.03E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.		M3	
		CI	
D. OTHER		M3	
		CI	

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

INSTALLATION: CALVERT CLIFFS

LOCATION: 45 MI SE WASHINGTON, D.C.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

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): 2700.00  
INITIAL CRITICALITY: 10/07/74

LICENSEE: BALTIMORE GAS & ELECTRIC  
LICENSED POWER (MWT): 2700.00  
INITIAL CRITICALITY: 11/30/76

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	1.08E+00
CO-58	9.80E-07
CO-60	3.00E-04
BR-82	4.79E-05
KR-85M	5.71E+01
KR-87	2.83E-01
KR-88	5.17E-01
RB-88	8.64E-03
SR-89	1.36E-04
SR-90	6.21E-05
I-131	3.72E-02
XE-131M	1.10E+02
I-132	1.60E-03
I-133	1.96E-02
XE-133	1.86E+03
XE-133M	2.56E+01
CS-134	6.10E-07
I-135	1.89E-03
XE-135	6.21E+01
CS-137	1.52E-06
CS-138	8.88E-05
BA-139	1.58E-08
CE-139	1.08E-07
BA-140	1.43E-04
LA-140	2.94E-04
CE-141	5.84E-07

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	3.93E-02
MN-54	3.81E-01
MN-56	2.63E-04
CO-57	8.41E-04
CO-58	1.27E+00
CO-60	2.09E-01
SR-89	2.19E-02
SR-90	2.69E-02
NB-95	1.64E-02
ZR-95	1.75E-02
ZR-97	5.36E-04

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
MO-99	1.66E-03
RU-103	4.45E-04
RU-106	1.07E-02
AG-110M	1.62E-02
SN-113	3.26E-03
SB-124	2.86E-04
SB-125	7.58E-02
I-131	3.07E-01
XE-131M	2.68E-02
I-133	5.89E-02
XE-133	3.91E+00
XE-133M	1.49E-02
CS-134	5.07E-02
XE-135	3.00E-02
CS-137	1.03E-01
BA-140	4.03E-03
LA-140	3.77E-02
CE-141	6.58E-06
CE-144	2.87E-03
UNIDENTIFIED	9.58E-03

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	5.81E+00
TOTAL LIQUID RELEASE	1.00E+03

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.87E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.33E+12

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS 42	MODE OF TRANSPORTATION MOTOR SURFACE TRANSI	DESTINATION BARNWELL, SC
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ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	CO-58	% 2.52E+01	3.48E+01
	CO-60	% 1.60E+01	5.80E+00
	CS-134	% 1.87E+01	2.03E+01
	CS-137	% 2.34E+01	2.97E+01
	MN-54	% 1.61E+01	4.70E+00
	SB-122	%	1.12E+00
B			
	CO-58	% 1.60E+01	2.63E+01
	CO-60	% 7.23E+01	1.74E+01
	CS-134	% 2.26E+00	1.06E+01
	CS-137	% 6.38E+00	4.13E+01
	MN-54	% 1.66E+00	2.60E+00
	NB-95	% 1.03E+00	
C			
	CO-58	% 1.72E+01	2.18E+01
	CO-60	% 2.21E+01	1.98E+01
	CR-51	% 2.30E+00	
	CS-134	% 7.28E+00	
	CS-137	% 3.53E+01	
	MN-54	% 3.79E+00	3.30E+00
	NB-95	% 6.68E+00	6.30E+00
	SB-122	%	2.80E+00
	SB-125	% 3.96E+00	4.31E+01
	ZR-95	% 1.36E+00	

TYPE OF WASTE

	UNIT YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3 5.29E+01 CI 9.40E+01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3 2.92E+02 CI 2.40E+00
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3 1.56E+02 CI 2.17E+00
D. OTHER	M3 CI

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



EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

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): 3250.00  
 INITIAL CRITICALITY: 01/18/75  
 LICENSEE: INDIANA & MICHIGAN ELECTRIC  
 LICENSED POWER (MWT): 3391.00  
 INITIAL CRITICALITY: 07/01/78

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	2.59E-01
AR-41	2.30E-01
MN-54	6.08E-05
CO-58	8.30E-04
CO-60	2.13E-03
KR-85	4.50E+00
KR-85M	3.16E+00
KR-87	9.94E-01
KR-88	8.01E-01
NB-95	1.38E-06
ZR-95	8.57E-07
I-130	6.47E-06
I-131	4.66E-02
XE-131M	3.75E+00
I-133	4.77E-02
XE-133	2.22E+04
XE-133M	2.07E+01
CS-134	3.06E-03
I-135	3.52E-05
XE-135	2.47E+02
CS-136	1.26E-04
CS-137	1.33E-02
CE-139	1.99E-04

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	4.79E-01
CR-51	2.82E-02
MN-54	2.75E-02
CO-57	3.77E-03
CO-58	4.57E-01
FE-59	6.14E-04
CO-60	2.26E-01
ZN-65	3.00E-03
SR-89	1.46E-03
SR-90	8.44E-04
ZR-NB-95	2.78E-02
ZR-97	2.23E-03
CD-109	1.71E-03
AG-110M	6.50E-02

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
SN-113	4.33E-04
SB-124	5.48E-03
I-131	1.53E-01
I-133	5.67E-02
CS-134	3.92E-02
CS-136	5.27E-03
CS-137	7.87E-02
CE-139	8.05E-05
BA-LA-140	2.48E-04

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	5.47E+00
TOTAL LIQUID RELEASE	9.15E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.89E+08
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.47E+12

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

INSTALLATION: DONALD C. COOK

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
82	TRUCK	BARNWELL, S.C.
1	TRUCK	BEATTY, NV
6	TRUCK	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	CO-58	% 4.50E+01	4.50E+01
	CO-60	% 2.00E+01	1.00E+01
	CS-134	% 1.00E+01	1.50E+01
	CS-137	% 2.50E+01	5.00E+01
B			
	CO-58	% 7.00E+01	7.50E+01
	CO-60	% 5.00E+00	1.00E+01
	CS-137	% 2.50E+01	1.50E+01

TYPE OF WASTE

	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	5.19E+02
	CI	1.29E+03
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	4.45E+02
	CI	1.42E+02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: BWR  
 DOCKET NO.: 50-298  
 COOLING WATER SOURCE: MISSOURI RIVER

LICENSEE NEBRASKA PUBLIC POWER & IOWA POWER & LIGHT  
 LICENSED POWER (MWT): 2381.00  
 INITIAL CRITICALITY: 02/21/74

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	4.83E-04
MN-54	7.35E-04
CO-58	1.86E-04
CO-60	1.77E-03
ZN-65	4.65E-05
KR-83M	5.99E+01
KR-85	4.59E+01
KR-85M	2.40E+02
KR-87	6.30E+03
KR-88	4.41E+02
KR-89	3.02E+00
SR-89	1.66E-04
SR-90	3.05E-05
I-131	<5.26E-03
XE-131M	3.55E+00
I-133	<1.18E-02
XE-133	4.87E+02
XE-133M	1.39E+01
CS-134	<2.24E-04
I-135	<1.27E-01
XE-135	6.71E+02
XE-135M	4.09E+01
CS-137	<3.73E-04
XE-137	8.24E+00
XE-138	2.11E+02
BA-LA-140	<1.66E-05

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	1.85E-02
CR-51	<5.25E-01
MN-54	<6.28E-01
MN-56	4.61E-04
CO-58	<3.09E-01
FE-59	<8.77E-03
CO-60	<9.76E-01
ZN-65	<1.98E-02
SR-89	4.34E-02
SR-90	1.59E-03
SR-92	<6.19E-05
ZK-NB-95	<2.12E-02
MO-99	1.47E-02
TC-99M	<2.17E-02
AG-110M	<1.06E-02

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
SB-124	<1.91E-02
I-131	<7.86E-02
XE-133	<1.31E-01
CS-134	<3.34E-01
XE-135	<1.13E-02
CS-136	<2.40E-03
CS-137	<4.40E-01
BA-LA-140	<2.18E-02
CE-141	<1.56E-02
UNIDENTIFIED	<9.14E-02

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	4.54E+00
TOTAL LIQUID RELEASE	<8.37E+00

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.12E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.16E+10

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

INSTALLATION: COOPER

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
71	SOLE USE VEHICLE	BEATTY, NV
5	SOLE USE VEHICLE	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	AG-110M	% 2.09E+00	2.94E+00
	BA-LA-140	%	1.52E-01
	CO-58	% 3.35E+00	2.50E+00
	CO-60	% 2.49E+01	3.89E+01
	CR-51	% 2.43E+01	4.37E+00
	CS-134	% 1.23E+01	1.53E+01
	CS-137	% 1.71E+01	2.03E+01
	FE-59	% 4.49E-01	1.93E-01
	I-131	% 1.69E-01	1.25E-01
	MN-54	% 1.37E+01	1.36E+01
	ZN-65	% 1.06E+00	1.28E+00
	ZR-NB-95	% 4.29E-01	2.50E-01
B			
	AG-110M	% 1.60E+00	2.14E+00
	CO-58	% 1.43E+00	2.18E+00
	CO-60	% 2.57E+01	2.55E+01
	CR-51	% 2.29E+01	2.42E+01
	CS-134	% 1.46E+01	1.35E+01
	CS-137	% 2.03E+01	1.88E+01
	FE-59	%	2.07E-01
	I-131	% 6.31E-01	1.30E-01
	MN-54	% 1.14E+01	1.25E+01
	ZN-65	% 9.57E-01	9.79E-01
	ZR-NB-95	% 1.43E-01	2.72E-01

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.51E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	4.40E+02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	3.48E+02
D. OTHER	CI	2.82E+00
	M3	
	CI	
	M3	
	CI	

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 3  
 TYPE: PWR  
 DOCKET NO.: 90-302  
 COOLING WATER SOURCE: GULF OF MEXICO

LICENSEE: FLORIDA POWER  
 LICENSED POWER (MWT): 2452.00  
 INITIAL CRITICALITY: 01/14/77

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	<3.23E+02
CR-51	<6.97E-04
MN-54	<7.01E-05
CO-57	<3.51E-05
CO-58	<1.05E-04
FE-59	<1.74E-04
CO-60	<1.03E-04
CN-65	<2.17E-04
KR-85	2.05E+03
KR-85M	1.40E+02
KR-87	<3.84E+01
KR-88	<1.58E+02
KR-89	<1.54E+05
SR-89	1.08E-03
SR-90	<1.71E-04
NB-95	<7.05E-05
ZR-95	<1.15E-04
AG-110M	<1.00E-04
SB-126	<7.10E-05
I-131	<9.04E-03
XE-131M	1.71E+02
I-133	<2.79E-03
XE-133	3.36E+04
XE-133M	6.42E+02
CS-134	<1.47E-03
I-135	<1.47E+00
XE-135	2.29E+03
XE-135M	<2.18E+02
CS-137	<1.96E-03
XE-137	<2.58E+04
XE-138	<7.16E+02
BA-LA-140	<1.86E-04
CE-141	<9.12E-05

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
RB	1.47E-07
NA-24	<2.85E-03
CR-51	<2.62E-02
MN-54	<3.55E-03
CO-57	9.65E-06
CO-58	4.79E-02
FE-59	<7.73E-03
CO-60	1.30E-02

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CU-64	<4.90E-01
ZN-65	<5.89E-03
AS-76	<6.88E-03
KR-85	<3.59E-01
KR-85M	<6.13E-03
SR-89	8.79E-03
SR-90	<8.37E-04
NB-95	<9.99E-04
ZP-95	<2.32E-03
NB-97	3.91E-05
ZR-97	2.27E-06
ZR-NB-97	<4.61E-03
MO-99	<1.48E-02
TC-99M	<2.10E-03
RU-103	1.54E-04
AG-110M	<3.94E-03
SB-124	4.06E-04
SB-125	2.04E-05
I-131	7.23E-03
XE-131M	<1.03E-01
I-132	<3.02E-03
I-133	<1.50E-03
XE-133	<3.56E+00
XE-133M	<3.41E-02
CS-134	1.50E-02
I-135	<7.75E-03
XE-135	<2.09E-02
CS-136	3.94E-05
CS-137	1.82E-02
BA-140	<5.23E-03
BA-LA-140	<3.02E-03
LA-140	<2.03E-03
CE-141	<3.75E-03
CE-144	<1.91E-02
W-187	1.51E-05
NP-239	<2.24E-02

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	1.55E+01
TOTAL LIQUID RELEASE	2.71E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	7.90E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.65E+09

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED



INSTALLATION: CRYSTAL RIVER

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
40	EXCLUSIVE USE VEHICL	BARNWELL, S.C.
41	TRUCK	BARNWELL, S.C.

IRRADIATED FUEL SHIPMENTS(DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION(BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
<b>A</b>			
CO-58	%	3.00E+00	4.69E+00
CO-60	%	2.30E+00	5.10E+00
CS-134	%	2.70E+01	2.63E+01
CS-137	%	5.91E+01	5.34E+01
I-131	%	6.50E+00	
<b>B</b>			
CO-58	%	7.20E+00	1.50E+01
CO-60	%	1.67E+01	3.66E+00
CR-51	%		1.39E+00
CS-134	%	1.02E+01	2.94E+00
CS-137	%	1.74E+01	4.52E+01
I-131	%	4.04E+01	1.94E+00
I-135	%	2.40E+00	

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.01E+03
	CI	1.30E+03
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.55E+02
	CI	7.76E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
 AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: PWR  
 DOCKET NO.: 50-346  
 COOLING WATER SOURCE: LAKE ERIE

LICENSEE: TOLEDO EDISON AND CLEVELAND ELECTRIC ILLUMINATING  
 LICENSED POWER (MWT): 2772.00  
 INITIAL CRITICALITY: 0R/12/77

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	8.66E+00
KR-85	7.04E+00
KR-85M	1.56E+00
SR-89	6.83E-05
I-131	5.38E-02
XE-131M	3.78E+00
I-133	6.04E-03
XE-133	9.83E+02
XE-133M	1.51E+00
XE-135	1.60E+01
XE-135M	1.00E+00
CS-137	2.97E-13

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	1.49E-03
MN-54	3.68E-03
CO-58	3.37E-01
FE-59	1.59E-04
CO-60	1.49E-02
SR-89	5.28E-04
Y-91M	3.51E-05
NB-95	1.81E-04
NB-97	3.92E-04
ZR-97	5.40E-05
MO-99	4.63E-04
TC-99M	4.82E-04
AG-110M	1.26E-03
I-131	2.43E-01
I-133	1.09E-03
CS-134	5.95E-02
CS-136	4.89E-04
CS-137	1.27E-01
BA-139	3.27E-05
CE-141	1.21E-05

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	8.65E+00
TOTAL LIQUID RELEASE	1.57E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.26E+08
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.77E+10

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

INSTALLATION: DAVIS-BESSE

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
30	TRUCK	BARNWELL, S.C.

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	CO-58	% 1.65E+01	6.71E+00
	CS-134	% 1.92E+01	2.58E+01
	CS-137	% 5.04E+01	5.89E+01
B			
	CO-58	% 6.22E+01	4.44E+01
	CO-60	%	3.69E+01
	CS-137	% 1.53E+01	
	MN-54	% 1.04E+01	9.07E+00

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.83E+02
	CI	7.69E+00
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.42E+02
	CI	3.19E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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 ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
TYPE: BWR  
DOCKET NO.: 50-10  
COOLING WATER SOURCE: KANKAKEE RIVER

LICENSEE: COMMON WEALTH EDISON  
LICENSED POWER (MWT): 700.00  
INITIAL CRITICALITY: 10/15/59

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
MN-54	8.55E-04
CO-58	1.55E-06
FE-59	4.31E-07
CO-60	2.82E-03
ZN-65	4.52E-07
SR-89	9.40E-04
SR-90	6.20E-05
NB-95	8.41E-04
ZR-95	4.88E-06
AG-110M	2.87E-07
I-131	2.61E-03
CS-134	3.28E-05
CS-137	1.75E-03
BA-140	1.29E-06
CE-141	5.52E-06
CE-144	2.87E-06

TRITIUM (CI)  
TOTAL AIRBORNE RELEASE N/D

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

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): 2527.00  
 INITIAL CRITICALITY: 06/09/72

LICENSEE: COMMONWEALTH EDISON  
 LICENSED POWER (MWT): 2527.00  
 INITIAL CRITICALITY: 11/16/71

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	1.26E-01
MN-54	3.57E-02
CO-58	1.01E-02
FE-59	5.11E-03
CO-60	3.03E-01
ZN-65	3.95E-03
KR-85M	7.12E+02
KR-87	1.05E+03
KR-88	1.75E+03
SR-89	1.03E+00
SR-90	5.81E-03
NB-95	2.17E-02
ZR-95	1.01E-02
RU-105	1.67E-02
AG-110M	5.20E-05
SB-124	3.12E-04
I-131	4.62E+00
I-133	1.53E+01
XE-133	3.26E+03
XE-133M	7.13E+01
CS-134	1.02E-02
I-135	2.53E+01
XE-135	9.11E+03
Xe-135M	5.48E+03
CS-136	7.03E-03
CS-137	4.23E-02
XE-138	1.81E+04
BA-140	4.45E+00
CE-141	1.36E-01
CE-144	3.82E-03

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
MN-54	3.89E-03
CO-58	9.75E-04
CO-60	2.84E-02
SR-89	1.10E-03
SR-90	1.66E-04
ZR-95	2.56E-04
I-131	1.53E-02

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
 AIRBORNE AND LIQUID EFFLUENTS

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CS-134	1.86E-03
CS-137	8.30E-03
CE-141	9.76E-04

TRITIUM

	(CI)
TOTAL AIRBORNE RELEASE	3.16E+02
TOTAL LIQUID RELEASE	6.05E+00

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	4.43E+06
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.63E+12

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

INSTALLATION: DRESDEN 1, 2, & 3

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
197	TRUCK	BARNWELL, S. C.
55	TRUCK	RICHLAND, WA

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	4.19E+02
	CI	4.49E+03
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	7.19E+02
	CI	9.69E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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 ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
TYPE: BWR  
DOCKET NO.:50-351  
COOLING WATER SOURCE:CEDAR RAPIDS RIVER & CIRC WATER SYSTEM

