Radioactive Materials Released from Nuclear Power Plants

Annual Report 1993

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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.
10. "Radioactive Materials Released from Nuclear Power Plants, 1981," NUREG/CR-2907, BNL-NUREG-51581, Vol. 2, June 1984.
11. "Radioactive Materials Released from Nuclear Power Plants, 1982," NUREG/CR-2907, BNL-NUREG-51581, Vol. 3, February 1986.
12. "Radioactive Materials Released from Nuclear Power Plants, 1983," NUREG/CR-2907, BNL-NUREG-51581, Vol. 4, August 1986.
13. "Radioactive Materials Released from Nuclear Power Plants, 1984," NUREG/CR-2907, BNL-NUREG-51581, Vol. 5, August 1987.
14. "Radioactive Materials Released from Nuclear Power Plants, 1985," NUREG/CR-2907, BNL-NUREG-51581, Vol. 6, January 1988.
15. "Radioactive Materials Released from Nuclear Power Plants, 1986," NUREG/CR-2907, BNL-NUREG-51581, Vol. 7, November 1988.
16. "Radioactive Materials Released from Nuclear Power Plants, 1987," NUREG/CR-2907, BNL-NUREG-51581, Vol. 8, October 1989.
17. "Radioactive Materials Released from Nuclear Power Plants, 1988," NUREG/CR-2907, BNL-NUREG-51581, Vol. 9, July 1991.
18. "Radioactive Materials Released from Nuclear Power Plants, 1989," NUREG/CR-2907, BNL-NUREG-51581, Vol. 10, September 1992.
19. "Radioactive Materials Released from Nuclear Power Plants, 1990," NUREG/CR-2907, BNL-NUREG-51581, Vol. 11, October 1993.

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PREVIOUS REPORTS IN THIS SERIES

20. "Radioactive Materials Released from Nuclear Power Plants, 1991," NUREG/CR-2907, BNL-NUREG-51581, Vol. 12, May 1994.
21. "Radioactive Materials Released from Nuclear Power Plants, 1992," NUREG/CR-2907, BNL-NUREG-51581, Vol. 13, August 1995.

ABSTRACT

Releases of radioactive materials in airborne and liquid effluents from commercial light water reactors during 1993 have been compiled and reported. The summary data for the years 1974 through 1992 are included for comparison. 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 1993 release data are summarized in tabular form. Data covering specific radionuclides are summarized.

TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT.....	i
LIST OF TABLES.....	xi
ACKNOWLEDGEMENT.....	xii
1.0 Introduction.....	1
1.1 Purpose.....	1
1.2 Scope.....	1
1.3 Source of Data.....	1
2.0 Tabulated Data.....	1
2.1 Airborne and Liquid Effluents.....	1
2.2 Solid Waste.....	2
2.3 Energy Generation.....	2
2.4 Individual Plant Summaries.....	2
2.5 Numerical Notation.....	3
3.0 Summary.....	3
Appendix A - Individual Plant Summaries	
Arkansas 1 - Unit 1.....	A-1
Arkansas 1 - Unit 2.....	A-3
Beaver Valley 1.....	A-7
Beaver Valley 2.....	A-8
Beaver Valley 1 & 2.....	A-9
Big Rock Point 1.....	A-13
Braidwood 1.....	A-15
Braidwood 2.....	A-17
Browns Ferry 1, 2 & 3.....	A-21
Brunswick 1 & 2.....	A-25

	<u>Page</u>
Byron 1	A-29
Byron 2	A-31
Callaway 1.....	A-35
Calvert Cliffs 1 & 2.....	A-39
Catawba 1.....	A-43
Catawba 2.....	A-45
Clinton 1.....	A-49
Comanche Peak 1 & 2.....	A-51
Cook 1 & 2.....	A-55
Cooper.....	A-57
Crystal River 3.....	A-60
Davis Besse 1.....	A-63
Diablo Canyon 1 & 2.....	A-67
Dresden 1.....	A-70
Dresden 2 & 3.....	A-71
Dresden 1, 2 & 3.....	A-72
Duane Arnold.....	A-75
Joseph M. Farley 1.....	A-78
Joseph M. Farley 2.....	A-79
Fermi 2.....	A-83
J.A. Fitzpatrick.....	A-85
Fort Calhoun 1.....	A-89
Fort St. Vrain.....	A-92
R.E. Ginna.....	A-94
Grand Gulf 1.....	A-98
Haddam Neck.....	A-101

	<u>Page</u>
Harris 1.....	A-104
Edwin I. Hatch 1 & 2.....	A-107
Hope Creek 1.....	A-111
Humboldt Bay 3.....	A-113
Indian Point 1 & 2.....	A-114
Indian Point 3.....	A-118
Kewaunee.....	A-120
LaCrosse.....	A-123
LaSalle 1 & 2.....	A-125
Limerick 1.....	A-128
Limerick 2.....	A-129
Limerick 1 & 2.....	A-130
Maine Yankee.....	A-134
McGuire 1.....	A-136
McGuire 2.....	A-139
Millstone 1.....	A-144
Millstone 2.....	A-148
Millstone 3.....	A-152
Monticello.....	A-156
Nine Mile Point 1.....	A-159
Nine Mile Point 2.....	A-161
North Anna 1 & 2.....	A-163
Oconee 1, 2 & 3.....	A-167
Oyster Creek 1.....	A-172
Palisades.....	A-175
Palo Verde 1.....	A-176

	<u>Page</u>
Palo Verde 2.....	A-177
Palo Verde 3.....	A-178
Peach Bottom 2 & 3.....	A-182
Perry 1.....	A-185
Pilgrim 1.....	A-188
Point Beach 1 & 2.....	A-192
Prairie Island 1 & 2.....	A-195
Quad-Cities 1 & 2.....	A-198
Rancho Seco 1.....	A-201
River Bend 1.....	A-202
H.B. Robinson 2.....	A-206
Salem 1.....	A-210
Salem 2.....	A-212
San Onofre 1.....	A-216
San Onofre 2 & 3.....	A-219
Scabrook 1.....	A-224
Sequoyah 1 & 2.....	A-225
Shoreham 1.....	A-229
South Texas 1.....	A-231
South Texas 2.....	A-232
St. Lucie 1.....	A-236
St. Lucie 2.....	A-238
Summer 1.....	A-242
Surry 1 & 2	A-245
Susquehanna 1 & 2	A-248
Three Mile Island 1.....	A-252

	<u>Page</u>
Three Mile Island 2.....	A-254
Trojan 1.....	A-256
Turkey Point 3.....	A-259
Turkey Point 4.....	A-260
Vermont Yankee 1.....	A-262
Vogtle 1 & 2.....	A-264
Waterford 3.....	A-267
WNP-2.....	A-271
Wolf Creek 1.....	A-275
Yankee Rowe 1.....	A-278
Zion 1 & 2.....	A-281

LIST OF TABLES

	<u>Page</u>
TABLE 1 Airborne Effluent Comparison by Year, Noble Gases, Boiling Water Reactors.....	6
TABLE 2 Airborne Effluent Comparison by Year, Noble Gases, Pressurized Water Reactors.....	8
TABLE 3 Airborne Effluent Comparison by Year, I-131 and Particulates, Boiling Water Reactors.....	12
TABLE 4 Airborne Effluent Comparison by Year, I-131 and Particulates, Pressurized Water Reactors.....	14
TABLE 5 Liquid Effluent Comparison by Year, Tritium, Boiling Water Reactors.....	18
TABLE 6 Liquid Effluent Comparison by Year, Tritium, Pressurized Water Reactors.....	20
TABLE 7 Liquid Effluent Comparison by Year, Mixed Fission and Activation Products, Boiling Water Reactors.....	24
TABLE 8 Liquid Effluent Comparison by Year, Mixed Fission and Activation Products, Pressurized Water Reactors.....	26
TABLE 9 Solid Waste Summary 1993, Boiling Water Reactors.....	30
TABLE 10 Solid Waste Summary 1993, Pressurized Water Reactors.....	31
TABLE 11 Solid Waste Comparison by Year, Boiling Water Reactors.....	32
TABLE 12 Solid Waste Comparison by Year, Pressurized Water Reactors.....	36
TABLE 13 Net Electrical Energy Generation Comparison by Year, Boiling Water Reactors.....	40
TABLE 14 Net Electrical Energy Generation Comparison by Year, Pressurized Water Reactors.....	42
TABLE 15 Thermal Energy Generation Comparison by Year, Boiling Water Reactors.....	46
TABLE 16 Thermal Energy Generation Comparison by Year, Pressurized Water Reactors.....	48

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Carmen Benkovitz was responsible for the original design of the computer data base in which the effluent data, beginning with the 1978 data, is stored. She was involved in the redesign of the data base when, in 1982, the decision was made to transfer the data base from one computer to another and to change the data base management system being used.

Andrew Slavinsky converted most of the 1993 data in this report to computer form.

1.0 Introduction

1.1 Purpose

This report, prepared annually for 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 1993. This information supplements earlier annual reports issued by the former Atomic Energy Commission and Nuclear Regulatory Commission.¹

1.2 Scope

Releases of radioactive materials are governed by 10 CFR Part 20 and 50 and by limits established in the Technical Specifications for each facility. The requirement for reporting effluent releases by nuclear power plant operators is described in 10 CFR 50.36a. Through its Office of Nuclear Reactor Regulation, 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 licensed nuclear power plants that were declared by the utilities to be in commercial operation as of December 31, 1993. Data are included for several licensed facilities which are permanently or indefinitely shut down (Browns Ferry 1 & 3, Brunswick 1, Dresden 1, Fort St. Vrain, Humboldt Bay, Indian Point 1, LaCrosse, Rancho Seco 1, San Onofre 1, Three Mile Island 2, Trojan 1, Yankee Rowe 1) and Shoreham which was never in commercial operation.