LICENSEE:IOWA ELECTRIC LIGHT & POWER  
LICENSED POWER (MWT):1658.10  
INITIAL CRITICALITY:03/25/74

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
N-13	4.64E+00
AR-41	1.10E+00
CR-51	1.14E-02
MN-54	8.66E-04
CO-57	4.00E-06
CO-58	2.16E-05
FE-59	2.17E-05
CO-60	2.12E-03
KR-85	<4.44E-01
KR-85M	3.06E+01
KR-87	4.76E+00
KR-88	2.77E+01
SR-89	3.36E-04
SR-90	3.52E-05
I-131	1.42E-02
I-133	1.64E-01
XE-133	1.61E+02
CS-134	1.19E-05
I-135	1.49E-01
XE-135	5.55E+01
XE-135M	<1.14E+02
CS-137	1.10E-05
CS-138	3.52E-04
XE-138	8.79E+01
BA-140	1.11E-03
CE-141	2.76E-04
UNIDENTIFIED	1.76E-03
TOTAL LIQUID RELEASE	N/A

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	N/A
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	N/A

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



INSTALLATION:DUANE ARNOLD

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION
114	
4	

DESTINATION  
BARNWELL, S.C.  
BEATTY, NV

IRRADIATED FUEL SHIPMENTS(DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION
0	

DESTINATION

TYPE OF WASTE

A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR  
BOTTOMS, ETC.  
B. DRY COMPRESSIBLE WASTE, CONTAMINATED  
EQUIPMENT, ETC.  
C. IRRADIATED COMPONENTS, CONTROL  
RODS, ETC.  
D. OTHER

UNIT YEAR TOTAL

M3	2.10E+02
CI	1.04E+03
M3	4.87E+02
CI	2.58E+01
M3	
CI	
M3	
CI	

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

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

LICENSEE: ALABAMA POWER  
 LICENSED POWER (MWT): 2652.4  
 INITIAL CRITICALITY: 08/09/7

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	6.17E+01
CR-51	1.19E-05
MN-54	6.40E-06
CO-58	5.10E-01
FE-59	0.00E+00
CO-60	1.74E-04
ZN-65	3.52E-05
KR-85	7.08E+01
KR-85M	1.70E+00
KR-87	4.98E-03
KR-88	1.53E-02
KR-89	0.00E+00
SR-89	3.57E-04
KR-90	2.72E-07
SR-90	8.97E-11
ZR-95	7.21E-06
SB-124	0.00E+00
I-131	3.00E-03
XE-131M	8.53E-01
I-133	1.39E-02
XE-133	8.00E+01
XE-133M	3.21E-01
CS-134	2.23E-02
XE-135	5.28E+00
XE-135M	2.51E-11
CS-136	0.00E+00
CS-137	8.74E-02
XE-137	2.93E-02
XE-138	5.55E-03
BA-140	5.39E-06
CE-141	1.58E-06

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	1.65E+02
NA-24	5.32E-06
CR-51	9.95E-04
MN-54	9.38E-04
CO-57	1.52E-04
CO-58	5.06E-03
FE-59	2.49E-04
CO-60	1.21E-02
CU-64	7.33E-03
ZN-65	1.78E-06

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
SR-89	6.72E-05
SR-90	2.61E-06
NB-95	5.76E-04
ZR-95	2.65E-05
RU-106	2.22E-04
AG-110M	2.04E-03
I-131	1.93E-02
I-133	4.83E-03
XE-133	3.48E-02
CS-134	2.32E-03
I-135	2.98E-04
XE-135	1.43E-05
CS-136	6.76E-05
CS-137	1.04E+00
LA-140	9.38E-05

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	6.80E+01
TOTAL LIQUID RELEASE	1.65E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	9.09E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.82E+10

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 2  
 TYPE: PWR  
 DOCKET NO.: 50-364  
 COOLING WATER SOURCE:

LICENSEE: ALABAMA POWER  
 LICENSED POWER (MWT): 2652.00  
 INITIAL CRITICALITY: 05/05/81

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	2.82E-04
CR-51	1.05E-05
MN-54	5.76E-08
CO-58	1.21E-05
FE-59	4.11E-08
CO-60	1.13E-04
ZN-65	8.28E-08
KR-85	1.64E-02
KR-85M	1.52E-03
KR-87	5.28E-08
KR-88	7.09E-08
KR-89	2.37E-08
SR-89	1.07E-05
KR-90	1.52E-12
ZR-95	6.80E-08
SB-124	1.53E-07
I-131	2.67E-05
XE-131M	5.43E-03
I-133	6.48E-03
XE-133	2.51E+00
XE-133M	6.75E-02
CS-134	4.16E-06
XE-135	2.49E-03
XE-135M	2.84E-08
CS-136	3.39E-08
CS-137	1.53E-07
XE-137	1.79E-06
XE-138	8.09E-08
BA-140	6.79E-06
CE-141	5.21E-08

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	5.78E+02
NA-24	8.06E-03
P-32	6.29E-04
CR-51	2.43E-04
MN-54	4.04E-04
FE-55	4.64E-03
CO-57	3.59E-06
CO-58	3.22E-03
FE-59	2.99E-04
CO-60	4.71E-03
CU-64	6.17E-05

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
ZN-65	9.11E-07
AS-76	2.41E-06
SR-89	2.17E-05
SR-90	9.71E-07
NB-95	5.35E-04
ZR-95	2.74E-05
MO-99	8.15E-06
TC-99M	2.89E-05
RU-105	6.02E-04
RU-106	1.02E-04
AG-110M	2.20E-03
I-131	5.69E-04
I-132	1.22E-05
I-133	5.90E-05
XE-135	4.27E-02
CS-134	8.00E-05
I-135	9.66E-06
XE-135	8.84E-06
CS-136	3.52E-05
CS-137	1.10E-04
BA-140	2.04E-05
LA-140	6.49E-05
CE-141	4.27E-07
NP-239	1.13E-04

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	1.25E+02
TOTAL LIQUID RELEASE	6.34E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.66E+08
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.09E+10

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS 38 MODE OF TRANSPORTATION TRUCK

DESTINATION BARNWELL, S. C.

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)		JAN-JUNE	JULY-DEC
<b>A</b>			
CO-58	%	2.15E+01	1.69E+01
CO-60	%	1.63E+01	7.21E+01
CR-51	%	3.36E+00	5.00E-01
CS-134	%	3.42E+01	2.20E+00
CS-137	%	9.54E+00	4.00E-01
MN-54	%	7.89E+00	7.90E+00
<b>B</b>			
CO-58	%	4.75E+01	7.00E+00
CO-60	%	4.25E+01	8.06E+01
CS-134	%	5.40E+00	1.34E+00
CS-137	%	7.00E+00	1.75E-01

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.49E+02
	CI	7.04E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	4.15E+02
	CI	1.56E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	0.00E+00
	CI	0.00E+00
D. OTHER	M3	0.00E+00
	CI	0.00E+00

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBR: 1  
 TYPE: BWR  
 DOCKET NO.: 50-533  
 COOLING WATER SOURCE: LAKE ONTARIO

LICENSEE: POWER AUTHORITY OF THE STATE OF NEW YORK  
 LICENSED POWER (MWT): 2456.00  
 INITIAL CRITICALITY: 11/17/74

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
N-13	8.80E+03
AR-41	2.21E+02
CR-51	1.35E-03
MN-54	9.89E-04
CO-58	5.07E-04
CO-60	5.52E-03
ZN-65	4.97E-05
KR-85M	1.23E+04
KR-87	1.49E+04
KR-88	2.48E+04
SR-89	1.40E-01
SR-90	1.33E-04
ZR-NB-95	5.66E-05
I-131	1.15E-01
XE-131M	3.29E+04
I-133	2.38E-01
XE-133	3.23E+04
XE-133M	5.49E+02
CS-134	1.73E-04
I-135	3.31E-01
XE-135	5.23E+04
XE-135M	5.95E+03
CS-137	8.62E-04
XE-138	1.45E+04
BA-LA-140	1.52E-02
CE-141	2.29E-05

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	3.77E-02
CR-51	4.79E-02
MN-54	3.44E-01
CO-58	2.08E-01
FE-59	1.10E-02
CO-60	1.40E+00
ZN-65	4.57E-02
AS-76	2.08E-04
KR-85M	7.28E-06
SR-90	1.27E-04
ZR-NB-95	2.54E-04
MO-99	6.44E-04
TC-99M	1.67E-03
AG-110M	2.21E-04
SB-124	3.83E-03

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
I-131	4.50E-02
I-133	5.35E-03
XE-135	3.98E-02
CS-134	8.00E-02
I-135	2.47E-03
XE-135	5.85E-02
CS-137	1.26E-01
BA-LA-140	1.12E-03
CE-141	6.99E-05
CE-144	6.58E-04
NP-239	4.29E-02

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	6.65E+00
TOTAL LIQUID RELEASE	4.11E+00

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.81E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.81E+11

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



INSTALLATION: JAMES A. FITZPATRICK

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
86	TRUCK	BARNWELL, S.C.
16	TRUCK	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

A

		JAN-JUNE	JULY-DEC
CO-58	%	4.00E+00	3.10E+00
CO-60	%	6.32E+01	7.19E+01
CR-51	%	3.90E+00	
CS-134	%	1.70E+00	3.70E+00
CS-137	%	3.30E+00	7.10E+00
MN-54	%	1.20E+01	1.02E+01
ZN-65	%	3.20E+00	3.30E+00

TYPE OF WASTE

	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	3.99E+02
	CI	1.61E+03
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	4.62E+02
	CI	2.00E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: PWR  
 DOCKET NO.: 50-285  
 COOLING WATER SOURCE: MISSOURI RIVER

LICENSEE: OMAHA PUBLIC POWER  
 LICENSED POWER (MWT): 1420.00  
 INITIAL CRITICALITY: 08/06/73

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	3.49E+00
KR-85	6.15E+01
KR-85M	2.99E-01
KR-87	3.61E-01
KR-88	4.71E-01
SR-89	4.43E-01
SR-90	1.20E-07
I-131	3.53E-03
XE-131M	3.68E+01
I-133	3.46E-06
XE-133	1.11E+03
XE-133M	5.33E+00
CS-134	4.44E-06
I-135	1.65E-04
XE-135	3.18E+00
XE-135M	4.41E-01
CS-137	3.88E-06
XE-138	1.20E+00
BA-140	N/D
LA-140	N/D

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	2.10E-03
MN-54	1.01E-03
CO-57	3.38E-04
CO-58	3.02E-02
FE-59	N/D
CO-60	3.85E-03
ZN-65	N/D
SR-89	6.16E-05
SR-90	3.98E-06
NB-95	5.41E-04
ZR-95	2.95E-04
MO-99	N/D
TE-99M	N/D
RU-103	N/D
SN-117M	1.04E-04
SB-124	3.18E-04
I-131	4.98E-03
I-133	N/D
XE-133	3.23E+00
CS-134	2.21E-02
XE-135	1.72E-02

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

INSTALLATION: FORT CALHOUN

LOCATION: 19 MI N OMAHA, NB

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CS-136	3.72E-04
CS-137	4.68E-02
BA-140	1.27E-03
LA-140	6.60E-05
CE-141	N/D

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	8.15E+01
TOTAL LIQUID RELEASE	2.42E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.42E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.12E+12

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

INSTALLATION: FORT CALHOUN

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
11	TRUCK	BARNWELL, S.C.
8	TRUCK	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0	N/A	N/A

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
<b>A</b>			
CO-58	%		1.40E+01
CO-60	%		1.00E+00
CS-134	%	3.40E+01	3.00E+01
CS-137	%	6.60E+01	5.50E+01
<b>B</b>			
CO-58	%		1.40E+01
CO-60	%		1.00E+00
CS-134	%	3.40E+01	3.00E+01
CS-137	%	6.60E+01	5.50E+01

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.29E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	9.08E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	1.24E+02
	CI	1.07E+01
D. OTHER	M3	0.00E+00
	CI	0.00E+00

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION: FORT ST. VRAIN

LOCATION: 35 MI N DENVER, CO

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
TYPE: HTG  
DOCKET NO.: 50-267  
COOLING WATER SOURCE: SOUTH PLATTE RIVER/SHALLOW WELLS

LICENSEE: PUBLIC SERVICE CO OF COLORADO  
LICENSED POWER (MWT): 842.00  
INITIAL CRITICALITY: 01/31/74

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	1.36E+01
KR-85	2.57E-01
KR-85M	2.22E-02
KR-87	2.84E-02
KR-88	3.36E-02
XE-131M	5.35E-01
XE-133	4.24E+01
XE-133M	1.11E-01
XE-135	6.59E-02

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	2.19E+02
CO-60	4.66E-07
NB-97	2.01E-04
XE-131M	1.52E-04
XE-133	2.43E-02
CS-134	2.82E-07
CS-137	8.43E-07

TRITIUM

	(CI)
TOTAL AIRBORNE RELEASE	1.36E+01
TOTAL LIQUID RELEASE	2.19E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.97E+05
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.91E+08

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: PWR  
 DOCKET NO.: 50-244  
 COOLING WATER SOURCE: LAKE ONTARIO

\* LICENSEE: ROCHESTER GAS&ELEC  
 LICENSED POWER (MWT): 1520.10  
 INITIAL CRITICALITY: 11/08/69

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	9.67E-01
CR-51	2.04E-06
CO-58	5.97E-07
CO-60	3.92E-06
KR-85	1.50E+01
KR-85M	5.84E-01
KR-87	7.40E-02
KR-88	9.20E-02
NB-95	5.03E-08
ZR-95	1.22E-07
RU-103	1.14E-07
AG-110M	8.52E-08
SB-125	2.57E-07
I-131	1.12E-03
XE-131M	1.79E+01
I-132	3.83E-03
I-133	1.36E-03
XE-133	4.83E+02
XE-133M	7.22E-01
CS-134	3.63E-07
I-135	1.23E-04
XE-135	2.60E+01
XE-135M	1.36E+00
CS-137	2.75E-06
XE-138	1.21E+00
BA-LA-140	6.55E-07

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
MN-54	1.07E-04
CO-58	8.18E-04
CO-60	1.58E-02
I-131	8.88E-04
CS-134	7.18E-03
CS-137	1.41E-02
BA-LA-140	8.83E-05
CE-141	9.51E-05
CE-PR-144	1.43E-03

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	7.01E+01
TOTAL LIQUID RELEASE	2.40E+02

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 ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.85E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.97E+11

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

INSTALLATION: R. E. GINNA

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
15		BARNWELL SC
5		BEATTY NV
2		RICHLAND WA

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	7.62E+01
	CI	6.27E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	3.00E+02
	CI	8.48E+00
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	N/A
	CI	N/A
D. OTHER	M3	
	CI	

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



EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: PWR  
 DOCKET NO.: 50-213  
 COOLING WATER SOURCE:CONNECTICUT RIVER

LICENSEE:CONNECTICUT YANKEE ATOMIC POWER  
 LICENSED POWER (MWT):1825.00  
 INITIAL CRITICALITY:07/24/67

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	8.66E+01
AR-37	N/D
AR-41	2.89E-01
CR-51	N/D
MN-54	N/D
CO-58	8.42E-05
CO-60	1.32E-03
KR-85	2.48E+01
KR-85M	7.54E-01
KR-87	2.74E+00
KR-88	2.34E+00
SR-89	2.74E-06
SR-90	1.15E-06
ZR-NB-95	N/D
RU-103	N/D
RU-106	N/D
I-131	8.85E-03
XE-131M	3.09E+01
I-133	1.47E-03
XE-133	1.71E+03
XE-133M	1.39E+01
CS-134	3.33E-05
I-135	N/D
XE-135	1.57E+01
XE-135M	9.36E+00
CS-137	9.87E-04
XE-137	8.36E+00
XE-138	8.44E+00
BA-LA-140	N/D
CE-144	N/D

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	5.29E+03
BE-7	N/D
NA-22	1.44E-04
CR-51	5.84E-03
MN-54	7.83E-03
CO-57	4.23E-04
CO-58	1.34E-02
FE-59	N/D
CO-60	1.20E-01
KR-85	1.00E-02
SR-89	6.73E-03

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
SR-90	8.01E-03
ZR-NB-95	3.06E-02
MO-99	N/D
TC-99M	N/D
RU-103	1.26E-03
RU-106	6.06E-02
AG-110M	4.35E-05
SB-125	8.47E-03
I-131	5.57E-02
I-132	3.97E-02
I-133	1.58E-01
XE-133	7.21E-01
XE-133M	1.17E-02
CS-134	2.78E-02
I-135	4.16E-02
XE-135	4.96E-02
CS-137 *	8.58E-02
BA-LA-140	2.94E-03
CE-141	N/D
CE-144	3.87E-02
EU-154	N/D

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	8.65E+01
TOTAL LIQUID RELEASE	5.29E+03

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.83E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	7.60E+11

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

INSTALLATION: HADDAM NECK

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
48	TRUCK	BARNWELL, S.C.

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

A

		JAN-JUNE	JULY-DEC
CE-141	%		3.88E-01
CE-144	%	1.29E+01	1.44E+00
CO-57	%	3.31E-01	
CO-58	%	2.71E+00	3.14E+01
CO-60	%	3.70E+01	2.20E+01
CR-51	%		2.71E+01
CS-134	%	1.52E-01	5.38E-01
CS-137	%	1.42E-01	5.21E-01
MN-54	%	4.81E+00	3.41E+00
NB-95	%	5.82E-01	1.82E+00
RU-103	%		2.74E+00
RU-106	%	4.19E+01	7.27E+00
ZR-95	%	3.23E-01	1.19E+00

B

AG-110M	%	1.74E-01	1.32E-01
CE-141	%		1.73E-01
CE-144	%	1.69E+01	1.01E+01
CO-57	%	4.28E-01	3.15E-01
CO-58	%	2.48E+00	1.05E+01
CO-60	%	2.75E+01	2.82E+01
CR-51	%		1.44E+01
CS-134	%		5.18E-02
CS-137	%	1.43E-01	1.94E-01
FE-59	%		1.55E-01
I-131	%		6.02E-02
MN-54	%	2.72E+00	2.80E+00
NA-22	%	2.60E-01	1.68E-01
NB-95	%	8.54E-01	1.21E+00
RU-103	%		1.39E+00
RU-106	%	4.72E+01	2.85E+01
SB-125	%	7.64E-01	7.57E-01
ZR-95	%	4.86E-01	7.47E-01

D

AG-110M	%	1.74E-01	1.32E-01
CE-141	%		1.73E-01
CE-144	%	1.69E+01	1.01E+01
CO-57	%	4.28E-01	3.15E-01

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION:HADDAM NECK

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

ESTIMATE OF MAJOR NUCLIDE COMPOSITION(BY TYPE OF WASTE)		JAN-JUNE	JULY-DEC
CO-58	%	2.48E+00	1.05E+01
CO-60	%	2.75E+01	2.82E+01
CR-51	%		1.44E+01
CS-134	%		5.18E-02
CS-137	%	1.45E-01	1.94E-01
FE-59	%		1.55E-01
I-131	%		6.02E-02
MN-54	%	2.72E+00	2.80E+00
NA-22	%	2.60E-01	1.68E-01
NB-95	%	8.54E-01	1.21E+00
RU-103	%		1.39E+00
RU-106	%	4.72E+01	2.85E+01
SB-125	%	7.64E-01	7.57E-01
ZR-95	%	4.86E-01	7.47E-01

TYPE OF WASTE		UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	*	M3	1.40E+02
		CI	6.34E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.		M3	2.77E+02
		CI	1.17E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.		M3	N/A
		CI	N/A
D. OTHER		M3	2.03E+01
DRY WASTE IN DRUMS		CI	1.56E+01

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

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

LICENSEE: GEORGIA POWER  
LICENSED POWER (MWT): 2436.00  
INITIAL CRITICALITY: 09/12/74

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
N-13	3.95E+02
AR-41	2.81E+02
CR-51	3.40E-04
MN-54	2.11E-05
CO-58	1.79E-05
FE-59	0.00E+00
CO-60	3.28E-04
KR-85	8.95E-01
KR-85M	1.92E+03
KR-87	2.50E+02
KR-88	1.47E+03
KR-89	0.00E+00
SR-89	7.69E-04
SR-90	8.30E-06
NB-95	1.50E-04
ZR-95	8.01E-06
SN-113	1.92E-08
I-131	2.00E-01
XE-131M	2.41E+03
I-133	7.92E-02
XE-133	1.91E+04
XE-133M	2.67E+02
CS-134	2.18E-03
I-135	3.44E-02
XE-135	2.63E+02
XE-135M	3.37E+02
CS-137	2.78E-03
XE-137	3.51E+02
XE-138	5.25E+02
Ba-140	4.61E-04
LA-140	9.02E-04
CE-141	6.81E-08
CE-144	4.64E-05

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
F-18	1.86E-03
NA-24	1.94E-03
P-32	0.00E+00
CR-51	4.43E-03
MN-54	3.40E-03
FE-55	5.92E-02
MN-56	0.00E+00
CO-58	1.14E-03

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
FE-59	1.72E-04
CO-60	2.06E-02
CU-64	7.37E-03
NI-65	4.10E-06
ZN-65	4.07E-02
ZN-69M	0.00E+00
AS-76	2.95E-05
KR-85M	1.31E-05
KR-87	0.00E+00
KR-88	2.63E-06
RB-88	1.90E-05
SR-89	1.42E-03
SR-90	0.00E+00
NB-95	1.07E-03
ZR-95	2.65E-04
NB-97	5.39E-05
ZR-97	9.50E-06
MO-99	2.62E-03
TC-99M	3.70E-03
AG-110M	3.16E-04
I-131	4.82E-02
XE-131M	1.79E-02
I-132	0.00E+00
I-133	3.08E-03
XE-133	1.10E-01
XE-133M	2.08E-03
CS-134	7.36E-02
I-135	2.77E-04
XE-135	8.39E-02
XE-135M	3.51E-06
CS-136	1.65E-03
CS-137	8.97E-02
CS-138	1.00E-04
XE-138	0.00E+00
BA-140	6.74E-05
LA-140	8.48E-04
CE-141	3.89E-05
CE-144	3.44E-03
W-187	1.33E-05
NP-239	6.86E-04

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	3.52E+00
TOTAL LIQUID RELEASE	1.16E+01

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

INSTALLATION: EDWIN I. HATCH 1

LOCATION: 11 MI N BAXLEY, GA

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.86E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.75E+09

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
100	TRACTOR & TRAILER	BARNWELL, S. C.
22	TRACTOR & TRAILER	HANFORD, WA
6	TRACTOR & TRAILER	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
<b>A</b>			
ALL OTHERS	%		2.96E+01
CO-60	%	2.07E+00	1.89E+01
CS-134	%	3.53E+01	2.32E+01
CS-137	%	4.71E+01	2.84E+01
OTHER	%	7.17E+00	
ZN-65	%	8.36E+00	
<b>B</b>			
ALL OTHERS	%		4.45E+01
CO-60	%	2.09E+01	1.65E+01
CR-51	%	2.83E+00	
CS-134	%	1.88E+01	
CS-137	%	2.82E+01	1.68E+01
OTHER	%	1.32E+01	
ZN-65	%	1.62E+01	2.25E+01
<b>D</b>			
CO-60	%	3.62E+01	
CS-137	%	2.44E+00	
NB-95	%	2.45E+01	
OTHER	%	6.56E+00	
ZN-65	%	1.75E+01	
ZR-95	%	1.28E+01	

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	3.04E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	C1	4.35E+03
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	6.47E+02
D. OTHER	C1	5.88E+01
	M3	0.00E+00
	C1	0.00E+00
	M3	3.36E+02
	C1	4.63E+01

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



EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

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

LICENSEE: GEORGIA POWER  
 LICENSED POWER (MWT): 2436.00  
 INITIAL CRITICALITY: 07/04/78

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
N-15	1.72E+01
AR-41	5.96E+00
CR-51	2.82E-06
MN-54	1.16E-06
CO-58	0.00E+00
FE-59	0.00E+00
CO-60	1.63E-05
KR-85	0.00E+00
KR-85M	8.71E+00
KR-87	5.92E+00
KR-88	1.19E+01
KR-89	0.00E+00
SR-89	8.38E-05
SR-90	8.66E-08
NB-95	1.55E-05
ZR-95	2.99E-07
SN-113	1.65E-07
I-131	8.62E-03
XE-131M	1.25E+01
I-133	6.16E-03
XE-133	9.10E+01
XE-133M	1.15E+00
CS-134	1.21E-05
I-135	2.50E-03
XE-135	3.55E+01
XE-135M	2.40E+00
CS-137	2.04E-05
XE-137	2.72E+00
XE-138	1.33E+01
BA-140	1.01E-04
LA-140	1.83E-04
CE-141	9.69E-10
CE-144	1.07E-07

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
F-18	1.17E-03
NA-24	7.92E-03
P-32	0.00E+00
CR-51	8.47E-04
MN-54	6.55E-04
FE-55	9.09E-02
MN-56	0.00E+00
CO-58	1.18E-03

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
FE-59	1.55E-05
CO-60	5.98E-03
CU-64	4.15E-04
NI-65	2.17E-06
ZN-65	1.29E-02
ZN-69M	0.00E+00
AS-76	1.94E-05
KR-85M	0.00E+00
KR-87	1.11E-06
KR-88	0.00E+00
RB-88	1.62E-05
SR-89	3.02E-04
SR-90	0.00E+00
NB-95	7.56E-04
ZR-95	3.12E-04
ZR-97	0.00E+00
MO-99	2.35E-04
TC-99M	3.84E-04
AG-110M	1.26E-05
SB-125	3.82E-05
I-131	1.58E-03
I-132	5.66E-06
I-133	1.29E-04
XE-133	1.55E-02
XE-133M	3.22E-04
CS-134	1.59E-02
I-134	8.08E-06
I-135	2.44E-05
XE-135	6.35E-03
CS-136	8.45E-05
CS-137	2.03E-02
CS-138	7.82E-05
XE-138	1.43E-08
BA-140	0.00E+00
LA-140	2.42E-05
CE-141	0.00E+00
CE-144	4.53E-04
W-187	0.00E+00
NP-239	1.37E-04

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	6.08E+00
TOTAL LIQUID RELEASE	9.28E+00

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.46E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	4.16E+09

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
33	TRACTOR & TRAILER	BARNWELL, S.C.
7	TRACTOR & TRAILER	RICHLAND, WA
23	TRUCK OR VAN	BARNWELL, S.C.
29	TRUCK OR VAN	HANFORD, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

	JAN-JUNE	JULY-DEC
<b>A</b>		
ALL OTHERS	N	2.24E+01
CO-58	N 3.85E+00	
CO-60	N 9.78E+00	
CR-51	N 9.06E+00	3.22E+01
CS-134	N 1.50E+01	
CS-137	N 1.68E+01	8.12E+00
NB-95	N 3.16E+00	
OTHERS	N 6.06E+00	
ZN-65	N 3.66E+01	3.73E+01
<b>B</b>		
ALL OTHERS	N	4.43E+01
CC-60	N 2.16E+01	1.65E+01
CR-51	N 2.39E+00	
CS-134	N 2.02E+01	
CS-137	N 3.09E+01	1.68E+01
CS-138	N 1.65E+00	
MN-54	N 1.22E+00	
OTHERS	N 4.13E+00	
SB-125	N 1.85E+00	
ZN-65	N 1.61E+01	2.25E+01

TYPE OF WASTE	UNIT YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M5 2.96E+02 C1 2.41E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M5 1.11E+03 C1 6.35E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M5 N/A C1
D. OTHER	M5 C1

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: BWR  
 DOCKET NO.: 50-155  
 COOLING WATER SOURCE:HUMBOLDT BAY

LICENSEE: PACIFIC GAS & ELECTRIC  
 LICENSED POWER (MWT): 220.00  
 INITIAL CRITICALITY: 02/16/65

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
MN-54	N/D
CO-60	2.96E-04
KR-85M	N/D
KR-85M	N/D
ER-87	N/D
KR-88	N/D
KR-89	N/D
SR-89	N/D
SR-90	1.75E-06
I-131	N/D
I-135	N/D
XE-135	N/D
XE-135M	N/D
CS-134	N/D
I-135	N/D
XE-135	N/D
XE-135M	N/D
CS-137	1.06E-04
XE-137	N/D
XE-138	N/D
BA-LA-140	N/D
CE-144	N/D

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	N/D
MN-54	9.68E-04
CO-58	N/D
CO-60	5.46E-02
ZN-65	N/D
SR-89	N/D
SR-90	3.70E-04
ZR-NB-95	N/D
MO-99	N/D
TC-99M	N/D
I-131	N/D
XE-135	N/D
CS-134	6.25E-03
XE-135	N/D
CS-137	9.17E-02
BA-LA-140	N/D
CE-144	N/D
NP-239	N/D

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	<4.00E-02
TOTAL LIQUID RELEASE	<1.62E-01

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	4.49E+05
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	9.08E+10

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

INSTALLATION: HUMBOLDT BAY

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
3	TRUCK (SOLE USE)	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
B			
	CO-60	%	4.28E+01
	CS-134	%	2.33E+00
	CS-137	%	5.12E+01
	MN-54	%	9.16E-02
	UNIDENTIFIED	%	3.56E+00

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	
	CI	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	8.43E+01
	CI	5.46E-01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1	LICENSEE: CONSOLIDATED EDISON
TYPE: PWR	LICENSED POWER (MWT): 615.00
DOCKET NO.: 50-3	INITIAL CRITICALITY: 08/02/62
COOLING WATER SOURCE: HUDSON RIVER	
UNIT NUMBER: 2	LICENSEE: CONSOLIDATED EDISON
TYPE: PWR	LICENSED POWER (MWT): 2758.00
DOCKET NO.: 50-247	INITIAL CRITICALITY: 05/22/75
COOLING WATER SOURCE: HUDSON RIVER	

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
P-32	4.68E-05
CR-51	7.76E-05
MN-54	6.14E-05
FE-55	1.94E-03
CO-57	1.31E-05
CO-58	2.67E-03
CO-60	2.90E-03
NI-63	2.71E-04
ZN-65	9.82E-06
KR-85	5.77E+02
KR-85M	5.60E+01
KR-87	2.49E+01
KR-88	8.93E+01
SR-89	5.10E-05
SR-90	1.45E-05
NB-95	5.59E-06
I-131	3.24E-02
XE-131M	1.33E+02
I-133	1.51E-02
XE-133	7.71E+03
XE-133M	1.05E+02
CS-134	3.04E-04
I-135	4.49E-02
XE-135	4.57E+02
XE-135M	8.17E+00
CS-137	2.89E-03
XE-137	1.07E+01
XE-138	2.30E+01
BA-LA-140	5.33E-04

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
P-32	4.43E-02
CR-51	2.15E-01
MN-54	4.98E-02
FE-55	6.86E-01
CO-57	6.50E-03
CO-58	7.86E-01
FE-59	2.73E-02
CO-60	1.01E+00

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NI-63	1.01E-01
ZN-65	3.20E-02
SR-89	4.78E-03
SR-90	1.29E-03
ZR-NB-95	9.64E-02
MO-99	3.25E-01
TC-99M	2.53E-02
AG-110M	7.18E-03
I-131	1.65E+00
XE-133	1.18E-01
CS-134	1.66E-01
XE-135	4.89E-02
CS-136	9.49E-02
CS-137	3.00E-01
BA-LA-140	1.09E-01
CE-141	9.69E-02

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	4.23E+00
TOTAL LIQUID RELEASE	2.41E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	8.89E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	7.24E+11

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



EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
112	TRUCK	BARNWELL, S.C.

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
CO-58	%	4.60E+01	1.90E+01
CO-60	%	1.30E+01	3.20E+01
CS-134	%	1.20E+01	1.90E+01
CS-137	%	1.70E+01	3.00E+01
NI-63	%	1.00E+01	
OTHERS	%	2.00E+00	
B			
CO-58	%	4.60E+01	2.60E+01
CO-60	%	1.30E+01	5.60E+01
CS-134	%	1.20E+01	5.70E+00
CS-137	%	1.70E+01	1.10E+01
NI-63	%	1.00E+01	
OTHERS	%	2.00E+00	

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	3.48E+02
	CI	1.65E+03
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.23E+03
	CI	5.55E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	0.00E+00
	CI	0.00E+00
D. OTHER	M3	0.00E+00
	CI	0.00E+00

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 3  
TYPE: PWR  
DOCKET NO.: 50-286  
COOLING WATER SOURCE:

LICENSEE: POWER AUTHORITY OF THE STATE OF NEW YORK  
LICENSED POWER (MWT): 2760.00  
INITIAL CRITICALITY: 04/06/76

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
P-32	3.26E-07
CR-51	7.38E-06
MN-54	1.31E-06
FE-55	8.09E-05
CO-57	1.07E-06
CO-58	7.98E-05
CO-60	3.65E-05
NI-63	2.23E-05
ZN-65	1.91E-06
KR-85	2.86E+02
KR-85M	8.20E+01
SR-85	2.37E-07
KR-87	2.96E+00
KR-88	6.22E+00
SR-89	4.13E-07
SR-90	5.60E-08
NB-95	6.52E-07
CD-109	1.76E-05
SN-113	2.57E-07
I-131	1.66E-03
XE-131M	8.26E+01
BA-133	1.64E-06
I-133	3.75E-05
XE-133	5.43E+03
XE-133M	5.24E+01
CS-134	1.79E-05
I-135	0.00E+00
XE-135	6.16E+02
XE-135M	1.31E+01
CS-137	3.13E-05
XE-138	2.11E-02
CE-139	1.22E-06
BA-LA-140	1.90E-06
CE-141	4.63E-07
CE-144	4.08E-06
HG-203	5.34E-07

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	9.94E-04
P-32	1.33E-02
CR-51	5.61E-02
MN-54	7.43E-02
FE-55	6.89E-01

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

LIQUID EFFLUENTS NUCLIDES RELEASED	ACTIVITY (CI)
MN-56	2.67E-03
CO-57	2.46E-03
CO-58	8.90E-01
FE-59	1.26E-02
CO-60	3.15E-01
NI-63	1.71E-01
NI-65	1.93E-05
ZN-65	2.22E-03
SR-85	1.03E-04
RB-88	5.52E-04
Y-88	3.07E-05
SR-89	4.58E-04
SR-90	7.40E-04
Y-91M	1.55E-03
SR-92	1.81E-03
Y-92	7.31E-04
ZR-NB-95	8.07E-03
NB-97	3.61E-02
ZR-97	6.71E-05
MO-99	8.68E-03
TC-99M	1.34E-03
RU-103	2.52E-04
RH-106	2.61E-03
CD-109	2.25E-03
AG-110M	1.60E-02
SN-113	1.71E-04
SB-122	5.58E-03
SB-124	2.45E-02
SB-125	7.20E-02
I-131	1.98E-02
I-132	4.27E-03
BA-133	1.26E-03
I-133	1.29E-02
XE-133	2.84E+00
CS-134	5.72E-02
I-134	2.55E-03
I-135	6.45E-03
XE-135	1.27E-01
CS-136	1.45E-04
CS-137	9.19E-02
CS-138	1.31E-03
CE-139	3.51E-04
BA-LA-140	7.19E-03
CE-141	1.64E-03
CE-144	1.59E-04
W-187	8.43E-05
HG-203	2.16E-04
NP-239	3.09E-04

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTSLIQUID EFFLUENTS  
NUCLIDES RELEASED

ACTIVITY (CI)

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	3.69E+00
TOTAL LIQUID RELEASE	6.42E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.71E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	7.25E+11

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

INSTALLATION: INDIAN POINT 3

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
20	TRUCK	BARNWELL, S.C.
5	TRUCK	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS(DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION(BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
<b>A</b>			
AG-110M	%	4.00E+00	
CO-58	%	1.70E+01	4.21E+01
CO-60	%	6.50E+01	2.44E+01
CS-134	%		1.17E+01
CS-137	%	7.00E+00	2.05E+01
MN-54	%	7.00E+00	1.30E+00
<b>B</b>			
CO-58	%	3.50E+01	3.21E+01
CO-60	%	3.60E+01	5.10E+01
CR-51	%		3.00E+00
CS-134	%	8.00E+00	1.90E+00
CS-137	%	1.60E+01	7.70E+00
MN-54	%	5.00E+00	4.30E+00

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	4.93E+01
	CI	5.75E+01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.68E+02
	CI	6.50E+00
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

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

LICENSEE: WISCONSIN PUBLIC SERVICE  
 LICENSED POWER (MWT): 1650.00  
 INITIAL CRITICALITY: 03/07/74

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	1.07E-06
AR-41	1.63E+00
CO-60	1.26E-05
KR-85M	2.38E-02
SR-89	<5.98E-06
SR-90	<5.98E-06
I-131	8.63E-05
I-132	1.15E-05
I-133	6.96E-05
XE-133	3.32E+00
XE-133M	1.78E+00
CS-134	2.71E-07
I-134	6.25E-07
I-135	2.52E-05
XE-135	8.34E-01
CS-137	1.00E-05
RN-222	6.32E-04
UNIDENTIFIED	<1.11E+02

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	3.11E-03
CR-51	1.43E-02
MN-54	9.22E-03
CO-57	2.98E-04
CO-58	4.37E-01
FE-59	4.53E-04
CO-60	2.11E-01
KR-85M	2.40E-05
SR-89	1.04E-04
SR-90	<4.45E-05
NB-95	7.44E-04
ZR-95	3.84E-04
AG-110M	2.39E-02
SN-113	8.80E-05
SN-117M	7.65E-05
SB-124	2.23E-02
SB-125	1.72E-02
I-131	1.02E-06
XE-133	5.25E-05
CS-134	2.09E-02
CS-137	4.96E-02

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 ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	3.82E+00
TOTAL LIQUID RELEASE	2.51E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.24E+06
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.81E+10

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION  
NUMBER OF SHIPMENTS 14 MODE OF TRANSPORTATION SHIELDED VAN DESTINATION BARNWELL, S.C.