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, Gelman Building, 2120 L Street, 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.

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

2.0 Tabulated Data

2.1 Airborne and Liquid Effluents

Tables 1 through 4 list for each reactor, the measured quantities of total noble gases and of I-131 and particulates (with half lives greater than 8 days) released in effluents to the atmosphere during each of the years 1974 through 1993. Tables 5 and 6 list the total measured quantities of tritium released in liquid effluents in each of the years. Tables 7 and 8 list the mixed fission and activation products not including noble gases, tritium and alpha released in liquid effluents in each of the years.

¹ Previous reports in this series are listed on page ii and iii.

2.2 Solid Waste

The total volumes, activity and the number of shipments of solid waste for each plant during 1993 are summarized in Tables 9 and 10. A comparison for the years 1978 through 1993 is made in Tables 11 and 12.

2.3 Energy Generation

Tables 13 and 14 present a summary of net electrical energy generated by each plant during 1979-1993. Tables 15 and 16 present a summary of the thermal energy generated by each plant during 1993 and previous years from 1979. 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 include the condition of the fuel, primary system integrity, effluent and radioactive waste treatment systems, maintenance activities 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 report² can be made available since all the data for 1978-1993 are stored in digital form.

A wide variation exists in the lists of specific radionuclides reported by utilities (licensees). Individual licensee Technical Specifications require the measurement and reporting of specific sets of radionuclides and "any others identified." The disparities result because of differing analytical methods used by various licensees for their measurements, and their differing operating histories and effluent and emission control methods.

Copies of the summaries included in this report as well as the more detailed summaries maintained in the computer data base were submitted to the licensees for verification before publication. In most cases, the licensees responded either verifying the included data for their plants or providing corrections. Individuals interested in obtaining the more detailed summaries should contact the Office of Nuclear Reactor Regulations of the Nuclear Regulatory Commission.

Volume 14 is the last report of NUREG/CR-2907, BNL-NUREG-51581 because the NRC has terminated the support for this work.

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

2.5 Notation

The following notation is used:

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

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

N/R = Not Reported

N/D = Not Detected

N/A = Not Applicable

< may actually mean ≤

3.0 Summary

Nearly all of the radioactive material reported as being released in effluents are from planned releases. Planned releases result from normal operation or from anticipated operational occurrences. The latter include unplanned releases of radioactive materials from miscellaneous actions such as equipment failure, operator error or procedure error; these releases are not of such consequence 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, many of which were required to be installed to meet the provisions of Appendix I to 10CFR Part 50, which was promulgated by the NRC in May 1975.

 

TABLES

Table 1

Airborne Effluents Comparison By Year

Fission and Activation Gases (Total Curies)

Boiling Water Reactors

Facility	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Big Rock Point 1	1.88E+05	5.06E+04	1.52E+04	1.34E+04	1.89E+04	6.67E+03	2.15E+04	1.97E+04	1.29E+04	1.10E+04
Browns Ferry 1,2 & 3	6.40E+04	9.24E+04	< 8.05E+04	< 1.66E+05	1.57E+05	< 2.71E+05	< 1.66E+05	4.52E+04	2.76E+05	4.79E+05
Brunswick 1&2		1.90E+02	1.90E+04	2.46E+05	9.14E+04	1.16E+05	6.93E+04	5.22E+05	4.65E+05	4.87E+05
Clinton 1										
Cooper	2.00E+03	1.96E+04	3.80E+04	1.27E+03	4.09E+03	3.04E+04	5.03E+03	2.48E+03	1.42E+04	1.54E+03
Dresden 1	9.60E+04	5.20E+05	4.52E+05	5.20E+05	8.50E+05	1.83E+02	7.03E+01	N/D	N/D	N/D
Dresden 2-3	6.27E+05	3.69E+05	3.23E+04	3.13E+05	4.06E+04	6.91E+04	4.30E+04	3.74E+04	1.04E+04	8.43E+03
Duane Arnold		1.58E+03	5.26E+03	3.87E+03	1.56E+03	8.71E+03	2.70E+03	< 4.87E+02	9.99E+01	4.81E+02
Fermi 2										
James A. Fitzpatrick		4.08E+03	4.41E+04	2.33E+04	5.88E+03	3.38E+03	7.68E+04	2.00E+05	2.11E+05	8.57E+04
Grand Gulf 1										4.51E+01
Edwin I. Hatch 1		2.70E+02	2.80E+03	1.90E+03	1.62E+03	1.71E+03	3.82E+04	2.77E+04	4.23E+03	1.96E+04
Edwin I. Hatch 2							2.95E+02	2.06E+02	1.04E+03	1.28E+04
Hope Creek 1										
Humboldt Bay 3	5.72E+06	2.97E+05	9.30E+04	4.40E+06	4.40E+06	< 4.40E+05	< 4.40E+05	< 4.40E+05	N/D	N/D
LaCrosse	4.90E+04	5.71E+04	1.24E+05	4.25E+04	8.45E+03	1.04E+04	4.71E+03	5.03E+03	4.26E+03	7.08E+03
LaSalle 1&2									5.46E+00	1.17E+01
Limerick 1&2										
Millstone 1	9.12E+05	2.97E+06	5.07E+05	6.20E+05	5.66E+05	2.06E+04	1.19E+04	1.43E+04	8.33E+03	6.34E+03
Monticello	1.57E+06	1.55E+05	1.14E+04	6.87E+03	6.42E+03	4.03E+03	3.83E+03	3.74E+03	7.22E+03	3.21E+03
Nine Mile Point 1	5.58E+05	1.30E+06	1.78E+05	3.53E+03	3.02E+03	1.04E+03	5.87E+02	5.10E+02	5.11E+01	2.68E+02
Nine Mile Point 2										
Oyster Creek 1	2.79E+05	2.06E+05	1.67E+05	1.77E+05	9.98E+05	1.01E+06	3.12E+04	5.28E+04	2.29E+04	2.14E+03
Peach Bottom 2&3	< 1.00E+00	1.30E+04	2.09E+05	7.11E+04	3.85E+04	1.90E+05	1.53E+04	1.58E+04	1.31E+04	3.45E+04
Perry 1										
Pilgrim 1	5.46E+05	4.60E+04	1.83E+05	4.13E+05	3.27E+04	1.39E+04	2.62E+04	< 5.30E+03	< 1.94E+04	2.01E+04
Quad-Cities 1&2	9.50E+05	1.10E+05	3.56E+04	2.56E+04	3.34E+04	3.48E+04	2.15E+04	3.20E+04	1.17E+04	1.20E+04
River Bend 1										
Shoreham 1										
Susquehanna 1&2									< 5.81E+02	1.03E+02
Vermont Yankee 1	6.40E+04	4.08E+03	3.03E+03	3.35E+03	4.94E+03	< 8.05E+03	1.63E+03	< 3.17E+03	< 3.07E+03	< 3.13E+03
WNP-2										
Total	< 6.48E+06	6.22E+06	< 2.20E+06	< 2.65E+06	2.85E+06	< 1.80E+06	< 5.40E+05	< 9.88E+05	< 1.09E+06	< 1.19E+06
* Fort St. Vrain						9.30E+01	9.13E+01	4.34E+01	2.96E+02	1.51E+02

* High temperature gas cooled reactor

N/D = Not Detectable

Table 1

Airborne Effluents Comparison By Year

Fission and Activation Gases (Total Curies)