IRRADIATED FUEL SHIPMENTS (DISPOSITION)  
NUMBER OF SHIPMENTS 0 MODE OF TRANSPORTATION DESTINATION

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)		JAN-JUNE	JULY-DEC
<b>A</b>			
CO-57	%		5.00E-02
CO-58	%	3.14E+01	3.27E+01
CO-60	%	5.16E+01	4.84E+01
CS-134	%	3.40E+00	3.81E+00
CS-137	%	1.15E+01	1.29E+01
MN-54	%	2.10E+00	1.68E+00
SB-125	%		4.90E-01
<b>B</b>			
CO-58	%	1.08E+01	3.58E+01
CO-60	%	6.86E+01	4.78E+01
CS-134	%	3.80E+00	3.40E+00
CS-137	%	1.29E+01	1.12E+01
MN-54	%	3.90E+00	1.80E+00
<b>C</b>			
CO-57	%		2.00E-01
CO-58	%	1.12E+01	1.99E+01
CO-60	%	6.84E+01	5.11E+01
CS-134	%	3.70E+00	5.70E+00
CS-137	%	1.29E+01	1.99E+01
MN-54	%	3.80E+00	1.20E+00
SB-125	%		2.20E+00
<b>D</b>			
CO-57	%		2.00E-02
CO-58	%	1.56E+01	3.42E+01
CO-60	%	6.48E+01	4.82E+01
CS-134	%	3.70E+00	3.63E+00
CS-137	%	1.25E+01	1.21E+01
MN-54	%	3.40E+00	1.77E+00
SB-125	%		2.20E-01

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



INSTALLATION: KEWAUNEE

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

TYPE OF WASTE	UNIT	YEAR	TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.02E+01	
	CI	1.43E+02	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.04E+01	
	CI	4.14E+00	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	2.99E+01	
	CI	1.69E+00	
D. OTHER CONTAMINATED FILTER	M3	1.34E+01	
	CI	4.97E+01	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: BWR  
 DOCKET NO.: 50-409  
 COOLING WATER SOURCE:MISSISSIPPI RIVER

LICENSEE:DAIRYLAND POWER  
 LICENSED POWER (MWT): 165.00  
 INITIAL CRITICALITY:07/11/67

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	6.78E-05
MN-54	3.49E-05
CO-57	5.76E-06
CO-58	4.63E-05
FE-59	3.07E-06
CO-60	2.36E-04
ZN-65	2.03E-03
KR-85	1.02E+01
KR-85M	3.10E+02
KR-87	1.78E+02
KR-88	5.81E+02
KR-89	4.64E+00
SR-89	2.34E-03
SR-90	8.18E-05
NB-95	5.01E-05
ZR-95	2.36E-05
RU-103	1.40E-06
RU-105	2.32E-06
RU+RH-106	1.89E-04
XE-129M	9.65E+00
I-131	4.08E-03
XE-131M	6.83E+01
I-132	2.91E-05
I-133	3.28E-03
XE-133	7.01E+02
XE-133M	3.67E+01
CS-134	1.26E-05
I-134	3.05E-05
I-135	3.26E-05
XE-135	2.79E+03
XE-135M	7.02E+01
CS-136	1.89E-06
CS-137	1.22E-04
XE-137	3.12E+01
XE-138	2.62E+02
BA+LA-140	3.98E-03
CE-141	1.41E-05
CE-144	7.97E-05

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	7.43E-03
MN-54	1.28E-01
MN-56	1.19E-04

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CO-57	2.36E-03
CO-58	1.89E-03
FE-59	2.42E-02
CO-60	8.33E-01
ZN-65	2.86E-02
KR-85M	6.95E-05
KR-87	3.64E-05
KR-88	4.41E-05
RB-88	2.53E-05
SR-89	8.54E-05
SR-90	4.59E-03
SR-91	7.54E-04
SR-92	4.82E-04
NB-95	1.52E-02
ZR-95	7.41E-03
MO-99	2.01E-03
TC-99M	7.89E-03
RU-103	7.20E-03
RU+RH-105	9.21E-04
RU+RH-106	1.69E-02
I-131	1.83E-03
XE-131M	4.67E-03
I-132	7.79E-05
I-133	4.12E-03
XE-133	1.75E-03
XE-133M	2.86E-04
CS-134	8.24E-02
I-135	1.63E-03
XE-135	1.59E-03
XE-135M	8.86E-04
CS-137	6.97E-01
BA-139	9.79E-05
BA+LA-140	1.44E-03
CE-141	3.20E-03
CE-144	3.67E-02
NP-239	4.68E-03

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	2.34E+01
TOTAL LIQUID RELEASE	7.74E+01

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.43E+05
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.38E+11

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

INSTALLATION: LACROSSE

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS    MODE OF TRANSPORTATION  
2                            TRUCK

DESTINATION  
BARNWELL, S.C.

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

JAN-JUNE            JULY-DEC

A

CE-144	%	9.12E-01
CO-57	%	2.12E-01
CO-58	%	4.65E+00
CO-60	%	6.75E+01
CS-134	%	2.18E+00
CS-137	%	1.27E+01
MN-54	%	6.12E+00
NB-95	%	1.20E-02
NB-97	%	1.33E+00
ZN-65	%	4.42E+00

TYPE OF WASTE

UNIT YEAR TOTAL

A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	4.82E+00
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	6.11E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
D. OTHER	CI	

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: PWR  
 DOCKET NO.: 50-309  
 COOLING WATER SOURCE: BACK RIVER

LICENSEE: MAINE YANKEE ATOMIC POWER  
 LICENSED POWER (MWT): 2630.00  
 INITIAL CRITICALITY: 10/23/72

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	N/D
CO-58	3.92E-05
CO-60	8.98E-05
KR-85	1.17E+02
KR-85M	N/D
KR-87	N/D
KR-88	N/D
SR-89	1.36E-06
SR-90	5.83E-08
I-131	4.20E-04
XE-131M	3.80E+00
I-132	N/D
I-133	1.18E-03
XE-133	1.99E+02
XE-133M	1.53E-01
CS-134	5.19E-06
I-134	N/D
I-135	N/D
XE-135	8.16E+00
XE-135M	N/D
CS-137	3.17E-05
XE-138	N/D
BA-140	N/D
UNIDENTIFIED	2.11E-04

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
F-18	5.81E-03
NA-24	1.62E-03
CR-51	N/D
MN-54	8.63E-03
CO-57	1.16E-04
CO-58	9.54E-02
FE-59	N/D
CO-60	3.65E-02
ZN-65	N/D
SE-75	1.52E-01
SR-89	1.96E-04
SR-90	3.92E-05
ZR-95	N/D
MO-99	4.43E-05
TC-99M	N/D
AG-110M	8.08E-04
SB-124	5.96E-04

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
 AIRBORNE AND LIQUID EFFLUENTS

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
SB-125	3.39E-04
I-131	1.76E-02
I-133	1.43E-03
XE-133	5.26E-03
CS-134	6.22E-03
XE-135	1.78E-03
CS-137	5.07E-02
BA-140	N/D
CE-141	1.56E-05
CE-143	6.64E-05
HG-203	4.97E-02
UNIDENTIFIED	5.70E-03

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	4.48E+00
TOTAL LIQUID RELEASE	2.16E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	7.76E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.87E+11

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

INSTALLATION: MAINE YANKEE

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
24	TRUCK	BARNWELL, S.C.
8	TRUCK	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	CO-58	% 2.50E+01	2.50E+01
	CO-60	% 2.50E+01	2.50E+01
	CS-137	% 5.00E+01	5.00E+01
B			
	CO-58	% 2.50E+01	2.50E+01
	CO-60	% 2.50E+01	2.50E+01
	CS-137	% 5.00E+01	5.00E+01

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.49E+02
	CI	1.65E+03
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.65E+02
	CI	1.53E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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

INSTALLATION: MCGUIRE

LOCATION: 17 MI W CHARLOTTE NC

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1

LICENSEE: DUKE POWER CO

TYPE: PWR

LICENSED POWER (MWT): 3411.00

DOCKET NO.: 50-369

INITIAL CRITICALITY: 08/08/81

COOLING WATER SOURCE: LAKE NORMAN

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	8.12E-03
KR-85	1.20E-01
KR-85M	1.73E-04
SR-90	1.21E-11
XE-133	2.42E-02
XE-133M	3.77E-04
XE-135	5.63E-03

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	8.83E-03
AR-41	8.99E-04
CR-51	4.86E-02
MN-54	1.24E-02
CO-57	7.14E-06
CO-58	2.35E-01
FE-59	2.17E-03
CO-60	3.51E-02
SR-89	9.52E-04
SR-92	8.00E-04
NB-95	6.80E-04
ZR-95	5.67E-04
MO-99	3.13E-04
TC-99M	1.66E-03
AG-110M	1.32E-03
SB-122	2.87E-04
SB-124	3.09E-03
I-131	8.89E-04
I-133	1.26E-03
XE-133	2.07E-04
XE-135	2.69E-04
CE-144	3.42E-03
W-187	3.58E-03

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	6.52E-02
TOTAL LIQUID RELEASE	6.25E+00

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.19E+06
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	7.22E+11

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED



INSTALLATION: MCGUIRE

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS    MODE OF TRANSPORTATION  
1

DESTINATION  
BARNWELL SC

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

B

	JAN-JUNE	JULY-DEC
AG-110M	%	5.10E-01
CO-57	%	1.74E+01
CO-58	%	1.80E+00
CO-60	%	3.58E+01
CS-134	%	1.97E+01
CS-137	%	2.37E+01
MN-54	%	1.20E-01
NB-97	%	6.20E-01

TYPE OF WASTE

- A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR  
BOTTOMS, ETC.
- B. DRY COMPRESSIBLE WASTE, CONTAMINATED  
EQUIPMENT, ETC.
- C. IRRADIATED COMPONENTS, CONTROL  
RODS, ETC.
- D. OTHER

UNIT YEAR TOTAL

MS  
CI  
MS 1.98E+01  
CI 1.91E-01  
MS  
CI  
MS  
CI

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: BWR  
 DOCKET NO.: 50-245  
 COOLING WATER SOURCE: LONG ISLAND SOUND

LICENSEE: NORTHEAST NUCLEAR ENERGY  
 LICENSED POWER (MWT): 2011.00  
 INITIAL CRITICALITY: 10/26/70

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	6.39E-03
MN-54	7.76E-04
CO-58	1.79E-04
FE-59	8.02E-06
CO-60	5.18E-03
KR-83M	4.62E+02
KR-85	5.94E-03
KR-85M	6.68E+02
KR-87	2.51E+03
KR-88	2.44E+03
KR-89	1.12E+00
SR-89	6.24E-03
SR-90	7.17E-05
I-131	<7.52E-02
XE-131M	2.44E-01
I-133	3.88E-01
XE-133	2.70E+02
XE-133M	1.21E+01
CS-134	2.90E-05
I-135	5.86E-01
XE-135	2.09E+03
XE-135M	1.10E+03
CS-137	8.29E-04
XE-137	7.95E+00
XE-138	4.76E+03
BA-LA-140	<4.88E-02
CE-141	1.08E-04

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	1.14E-04
CR-51	4.10E-04
MN-54	2.77E-02
CO-58	6.08E-04
CO-60	2.00E-01
SR-89	<2.26E-03
SR-90	4.75E-04
MO-99	5.62E-05
TC-99M	8.00E-05
SB-124	1.96E-02
I-131	<6.83E-04
I-133	9.34E-06
XE-133	8.42E-03
CS-134	2.18E-02

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
XE-135	<3.16E-02
CS-137	1.21E-01
BA-LA-140	<8.92E-04
CE-141	7.57E-05
CE-144	3.92E-04

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	9.47E+01
TOTAL LIQUID RELEASE	2.62E+00

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	7.94E+06
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.29E+10

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

INSTALLATION: MILLSTONE 1

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
111	TRUCK	BARNWELL, S. C.
17	TRUCK	RICHLAND, WA.

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
1	TRUCK	PLEASANTON, CA

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

A

		JAN-JUNE	JULY-DEC
BA-140	%		1.30E+00
CE144-ZN65-KR85-SR90-NB97-NI63-FE59-I131-I133	%	3.00E+00	
CO-58	%		3.00E+00
CO-60	%	4.20E+01	4.20E+01
CR-51	%		3.20E+00
CR51-CO58-SR89	%	3.90E+00	
CS-134	%	9.80E+00	4.10E+00
CS-137	%	1.80E+01	1.20E+01
FE-55	%	9.00E+00	1.60E+01
FE59-NB97-SB124-SR90-NI63-CE144-I131-CE141	%		4.70E+00
LA-140	%		1.30E+00
MN-54	%	7.10E+00	8.80E+00
SB-124	%	7.20E+00	
SR-89	%		3.60E+00

B

CO-60	%	6.20E+01	4.00E+01
CO58-SR90-NI63-CR51	%	4.70E+00	
CS-134	%	2.00E+00	3.40E+00
CS-137	%	7.00E+00	2.10E+01
FE-55	%	7.00E+00	2.30E+01
MN-54	%	1.60E+01	6.20E+00
SR-89	%	1.30E+00	3.30E+00
SR90-NI63	%		3.10E+00

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	2.74E+02
	CI	1.77E+03
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.69E+03
	CI	5.79E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 2  
 TYPE: PWR  
 DOCKET NO.: 50-356  
 COOLING WATER SOURCE: LONG ISLAND SOUND

LICENSEE: NORTHEAST NUCLEAR ENERGY  
 LICENSED POWER (MWT): 2560.00  
 INITIAL CRITICALITY: 10/17/75

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	1.39E+02
AR-41	3.21E-01
MN-54	6.40E-05
CO-58	6.00E-06
CO-60	2.61E-04
BR-82	1.04E-06
KR-83M	1.40E+01
KR-85	7.48E-01
KR-85M	1.65E+01
KR-87	1.58E+00
KR-88	2.82E+00
RB-88	2.59E-03
Y-88	2.15E-05
SR-89	6.66E-07
I-131	1.06E-01
XE-131M	2.32E+00
I-133	5.13E-03
XE-133	1.99E+03
XE-133M	1.36E+00
I-135	4.66E-03
XE-135	2.44E+02
XE-135M	3.76E+00
CS-137	1.22E-05
XE-137	8.19E-01
CS-138	3.54E-05
XE-138	1.37E+00

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	3.71E+02
NA-24	3.08E-02
CR-51	6.74E-04
MN-54	3.58E-02
CO-57	1.64E-04
CO-58	2.05E-01
FE-59	7.97E-04
CO-60	6.40E-01
RB-88	1.46E-03
SR-89	4.90E-04
SR-90	7.00E-06
SR-92	7.99E-03
NB-95	5.51E-03
ZR-95	9.93E-04
NB-97	3.58E-02

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
MO-99	3.05E-02
TC-99M	8.97E-04
RU-105	1.75E-02
RU-106	2.67E-02
AG-110M	2.85E-02
SB-124	1.83E-01
SB-125	1.88E-03
I-131	4.81E-01
I-132	1.60E-01
I-135	7.50E-01
XE-133	2.32E+00
CS-134	4.37E-01
I-134	5.73E-02
I-135	2.38E-01
XE-135	5.33E-02
XE-135M	4.99E-01
CS-136	1.29E-01
CS-137	5.31E-01
CS-138	9.82E-02
CE-141	3.51E-04
CE-144	2.67E-03
W-187	3.52E-03

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	1.40E+02
TOTAL LIQUID RELEASE	3.71E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.98E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.81E+11

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

INSTALLATION: MILLSTONE 2

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
7	TRUCK	BARNWELL, S.C.

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

A

	JAN-JUNE	JULY-DEC
CO-58	%	4.70E+01
CO-60	% 8.00E+00	1.40E+01
CR-51	%	5.60E+00
CS-134	% 2.80E+01	1.30E+01
CS-137	% 6.30E+01	1.50E+01
FE-55	%	1.00E+00
MN-54	%	1.60E+00
NB-95	%	1.00E+00
SR89-MN54-SR90-NI63-FE55	% 1.00E+00	
ZR95-NB97-1131-CO57-SR89-SR90-NI63	%	1.80E+00

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS ETC.	M3	1.63E+01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	3.21E+02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION:MONTICELLO

LOCATION:25 MI SE ST. CLOUD, MN

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
TYPE: BWR  
DOCKET NO.: 50-263  
COOLING WATER SOURCE:MISSISSIPPI RIVER

LICENSEE:NORTHERN STATES POWER  
LICENSED POWER (MWT):1670.00  
INITIAL CRITICALITY:12/10/70

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	4.24E-04
MN-54	2.56E-04
CO-58	3.71E-05
FE-59	5.28E-05
CO-60	2.14E-03
ZN-65	8.12E-04
KR-83M	7.74E+00
KR-85	2.50E+02
KR-85M	7.27E+00
KR-87	4.12E+01
KR-88	2.23E+01
KR-89	7.70E+02
SR-89	5.17E-03
KR-90	2.63E+01
SR-90	1.83E-04
NB-95	5.35E-05
ZR-95	1.77E-05
RU-103	3.33E-05
I-131	1.55E-02
XE-131M	4.75E+00
I-133	7.48E-02
XE-133	6.34E+02
XE-133M	2.61E+00
CS-134	7.18E-05
I-135	3.95E-02
XE-135	3.77E+01
XE-135M	5.86E+01
CS-136	1.51E-06
CS-137	7.80E-04
XE-137	1.01E+03
XE-138	8.13E+02
XE-139	6.30E+01
BA-140	8.85E-03
CE-141	6.75E-05
CE-144	1.40E-05
ND-147	1.17E-06

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CO-60	1.63E-06
I-131	2.48E-07
I-133	1.03E-06
CS-137	1.99E-07

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 ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

TRITIUM	(CI)		
TOTAL AIRBORNE RELEASE	1.10E+02		
TOTAL LIQUID RELEASE	4.17E-03		
VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.79E+02	
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	0.00E+00	

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

INSTALLATION: MONTICELLO

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
20	TRUCK	BARNWELL, S.C.
31	TRUCK	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
1	TRUCK	VALLECITOS, CA

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

A

		JAN-JUNE	JULY-DEC
BA-140	%	5.90E+00	4.45E+00
CE-141	%	5.36E-01	
CO-58	%	2.61E-01	
CO-60	%	1.61E+01	1.84E+01
CR-51	%	1.19E+00	2.14E+00
CS-134	%	6.81E+00	5.05E+00
CS-137	%	4.12E+01	4.20E+01
I-131	%	5.74E+00	4.44E+00
LA-140	%	6.28E+00	4.49E+00
MN-54	%	1.07E+00	2.04E+00
NB-95	%	4.32E-03	
SR-90	%	7.31E-03	
ZN-65	%	1.13E+01	1.51E+01

B

BA-140	%	7.90E-01	3.17E-01
CE-141	%	8.17E-02	1.54E+00
CO-58	%	1.78E+00	
CO-60	%	7.78E+01	5.06E+01
CR-51	%	2.26E+00	2.83E+00
CS-134	%	8.87E-01	2.28E+00
CS-137	%	7.55E+00	2.37E+01
FE-59	%	4.88E-01	
I-131	%		1.06E+00
LA-140	%	8.56E-01	2.89E-01
MN-54	%	2.66E+00	7.89E-01
RU-103	%		1.45E-02
SR-90	%		1.42E-01
ZN-65	%	3.47E+00	1.27E+01

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION: MONTICELLO

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.40E+02
	CI	4.23E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	4.14E+02
	CI	1.94E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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 ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
TYPE: BWR  
DOCKET NO.:50-220  
COOLING WATER SOURCE:LAKE ONTARIO

LICENSEE:NIAGARA MOHAWK POWER  
LICENSED POWER (MWT):1650.00  
INITIAL CRITICALITY:09/05/69

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	1.94E-04
MN-54	1.22E+00
CO-58	4.65E-05
CO-60	6.10E-05
KR-85M	5.37E+01
KR-88	6.89E+01
SR-89	<5.60E-04
SR-90	<6.87E-05
I-131	6.44E-05
I-133	5.62E-02
XE-133	7.49E+01
I-135	2.92E-01
XE-135	1.58E+02
XE-135M	2.36E+02
CS-137	1.35E-03
XE-138	1.99E+01
BA-LA-140	3.70E-05

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
MN-54	9.32E-02
CO-58	2.58E-02
CO-60	1.16E+00
SR-89	3.06E-04
SR-90	2.10E-03
XE-133	<1.91E-02
CS-134	5.40E-01
XE-135	<2.89E-01
CS-137	3.53E+00

TRITIUM

	(CI)
TOTAL AIRBORNE RELEASE	6.34E+01
TOTAL LIQUID RELEASE	5.65E+00

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	4.32E+05
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	7.81E+08

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

INSTALLATION:NINE MILE POINT

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
68	TRUCK	BARNWELL SC
8	TRUCK	HANFORD WA

IRRADIATED FUEL SHIFMENTS(DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
3		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION(BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	CO-58	%	1.00E-01
	CO-60	%	5.00E+01
	CS-134	%	1.00E+01
	CS-137	%	4.00E+01
	MN-54	%	3.86E+01
			4.50E+00
B			
	CO-58	%	1.00E-01
	CO-60	%	5.00E+01
	CS-134	%	1.00E+01
	CS-137	%	4.00E+01
	MN-54	%	3.86E+01
			4.50E+00

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	2.37E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	1.71E+03
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	2.94E+02
	CI	1.14E+01
D. OTHER	M3	0.00E+00
	CI	

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 ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
TYPE: PWR  
DOCKET NO.: 50-338  
COOLING WATER SOURCE: LAKE ANNA  
UNIT NUMBER: 2  
TYPE: PWR  
DOCKET NO.: 50-339  
COOLING WATER SOURCE: LAKE ANNA

LICENSEE: VIRGINIA ELECTRIC & POWER  
LICENSED POWER (MWT): 2775.00  
INITIAL CRITICALITY: 04/05/78

LICENSEE: VIRGINIA ELECTRIC & POWER  
LICENSED POWER (MWT): 2775.00  
INITIAL CRITICALITY: 06/12/80

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
MN-54	1.03E-03
CO-58	5.02E-03
CO-60	6.19E-03
KR-85M	2.82E-03
KR-88	2.26E-03
SR-89	1.48E-05
SR-90	3.34E-07
I-131	4.66E-01
XE-131M	5.76E+00
I-133	7.03E-02
XE-133	5.20E+03
XE-133M	2.23E+01
CS-134	1.17E-03
I-135	3.06E-03
XE-135	8.03E+01
XE-135M	3.94E-03
CS-137	1.98E-03

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	2.62E-02
GR-51	3.62E-03
MN-54	3.15E-03
CO-58	1.93E-01
FE-59	1.23E-03
CO-60	1.34E-01
ZR-NB-95	1.55E-03
TC-99M	5.59E-04
AG-110M	1.13E-02
SB-124	3.30E-03
I-131	9.75E-02
TE-131M	1.05E-04
I-133	5.71E-03
XE-133	4.28E+00
XE-133M	2.10E-02
CS-134	7.22E-02
XE-135	4.51E-02
CS-137	1.22E-01
BA-LA-140	2.72E-04

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 ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	3.14E+01
TOTAL LIQUID RELEASE	1.28E+03

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.85E+08
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.70E+12

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
27	PRIVATE VEHICLE	BARNWELL, S.C.

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	CO-57	%	1.50E-01
	CO-58	%	2.80E+01
	CO-60	%	5.57E+01
	CS-134	%	1.20E+01
	CS-137	%	1.50E+01
	MN-54	%	6.90E+00
B			
	CO-58	%	2.80E+01
	CO-60	%	3.80E+01
	CS-134	%	1.20E+01
	CS-137	%	1.50E+01
	MN-54	%	6.90E+00

TYPE OF WASTE

	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	8.14E+01
	CI	2.52E+03
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.21E+02
	CI	1.03E+02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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



EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1	LICENSEE:DUKE POWER
TYPE: PWR	LICENSED POWER (MWT):2568.00
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):2568.00
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):2568.00
DOCKET NO.:50-287	INITIAL CRITICALITY:09/05/74
COOLING WATER SOURCE:KEOWEE LAKE	

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	1.14E+01
CR-51	1.40E-03
MN-54	1.45E-04
CO-58	6.74E-03
FE-59	1.18E-04
CO-60	1.58E-03
ZN-65	1.25E-04
KR-85	3.02E+02
KR-85M	5.85E+00
KR-87	1.06E+01
KR-88	2.58E+00
KR-89	4.84E+01
SR-89	2.98E-08
SR-90	2.97E-09
NB-95	5.04E-05
ZR-95	5.26E-04
MO-99	9.19E-04
RU-103	9.68E-05
RU-106	1.10E-03
AG-110M	8.84E-04
SB-125	2.16E-04
I-131	2.50E-01
XE-131M	1.85E+02
I-133	2.78E-02
XE-133	1.54E+04
XE-133M	1.18E+02
CS-134	5.39E-03
I-135	1.99E-02
XE-135	2.07E+02
XE-135M	6.77E+00
CS-136	2.67E-04
CS-137	6.15E-03
BA-140	5.24E-04
CE-144	7.62E-04

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

LIQUID EFFLUENTS NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	2.29E-04
AR-41	8.70E-05
CR-51	3.82E-02
MN-54	1.05E-02
CO-57	1.56E-04
CO-58	1.98E-01
FE-59	1.13E-04
CO-60	2.83E-02
ZN-65	2.32E-05
KR-85	1.15E+00
KR-85M	5.53E-04
KR-87	8.87E-06
KR-88	2.95E-04
Y-88	2.12E-05
SR-89	1.54E-02
SR-90	1.74E-03
SR-91	3.56E-03
SR-92	7.16E-04
NB-95	5.11E-04
ZR-95	4.05E-05
NB-97	1.44E-02
ZR-97	3.73E-05
MO-99	2.41E-02
TC-99M	3.33E-05
RU-103	1.63E-05
RU-106	3.33E-02
AG-108M	2.50E-06
AG-110M	3.08E-03
CD-115	3.14E-03
SB-125	7.79E-03
I-131	1.16E-01
XE-131M	9.93E-02
I-132	1.70E-04
I-133	1.91E-03
XE-133	5.37E+00
XE-133M	5.39E-02
CS-134	4.85E-01
I-134	1.52E-03
I-135	2.23E-03
XE-135	1.67E-01
CS-136	1.50E-02
CS-137	6.72E-01
CS-138	1.97E-03
BA-LA-140	1.75E-02
CE-144	2.61E-02
W-187	1.37E-02
NP-239	9.50E-03

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	5.77E+01
TOTAL LIQUID RELEASE	5.07E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.56E+08
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.20E+11

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

INSTALLATION: OCONEE

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION  
NUMBER OF SHIPMENTS    MODE OF TRANSPORTATION    DESTINATION  
193                            TRUCK                            BARNWELL, SC

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	2.48E+03
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	C1	1.12E+04
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
D. OTHER	C1	

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

INSTALLATION: OYSTER CREEK

LOCATION: 9 MI S TOMS RIVER, NJ

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
TYPE: BWR  
DOCKET NO.: 50-219

LICENSEE: JERSEY CENTRAL POWER & LIGHT  
LICENSED POWER (MWT): 1930.00  
INITIAL CRITICALITY: 05/05/69

COOLING WATER SOURCE: BARNEGAT BAY

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	2.94E-03
MN-54	1.79E-02
CO-57	2.40E-04
CO-58	1.49E-03
CO-60	4.50E-03
KR-85M	1.92E+03
KR-87	6.99E+03
KR-88	5.85E+03
KR-89	1.67E-01
SR-89	4.72E-01
SR-90	6.84E-03
SR-91	2.98E+00
NB-95	5.11E-03
ZR-95	2.12E-04
MO-99	1.13E-02
TC-99M	3.05E-01
I-131	9.15E-01
I-133	3.38E+00
XE-133	1.03E+03
XE-133M	3.32E+01
I-135	4.83E+00
XE-135	1.20E+04
XE-135M	4.14E+03
CS-137	4.11E-02
XE-137	3.68E+03
XE-138	1.53E+04
BA-140	7.55E-01
LA-140	5.37E-01
CE-141	7.35E-04
CE-143	1.40E-03
CE-144	3.41E-02
PA-235	9.89E-05
NP-239	1.20E-02

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	3.95E-02
MN-54	8.66E-03
CO-57	8.40E-04
CO-58	6.13E-05
CO-60	7.97E-02
SR-89	6.68E-03
SR-90	5.63E-04
SR-91	8.14E-04

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
MO-99	9.08E-05
TC-99M	7.18E-03
RU-103	1.26E-04
SB-124	1.65E-03
SB-125	3.48E-04
I-131	3.30E-03
I-135	8.84E-03
XE-135	1.04E-01
XE-135M	3.87E-04
CS-134	3.01E-03
I-135	5.16E-02
XE-135	2.89E-01
CS-137	1.74E-02
BA-140	4.36E-03
LA-140	6.32E-03
CE-141	6.16E-04
CE-143	1.44E-04
CE-144	6.18E-03
PA-233	4.04E-05
NP-239	4.92E-04

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	3.22E+00
TOTAL LIQUID RELEASE	2.67E+01

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	8.42E+06
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.52E+12

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

INSTALLATION: OYSTER CREEK

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
159	MOTOR VEHICLE	BARNWELL, S.C.
1	MOTOR VEHICLE	BEATTY, NV
15	MOTOR VEHICLE	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		
1	MOTOR VEHICLE	COLUMBUS, OH

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

	JAN-JUNE	JULY-DEC
A		
BA-140	%	4.00E+00
CO-60	%	5.40E+01
CS-137	%	8.20E+00
I-133	%	3.60E+00
LA-140	%	4.30E+00
MN-54	%	7.90E+00
SR-89	%	1.30E+01
B		
CO-58	%	5.50E+00
CO-60	%	2.80E+01
CS-137	%	1.00E+01
I-133	%	3.70E+00
MN-54	%	2.10E+00
SR-89	%	3.40E+01
	%	7.20E+00
		4.50E+00

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	5.78E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	2.83E+02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	1.20E+03
	CI	1.38E+02
D. OTHER	M3	0.00E+00
	CI	0.00E+00

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: PWR  
 DOCKET NO.: 50-255  
 COOLING WATER SOURCE: LAKE MICHIGAN

LICENSEE: CONSUMERS POWER  
 LICENSED POWER (MWT): 2550.00  
 INITIAL CRITICALITY: 05/24/71

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	9.67E-05
MN-54	7.58E-05
CO-58	3.15E-04
CO-60	2.40E-04
SE-75	1.51E-05
KR-85	5.21E+00
KR-85M	1.55E-01
KR-87	2.16E-01
KR-88	3.23E-01
MO-99	4.07E-07
RU-103	1.17E-06
I-131	4.05E-02
XE-131M	2.44E+00
I-132	1.66E-03
I-133	1.15E-02
XE-133	2.99E+03
XE-133M	2.60E-01
CS-134	2.63E-05
I-135	3.44E-03
XE-135	1.08E+00
XE-135M	5.02E-01
CS-137	2.50E-04
BA-140	1.13E-06
LA-140	3.00E-06
UNIDENTIFIED	5.79E-05

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	5.12E-04
MN-54	3.60E-03
CO-57	4.04E-06
CO-58	1.06E-02
CO-60	6.85E-03
NB-95	1.59E-04
ZR-95	6.71E-05
RU-103	3.87E-05
SB-125	2.22E-04
I-131	8.16E-05
XE-133	2.45E-03
CS-134	2.55E-03
CS-137	6.25E-03
UNIDENTIFIED	2.08E-03

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



INSTALLATION: PALISADES

LOCATION: 5 MI S SOUTH HAVEN, MI

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

TRITIUM	(C1)
TOTAL AIRBORNE RELEASE	6.42E+00
TOTAL LIQUID RELEASE	2.78E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.60E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	8.54E+10

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

INSTALLATION: PALISADES

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
5	TRUCK	EARNWELL, S.C.
34	TRUCK	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOITOMS, ETC.	M3	1.33E+02
	CI	1.02E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	7.20E+02
	CI	2.29E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	3.70E-01
	CI	1.56E+04
D. OTHER	M3	
	CI	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 2	LICENSEE: PHILADELPHIA ELECTRIC
TYPE: BWR	LICENSED POWER (MWT): 3293.00
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): 3293.00
DOCKET NO.: 50-278	INITIAL CRITICALITY: 08/07/74
COOLING WATER SOURCE: CONOWINGO POND/SUSQUEHANNA RIVER	

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
N-13	1.95E+00
NA-24	2.10E-04
AR-41	4.70E+00
CR-51	3.18E-04
MN-54	1.76E-05
CO-58	2.05E-04
CO-60	1.57E-03
ZN-65	1.83E-03
KR-85M	3.28E+01
KR-87	6.24E+01
KR-88	1.43E+01
RB-89	1.75E-04
SR-89	<1.66E-03
SR-90	<8.93E-05
SR-91	8.20E-04
Y-91M	6.35E-03
NB-95	1.35E-06
TC-99M	8.11E-05
CD-109	2.06E-04
I-131	3.34E-02
I-133	9.95E-01
XE-133	1.41E+04
XE-133M	3.84E+02
CS-134	6.53E-04
I-135	4.67E-01
XE-135	1.25E+03
XE-135M	4.63E+01
CS-137	1.04E-03
CS-138	4.79E-02
XE-138	1.10E+02
BA-140	1.02E-03
LA-140	7.32E-04

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	2.49E+01
NA-24	6.73E-01
P-32	1.74E-02
CR-51	2.33E-02
MN-54	2.57E-03

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
TE-55	2.44E-03
CO-58	9.76E-03
CO-60	1.30E-01
NI-63	3.99E-03
ZN-65	2.90E-01
SR-89	1.48E-03
SR-90	1.59E-03
SR-91	1.46E-03
Y-91M	2.68E-03
SR-92	1.05E-03
NB-95	4.98E-04
TC-99M	7.06E-03
AG-110M	1.84E-03
I-131	5.39E-02
XE-131M	4.14E-04
I-132	2.76E-03
TE-132	8.04E-03
I-133	8.12E-02
XE-133	5.31E-01
XE-133M	1.25E-03
CS-134	9.92E-02
I-135	2.28E-02
XE-135	2.34E-01
XE-135M	3.46E-02
CS-137	1.70E-01
BA-140	3.71E-04
LA-140	4.73E-03
NP-239	1.27E-02

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	2.85E+01
TOTAL LIQUID RELEASE	3.68E+01

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.69E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.66E+11

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

INSTALLATION: PEACH BOTTOM

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
303	TRUCK	BARNWELL SC
32	TRUCK	RICHLAND WA

TYPE OF WASTE	UNIT	YEAR	TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	2.34E+03	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	5.53E+03	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3		
D. OTHER	CI		

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
TYPE: BWR  
DOCKET NO.: 50-293  
COOLING WATER SOURCE: CAPE COD BAY

LICENSEE: BOSTON EDISON  
LICENSED POWER (MWT): 1998.00  
INITIAL CRITICALITY: 06/16/72

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
MN-54	5.58E-05
CO-58	1.05E-05
CO-60	7.93E-04
KR-85	<6.32E-02
KR-85M	<8.12E+02
KR-87	<1.33E+02
KR-88	<7.86E+02
SR-89	1.56E-02
SR-90	2.75E-05
I-131	<5.24E-02
I-133	<2.04E-01
XE-133	<3.09E+03
XE-133M	1.48E+01
CS-134	8.18E-06
I-135	<2.79E-01
XE-135	4.22E+02
XE-135M	<9.18E+00
CS-137	2.15E-04
XE-138	<3.22E+01
BA-LA-140	<9.88E-03
CE-144	1.70E-05

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	1.79E-02
MN-54	8.43E-02
FE-55	<5.18E-01
CO-58	4.05E-02
FE-59	2.40E-03
CO-60	6.24E-01
ZN-65	4.09E-03
SR-89	<2.26E-02
SR-90	<5.18E-03
ZR-NB-95	6.75E-04
MO99-TC99M	3.06E-03
I-131	2.19E-03
I-133	1.46E-03
XE-133	3.17E-04
CS-134	6.04E-02
XE-135	1.72E-04
CS-137	3.48E-01
BA-LA-140	1.58E-02
CE-141	8.18E-05
UNIDENTIFIED	1.96E-01

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTSLIQUID EFFLUENTS  
NUCLIDES RELEASED

ACTIVITY (CI)

## TRITIUM

(CI)

TOTAL AIRBORNE RELEASE	7.69E+01
TOTAL LIQUID RELEASE	5.41E+01

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	4.68E+06
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.15E+10

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

INSTALLATION: PILGRIM

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
78	TRACTOR TRAILER	BARNWELL, S.C.