Boiling Water Reactors

Facility	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Big Rock Point 1	1.41E+05	6.26E+04	6.79E+04	8.35E+03	7.77E+03	7.08E+03	5.55E+03	4.50E+03	1.79E+03	5.14E+03
Browns Ferry 1, 2 & 3	< 6.64E+05	< 2.64E+04	< 2.26E+03	3.22E-01	N/D	N/D	N/D	2.10E+03	1.67E+04	4.00E+03
Brunswick 1&2	1.67E+05	1.75E+04	4.51E+04	2.64E+04	1.58E+03	1.36E+03	1.12E+03	6.77E+02	4.88E+02	3.41E+02
Clinton 1				6.83E+00	4.34E+00	1.29E+01	1.09E+01	7.08E-01	7.38E+00	8.35E+00
Cooper	< 1.44E+03	< 1.39E+03	1.72E+03	1.20E+03	1.81E+03	3.44E+03	1.87E+02	2.56E+01	1.40E+01	6.42E+00
Dresden 1	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Dresden 2-3	1.81E+03	2.94E+03	4.38E+02	3.77E+02	1.68E+02	3.67E+01	2.04E+01	1.25E+01	1.33E+01	4.83E+01
Duane Arnold	4.18E+02	2.51E+02	3.10E+02	2.19E+02	7.06E+02	4.38E+01	4.57E+01	3.80E+01	4.74E+01	5.70E+01
Fertin 2			N/D	N/D	1.11E+00	1.64E+02	1.61E+02	6.22E+01	2.08E+02	1.55E+02
James A. Fitzpatrick	3.41E+04	1.46E+04	2.65E+03	4.72E+03	3.89E+03	5.90E+02	1.35E+03	2.05E+03	1.71E+02	4.15E+02
Grand Gulf 1	1.14E+02	1.51E+02	1.34E+02	2.08E+02	9.44E+01	1.44E+03	1.36E+02	3.17E+01	2.12E+02	9.43E+01
Edwin 1 Hatch 1	1.02E+04	9.89E+03	8.95E+03	7.40E+03						
Edwin 1 Hatch 2	2.86E+03	2.76E+03	1.09E+04	1.37E+04	3.46E+03	5.02E+02	1.10E+03	2.80E+02	1.05E+03	3.81E+03
Hope Creek 1			3.80E+01	1.18E+03	1.76E+02	3.94E+02	8.30E+02	1.93E+02	1.39E+02	7.33E+01
Humboldt Bay 3	N/D	N/D	N/D	N/D	< 6.48E+01	< 6.40E+01	N/D	N/D	N/D	N/D
LaCrosse	1.09E+04	8.59E+03	3.53E+03	2.53E+03	N/D	N/D	N/D	N/D	N/D	N/D
LaSalle 1&2	5.86E+02	1.95E+02	2.98E+03	6.51E+03	3.79E+03	1.08E+03	8.87E+02	1.06E+02	1.18E+02	1.04E+03
Limerick 1&2	N/D	N/D	3.70E-01	2.41E+01	1.68E+02	2.56E+02	3.44E+01	7.11E+01	8.57E+02	1.61E+02
Millstone 1	2.80E+03	1.11E+03	3.31E+03	5.84E+03	8.76E+02	1.81E+02	1.17E+02	2.35E+01	4.48E+00	3.28E+02
Monticello	5.15E+02	2.72E+03	2.53E+03	3.95E+03	5.86E+03	3.98E+03	2.86E+03	1.98E+03	1.30E+03	5.99E+02
Nine Mile Point 1	1.02E+03	9.84E+02	4.82E+02	1.97E+02	1.80E+01	1.52E+04	N/D	5.05E+01	3.43E+02	2.65E+02
Nine Mile Point 2				6.00E+00	4.03E+01	8.42E+01	1.83E+02	1.00E+02	3.11E+01	2.75E+02
Oyster Creek 1	3.93E+03	4.15E+04	7.67E+04	3.39E+03	5.05E+03	3.24E+02	7.35E+02	4.60E+02	4.10E+02	2.19E+02
Peach Bottom 2&3	8.09E+04	1.29E+05	2.78E+04	1.15E+04	1.19E+03	2.64E+03	1.12E+04	2.40E+04	8.43E+03	1.11E+04
Perry 1			1.23E+00	1.06E+01	1.25E+03	1.92E+02	8.37E+01	1.11E+02	3.28E+02	6.84E+02
Piggin 1	< 1.84E+01	3.26E+03	1.26E+02	N/D	N/D	6.78E+02	9.07E+02	2.22E+03	1.18E+03	9.42E+03
Quad-Cities 1&2	6.02E+03	2.95E+03	1.48E+03	3.73E+02	3.77E+02	2.87E+02	7.96E+01	4.21E+01	4.93E+01	3.80E+01
River Bend 1			1.70E+03	1.39E+00	2.05E+00	8.31E-01	1.03E+03	1.12E+03	4.66E+03	6.97E+02
Shoreham 1			N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Susquehanna 1&2	1.19E+02	5.15E+02	2.55E+02	1.23E+02	7.25E+01	1.19E+02	7.21E+01	5.76E+01	5.72E+01	1.69E+01
Vermont Yankee 1	< 3.18E+03	< 3.44E+03	< 1.56E+03	N/D	N/D	1.03E+03	5.07E+03	3.02E+03	5.84E+03	3.59E+02
WNP-2	2.28E+02	2.12E+02	1.66E+02	5.35E+02	9.03E+02	5.45E+03	8.80E+02	7.23E+02	1.51E+02	1.41E+02
Total	< 1.13E+06	< 3.33E+05	< 2.63E+05	9.85E+04	< 3.90E+04	< 2.70E+04	3.45E+04	4.41E+04	4.05E+04	3.10E+04
* Fort St. Vrain	1.17E+02	2.03E+00	5.57E+01	2.03E+02	2.60E+02	1.96E+02	N/D	N/D	N/D	N/D

* High temperature gas cooled reactor

** Included with Edwin 1 Hatch 2 total

N/D = Not Detectable

Table 2

Airborne Effluents Comparison By Year

Fission and Activation Gases (Total Curies)

Pressurized Water Reactors

Facility	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Arkansas One 1	1.96E+02	1.03E+03	5.69E+03	1.39E+04	7.50E+03	8.51E+03	3.80E+04	3.73E+03	2.10E+03	9.83E+02
Arkansas One 2							4.53E+03	9.37E+03	4.98E+03	9.78E+03
Beaver Valley 1&2			1.07E+00	4.73E+01	3.90E+02	1.75E+03	8.64E+01	8.06E+02	1.31E+02	1.98E+02
Braidwood 1										
Braidwood 2										
Byron 1&2										
Callaway 1										
Calvert Cliffs 1&2		7.72E+03	9.40E+03	2.33E+04	2.76E+04	1.02E+04	2.96E+03	3.18E+03	6.00E+03	9.75E+03
Catawba 1										
Catawba 2										
Comanche Peak 1										
Donald C. Cook 1&2		2.64E+00	9.75E+02	3.80E+03	4.85E+04	1.09E+04	3.76E+03	5.42E+03	3.68E+03	3.28E+02
Crystal River 3				3.35E+03	6.86E+03	7.26E+04	3.65E+04	3.96E+04	6.55E+03	3.38E+03
Davis-Besse 1				1.27E+03	2.10E+03	1.68E+03	3.35E+03	1.01E+03	5.35E+02	9.15E+02
Diablo Canyon 1&2										
Joseph M. Farley 1					3.53E+03	3.18E+03	1.93E+04	3.21E+02	3.61E+04	2.20E+04
Joseph M. Farley 2								2.60E+00	3.54E+03	8.47E+02
Fort Calhoun 1	3.03E+02	4.29E+02	1.94E+03	3.81E+03	1.36E+03	7.06E+02	2.97E+02	1.22E+03	3.48E+02	8.79E+02
R. E. Ginna	7.57E+02	1.04E+04	5.52E+03	3.20E+03	9.72E+02	7.62E+02	8.61E+02	5.46E+02	1.95E+03	7.12E+02
Haddam Neck	7.00E+00	4.80E+02	4.52E+02	3.12E+03	2.14E+03	5.53E+03	2.68E+03	1.83E+03	7.54E+02	2.76E+03
Harris 1										
Indian Point 1&2	5.58E+03	8.20E+03	1.16E+04	1.60E+04	1.41E+04	9.03E+03	9.38E+03	9.13E+03	7.27E+03	9.58E+03
Indian Point 3			Shows with	Other Unit	8.09E+02	2.47E+02	1.11E+03	6.57E+03	2.58E+03	5.60E+03
Kewaunee	3.35E+03	2.45E+03	1.40E+03	2.43E+03	4.44E+02	1.52E+02	1.22E+02	1.18E+02	1.68E+02	2.25E+02
Maine Yankee	6.36E+03	4.09E+03	1.30E+03	3.57E+03	1.55E+03	2.09E+03	4.07E+03	3.28E+02	1.53E+03	5.07E+01
McGuire 1								1.68E-01	1.65E-03	1.60E+03
McGuire 2										1.60E+03
Millstone 2			1.57E+03	2.28E+03	7.64E+02	3.58E+02	1.33E+03	2.24E+03	9.09E+03	9.06E+03
Millstone 3										
North Anna 1&2					1.51E+04	6.28E+03	3.50E+03	5.30E+03	4.34E+03	2.22E+04
Oconee 1,2&3	1.94E+04	1.51E+04	4.39E+04	3.56E+04	4.33E+04	4.79E+04	1.92E+04	1.83E+04	2.41E+04	2.40E+04
Palisades	< 1.00E+00	2.61E+03	2.99E+01	5.99E+01	3.23E+02	8.84E+01	1.40E+02	3.00E+03	7.38E+03	3.00E+03
Palo Verde 1										
Palo Verde 2										
Palo Verde 3										
Point Beach 1&2	9.74E+03	4.45E+04	1.91E+03	1.13E+03	6.16E+02	9.68E+02	6.41E+02	6.11E+02	9.93E+02	7.68E+02
Prairie Island 1&2	3.62E+02	2.17E+03	1.74E+03	6.73E+02	1.26E+03	6.97E+02	2.60E+02	4.65E+01	5.47E+02	2.76E+02
Rancho Seco 1		1.18E+02	1.27E+02	2.00E+03	7.10E+03	8.81E+03	1.56E+03	1.37E+03	1.48E+03	6.89E+02
H. B. Robinson 2	2.31E+03	1.17E+03	6.40E+02	4.76E+02	8.84E+02	1.52E+03	5.82E+02	5.13E+02	1.75E+02	2.93E+02
Salem 1			< 1.00E-02	1.96E+01	1.02E+01	2.48E+02	7.82E+01	1.06E+03	2.34E+02	1.25E+02
Salem 2							7.74E+00	6.09E+02	1.11E+03	7.44E+02
San Onofre 1	1.78E+03	1.11E+03	4.16E+02	1.54E+02	1.81E+03	6.37E+02	1.05E+03	4.17E+02	8.61E+01	1.06E+01
San Onofre 2-3									6.40E+00	7.43E+03
Seabrook 1										
Sequoyah 1&2							3.01E+03	9.03E+03	5.74E+03	3.92E+03
South Texas 1										
South Texas 2										
St. Lucie 1			1.72E+03	2.54E+04	2.93E+04	1.54E+04	8.97E+03	2.30E+04	2.33E+04	2.16E+04
St. Lucie 2										1.25E+03
Summer 1									1.40E+02	3.88E+02
Surry 1&2	6.86E+03	8.04E+03	1.91E+04	1.90E+04	4.36E+03	1.78E+03	6.17E+03	1.41E+04	2.11E+04	5.49E+03
Three Mile Island 1	9.16E+02	3.63E+03	2.78E+03	1.86E+04	1.57E+04	2.24E+03	4.84E+03	5.81E+02	7.56E+02	2.01E+01
Three Mile Island 2					8.73E+00	9.97E+06	4.72E+04	2.86E+02	4.89E+02	1.73E+02
TMI 2/Eggleston							2.16E+00	1.84E+02	4.26E+02	3.61E+01
Trojan			7.56E+02	4.45E+03	3.28E+02	9.47E+02	4.10E+02	1.24E+03	9.02E+02	2.28E+02

* Changes to the entries for Trojan for 1976 - 1987 represent corrections which were reported and explained in the Trojan July-December 1980 Effluent and Waste Disposal Report.

** Changes to the entries for Maine Yankee for 1977 - 1986 represent corrections which were reported and explained in the Maine Yankee report "Revised Semiannual Effluent Release Report for 770131 - 901231" Docket Date 92/01/08.

Table 2

Airborne Effluents Comparison By Year

Fission And Activation Gases (Total Curies)

Pressurized Water Reactors

Facility	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Turkey Point 3&4	4.66E+03	1.34E+04	1.56E+04	2.33E+04	2.35E+04	1.06E+04	4.24E+03	4.33E+03	2.00E+04	1.61E+04
Turkey Point 3										
Turkey Point 4										
Vogtle 1&2										
Waterford 3										
Wolf Creek 1										
Yankee Rowe 1	4.00E+01	2.24E+01	2.57E+01	1.25E+02	6.56E+02	1.82E+02	7.07E+01	1.72E+02	1.55E+02	7.51E+02
Zion 1&2	2.99E+03	4.88E+04	1.14E+05	3.22E+04	6.77E+04	3.41E+04	5.78E+03	6.81E+03	1.61E+04	8.34E+03
Total	< 6.56E+04	1.75E+05	< 2.43E+05	2.40E+05	3.30E+05	< 1.02E+07	< 2.38E+05	1.68E+05	2.25E+05	< 1.83E+05

Table 2

Airborne Effluents Comparison By Year

Pressurized Water Reactors Reactor	Fission and Activation (Gross Total Curies)									
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Arkansas One 1	2 90E+03	8 10E+03	1 71E+03	3 36E+02	1 24E+03	2 33E+03	7 00E+02	4 95E+02	8 98E+02	1 78E+01
Arkansas One 2	3 26E+03	8 91E+03	3 46E+03	2 06E+02	2 16E+03	2 76E+03	1 89E+02	1 59E+03	1 70E+03	5 21E+01
Beaver Valley 1&2	1 16E+03	3 92E+01	7 57E+01	2 25E+02	9 41E+01	1 57E+02	8 17E+01	1 49E+02	1 55E+02	5 56E+02
Bradwood 1				2 81E+01	4 19E+01	1 17E+03	1 42E+03	5 24E+03	7 71E+01	3 49E+02
Bradwood 2					3 82E+01	5 07E+02	1 02E+03	5 28E+03	1 56E+02	2 40E+03
Byron 1&2		2 79E+02	6 36E+02	1 30E+03	1 78E+03	8 16E+02	1 24E+03	1 04E+02	3 77E+03	1 22E+02
Callaway 1	2 00E+02	1 67E+03	5 19E+03	2 90E+03	6 89E+03	7 22E+02	9 02E+02	1 38E+02	4 01E+02	8 08E+02
Calvert Cliffs 1&2	3 83E+03	3 98E+03	7 65E+03	4 85E+03	5 70E+03	3 28E+03	6 72E+02	2 07E+03	5 87E+03	2 14E+02
Catawba 1		2 77E+02	1 36E+03	2 41E+03	1 58E+03	3 15E+02	5 33E+02	4 01E+02	4 28E+02	6 48E+02
Catawba 2			1 36E+03	2 41E+03	1 58E+03	3 15E+02	5 33E+02	4 01E+02	4 28E+02	6 48E+02
Comanche Peak 1							9 06E+02	5 89E+03	1 76E+03	1 92E+02
Donald C. Cook 1&2	3 80E+03	4 94E+03	3 29E+02	8 75E+02	2 58E+02	1 15E+02	1 89E+02	8 10E+01	2 04E+02	2 06E+03
Crystal River 3	1 96E+03	1 05E+03	2 76E+03	1 10E+03	3 41E+03	4 54E+03	7 31E+03	1 41E+03	7 86E+02	3 82E+01
Duke-Besse 1	5 02E+02	1 18E+02	5 09E+04	3 80E+02	1 09E+02	3 78E+02	1 09E+02	1 16E+03	3 82E+01	3 48E+02
Diablo Canyon 1&2	5 86E+02	5 72E+03	2 32E+03	7 14E+02	3 27E+02	3 35E+03	5 63E+01	4 82E+01	2 46E+00	2 14E+00
Joseph M. Farley 1	3 73E+03	1 70E+03	1 28E+03	1 30E+03	9 60E+02	9 92E+01	8 72E+01	1 05E+02	6 82E+02	1 94E+02
Joseph M. Farley 2	3 89E+03	6 63E+02	1 84E+03	7 22E+02	5 93E+02	1 60E+02	3 38E+01	3 56E+02	2 68E+01	2 61E+01
Fort Calhoun 1	1 52E+03	1 48E+03	5 68E+02	4 23E+02	7 85E+02	1 64E+02	4 59E+02	3 58E+02	1 51E+02	9 26E+00
R. E. Ginna	2 96E+02	4 06E+02	2 08E+02	1 77E+02	5 17E+01	5 11E+02	5 95E+02	5 14E+02	5 41E+02	1 40E+03
Haddam Neck	7 52E+03	2 76E+03	2 33E+03	3 58E+03	2 35E+03	1 71E+04	1 46E+03	6 11E+03	2 79E+00	2 08E+03
Harris 1				1 71E+03	2 25E+03	1 15E+03	5 98E+02	6 82E+02	1 36E+03	3 48E+02
Indiana Point 1&2	3 78E+03	1 88E+03	2 05E+03	4 68E+03	2 27E+02	8 77E+01	2 23E+03	1 41E+03	5 25E+03	1 88E+03
Indiana Point 3	1 88E+03	1 54E+03	1 93E+03	1 82E+03	3 10E+02	3 14E+02	6 28E+02	6 05E+01	2 15E+01	4 17E+01
Kewaunee	< 4 04E+01	< 4 97E+01	< 6 55E+01	< 3 19E+01	< 2 91E+01	6 52E+01	2 31E+00	1 81E+00	1 60E+00	3 67E+01
Mane Yankee	1 54E+02	4 41E+02	1 07E+03	8 34E+02	9 19E+01	2 02E+01	9 46E+02	1 13E+03	4 01E+02	4 50E+01
McGuire 1	2 28E+03	1 93E+03	1 05E+03	2 04E+03	1 95E+03	7 19E+02	5 18E+02	4 48E+02	4 06E+02	4 84E+02
McGuire 2	2 28E+03	1 93E+03	1 05E+03	2 04E+03	1 95E+03	7 19E+02	5 18E+02	4 48E+02	4 06E+02	4 84E+02
Millstone 2	4 19E+03	4 00E+02	1 02E+02	3 97E+02	6 34E+02	2 46E+02	2 89E+03	3 89E+02	6 36E+02	1 32E+01
Millstone 3			2 39E+01	1 05E+02	8 44E+01	2 96E+02	2 11E+02	1 25E+02	1 13E+00	3 00E+01
North Anna 1&2	1 78E+04	8 05E+03	5 71E+03	1 05E+03	4 83E+02	1 44E+03	9 52E+02	2 24E+03	1 23E+03	2 51E+02
Oconee 1, 2 & 3	2 28E+04	2 35E+04	2 43E+04	1 05E+04	2 59E+04	8 97E+03	8 84E+03	3 45E+03	3 29E+03	8 58E+02
Palo Verde	3 84E+01	3 88E+03	1 78E+02	1 75E+03	2 43E+03	1 52E+02	1 21E+02	6 26E+01	7 46E+01	9 29E+01
Palo Verde 1		2 53E+02	2 67E+03	1 27E+03	1 84E+03	6 41E+02	7 08E+02	2 91E+03	2 22E+03	5 79E+02
Palo Verde 2			1 97E+03	5 47E+03	2 97E+03	4 29E+02	6 76E+02	5 29E+02	2 01E+02	2 62E+02
Palo Verde 3				3 52E+02	1 36E+02	8 34E+02	1 20E+03	4 58E+02	4 38E+01	1 97E+02
Point Beach 1&2	9 30E+01	1 16E+02	2 78E+01	4 82E+01	8 06E+01	1 50E+01	8 03E+00	2 00E+01	5 08E+01	1 01E+01
Prune Island 1&2	7 56E+01	4 58E+01	3 03E+01	8 77E+01	1 42E+01	1 73E+02	8 28E+01	5 60E+01	2 54E+01	3 88E+01
Rancho Seco 1	3 83E+03	4 67E+03	9 30E+01	2 18E+02	1 52E+03	2 00E+03	2 20E+01	N/D	6 83E+02	N/D
H. B. Robinson 2	4 90E+01	2 14E+03	6 59E+02	7 70E+02	1 04E+03	2 79E+01	7 20E+00	2 26E+00	7 59E+00	3 99E+02
Salem 1	1 95E+02	1 68E+03	1 89E+03	3 64E+03	5 29E+02	1 39E+03	3 13E+02	3 66E+02	6 75E+02	1 12E+03
Salem 2	1 81E+03	1 15E+03	8 56E+02	1 06E+03	1 18E+03	7 30E+01	1 49E+02	1 82E+02	2 68E+02	3 42E+02
San Onofre 1	8 62E+01	3 83E+03	4 11E+02	8 81E+02	2 99E+03	9 05E+02	1 80E+03	2 49E+03	4 12E+03	4 20E+02
San Onofre 2 & 3	4 00E+04	2 83E+04	8 25E+03	2 18E+04	5 12E+03	2 46E+03	1 16E+03	1 30E+03	1 41E+03	1 54E+03
Seabrook 1						N/D	1 07E+02	2 92E+01	9 13E+01	1 09E+01
Sequoyah 1&2	6 88E+03	4 57E+03	1 21E+00	N/D	2 25E+02	3 85E+03	6 07E+03	1 42E+03	2 07E+02	7 71E+01
South Texas 1					8 64E+02	4 45E+02	1 72E+02	8 55E+01	2 89E+02	3 42E+01
South Texas 2						1 16E+02	1 09E+02	4 67E+01	6 23E+02	1 79E+01
St. Lucie 1	3 53E+04	5 08E+04	3 33E+04	6 21E+03	1 42E+03	4 58E+03	6 19E+02	2 05E+03	3 30E+02	2 61E+02
St. Lucie 2	7 68E+03	9 55E+03	9 98E+03	8 80E+03	9 18E+03	2 22E+03	5 34E+02	4 90E+02	5 59E+02	8 82E+01
Summer 1	1 54E+01	1 40E+02	1 39E+01	6 34E+02	3 32E+02	1 82E+03	7 51E+02	4 34E+02	3 38E+02	2 43E+02
Surry 1&2	6 85E+03	2 07E+03	1 99E+03	3 08E+03	3 86E+02	1 37E+03	4 51E+02	3 54E+01	1 61E+01	4 15E+01
Three Mile Island 1	3 62E+01	1 08E+02	3 80E+03	7 89E+02	1 87E+03	2 10E+03	6 86E+02	1 22E+02	5 73E+02	2 40E+03
Three Mile Island 2	2 07E+02	N/D	2 80E+01	N/D	4 40E+01	N/D	N/D	4 18E+05	5 81E+05	4 41E+02
TMI 2/Epicor	3 99E+01	+	+	+	+	+	+	+	+	+
Trojan	8 98E+02	1 10E+03	9 42E+02	3 55E+02	4 25E+02	5 94E+02	2 08E+02	1 68E+02	2 07E+02	5 34E+01