IRRADIATED FUEL SHIPMENTS(DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION(BY TYPE OF WASTE)

A

		JAN-JUNE	JULY-DEC
BA-140	%		2.98E+00
BA-1A-140	%	4.20E-01	
CE-141	%	2.00E-02	8.60E-02
CO-58	%	1.47E+00	3.78E+00
CO-60	%	4.16E+01	3.65E+01
CR-51	%	1.01E+00	6.16E+00
CS-134	%	1.28E+01	2.54E+00
CS-137	%	1.79E+01	1.49E+01
FE-55	%	3.88E+00	1.30E+01
FE-59	%	1.00E-02	1.01E-01
I-131	%	1.00E-01	1.20E+00
I-133	%	2.00E-03	2.68E-01
LA-140	%		1.38E+00
MN-54	%	9.32E+00	4.19E+00
MO-99	%		6.15E-01
MO-99/TC-99M	%	8.00E-02	
RU-103	%	1.00E-03	
SR-89	%	1.07E+01	1.03E+01
SR-90	%	2.00E-01	2.15E-01
TC-99M	%		8.63E-01
XE-131M	%	1.00E-02	4.28E-01
ZN-65	%	4.60E-01	5.58E-01

B

BA-140	%		1.85E-01
CO-58	%	4.61E+01	2.04E+00
CO-60	%	3.59E+01	8.48E+01
CR-51	%		1.32E+00
CS-134	%		8.99E-01
CS-137	%	1.50E-01	4.96E+00
FE-55	%	1.70E+00	1.60E+00
FE-59	%	2.90E+00	1.70E-01
I-131	%		1.93E-01
LA-140	%		1.10E-02
MN-54	%	5.83E+00	2.75E+00
NB-97	%		1.86E-01
SB-122	%		7.20E-02
SR-89	%		5.19E-01

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED



INSTALLATION: PILGRIM

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)	JAN-JUNE	JULY-DEC
SR-90	%	1.20E-02
ZN-65	%	7.35E+00
ZR-NB-95	%	4.00E-02

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	2.10E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	8.59E+02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	8.54E+02
D. OTHER	CI	7.88E+01
	M3	
	CI	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

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): 1518.50  
INITIAL CRITICALITY: 11/02/70  
LICENSEE: WISCONSIN ELECTRIC POWER COMPANY  
LICENSED POWER (MWT): 1518.50  
INITIAL CRITICALITY: 05/30/72

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (Ci)
F-18	1.68E-07
NA-24	3.45E-08
AR-41	3.85E+01
CR-51	5.38E-06
MN-54	1.19E-06
CO-58	8.20E-05
CO-60	1.96E-04
KR-85	2.00E+01
KR-85M	4.15E+01
KR-87	2.87E+01
KR-88	6.88E+01
RB-88	1.76E-01
SR-89	9.50E-07
SR-90	2.15E-07
NB-95	1.18E-04
ZR-95	9.77E-05
ZR-97	1.27E-07
RU-103	5.13E-06
CD-109	6.72E-09
AG-110M	1.24E-09
SN-113	3.01E-06
SB-125	1.28E-08
I-131	4.49E-03
XE-131M	1.04E-01
I-132	4.40E-03
TE-132	3.00E-06
BA-133	9.34E-09
I-133	1.08E-03
XE-133	1.53E+02
XE-133M	6.57E+00
CS-134	4.01E-05
I-134	2.96E-04
I-135	9.80E-05
XE-135	1.78E+02
XE-135M	2.57E+01
CS-137	6.90E-05
CS-138	1.53E-02
XE-138	4.94E+01
CE-139	1.03E-06
LA-140	1.95E-09

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CE-144	7.67E-07

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	6.52E+02
F-18	6.16E-02
NA-24	7.02E-03
CR-51	2.12E-03
MN-54	6.75E-04
CO-57	8.81E-06
CO-58	2.91E-05
CO-60	6.57E-08
KR-85M	6.93E-04
KR-88	5.52E-04
RB-88	4.23E-04
SR-90	5.65E-04
SR-90	7.36E-04
NB-95	5.84E-05
MO-99	8.19E-04
RL-103	1.23E-04
AG-110M	6.50E-05
SN-113	5.18E-04
SB-125	5.11E-04
I-131	1.83E-01
I-132	4.69E-02
TE-132	5.58E-06
I-133	2.92E-01
XE-135	7.26E-02
XE-135M	2.60E-04
CS-134	4.61E-02
I-134	6.92E-02
I-135	1.92E-01
XE-135	6.98E-03
CS-136	7.10E-04
CS-137	9.18E-02
CS-138	4.77E-03
CE-141	2.26E-04
CE-144	2.22E-05

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	4.80E+02
TOTAL LIQUID RELEASE	6.52E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.78E+08
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.50E+11

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

INSTALLATION: POINT BEACH

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
24	TRUCK	N/R

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

TYPE OF WASTE

	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.77E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	4.87E+02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
D. OTHER	CI	

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
TYPE: PWR  
DOCKET NO.: 50-282  
COOLING WATER SOURCE: MISSISSIPPI RIVER  
UNIT NUMBER: 2  
TYPE: PWR  
DOCKET NO.: 50-306  
COOLING WATER SOURCE: MISSISSIPPI RIVER

LICENSEE: NORTHERN STATES POWER  
LICENSED POWER (MWT): 1650.00  
INITIAL CRITICALITY: 12/01/75  
LICENSEE: NORTHERN STATES POWER  
LICENSED POWER (MWT): 1650.00  
INITIAL CRITICALITY: 12/17/74

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	5.17E+00
CO-58	4.20E-05
CO-60	1.39E-05
KR-85	1.21E-01
KR-85M	3.49E-01
KR-87	6.06E-01
KR-88	1.88E+00
RB-88	1.48E+00
Y-88	3.53E-02
AG-110M	5.05E-05
I-131	3.61E-04
I-133	7.37E-04
XE-133	5.39E+01
XE-133M	1.69E-01
XE-135	4.19E+00
XE-135M	4.70E-01
CS-138	1.70E+00
XE-138	1.70E+00
CE-144	1.82E-06

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
MN-54	5.31E-05
CO-58	3.84E-03
CO-60	1.38E-03
ZR-NB-97	1.13E-05
SB-124	6.76E-04
XE-133	1.53E-02
XE-133M	9.70E-05
XE-135	3.38E-04
CS-137	1.78E-05
BA-LA-140	2.82E-05

TRIT. d	(CI)
TOTAL AIRBORNE RELEASE	7.35E+01
TOTAL LIQUID RELEASE	5.62E+02

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.65E+08
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.22E+12

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

INSTALLATION: PRAIRIE ISLAND

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
18	TRUCK	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	CO-58	% 2.40E+00	2.00E+00
	CO-60	% 7.96E+01	3.60E+01
	CS-134	% 3.00E+00	1.50E+01
	CS-137	% 1.15E+01	4.50E+01
	MN-54	% 3.50E+00	2.00E+00
B			
	CO-58	% 7.40E+00	1.50E+01
	CO-60	% 6.45E+01	3.50E+01
	CS-134	% 2.00E+00	1.00E+01
	CS-137	% 1.95E+01	2.50E+01
	MISC	% 6.60E+00	
	MN-54	%	1.50E+01
C			
	NONE	%	N/A
D			
	CO-58	%	8.50E+00
	CO-60	%	9.15E+01

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	2.07E+01
	CI	4.36E+01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.82E+02
	CI	1.27E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	9.37E+01
	CI	9.60E-02

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

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 & ELECTRIC  
LICENSED POWER (MWT): 2511.00  
INITIAL CRITICALITY: 10/18/71  
LICENSEE: COMMONWEALTH EDISON AND IOWA-ILLINOIS GAS & ELECTRIC  
LICENSED POWER (MWT): 2511.00  
INITIAL CRITICALITY: 04/26/72

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	2.15E-02
MN-54	3.51E-04
CO-58	6.53E-04
CO-60	1.14E-02
ZN-65	8.75E-04
KR-85	N/D
KR-85M	2.63E+03
KR-87	2.02E+03
KR-88	4.74E+03
SR-89	8.92E-02
SR-90	3.97E-04
RU-103	4.90E-06
AG-110M	2.53E-05
SB-124	3.40E-05
I-131	5.12E-01
I-133	2.24E+00
XE-133	4.07E+03
CS-134	6.15E-04
I-135	5.35E+00
XE-135	3.96E+03
XE-135M	4.48E+03
CS-136	7.09E-04
CS-137	1.81E-02
XE-138	9.12E+03
BA-140	2.00E-01
LA-140	N/D
CE-141	7.80E-03
CE-144	1.90E-03
UNIDENTIFIED	N/D

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	8.30E-04
CR-51	3.86E-03
MN-54	8.09E-03
CO-58	5.58E-03
FE-59	N/D
CO-60	2.54E-01
ZN-65	2.05E-03
SR-89	6.21E-03

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



EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
SR-90	1.28E-03
SR-91	1.85E-03
SR-92	9.93E-05
NB-95	2.80E-05
ZR-95	N/D
MO-99	2.07E-03
TC-99M	2.93E-03
AG-110M	N/D
I-131	1.22E-02
I-133	1.14E-02
XE-133	1.48E+00
XE-133M	1.28E-02
CS-134	6.98E-01
I-135	5.62E-03
XE-135	2.48E-01
CS-136	1.25E-04
CS-137	2.29E+00
CS-138	2.60E-03
BA-140	5.43E-03
LA-140	1.44E-03
CE-141	2.67E-04
NF-239	1.10E-04

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	8.59E+01
TOTAL LIQUID RELEASE	1.19E+01

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.11E+06
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.08E+09

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: PWR  
 DOCKET NO.: 50-312  
 COOLING WATER SOURCE: COOLING TOWERS-FOLSOM CANAL

LICENSEE: SACRAMENTO MUNICIPAL UTILITY  
 LICENSED POWER (MWT): 2772.00  
 INITIAL CRITICALITY: 09/16/74

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	3.01E-02
CO-58	1.94E-04
CO-60	4.33E-04
KR-85	1.32E+01
KR-85M	1.45E-01
KR-87	N/D
KR-88	1.45E+00
I-131	3.84E-03
XE-131M	7.64E-01
I-133	1.33E-04
XE-133	1.33E+03
XE-133M	2.35E+00
I-135	N/D
XE-135	1.63E+01
XE-135M	N/D
CS-137	2.20E-04
XE-138	N/D

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	8.55E+01
CR-51	N/D
MN-54	4.22E-02
CO-57	1.47E-04
CO-58	3.04E-01
FE-59	3.92E-04
CO-60	6.09E-02
ZN-65	N/D
SR-89	N/D
SR-90	N/D
ZR-NB-95	4.55E-03
MO-99	N/D
TC-99M	N/D
AC-110M	6.34E-04
I-131	3.47E-02
I-133	4.70E-03
XE-133	N/D
CS-134	4.95E-02
XE-135	N/D
CS-137	8.92E-02
BA-LA-140	1.36E-02
UNIDENTIFIED	N/D

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

TRITIUM	(CI)		
TOTAL AIRBORNE RELEASE	1.41E+02		
TOTAL LIQUID RELEASE	8.35E+01		
VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	9.11E+07	
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.76E+09	

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

INSTALLATION: RANCHO SECO

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
2	TRUCK (SOLE USE)	BEATTY, NV
15	TRUCK (SOLE USE)	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

	JAN-JUNE	JULY-DEC
A		
NOT APPLICABLE	%	N/A
B		
CO-58	%	5.00E+01
CO-60	%	5.30E+01
CR-51/AG-110M	%	5.00E+00
MN-54	%	1.20E+01
C		
NOT APPLICABLE	%	N/A
D		
AG-110M	%	5.00E+00
CO-58	%	2.70E+01
CO-60	%	5.80E+01
CR-51/NB-95	%	2.00E+00
CS-134/CS-137	%	1.00E+00
MN-54	%	8.00E+00

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	0.00E+00
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	0.00E+00
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	1.22E+02
D. OTHER	CI	6.59E+00
	M3	0.00E+00
	CI	0.00E+00
	M3	1.09E+02
	CI	1.37E+02

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 2  
 TYPE: PWR  
 DOCKET NO.: 50-261  
 COOLING WATER SOURCE:ROBINSON INPOUNDMENT

LICENSEE:CAROLINA POWER &LIGHT  
 LICENSED POWER (MWT):2300.00  
 INITIAL CRITICALITY:09/20/70

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
F-18	1.10E-05
AR-41	4.78E+01
CO-58	3.75E-05
CO-60	2.74E-04
KR-85M	2.60E+00
KR-87	1.87E+00
KR-88	1.35E+00
NB-97	1.28E-05
I-131	2.00E-05
I-133	7.86E-05
XE-133	3.49E+02
XE-135M	2.89E+00
XE-135	1.04E+02
XE-135M	4.37E+00
CS-137	8.58E-07

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
F-18	2.56E-03
NI-24	1.56E+00
AR-41	3.96E-02
CR-51	1.29E-03
MN-54	3.16E-03
CO-57	1.28E-07
CO-58	3.94E-02
FE-59	5.03E-05
CO-60	4.06E-02
ZN-65	4.57E-04
KR-85M	1.25E-04
KR-87	2.51E-06
SR-89	1.06E-03
SR-90	5.60E-03
SR-92	2.14E-06
NB-95	1.40E-03
ZR-95	6.76E-04
NB-97	8.46E-04
MO-99	8.73E-04
TC-99M	8.49E-04
AG-110M	3.35E-04
SN-113	2.36E-05
SB-124	9.91E-05
I-131	3.90E-03
I-133	1.71E-01
XE-133	1.20E-02

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
 AIRBORNE AND LIQUID EFFLUENTS

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CS-134	7.45E-04
XE-135	9.70E-03
XE-135M	4.67E-04
CS-137	1.12E-02
CE-144	7.34E-05

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	1.06E+01
TOTAL LIQUID RELEASE	1.86E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.09E+08
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	8.42E+11

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION			DESTINATION
NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION		BARNWELL, S.C.
54	TRUCK		

IRRADIATED FUEL SHIPMENTS (DISPOSITION)			DESTINATION
NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION		SOUTHPORT, N.C.
0			
2	RAIL		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)	JAN-JUNE	JULY-DEC
<b>A</b>		
AG-110M	%	3.18E-02
CO-58	% 1.08E-01	5.88E-01
CO-60	% 3.93E-01	4.93E-01
CR-51	%	3.18E-02
CS-137	% 2.50E-02	1.43E-01
MN-54	% 3.24E-03	3.18E-02
NB-95	%	3.18E-02
NB-97	% 2.12E-02	3.18E-02
OTHERS	% 1.76E-02	7.95E-02
SB-124	%	1.27E-01
<b>B</b>		
CO-58	% 1.49E-01	1.30E-01
CO-60	% 2.02E+00	3.07E-01
CR-51	%	1.56E-02
CS-137	% 9.88E-03	
MN-54	% 3.40E-02	1.56E-02
NB-97	%	3.12E-02
OTHERS	%	2.08E-02

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	2.50E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	4.99E+00
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	6.52E+02
D. OTHER	CI	1.38E+01
	M3	
	CI	
	M3	
	CI	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: PWR  
 DOCKET NO.: 50-272  
 COOLING WATER SOURCE: DELAWARE RIVER

LICENSEE: PSE&G  
 LICENSED POWER (MWT): 3338.00  
 INITIAL CRITICALITY: 12/11/76

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CS-139	6.99E-04
F-18	3.09E-04
AR-41	2.43E-03
MN-54	4.12E-03
CO-58	2.12E-07
CO-60	3.80E-01
KR-85	4.62E-01
KR-85M	2.02E+00
KR-87	6.36E-03
KR-88	2.76E-02
RB-88	8.31E-02
Y-88	4.44E-03
I-131	9.31E-03
I-133	1.64E-03
XE-133	6.24E+02
XE-133M	2.91E+00
XE-135	5.24E+01
XE-135M	2.99E-01
CS-137	4.63E-05
CS-138	5.82E-04
UNIDENTIFIED	3.81E+02

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	4.93E+02
NA-24	2.40E-02
CR-51	5.92E-02
MN-54	7.39E-02
CO-58	4.51E-01
FE-59	3.75E-03
CO-60	3.20E-01
NB-95	1.81E-02
ZR-95	1.04E-02
MO-99	2.52E-04
SN-113	8.91E-04
SB-124	6.15E-04
SB-125	2.95E-01
TE-125M	5.62E-03
I-131	1.10E-01
I-133	8.80E-02
XE-133	5.38E+00
XE-133M	5.24E-02
CS-134	5.95E-02
XE-135	9.64E-02

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



EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CS-136	1.42E-03
CS-137	7.60E-02
CE-144	5.98E-04

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	2.74E+00
TOTAL LIQUID RELEASE	4.95E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.29E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.35E+10

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 2	LICENSEE: PSE&G
TYPE: PWR	LICENSED POWER (MWT): 3338.00
DOCKET NO.: 50-311	INITIAL CRITICALITY: 08/02/80
COOLING WATER SOURCE: DELAWARE RIVER	

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
F-18	2.96E-06
MN-54	2.39E-04
CO-58	2.12E-07
CO-60	4.60E-03
KR-85	1.65E-01
KR-85M	1.99E+00
SR-85	6.33E-04
KR-88	1.69E-03
I-131	8.36E-04
I-133	1.82E-05
XE-133	5.42E+02
XE-133M	3.15E-01
CS-134	1.05E-06
XE-135	1.38E+01
XE-135M	2.99E-01
CS-137	8.01E-06

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	8.43E+02
NA-24	2.05E-01
CR-51	9.46E-02
MN-54	4.43E-02
CO-58	8.12E-01
FE-59	5.84E-03
CO-60	2.56E-01
NB-95	1.50E-02
ZR-95	1.05E-02
MO-99	7.41E-05
SN-113	2.65E-04
SB-124	9.07E-04
SB-125	8.37E-03
TE-125M	3.7E-02
I-131	2.57E-02
I-133	6.03E-04
XE-133	5.59E+00
XE-133M	5.65E-02
CS-134	1.79E-02
XE-135	6.99E-02
CS-137	2.94E-02
CE-139	1.45E-04
W-187	2.49E-04

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION: SALEM 2

LOCATION: 20 M S WILMINGTON, DL

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	1.13E+00
TOTAL LIQUID RELEASE	8.43E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.70E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.20E+10

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
86	TRUCK	BARNWELL, S.C.
4	TRUCK	BEATTY, NV
NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	CO-58	% 7.30E+01	7.30E+01
	CO-60	% 1.50E+01	1.50E+01
	FE-55	% 9.00E+00	9.00E+00
	MN-54	% 3.00E+00	3.00E+00
B			
	CO-58	% 7.30E+01	7.30E+01
	CO-60	% 1.50E+01	1.50E+01
	FE-55	% 9.00E+00	9.00E+00
	MN-54	% 3.00E+00	3.00E+00

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	2.34E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	1.10E+03
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	7.02E+02
D. OTHER	CI	3.70E+01
	M3	
	CI	

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 ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
TYPE: PWR  
DOCKET NO.: 50-206  
COOLING WATER SOURCE: PACIFIC OCEAN

LICENSEE: SOUTHERN CALIFORNIA EDISON AND SAN DIEGO GAS & ELECTRIC  
LICENSED POWER (MWT): 1347.00  
INITIAL CRITICALITY: 06/14/67

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	2.27E-01
CR-51	9.43E-03
MN-54	2.03E-07
CO-57	7.46E-09
CO-58	8.62E-07
CO-60	4.15E-06
KR-85	1.07E-01
KR-85M	1.75E+00
KR-87	5.73E-02
KR-88	5.59E-01
SR-89	N/D
SR-90	N/D
I-131	2.39E-03
XE-131	N/D
XE-131M	2.69E-01
XE-133	4.01E+02
XE-133M	3.48E+00
CS-134	N/D
XE-135	9.47E+00
XE-135M	8.79E-03
CS-137	1.86E-06
BA-LA-140	N/D

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	2.97E+02
CR-51	1.74E-01
MN-54	1.99E-01
CO-57	4.42E-03
CO-58	2.67E-01
FE-59	2.46E-02
CO-60	2.14E+00
ZN-65	1.05E-02
KR-85	2.67E-01
KR-85M	N/D
SR-89	N/D
SR-90	N/D
ZR-NB-95	5.35E-03
MO-99	N/D
TC-99M	1.79E-03
AG-110M	9.70E-03
SB-122	1.72E-03
I-131	1.33E-02
I-133	N/D

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
XE-135	1.07E-01
CS-134	2.27E-01
I-135	N/D
XE-135	N/D
CS-137	5.19E-01
BA-LA-140	N/D
CE-141	N/D
CE-144	4.99E-02

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	1.20E+01
TOTAL LIQUID RELEASE	2.97E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	3.41E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.02E+11

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION: SAN ONOFRE

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS    MODE OF TRANSPORTATION

9

73

DESTINATION

RICHLAND WA

TYPE OF WASTE

A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR  
BOTTOMS, ETC.

B. DRY COMPRESSIBLE WASTE, CONTAMINATED  
EQUIPMENT, ETC.

C. IRRADIATED COMPONENTS, CONTROL  
RODS, ETC.

D. OTHER

UNIT YEAR TOTAL

M3    1.62E+03

CI    1.26E+03

M3

CI

M3

CI

M3

CI

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1

TYPE: PWR

DOCKET NO.: 50-327

COOLING WATER SOURCE: TENNESSEE RIVER

LICENSEE: TENNESSEE VALLEY AUTHORITY

LICENSED POWER (MWT): 2815.00

INITIAL CRITICALITY: 07/05/80

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	9.90E+00
CR-51	1.22E-05
CO-58	1.75E-05
KR-85	1.10E+01
KR-85M	7.41E-01
RB-88	5.39E-04
SR-89	2.06E-07
SR-90	1.24E-06
NB-95	1.96E-13
TC-99M	1.16E-02
I-131	7.99E-04
XE-131M	2.31E+01
I-133	1.54E-03
XE-133	8.87E+03
XE-133M	1.59E+01
XE-135	9.74E+01

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	1.22E-02
P-32	2.63E-01
AR-41	6.57E-05
CR-51	6.06E-01
MN-54	3.52E-01
FE-55	8.60E-02
CO-58	1.01E+00
FE-59	3.86E-02
CO-60	6.46E-02
ZN-65	2.68E-04
KR-85M	8.40E-04
SR-89	1.62E-03
SR-90	4.88E-03
ZR-NB-95	7.89E-02
ZR-97	1.57E-04
TC-99M	1.47E-04
RH-105	1.63E-03
SB-124	1.11E-03
I-131	6.60E-02
XE-131M	6.26E-02
TE-132	8.15E-07
I-133	2.88E-03
XE-133	2.44E+00
CS-134	2.81E-02
XE-135	1.02E-02

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED



EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CS-136	4.23E-03
CS-137	9.54E-02
BA-LA-140	2.68E-02
CE-144	1.72E-02
W-187	5.02E-03

## TRITIUM

	(CI)
TOTAL AIRBORNE RELEASE	9.19E-01
TOTAL LIQUID RELEASE	7.65E+01

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.15E+09
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	8.47E+09

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
12	TRUCK	BARNWELL SC

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	CO-58	% 3.15E+01	5.52E+01
	CO-60	% 3.24E+00	1.75E+01
	CR-51	% 1.41E+01	7.55E+00
	CS-134	% 1.51E-01	9.59E-01
	CS-137	% 5.68E-01	3.00E+00
	FE-59	% 9.57E-01	6.24E-01
	I-131	% 4.22E+00	4.61E+00
	MN-54	% 2.96E+01	3.65E+00
	NB-95	% 1.34E+00	1.98E+00
	UNIDENTIFIED	% 1.27E+01	3.79E+00
	ZR-95	% 9.40E-01	1.08E-01
D			
	CO-58	% 6.72E+01	4.32E+01
	CO-60	% 7.38E+00	1.39E+01
	CR-51	% 1.07E+01	7.17E+00
	CS-134	% 5.60E-01	5.60E-01
	CS-137	% 5.96E-01	2.21E-01
	FE-59	% 9.02E-01	1.07E+00
	I-131	% 6.99E-01	2.60E+01
	MN-54	% 1.17E+01	2.15E+00
	NB-95	% 1.37E+00	1.37E+00
	UNIDENTIFIED	% 7.98E-01	3.54E+00
	ZR-95	% 7.65E-01	7.65E-01

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	3.81E+01
	CI	2.04E+01
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	
	CI	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	1.23E+02
BOXES AND DRUMS	CI	8.80E+00

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: PWR  
 DOCKET NO.: 50-335  
 COOLING WATER SOURCE: ATLANTIC OCEAN

LICENSEE: FLORIDA POWER & LIGHT  
 LICENSED POWER (MWT): 2560.00  
 INITIAL CRITICALITY: 04/22/76

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	8.30E+00
CO-58	3.32E-05
CO-60	1.45E-04
KR-85	1.17E+02
KR-85M	3.79E+02
KR-87	1.79E+02
KR-88	5.18E+02
RB-88	4.38E-02
ZR-95	8.40E-07
I-131	5.85E-02
XE-131M	1.11E+03
I-132	5.04E-04
I-133	1.59E-01
XE-133	1.92E+04
XE-133M	2.64E+02
I-135	1.14E-03
XE-135	9.74E+02
XE-135M	4.67E+01
XE-138	1.88E+02
BA-140	2.51E-06
LA-140	2.51E-06

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	4.32E-04
AR-41	6.85E-04
CR-51	2.58E-01
MN-54	2.99E-02
MN-56	8.45E-03
CO-57	1.47E-03
CO-58	4.69E-01
FE-59	9.64E-03
CO-60	1.19E+00
NI-65	2.88E-03
ZN-65	2.57E-03
BR-82	9.39E-05
KR-85	8.81E-02
KR-85M	9.68E-05
KR-87	2.53E-05
KR-88	6.19E-05
SR-89	2.53E-03
SR-90	3.68E-04
NB-95	1.03E-02
ZR-95	4.58E-02

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NB-97	5.91E-03
ZR-97	8.01E-03
MO-99	5.61E-03
TC-99M	1.94E-03
RU-105	1.85E-04
AG-110M	9.70E-03
SN-113	3.89E-03
SB-122	1.05E-02
SB-124	6.79E-02
SB-125	5.01E-02
I-131	7.15E-02
XE-131M	8.02E-03
I-132	7.39E-04
I-133	1.09E-02
XE-133	5.16E-01
XE-133M	5.85E-03
CS-134	9.22E-02
I-134	4.36E-04
I-135	7.53E-03
XE-135	1.01E-02
XE-135M	3.04E-05
CS-136	1.44E-03
CS-137	9.42E-02
XE-138	3.50E-05
BA-140	7.83E-04
LA-140	1.40E-03
CE-141	2.25E-04
CE-144	6.30E-03
W-187	6.23E-03
NP-239	3.36E-04

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	3.70E+02
TOTAL LIQUID RELEASE	3.25E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	4.16E+06
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.34E+10

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

INSTALLATION: ST. LUCIE

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
15	TRUCK	BARNWELL SC

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	CO-58	% 7.00E+00	2.40E+01
	CO-60	% 6.70E+01	6.00E+01
	CS-134	% 8.00E+00	6.00E+00
	CS-137	% 1.20E+01	1.00E+01
	MN-54	% 6.00E+00	
B			
	CO-58	% 1.00E+01	1.50E+01
	CO-60	% 6.20E+01	3.50E+01
	CS-134	% 7.00E+00	1.50E+01
	CS-137	% 1.80E+01	3.00E+01
	MN-54	% 3.00E+00	5.00E+00

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.89E+01
	CI	2.90E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.31E+02
	CI	6.12E+00
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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

INSTALLATION: SURRY

LOCATION: 19 MI NW NEWPORT NEWS, VA

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

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): 2441.00  
INITIAL CRITICALITY: 07/01/72

LICENSEE: VIRGINIA ELECTRIC & POWER  
LICENSED POWER (MWT): 2441.00  
INITIAL CRITICALITY: 03/07/73

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	6.85E-01
CR-51	7.11E-05
MN-54	8.14E-05
CO-58	7.80E-04
FE-59	2.37E-06
CO-60	1.90E-03
ZN-65	2.01E-07
KR-85	6.49E+00
KR-85M	4.89E+00
KR-88	5.95E+00
RB-88	2.77E-01
NB-95	1.61E-05
ZR-95	6.64E-06
RU-103	1.03E-06
I-131	4.50E-02
I-132	1.68E-07
I-133	1.65E-02
XE-133	1.34E+04
XE-133M	6.64E+01
CS-134	1.23E-04
I-135	1.50E-03
XE-135	5.67E+02
CS-137	5.48E-04
CS-138	9.33E-04

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
C-14	4.69E-03
NA-24	2.10E+00
AR-41	1.29E-02
CR-51	5.25E-02
MN-54	2.21E-02
CO-57	1.23E-03
CO-58	1.30E+00
FE-59	7.69E-04
CO-60	1.23E+00
RB-88	2.32E-01
SR-89	2.47E-04
SR-90	1.87E-05
NB-95	5.22E-03

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

INSTALLATION: SURRY

LOCATION: 19 MI NW NEWPORT NEWS, VA

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
SB-124	1.65E-02
SB-125	2.89E-02
I-131	1.56E+00
XE-131M	8.35E-02
I-132	1.73E-03
I-133	2.41E-01
XE-133	8.15E+00
XE-133M	2.11E-01
CS-134	1.23E+00
I-134	2.27E-05
I-135	7.66E-03
XE-135	2.34E+00
CS-136	8.31E-02
CS-137	1.81E+00
BA-LA-140	2.06E-04
CE-141	7.39E-05
CE-144	4.69E-03

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	6.19E+01
TOTAL LIQUID RELEASE	5.31E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.09E+08
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.11E+12

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

INSTALLATION: SURRY

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION
126	
12	

DESTINATION  
BARNWELL SC  
RICHLAND WA

TYPE OF WASTE

A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR  
BOTTOMS, ETC.  
B. DRY COMPRESSIBLE WASTE, CONTAMINATED  
EQUIPMENT, ETC.  
C. IRRADIATED COMPONENTS, CONTROL  
RODS, ETC.  
D. OTHER

UNIT YEAR TOTAL

M3	2.80E+03
CI	1.36E+03
M3	
CI	
M3	
CI	
M3	
CI	

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



EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: PWR  
 DOCKET NO.: 50-289  
 COOLING WATER SOURCE: SUSQUEHANNA RIVER

LICENSEE: METROPOLITAN EDISON & JERSEY CENTRAL POWER & LIGHT  
 LICENSED POWER (MWT): 2575.00  
 INITIAL CRITICALITY: 06/05/74

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CO-60	5.16E-06
KR-85	5.81E-02
SR-89	6.87E-06
SR-90	1.24E-05
CS-137	4.73E-04

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
P-32	2.70E-07
MN-54	1.23E-04
FE-55	2.22E-03
CO-57	2.99E-06
CO-58	3.40E-05
CO-60	5.91E-03
ZN-65	4.45E-06
SR-90	7.10E-05
AG-110M	4.36E-04
SB-125	2.10E-03
CS-134	1.29E-02
CS-137	6.32E-02

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	1.49E-02
TOTAL LIQUID RELEASE	7.11E+00

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.89E+09
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.58E+10

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

INSTALLATION: THREE MILE ISLAND 1

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
7	SHIPPING CASK	BARNWELL SC
1	TRACTOR/FLATBED TRAILER	BARNWELL SC
6	TRACTOR/FLATBED TRAILER	WASHINGTON STATE
14	TRACTOR/TRAILER (CASK)	BARNWELL SC
3	TRACTOR/TRAILER (FLATBED)	BARNWELL SC
14	TRACTOR/TRAILER (FLATBED)	RICHLAND WA
9	TRACTOR/TRAILER (VAN)	BARNWELL SC
2	TRACTOR/TRAILER (VAN)	WASHINGTON STATE

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
<b>A</b>			
BA-137M	%	1.80E+01	3.00E+01
CO-60	%	6.00E-01	1.35E+01
CS-134	%	1.50E+01	8.50E+00
CS-137	%	5.80E+01	4.12E+01
<b>B</b>			
AG-110M	%		1.80E+00
BA-137M	%	3.10E+01	3.46E+01
CO-60	%	7.70E+00	8.40E+00
CS-134	%	1.90E+01	1.82E+01
CS-137	%	3.10E+01	3.63E+01
MN-54	%	6.10E+00	

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	2.96E+02
	CI	2.31E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	5.01E+02
	CI	2.51E+00
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTSUNIT NUMBER: 2  
TYPE: PWR  
DOCKET NO.: 50-320LICENSEE:METROPOLITAN EDISON & JERSEY CENTRAL POWER & LIGHT  
LICENSED POWER (MWT):2772.00  
INITIAL CRITICALITY:03/28/78

COOLING WATER SOURCE:SUSQUEHANNA RIVER

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CO-60	1.07E-05
KR-85	2.88E+02
SR-89	1.40E-12
SR-90	1.02E-09
NB-95	1.30E-09
CS-134	2.23E-08
CS-137	7.16E-06
UNIDENTIFIED	2.90E-05

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CS-137	1.41E-05
UNIDENTIFIED	8.08E-06

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	6.56E+01
TOTAL LIQUID RELEASE	5.06E-02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.81E+05
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	5.58E+10

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
1	TRACTOR/TRAILER (VAN)	BARNWELL SC
2	TRACTOR/TRAILER (VAN)	RICHLAND WA
5	TRACTOR/TRAILER (VAN)	WASHINGTON STATE

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	CO-58	%	4.30E-01
	CO-60	%	8.00E+01
	MN-54	%	1.88E+01
	SR-90/Y-90	%	3.50E-01
B			
	BA-137M	%	4.10E+01
	CS-134	%	9.00E+00
	CS-137	%	4.30E+01
	SR-90	%	3.00E+00
	Y-90	%	3.00E+00
D			
	BA-137M	%	1.67E+01
	CS-137	%	1.75E+01
	SR-89	%	7.95E+00
	SR-90	%	2.75E+01
	Y-90	%	2.75E+01

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	4.42E+00
	CI	4.00E-02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.67E+02
	CI	4.79E+01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	3.16E+00
	CI	3.17E+00