* Changes to the entries for Trojan for 1976-1987 are corrections which were reported and explained in the Trojan July-December 1990 Effluent and Waste Disposal Report.

** Changes to the entries for Maine Yankee for 1977 - 1988 are corrections which were reported and explained in the Maine Yankee Report, Revised Semiannual Effluent and Release Reports for 770131 - 801231. Docket Date 92/01/08.

*** Included with Three Mile Island 2 total.

N/D = Not Detectable

Table 2

Airborne Effluents Comparison By Year

Fission and Activation Gases (Total Curies)

Pressurized Water Reactors

Facility	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Turkey Point 3&4	1.16E+04									
Turkey Point 3		1.32E+03	3.84E+03	9.38E+02	1.25E+03	1.70E+03	6.88E+02	8.95E+00	6.15E+01	2.31E+02
Turkey Point 4		1.80E+03	1.01E+03	7.86E+02	1.31E+03	1.71E+03	5.92E+02	9.49E+00	6.22E+01	2.22E+02
Vogtle 1&2				1.07E+02	1.15E+02	5.48E+02	1.88E+02	3.58E+02	1.13E+02	2.34E+02
Waukegan 3		8.21E+03	1.12E+04	5.63E+03	5.30E+03	5.58E+02	5.73E+03	2.15E+03	6.83E+02	9.13E+02
Wolf Creek 1		1.72E+02	3.15E+01	1.75E+02	7.92E+02	6.40E+02	9.99E+02	3.00E+03	3.08E+02	5.20E+02
Yankee Rowe 1	1.74E+03	1.47E+03	5.11E+02	3.84E+02	2.06E+02	1.21E+02	1.13E+02	2.15E+02	N/D	N/D
Zion 1&2	3.61E+03	9.88E+03	3.18E+03	1.18E+02	1.39E+03	1.12E+03	1.10E+02	2.76E+02	3.35E+02	2.61E+03
Total	< 2.10E+05	< 2.05E+05	< 1.57E+05	< 1.11E+05	< 1.03E+05	8.11E+04	6.31E+04	6.22E+04	4.16E+04	2.79E+04

Table 3

Airborne Effluents Comparison By Year

I-131 and Particulates (Curies)

(Half-Life Equal To or Greater Than 8 Days)

Boiling Water Reactors

Facility	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Big Rock Point 1	1 60E-01	1 20E-01	5 00E-02	1 00E-02	8 81E-03	1 90E-03	2 94E-02	6 10E-03	4 71E-03	3 35E-03
Browns Ferry 1, 2 & 3	1 20E-01	2 70E-01	< 7 00E-02	1 04E-01	2 27E-01	5 03E-02	1 06E-01	N/D	1 99E-01	2 83E-01
Brunswick 1&2		< 1 00E-02	4 60E-01	9 32E-01	4 07E-01	9 52E-01	2 12E+00	8 88E-01	1 99E+00	6 25E+00
Clinton 1										
Cooper	2 40E-01	5 00E-02	< 4 00E-02	< 1 91E-02	5 41E-03	< 1 79E-01	< 1 52E-01	< 1 09E-02	< 1 55E-01	< 2 30E-02
Dresden 1	6 80E-01	9 60E-01	8 40E-01	4 93E+00	2 28E+00	2 38E-02	1 46E-02	9 94E-03	3 36E-04	7 56E-04
Dresden 2-3	8 50E+00	4 31E+00	5 49E+00	6 86E+00	3 13E+00	6 97E+00	1 10E+01	9 37E+00	9 50E-01	6 32E-01
Duane Arnold		1 10E-03	8 18E-02	2 29E-02	3 66E-02	3 35E-02	8 50E-02	3 25E-02	1 03E-02	1 50E-02
Fort 2										
James A. Fitzpatrick		< 4 00E-02	6 80E-01	1 73E-01	2 78E-01	1 42E-02	1 25E-01	2 80E-01	7 71E-01	3 80E-01
Grand Gulf 1										4 50E-05
Edwin J Hatch 1		< 1 00E-02	< 1 00E-02	5 67E-03	4 13E-03	2 59E-02	4 29E-01	2 12E-01	1 84E-01	6 96E-02
Edwin J Hatch 2							1 33E-02	9 42E-03	6 83E-02	1 95E-02
Hope Creek 1										
Humboldt Bay 3	8 40E-01	1 06E+00	8 36E-02	4 04E-03	7 28E-04	1 07E-04	5 11E-04	< 3 82E-04	1 09E-04	2 68E-04
LaCrosse	4 00E-02	1 00E-01	< 7 06E-02	1 67E-01	2 79E-02	2 53E-02	1 32E-02	1 69E-02	8 35E-03	1 08E-02
LaSalle 1&2									4 16E-03	1 80E-02
Limerick 1&2										
Millstone 1	3 26E+00	8 88E+00	2 33E+00	4 88E+00	4 55E+00	6 90E-01	3 32E-01	1 48E-01	2 09E-01	6 25E-02
Monroeville	5 70E+00	3 71E+00	1 71E-01	8 51E-02	5 49E-02	3 39E-02	2 83E-02	8 45E-02	8 85E-02	4 10E-02
Nine Mile Plant 1	8 90E-01	2 78E+00	2 20E+00	1 99E-01	1 35E-01	4 71E-02	2 55E-02	1 48E-02	2 71E-03	1 07E-02
Nine Mile Plant 2										
Oyster Creek 1	3 51E+00	5 64E+00	6 38E+00	9 05E+00	1 81E+01	9 32E+00	1 25E+00	2 24E+00	1 04E+00	1 90E-02
Peach Bottom 2&3	1 00E-02	4 00E-02	8 75E-01	2 73E-01	9 62E-02	2 55E-01	2 64E-03	< 4 19E-02	3 90E-02	4 60E-02
Perry 1										
Piggen 1	1 45E+00	2 58E+00	6 74E-01	6 90E-01	1 81E-01	1 46E-01	1 04E-01	< 6 87E-02	< 4 44E-02	< 4 69E-02
Quad-Cities 1&2	6 88E+00	1 31E+00	1 33E+00	1 69E+00	2 15E+00	1 67E+00	5 90E-01	1 27E+00	4 12E-01	4 36E-01
River Bend 1										
Shoreham 1										
Sasquatchanna 1&2									< 8 70E-04	9 43E-04
Vermont Yankee 1	3 60E-01	1 00E-02	< 1 00E-02	1 44E-02	2 18E-01	4 43E-01	1 70E-02	4 53E-03	1 45E-03	4 14E-03
WNP-2										
Total	3 26E+01	< 3 30E+01	< 2 20E+01	< 3 01E+01	3 19E+01	< 2 07E+01	< 1 65E+01	< 1 52E+01	< 6 20E+00	< 6 37E+00
* Fort St. Vrain						6 88E-07	1 25E-06	1 40E-06	2 61E-01	7 40E-07

* High temperature gas cooled reactor

N/D = Not Detectable

Table 3

Airborne Effluents Comparison By Year

I-131 and Furanolates (Curies)

(Half-Life Equal To or Greater Than 6 Days)

Boiling Water Reactors

Facility	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Big Rock Point 1	1.32E-01	8.25E-02	7.66E-02	2.94E-02	5.07E-02	4.97E-03	5.71E-03	3.07E-03	4.99E-03	3.81E-03
Browns Ferry 1 & 2 & 3	< 1.72E-01	< 2.48E-02	< 2.73E-03	1.78E-03	1.76E-03	1.86E-04	1.88E-04	2.84E-02	4.66E-02	2.56E-02
Brunswick 1&2	3.49E-01	6.32E-02	4.69E-02	1.82E-01	1.77E-01	4.84E-02	4.83E-02	1.91E-03	7.43E-03	7.90E-03
Clinton 1				2.56E-04	5.94E-02	9.52E-03	8.71E-03	8.10E-03	2.52E-03	1.85E-02
Cooper	< 1.15E-02	< 2.29E-02	< 1.16E-02	2.67E-02	2.04E-02	5.26E-03	3.53E-04	5.64E-04	9.08E-05	1.76E-04
Dresden 1	1.69E-03	9.23E-05	*	*	*	1.07E-04	2.59E-04	4.19E-03	3.32E-05	1.24E-04
Dresden 2-3	1.30E-01	1.56E-01	7.11E-02	1.45E-01	2.35E-01	1.15E+00	1.51E-01	3.69E-02	2.37E-02	3.82E-02
Duane Arnold	1.53E-02	8.69E-03	7.32E-03	1.37E-01	1.55E-03	3.16E-03	4.48E-03	2.64E-03	2.98E-03	2.17E-03
Fermi 2			2.68E-07	8.56E-03	2.76E-03	1.67E-02	1.54E-02	5.66E-03	6.89E-03	9.01E-03
James A. Fitzpatrick	2.10E-01	1.67E-01	8.68E-02	1.36E-01	7.00E-02	7.12E-02	1.81E-02	2.50E-02	4.23E-04	2.31E-03
Grand Gulf 1	1.86E-04	7.53E-04	4.85E-04	4.28E-03	4.90E-04	1.08E-03	9.98E-04	4.29E-03	8.77E-03	5.56E-04
Edwin 1 Hatch 1	6.57E-02	3.98E-02	1.90E-02	2.54E-01	**	**	**	**	**	**
Edwin 1 Hatch 2	1.15E-02	3.47E-02	1.79E-02	1.16E-01	4.29E-02	5.73E-03	7.64E-03	5.57E-03	4.06E-02	2.98E-01
Hopewick 1			N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Humboldt Bay 3	2.68E-04	7.62E-05	1.64E-04	8.78E-05	1.49E-04	3.87E-05	3.85E-05	6.68E-05	2.70E-05	6.16E-05
LaCrosse	6.90E-03	9.62E-03	5.91E-03	2.31E-03	1.11E-05	1.29E-05	1.80E-04	3.64E-06	3.69E-05	1.04E-04
LaSalle 1&2	1.06E-02	2.32E-02	7.09E-02	4.97E-02	1.34E-02	8.23E-03	3.44E-03	6.84E-03	2.70E-03	8.45E-03
Lansack 1&2	N/D	N/D	7.45E-03	1.17E-03	6.67E-03	7.60E-03	7.64E-04	1.13E-04	1.49E-03	2.85E-02
Millstone 1	6.24E-02	5.20E-02	4.71E-02	2.50E-02	7.60E-03	9.35E-03	2.60E-03	2.64E-03	1.49E-03	3.68E-03
Monticello	2.93E-02	9.95E-02	6.86E-02	1.73E-01	7.90E-02	1.14E-01	4.34E-02	3.62E-02	4.01E-02	2.94E-02
Nase Mile Point 1	1.75E-02	3.46E-02	1.75E-02	1.61E-02	1.89E-03	3.02E-03	2.72E-03	7.19E-03	4.42E-03	5.59E-03
Nase Mile Point 2				5.17E+00	6.90E-04	5.04E-03	4.95E-03	1.36E-02	6.70E-03	8.90E-03
Oyster Creek 1	4.37E-01	3.04E+00	7.00E-01	1.04E-01	6.35E-02	5.08E-02	3.14E-02	3.25E-02	5.71E-02	1.28E-02
Peach Bottom 2&3	1.02E-01	6.88E-02	5.20E-02	2.00E-02	1.50E-03	3.45E-03	1.87E-02	4.28E-02	3.19E-02	5.59E-02
Perry 1			1.13E-08	4.87E-05	4.62E-02	8.54E-03	1.11E-02	1.62E-02	1.52E-01	4.20E-02
Pilgrim 1	< 5.17E-03	< 5.68E-02	< 1.24E-02	< 8.43E-04	3.82E-04	5.82E-03	1.02E-02	4.71E-02	4.61E-02	4.38E-02
Quad-Cities 1&2	8.86E-02	8.06E-01	1.11E-01	9.40E-02	2.45E-02	4.06E-02	3.34E-02	1.19E-02	3.07E-02	2.08E-02
River Bend 1			4.62E-05	4.03E-04	9.86E-04	4.13E-04	5.17E-02	4.44E-02	9.34E-03	2.33E-02
Shoreham 1			N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Susquehanna 1&2	1.48E-02	2.66E-02	3.39E-03	6.08E-03	1.82E-03	1.11E-03	8.63E-04	2.93E-04	4.71E-03	1.29E-03
Vermont Yankee 1	6.87E-03	< 5.87E-03	< 1.29E-02	1.27E-02	6.58E-03	8.92E-03	7.24E-02	8.26E-02	6.41E-02	2.00E-02
WNP-2	2.49E-01	1.89E-01	6.35E-02	8.87E-02	4.48E-01	1.14E-01	1.50E-01	6.37E-02	4.33E-02	3.62E-02
Total	< 2.13E+00	< 4.81E+00	< 1.57E+00	< 6.79E+00	1.38E+00	1.70E+00	7.05E-01	5.50E-01	6.44E-01	7.49E-01
* Fort St. Vrain	2.78E-06	6.31E-07	N/D	N/D	< 1.79E-05	N/D	N/D	N/D	N/D	6.76E-06

* Included with Dresden 2-3 total

* High temperature gas cooled reactor

** Included with Edwin 1 Hatch 2 total

N/D = Not Detectable

Table 4

Arkansas Effluents Comparison By Year

1-131 and Particulates (Curies)
Half-Life: Equal To or Greater Than 8 Days

Pressurized Water Reactors

Facility	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Arkansas One 1	5 00E-02	7 40E-01	5 73E-02	9 04E-03	3 19E-03	4 47E-03	1 65E-01	5 58E-03	9 07E-04	1 15E-03
Arkansas One 2						4 65E-03	6 80E-03	1 41E-02	4 92E-03	5 78E-03
Beaver Valley 1&2			< 1 00E-02	1 52E-04	7 21E-02	4 07E-04	1 81E-03	6 85E-03	4 56E-03	5 25E-02
Braidwood 1										
Braidwood 2										
Byron 1&2										
Callaway 1										
Calvert Cliffs 1&2		7 00E-02	1 38E-01	3 07E-01	1 35E-01	3 05E+00	7 44E-02	4 69E-02	1 84E-01	1 02E-01
Catawba 1										
Catawba 2										
Comanche Peak 1										
Donald C Cook 1&2		< 1 00E-02	< 1 00E-02	7 45E-02	1 10E-01	7 36E-02	6 86E-02	3 55E-01	1 28E-01	5 75E-02
Crystal River 3				2 53E-03	1 05E-03	1 88E-02	6 77E-03	1 78E-02	3 22E-03	1 56E-03
Davis-Besse 1				2 57E-04	4 30E-04	5 69E-03	3 01E-03	5 78E-02	5 28E-03	7 37E-03
DuBois Canyon 1&2										
Joseph M Farley 1					4 11E-02	2 20E-02	2 37E-03	6 24E-01	9 09E-02	4 60E-02
Joseph M Farley 2								3 22E-03	6 51E-05	5 06E-05
Fort Calhoun 1	< 1 00E-02	< 1 00E-02	< 2 04E-02	1 34E-02	8 30E-03	1 58E-03	2 42E-03	3 63E-03	1 59E-03	9 32E-04
R E Ginna	< 1 00E-02	2 00E-02	3 17E-02	2 55E-02	1 04E-02	1 88E-02	9 00E-03	5 58E-03	1 36E-02	1 53E-02
Haddam Neck	< 1 00E-02	< 1 00E-02	< 1 00E-02	1 74E-03	5 21E-03	4 77E-02	6 01E-03	< 1 28E-02	< 5 41E-04	< 1 02E-02
Hams I										
Indian Point 1&2	4 30E-01	1 82E+00	2 43E-01	5 59E-02	3 05E-01	4 50E-01	6 42E-02	4 42E-02	4 17E-02	2 06E-02
Indian Point 3			Shown With	Other Unit	1 39E-02	3 89E-03	2 53E-02	3 63E-03	< 4 28E-03	< 1 53E-04
Kewaunee	2 00E-02	6 60E-01	< 1 00E-02	2 40E-02	6 48E-03	6 18E-04	2 61E-04	1 21E-04	6 97E-05	< 2 16E-04
** Maine Yankee	5 00E-02	< 1 00E-02	< 1 00E-02	1 07E-02	4 39E-03	1 18E-01	3 67E-03	1 21E-03	2 55E-04	1 48E-04
McGuire 1								1 21E-11	9 51E-04	1 89E-03
McGuire 2										1 89E-03
Millstone 2		1 00E-02	1 25E-02	4 47E-03	2 97E-03	9 79E-03	1 94E-02	1 08E-01	3 19E-01	5 73E-02
Millstone 3										
North Anna 1&2					3 19E-02	5 71E-02	1 26E-02	4 61E-01	3 49E-02	3 28E-01
Oconee 1,2 & 3	3 00E-02	1 00E-02	2 72E-01	5 35E-01	3 22E-01	2 28E-01	1 33E-01	3 24E-01	2 55E-01	1 13E-01
Palsades	1 00E-02	3 80E-01	4 16E-02	1 63E-02	2 07E-02	2 46E-02	2 76E-02	4 15E-02	2 30E-02	3 44E-02
Palo Verde 1										
Palo Verde 2										
Palo Verde 3										
Point Beach 1&2	1 60E-01	7 00E-02	1 85E-02	5 02E-03	2 88E-02	1 35E-02	1 28E-03	2 03E-01	3 48E-03	1 82E-02
Pratts Island 1&2	< 1 00E-02	3 12E-02	1 14E-02	7 58E-03	8 96E-04	3 86E-03	1 83E-03	4 49E-04	3 74E-03	1 40E-02
Rancho Seco 1		< 1 00E-02	< 1 00E-02	5 02E-03	3 21E-02	5 75E-03	9 96E-03	4 65E-03	2 82E-02	2 28E-03
H B Robinson 2	5 00E-02	2 00E-02	9 98E-02	3 68E-03	9 28E-04	4 10E-04	1 13E-03	3 82E-04	5 70E-04	1 31E-02
Salem 1			N/D	2 34E-07	4 01E-02	7 68E-03	2 17E-01	4 84E-01	7 86E-03	6 25E-02
Salem 2							5 44E-05	6 31E-03	4 54E-03	3 53E-02
San Onofre 1	< 1 00E-02	4 00E-03	< 1 00E-02	1 88E-04	2 71E-03	1 43E-04	8 41E-01	1 18E-02	4 96E-07	5 44E-06
San Onofre 2-3									3 35E-05	1 56E-01
Seabrook 1										
Sequoyah 1&2							3 57E-03	1 30E-02	1 23E-01	2 22E-03
South Texas 1										
South Texas 2										
St. Lucie 1			< 1 00E-02	1 48E-01	5 17E-01	2 02E-01	6 20E-02	7 69E-02	4 15E-01	2 13E-01
St. Lucie 2										1 27E-02
Summer 1									N/D	4 74E-05
Surry 1&2	1 40E-01	5 00E-02	3 46E-01	1 20E-01	6 49E-02	7 81E-03	1 85E-02	6 53E-02	5 96E-02	6 34E-02
Three Mile Island 1	< 1 00E-02	< 1 00E-02	1 07E-02	3 39E-02	1 35E-01	1 24E-02	2 93E-04	5 05E-04	1 65E-04	6 55E-05
Three Mile Island 2					2 30E-03	1 42E-01	5 67E-04	3 69E-05	6 46E-05	2 79E-05
TMI 2/Epicor							6 83E-06	2 63E-06	3 71E-06	1 80E-06
* Trojan			2 84E-02	3 56E-02	8 28E-03	2 48E-02	1 84E-02	4 97E-02	1 09E-02	5 57E-03