N/A=NOT APPLICABLE

N/D=NOT DETECTED

N/R=NOT REPORTED

INSTALLATION:TMI 2/EPICOR

LOCATION:10 MI SE HARRISBURG, PA

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 2

LICENSEE:METROPOLITAN EDISON & JERSEY CENTRAL POWER & LIGHT

TYPE: PWR

LICENSED POWER (MWT):2772.00

DOCKET NO.:50-320

INITIAL CRITICALITY:03/28/78

COOLING WATER SOURCE:SUSQUEHANNA RIVER

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
KR-85	1.84E+02
CS-134	8.70E-08
CS-137	9.99E-07
UNIDENTIFIED	1.53E-06

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	5.59E-02
TOTAL LIQUID RELEASE	0.00E+00

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	0.00E+00
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	4.17E+10

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
22	SHIPPING CASK/TRUCK	WASHINGTON STATE
1	TRACTOR/FLATBED TRAILER	WASHINGTON STATE
25	TRACTOR/TRAILER (CASK)	RICHLAND WA

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

A		JAN-JUNE	JULY-DEC
BA-157M	%	3.35E+01	7.47E+00
CS-134	%	4.60E+00	
CS-137	%	3.54E+01	6.61E+00
SB-125	%		1.85E+01
SR-90	%	9.90E+00	2.94E+01
Y-90	%	9.90E+00	2.94E+01

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.51E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	3.50E+02
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
D. OTHER	CI	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: PWR  
 DOCKET NO.: 50-544  
 COOLING WATER SOURCE: COLUMBIA RIVER

LICENSEE: PORTLAND GENERAL ELECTRIC  
 LICENSED POWER (MWT): 34.1.00  
 INITIAL CRITICALITY: 12/15/75

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	1.42E+00
MN-54	1.28E-07
CO-57	1.06E-08
CO-58	1.08E-05
CO-60	9.02E-06
KR-85	2.57E+00
KR-85M	2.01E+00
KR-87	3.00E+00
KR-88	3.66E+00
SR-89	3.95E-05
SR-90	3.95E-05
NB-95	3.43E-07
ZR-95	2.33E-08
RU-103	1.04E-06
I-131	3.77E-02
XE-131M	2.69E+00
I-132	2.16E-04
I-133	5.52E-03
XE-133	1.05E+03
XE-133M	7.30E+00
CS-134	5.60E-06
I-134	3.32E-05
I-135	<6.76E-03
XE-135	5.62E+01
XE-135M	1.54E+01
CS-137	5.85E-05
XE-137	6.43E+00
XE-138	7.71E+00
BA-140	<1.06E-03
LA-140	<3.35E-04
CE-144	2.65E-08
UNIDENTIFIED	8.50E-06

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
P-18	1.82E-03
NA-24	4.99E-04
CR-51	7.74E-02
MN-54	3.99E-02
CO-57	5.30E-04
CO-58	1.49E-01
FE-59	2.37E-03
CO-60	2.65E-01
ZN-65	2.57E-04

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
KR-85M	6.34E-06
SR-89	<8.23E-03
SR-90	<1.67E-03
NB-95	2.01E-02
ZR-95	1.05E-02
MO-99	3.34E-04
TC-99M	2.94E-04
RU-103	6.34E-03
AG-110M	1.53E-03
SN-113	4.13E-04
SB-124	1.14E-02
SB-125	6.83E-02
I-131	<5.69E-02
XE-131M	3.55E-03
I-132	7.16E-05
TE-132	3.63E-04
I-133	1.24E-02
XE-133	6.93E-01
XE-133M	7.85E-04
CS-134	6.30E-02
I-135	2.15E-03
XE-135	1.59E+00
XE-135M	1.02E+00
CS-136	1.96E-03
CS-137	9.08E-02
BA-140	<6.99E-02
LA-140	<1.65E-02
CE-141	4.36E-04
CE-144	9.14E-03
NF-239	1.89E-03
UNIDENTIFIED	7.62E-04

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	4.03E+01
TOTAL LIQUID RELEASE	1.03E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.06E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	4.35E+10

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



INSTALLATION: TROJAN

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
27	TRUCK	RICHLAND WA

IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
A			
	BA-140	% 1.98E-03	
	CE-144	% 9.48E-01	3.09E-01
	CO-57	% 1.99E-01	5.21E-02
	CO-58	% 1.32E+01	5.55E-01
	CO-60	% 6.56E+01	3.74E+01
	CR-51	% 1.03E+00	4.68E-03
	CS-134	% 5.31E+00	4.16E+00
	CS-136	% 2.97E-03	
	CS-137	% 1.19E+01	1.02E+01
	FE-55	%	3.19E+01
	FE-59	% 4.35E-02	
	I-131	% 2.47E-02	
	I-133	% 9.89E-04	
	LA-140	% 9.89E-04	
	MN-54	% 1.14E+00	2.30E+00
	NB-95	% 2.93E-01	3.19E-03
	NI-63	%	1.28E+01
	RU-103	% 8.51E-02	
	SB-125	% 8.91E-03	2.06E-02
	SR-90	%	2.61E-01
	ZR-95	% 1.76E-01	4.68E-03
B			
	CE-141	% 1.04E-01	1.22E-01
	CE-144	% 2.16E+01	3.28E+00
	CO-58	% 2.45E+01	2.52E+01
	CO-60	% 1.86E+01	2.90E+01
	CR-51	% 1.79E+01	1.30E+01
	CS-134	% 1.11E+00	5.59E+00
	CS-136	% 3.48E-02	1.22E-01
	CS-137	% 3.17E+00	7.78E+00
	FE-59	% 5.57E-01	3.65E-01
	I-131	% 5.57E-01	1.70E+00
	MN-54	% 3.17E+00	3.40E+00
	NB-95	% 5.22E+00	5.71E+00
	RU-103	% 6.96E-01	8.51E-01
	ZN-65	%	1.22E-01
	ZR-95	% 2.68E+00	3.65E+00

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

INSTALLATION: TROJAN

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)      JAN-JUNE      JULY-DEC

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.49E+02
	CI	1.04E+03
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.26E+02
	CI	3.70E+00
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 3  
 TYPE: PWR  
 DOCKET NO.: 50-250  
 COOLING WATER SOURCE: CLOSED CANAL SYSTEM  
 UNIT NUMBER: 4  
 TYPE: PWR  
 DOCKET NO.: 50-251  
 COOLING WATER SOURCE: CLOSED CANAL SYSTEM

LICENSEE: FLORIDA POWER & LIGHT  
 LICENSED POWER (MWT): 2200.00  
 INITIAL CRITICALITY: 10/20/72

LICENSEE: FLORIDA POWER & LIGHT  
 LICENSED POWER (MWT): 2200.00  
 INITIAL CRITICALITY: 06/11/73

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	3.53E+01
CR-51	4.98E-05
MN-54	2.65E-05
CO-57	1.10E-07
CO-58	3.64E-04
CO-60	6.24E-04
BR-82	2.99E-03
KR-85	2.79E+00
KR-85M	4.65E-01
KR-87	5.29E-02
KR-88	2.32E-01
SR-89	1.59E-05
SR-90	6.90E-07
NB-95	1.00E-05
RU-103	2.60E-07
SB-125	1.30E-06
I-131	2.80E-02
XE-131	4.84E+00
XE-131M	2.52E+00
I-133	9.31E-03
XE-133	4.26E+03
XE-133M	8.87E+00
CS-134	6.58E-05
I-135	8.59E-04
XE-135	8.87E+00
XE-135M	3.39E-01
CS-136	2.70E-06
CS-137	1.51E-04
BA-140	1.60E-05
LA-140	1.30E-05

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
F-18	1.23E-02
NA-24	2.61E-03
CR-51	2.00E-02
MN-54	2.42E-03
CO-57	1.76E-05
CO-58	6.55E-02
FE-59	1.30E-03

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
 AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CO-60	6.17E-02
ZN-65	2.38E-04
SR-89	3.39E-03
SR-90	3.49E-05
NB-95	3.97E-03
ZR-95	1.69E-03
ZR-97	1.01E-03
RU-103	4.01E-05
AG-110M	2.03E-03
SB-124	4.61E-03
SB-125	1.13E-02
I-131	1.63E-02
I-132	3.28E-03
I-133	1.54E-02
CS-134	2.95E-02
I-134	6.70E-04
I-135	1.48E-03
CS-136	1.03E-04
CS-137	4.18E-02
LA-140	2.66E-04
CE-144	1.52E-04

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	6.86E-01
TOTAL LIQUID RELEASE	1.95E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	2.04E+08
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.33E+12

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

INSTALLATION: TURKEY POINT

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
55		BARNWELL SC
27		RICHLAND WA

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.25E+05
	CI	1.17E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	
	CI	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: BWR  
 DOCKET NO.: 50-271  
 COOLING WATER SOURCE:CONNECTICUT RIVER

LICENSEE:VERMONT YANKEE NUCLEAR POWER  
 LICENSED POWER (MWT):1593.00  
 INITIAL CRITICALITY:03/24/72

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
MN-54	<2.96E-04
CO-58	5.66E-05
CO-60	1.60E-03
ZN-65	<5.52E-04
KR-85	N/D
KR-85M	<2.86E+01
KR-87	<8.35E+01
KR-88	<7.40E+01
SR-89	5.79E-05
SR-90	3.13E-06
I-131	1.63E-03
I-133	<6.22E-03
XE-133	<4.68E+02
CS-134	<1.84E-04
I-135	<3.29E-02
XE-135	<1.48E+02
XE-135M	<5.13E+02
CS-137	6.60E-04
XE-138	<1.86E+03
BA-LA-140	<8.44E-04

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	3.79E-04
CR-51	N/D
MN-54	N/D
CO-58	N/D
FE-59	N/D
CO-60	2.13E-03
ZN-65	6.54E-04
SR-89	1.41E-05
SR-90	1.35E-06
ZR-NB-95	N/D
MO-99	N/D
TC-99M	N/D
I-131	N/D
XE-133	N/D
CS-134	1.58E-03
XE-135	9.65E-05
CS-137	5.48E-03
BA-LA-140	N/D
CE-141	N/D

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

TRITIUM	(CI)		
TOTAL AIRBORNE RELEASE	1.96E+01		
TOTAL LIQUID RELEASE	3.70E-01		
VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	6.74E+04	
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	1.11E+08	

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
36	TRUCK	BARNWELL, S.C.
5	TRUCK	BEATTY, NV
3	TRUCK	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS(DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

ESTIMATE OF MAJOR NUCLIDE COMPOSITION(BY TYPE OF WASTE)

		JAN-JUNE	JULY-DEC
<b>A</b>			
BA-140	%	6.70E-03	
CO-58	%	1.90E+00	2.00E+00
CO-60	%	1.60E+01	1.60E+01
CS-134	%	1.90E+01	2.00E+01
CS-137	%	5.30E+01	5.30E+01
I-131	%	1.30E-01	
MN-54	%	2.10E+00	2.00E+00
SB-124	%	2.40E-01	
ZN-65	%	7.30E+00	7.00E+00
ZR-95	%	3.20E-01	
<b>B</b>			
CO-58	%	9.80E-01	9.80E-01
CO-60	%	2.40E+01	2.40E+01
CS-134	%	2.30E+01	2.30E+01
CS-137	%	4.10E+01	4.10E+01
MN-54	%	2.50E+00	2.50E+00
ZN-65	%	8.40E+00	8.40E+00
<b>C</b>			
CO-58	%		9.80E-01
CO-60	%		2.40E+01
CS-134	%		2.30E+01
CS-137	%		4.10E+01
MN-54	%		2.50E+00
ZN-65	%		8.40E+00

TYPE OF WASTE

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.72E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	C1	1.02E+03
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	2.65E+02
	C1	8.03E+00
D. OTHER	M3	1.20E+00
	C1	7.90E+01
	M3	
	C1	

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



EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 1  
 TYPE: PWR  
 DOCKET NO.: 50-29  
 COOLING WATER SOURCE:DEERFIELD RIVER

LICENSEE:YANKEE ATOMIC ELECTRIC  
 LICENSED POWER (MWT): 600.00  
 INITIAL CRITICALITY:08/19/60

## AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	3.07E+00
C-14	4.71E-01
AR-37	5.96E-01
AR-41	1.33E+00
CR-51	<1.54E-05
MN-54	9.61E-06
CO-58	<8.90E-06
FE-59	<3.28E-06
CO-60	<1.10E-05
KR-85	6.53E+00
KR-85M	1.44E+00
KR-87	1.52E+00
KR-88	2.48E+00
SR-89	<1.50E-06
SR-90	<1.11E-06
ZR-NB-95	<3.41E-06
AG-110M	<3.14E-06
SB-124	<3.12E-06
SB-125	<1.18E-05
I-131	1.68E-04
XE-131M	1.18E+00
I-133	<5.76E-05
XE-133	8.03E+01
XE-133M	<1.19E+00
CS-134	<1.93E-06
I-135	<1.09E-04
XE-135	2.90E+01
XE-135M	4.55E+01
CS-137	<3.18E-06
XE-138	1.40E+00
BA-LA-140	<7.25E-06
CE-141	<2.63E-06
CE-144	<1.23E-05

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
H-3	1.03E+02
C-14	5.25E-03
CR-51	<1.64E-04
MN-54	3.44E-04
CO-58	2.09E-04
FE-59	4.60E-05
CO-60	4.14E-04
ZN-65	<7.40E-05

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
SE-75	<3.57E-05
SR-89	3.19E-04
SR-90	1.88E-05
ZR-NB-95	<1.86E-05
MO-99	<1.68E-04
TC-99M	<1.93E-05
KU-103	<1.40E-05
RU-106	<1.93E-05
AG-110M	<4.91E-05
SB-124	<3.00E-05
SB-125	6.71E-06
I-131	3.32E-03
TE-132	8.15E-06
I-133	4.07E-04
XE-133	9.01E-01
CS-134	1.14E-03
XE-135	<4.10E-03
CS-137	2.47E-03
BA-LA-140	<1.65E-04
CE-141	<1.10E-05
CE-144	<7.80E-05
UNIDENTIFIED	<9.62E-05

TRITIUM	(CI)
TOTAL AIRBORNE RELEASE	3.07E+00
TOTAL LIQUID RELEASE	1.03E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.63E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.12E+11

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

INSTALLATION:YANKEE TOWE

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
23	TRUCK	BARNWELL, S. C.
3	TRUCK	RICHLAND, WA

IRRADIATED FUEL SHIPMENTS(DISPOSITION)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
0		

TYPE OF WASTE	UNIT	YEAR	TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	5.95E+01	
	CI	5.47E+00	
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	2.49E+02	
	CI	6.24E+01	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	0.00E+00	
	CI	0.00E+00	
D. OTHER	M3	0.00E+00	
	CI	0.00E+00	

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

INSTALLATION: ZION 1&2

LOCATION: 6 MI N WAUKEGAN, IL

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

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): 3250.00  
INITIAL CRITICALITY: 06/19/73

LICENSEE: COMMONWEALTH EDISON  
LICENSED POWER (MWT): 3250.00  
INITIAL CRITICALITY: 12/24/73

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	2.69E+01
CO-58	1.08E-03
CO-60	3.33E-04
KR-85	9.42E-01
KR-85M	1.70E+01
KR-87	9.31E+00
KR-88	3.05E+01
SR-89	1.31E-04
SR-90	1.86E-05
NB-95	1.05E-04
I-131	5.15E-03
XE-131M	4.09E+00
i-132	1.23E-05
I-133	9.22E-04
XE-133	6.37E+03
XE-133M	7.60E+00
CS-134	1.56E-08
I-134	4.66E-06
I-135	6.58E-04
XE-135	2.92E+02
XE-135M	2.64E+01
CS-137	2.45E-05
CS-138	1.53E-05
XE-138	1.14E+00

TRITIUM (CI)  
TOTAL AIRBORNE RELEASE N/A

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
CR-51	2.25E-01
MN-54	3.63E-04
CO-58	4.89E-01
FE-59	3.39E-03
CO-60	4.31E-01
KR-85	7.43E-01
SR-89	8.36E-03
SR-90	1.20E-03
SR-92	3.40E-02
NB-95	2.49E-02
ZR-95	2.75E-03
AG-110M	1.76E-01
SB-124	7.50E-02
I-131	4.88E-03
XE-133	4.26E+00
XE-133M	1.13E-02
CS-134	1.53E-02
XE-135	1.16E-02
CS-136	5.60E-03
CS-137	2.60E-02
BA-LA-140	1.96E-03
W-187	9.40E-02
TOTAL LIQUID RELEASE	6.04E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.14E+08
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	7.81E+11

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

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
AIRBORNE AND LIQUID EFFLUENTS

## LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (Ci)
CR-51	1.48E-01
MN-54	1.43E-03
CO-58	3.48E-01
FE-59	5.05E-04
CO-60	2.66E-01
KR-85	4.20E-01
SR-92	8.04E-03
NB-95	3.17E-02
ZR-95	8.54E-03
AG-110M	7.44E-02
SB-124	4.03E-02
I-131	1.82E-03
I-133	1.92E-04
XE-133	1.66E+00
XE-133M	1.82E-03
CS-134	9.93E-03
XE-135	2.99E-03
Cs-136	1.15E-03
CS-137	3.96E-02
BA-LA-140	1.32E-04
CE-144	9.27E-04
W-187	4.64E-02
TOTAL LIQUID RELEASE	2.66E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.09E+07
VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	7.82E+11

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

INSTALLATION: ZION 1&2

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1981  
SOLID EFFLUENTS

SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS    MODE OF TRANSPORTATION  
167

DESTINATION

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	1.53E+03
	CI	3.44E+03
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	
	CI	
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	
	CI	
D. OTHER	M3	
	CI	

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

**BIBLIOGRAPHIC DATA SHEET**

NUREG/CR-2907, Vol. 2  
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Radioactive Materials Released from Nuclear Power  
Plants - 1981

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MONTH	YEAR
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J. Tichler, C. Benkovitz

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12b. PERIOD COVERED (Inclusive dates)

1981

13. SUPPLEMENTARY NOTES

14. ABSTRACT (200 words or less)

Releases of radioactive materials in airborne and liquid effluents from commercial light water reactors during 1981 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 1981 release data are compared with previous years' releases in tabular form. Data covering specific radionuclides are summarized.

15a. KEY WORDS AND DOCUMENT ANALYSIS

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liquid effluents

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