* Changes to the entries for Trojan for 1978-1987 are corrections which were reported and explained in the Trojan July-December 1990 Effluent and Waste Disposal Report

1-131 not included

** Changes to the entries for Maine Yankee for 1977 - 1988 are corrections which were reported and explained in the Maine Yankee report "Revised Semiannual Effluent Release Reports for 770131 - 801231" Docket Date 82/01/08

N/D = Not Detectable

Table 4

Airborne Effluents Comparison By Year

I-131 and Particulates (Curies)
(Half-Life Equal To or Greater Than 8 Days)

Pressurized Water Reactors

Facility	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Turkey Point 3&4	3.63E+00	4.30E-01	4.22E-01	1.04E+00	4.59E-01	7.91E-02	7.05E-02	2.94E-02	2.20E-01	1.44E-01
Turkey Point 3										
Turkey Point 4										
Vogtle 1&2										
Waterford 3										
Wolf Creek 1										
Yankee Rowe 1	5.30E-01	1.00E-02 <	1.00E-02	8.70E-05	2.25E-04	2.49E-04	9.56E-05	2.13E-04 <	5.75E-04	3.11E-03
Zion 1&2	1.00E-02	1.40E-01	9.00E-02	5.38E-02	8.91E-02	6.74E-02	3.00E-03	1.25E-02	8.57E-02	2.25E-02
Total	< 5.17E+00 <	4.35E+00 <	1.93E+00	2.53E+00	2.27E+00	1.78E+01	1.88E+00 <	3.11E+00 <	2.08E+00 <	1.65E+00

Table 4

Airborne Effluents Comparison By Year

T-131 and Particulates (Curies)
(Half-Life Equal To or Greater Than 6 Days)

Pressurized Water Reactors

Facility	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Arkansas One 1	1.14E-03	3.50E-03	4.01E-03	3.05E-04	1.03E-03	8.17E-04	8.94E-04	2.51E-03	4.98E-02	7.30E-06
Arkansas One 2	2.54E-04	3.27E-03	2.36E-04	5.12E-05	4.21E-04	5.87E-04	2.03E-04	4.27E-02	7.69E-04	4.87E-06
Beaver Valley 1&2	6.21E-03	1.58E-03	7.63E-03	1.38E-02	3.54E-03	1.11E-02	3.20E-04	1.02E-02	1.27E-03	2.20E-02
Bradwood 1				1.34E-05	2.44E-02	2.54E-04	1.56E-03	8.01E-03	2.91E-05	3.19E-04
Bradwood 2					9.53E-05	2.86E-04	5.61E-04	5.07E-03	7.55E-06	3.87E-03
Byron 1&2		2.18E-03	5.45E-02	9.45E-03	1.28E-02	7.93E-04	4.08E-03	1.81E-04	4.38E-04	4.38E-04
Callaway 1	9.41E-07	3.23E-04	1.18E-03	4.46E-04	3.36E-04	1.65E-04	1.46E-04	9.16E-06	4.87E-04	6.28E-04
Calvert Cliffs 1&2	6.02E-02	5.36E-02	6.73E-02	9.18E-02	1.38E-01	4.81E-02	1.69E-03	1.82E-02	1.68E-02	2.16E-02
Catawba 1		5.71E-04	6.69E-03	7.42E-03	4.05E-03	7.46E-04	8.60E-04	1.39E-03	7.71E-04	4.58E-04
Catawba 2			6.69E-03	7.42E-03	4.05E-03	7.46E-04	8.60E-04	1.39E-03	7.71E-04	4.58E-04
Comanche Peak 1							N/D	1.85E-03	8.31E-04	7.56E-05
Donald C. Cook 1&2	2.09E-02	1.78E-01	2.29E-02	6.44E-02	8.92E-03	3.44E-02	7.35E-02	2.41E-03	9.95E-03	5.01E-04
Crystal River 3	2.07E-04	7.31E-04	1.02E-03	3.49E-03	1.25E-03	2.02E-03	7.88E-04	4.57E-04	5.59E-04	2.64E-05
Davis-Besse 1	1.66E-03	5.13E-04	N/D	1.24E-03	4.76E-04	3.06E-03	2.38E-03	8.70E-03	9.57E-04	7.79E-03
Duško Canyon 1&2	1.20E-05	2.40E-04	1.44E-03	2.36E-03	1.29E-03	9.75E-04	5.94E-05	5.90E-04	2.57E-03	5.06E-05
Joseph M. Farley 1	5.87E-03	5.60E-03	7.96E-04	3.81E-04	1.60E-03	3.64E-05	N/D	1.60E-03	3.80E-04	N/D
Joseph M. Farley 2	1.54E-03	2.97E-04	1.35E-03	1.49E-04	2.51E-06	7.89E-07	3.15E-06	1.43E-05	4.66E-05	1.26E-07
Fort Calhoun 1	1.25E-02	7.29E-03	1.48E-03	5.11E-03	3.10E-04	1.27E-04	1.81E-03	3.22E-04	5.69E-04	2.27E-05
R. E. Ginna	1.62E-03	9.74E-04	4.04E-04	8.71E-03	5.69E-05	8.38E-04	5.14E-03	1.85E-03	1.40E-03	7.46E-04
Haddam Neck	5.72E-02	1.13E-03	9.36E-06	1.35E-03	3.69E-02	1.50E-02	4.71E-03	2.60E-02	5.39E-03	1.25E-02
Hams 1				4.42E-06	4.59E-05	1.79E-06	7.72E-05	4.71E-05	8.16E-04	1.51E-04
Indian Point 1&2	< 1.51E-01	1.44E+00	4.39E-01	1.57E-02	9.19E-03	3.88E-03	5.36E-03	2.10E-03	1.32E-02	5.78E-03
Indian Point 3	2.04E-02	1.80E-03	4.01E-03	2.07E-03	3.42E-03	1.36E-03	1.81E-04	2.44E-05	8.29E-05	1.55E-04
Kewaunee	< 4.05E-03	2.77E-04	< 5.58E-03	< 1.23E-02	< 1.05E-02	1.75E-02	3.24E-03	1.93E-03	1.79E-06	2.02E-05
** Maine Yankee	7.14E-03	8.17E-04	4.60E-03	5.05E-03	5.10E-04	2.39E-04	1.81E-02	7.23E-03	5.24E-03	5.81E-03
McGuire 1	1.25E-02	1.29E-02	3.03E-02	6.08E-02	8.14E-03	3.76E-03	1.02E-03	9.78E-04	1.16E-03	8.68E-04
McGuire 2	1.25E-02	1.29E-02	3.03E-02	6.08E-02	8.14E-03	3.76E-03	1.02E-03	9.78E-04	1.16E-03	8.68E-04
Millstone 2	3.71E-02	6.48E-03	5.37E-03	6.81E-03	5.13E-02	3.76E-02	2.06E-02	1.27E-02	7.87E-03	1.06E-03
Millstone 3			< 3.69E-04	5.09E-03	9.89E-03	1.28E-02	2.46E-03	4.60E-03	9.71E-04	1.05E-03
North Anna 1&2	8.65E-02	8.57E-02	2.37E-02	1.73E-02	2.30E-03	4.33E-03	7.05E-03	2.70E-03	1.36E-02	2.90E-03
Oconee 1,2 & 3	1.07E-01	4.92E-03	4.34E-02	1.46E-01	1.63E-01	3.56E-02	9.02E-03	2.90E-02	1.41E-02	3.32E-03
Palsades	9.92E-04	4.92E-02	3.03E-03	2.77E-02	2.65E-02	1.73E-02	2.13E-03	3.03E-04	9.52E-04	1.12E-03
Palo Verde 1		1.43E-03	7.78E-03	5.81E-02	1.82E-03	7.58E-04	2.68E-03	1.15E-02	1.20E-03	1.00E-02
Palo Verde 2			3.48E-03	1.34E-02	4.67E-02	3.03E-03	2.68E-03	2.08E-02	1.77E-05	7.34E-03
Palo Verde 3				N/D	1.24E-04	6.45E-03	6.34E-04	3.33E-03	1.91E-03	1.73E-03
Point Beach 1&2	1.25E-03	9.05E-03	1.69E-03	3.08E-03	2.23E-03	3.27E-03	3.02E-04	3.46E-03	6.75E-03	1.48E-02
Presque Island 1&2	1.44E-03	7.35E-03	2.22E-03	2.33E-04	7.74E-05	2.10E-05	1.50E-03	4.87E-04	2.53E-04	7.40E-04
Rancho Seco 1	2.37E-02	7.84E-03	1.49E-03	1.54E-06	4.74E-04	2.78E-04	N/D	N/D	N/D	N/D
H. B. Robinson 2	2.47E-04	1.37E-02	9.92E-03	2.08E-02	1.10E-03	1.41E-04	1.34E-04	1.73E-04	1.39E-04	1.56E-03
Salem 1	5.16E-04	4.45E-02	1.17E-03	1.66E-03	2.13E-03	3.62E-03	1.20E-03	1.66E-03	3.79E-04	5.11E-03
Salem 2	5.41E-03	8.95E-02	3.23E-03	1.82E-03	9.91E-04	8.79E-04	2.06E-04	7.13E-04	7.10E-05	1.13E-03
San Onofre 1	9.49E-06	1.17E-03	2.09E-04	4.17E-04	1.08E-02	2.22E-03	7.25E-03	1.94E-03	1.57E-02	3.01E-04
San Onofre 2-3	4.12E-01	4.47E-01	1.62E-01	4.20E-01	7.75E-02	4.73E-01	7.05E-03	1.14E-02	2.32E-02	4.99E-02
Seabrook 1						N/D	N/D	1.08E-03	1.11E-03	6.60E-07
Squawyah 1&2	2.12E-02	3.17E-03	1.56E-03	5.04E-04	1.90E-04	4.22E-04	2.65E-04	5.66E-04	9.23E-05	1.41E-05
South Texas 1					8.26E-04	4.02E-03	1.15E-03	1.85E-03	2.52E-03	4.84E-05
South Texas 2						1.42E-03	5.75E-04	2.72E-04	4.83E-05	4.85E-04
St. Lucie 1	2.80E-01	7.81E-01	2.88E-01	3.95E-02	8.40E-03	5.75E-03	8.36E-03	2.69E-03	1.03E-03	2.08E-03
St. Lucie 2	2.84E-01	1.92E-01	4.20E-02	5.51E-02	2.88E-02	8.27E-03	5.79E-03	4.86E-03	4.88E-03	5.06E-04
Summer 1	9.00E-06	2.55E-05	2.99E-05	7.04E-04	2.33E-03	1.61E-03	5.57E-04	2.84E-04	2.14E-04	4.39E-03
Surry 1&2	5.87E-02	2.67E-02	2.09E-02	2.09E-02	2.02E-02	2.37E-03	2.98E-03	1.10E-03	6.04E-04	7.86E-04
Three Mile Island 1	1.27E-09	2.86E-05	3.97E-04	1.29E-04	1.26E-03	8.22E-03	1.53E-03	9.89E-04	4.95E-03	7.38E-03
Three Mile Island 2	1.61E-06	4.59E-05	1.67E-04	7.27E-05	6.78E-05	3.50E-06	3.74E-06	7.80E-05	5.49E-06	5.91E-02
TMI 2/Epicor	7.93E-07	+	+	+	+	+	+	+	+	+
* Trojan	4.65E-03	5.75E-03	8.62E-03	2.61E-03	3.97E-03	4.30E-03	1.64E-03	5.61E-04	2.44E-04	N/D

* Changes to the entries for Trojan for 1976-1987 are corrections which were reported and explained in the Trojan July-December 1990 Effluent and Waste Disposal Report

** Changes to the entries for Maine Yankee for 1977 - 1988 are corrections which are reported and explained in the Maine Yankee report. Revised Semiannual Effluent Release Reports for 770131 - 901231. Docket Date 92/01/08

†† Included with Three Mile Island 2 total

N/D = Not Detectable

Table 4

Airborne Effluents Comparison By Year

I-131 and Particulates (Curies)
 (Half-Life Equal To or Greater Than 8 Days)

Pressurized Water Reactors

Facility	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Turkey Point 3&4	2.77E-02									
Turkey Point 3		7.98E-03	1.89E-02	1.24E-02	4.83E-03	3.10E-03	4.90E-03	6.53E-04	1.15E-04	1.13E-03
Turkey Point 4		7.88E-03	3.45E-03	1.36E-02	4.78E-03	2.88E-04	1.87E-03	8.52E-04	1.16E-04	1.13E-03
Vogtle 1&2				1.99E-05	1.75E-05	1.25E-03	8.48E-05	2.08E-03	5.87E-03	5.21E-04
Waukegan 3		3.48E-03	5.30E-03	1.02E-03	1.24E-03	7.62E-04	6.96E-04	2.96E-03	2.75E-05	1.06E-06
Wolf Creek 1		1.67E-06	2.11E-04	2.14E-04	8.36E-05	2.31E-05	1.71E-04	2.40E-03	1.81E-05	6.92E-04
Yankee Rowe 1	< 6.48E-03	< 7.61E-04	2.02E-04	4.10E-05	5.89E-05	< 1.82E-04	1.81E-04	2.97E-05	7.71E-06	7.97E-07
Zion 1&2	4.27E-02	2.55E-02	4.43E-02	4.07E-03	1.40E-02	2.38E-03	1.36E-03	7.85E-03	5.11E-02	3.46E-02
Total	< 1.75E+00	< 3.56E+00	< 1.42E+00	< 1.25E+00	< 7.59E-01	< 7.96E-01	2.23E-01	2.73E-01	2.86E-01	2.99E-01

Table 5

Liquid Effluents Comparison By Year

Tritium (Curies)

Boiling Water Reactors

Facility	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Big Rock Point 1	5.10E+00	5.73E+00	2.41E+00	8.83E+00	4.05E+00	5.45E+00	8.18E+00	3.13E+00	2.96E+00	2.22E+01
Browns Ferry 1, 2, & 3	2.80E+00	1.04E+01	4.02E+00	2.40E+01	3.08E+01	1.32E+01	2.18E+01	2.42E+01	2.39E+01	3.20E+01
Brunswick 1&2		3.20E+00	5.90E+00	8.93E+00	1.41E+01	3.09E+01	1.28E+01	2.36E+01	4.88E+01	1.04E+02
Clinton 1										
Cooper	1.70E+00	6.25E+00	6.43E+00	9.04E+00	7.51E+00	6.63E+00	8.77E+00	8.37E+00	9.08E+00	7.80E+00
Dresden 1	1.88E+01	2.70E+01	2.00E+02	8.90E+02	1.31E+01	1.50E+00	N/D	N/D	N/D	N/D
Dresden 2-3	2.26E+01	5.40E+01	1.97E+01	5.00E+00	1.82E+01	1.83E+01	5.20E+01	6.05E+00	1.36E+00	1.45E+03
Duane Arnold		9.90E+01	8.40E+01	2.13E+01	1.19E+02	2.80E+01	N/D	N/D	2.25E+05	N/D
Fernald 2										
James A. Fitzpatrick		5.03E+00	4.20E+00	3.35E+00	1.90E+00	1.52E+00	2.61E+00	4.11E+00	6.55E+01	2.72E+00
Grand Gulf 1										3.89E+03
Edwin I. Hatch 1		6.12E+00	8.98E+00	1.20E+01	9.00E+00	1.23E+01	1.42E+01	1.16E+01	1.03E+02	9.47E+01
Edwin I. Hatch 2							1.07E+01	9.28E+00	3.68E+01	3.40E+01
Hope Creek 1										
Humboldt Bay 3	3.17E+01	2.01E+01	1.30E+01	5.26E+01	3.63E+02	3.91E+02	9.70E+02	1.62E+01	5.99E+02	5.33E+02
LaCrosse	1.15E+02	1.27E+02	4.10E+01	4.85E+01	4.72E+01	3.54E+01	7.20E+01	7.74E+01	5.92E+01	1.24E+02
LaSalle 1&2									9.28E+01	4.25E+00
Limerick 1&2										
Millstone 1	2.41E+01	8.03E+01	2.01E+01	4.41E+00	3.20E+00	7.92E+00	2.73E+01	2.62E+00	6.21E+00	8.38E+00
Monticello	N/D	N/D	N/D	N/D	N/D	N/D	N/D	4.17E+03	2.76E+03	N/D
Nine Mile Point 1	1.87E+01	2.51E+01	2.46E+00	2.49E+00	N/D	6.78E+00	N/D	5.05E+00	5.82E+00	7.89E+00
Nine Mile Point 2										
Oyster Creek 1	1.41E+01	1.79E+01	3.86E+01	1.88E+01	1.96E+01	1.49E+00	1.54E+02	2.67E+01	4.95E+00	8.76E+00
Peach Bottom 2&3	1.00E+01	3.08E+01	7.37E+01	7.09E+01	3.24E+01	4.28E+01	3.73E+01	3.88E+01	2.37E+01	2.02E+01
Perry 1										
Pilgrim 1	1.05E+01	1.82E+01	4.67E+01	3.27E+01	2.98E+00	1.34E+01	4.00E+01	3.41E+01	5.91E+00	1.56E+01
Quad-Cities 1&2	3.40E+01	5.87E+01	4.98E+01	2.64E+01	1.72E+01	1.76E+01	1.03E+01	1.19E+01	7.80E+00	3.88E+00
River Bend 1										
Shoreham 1										
Susquehanna 1&2									< 5.55E+01	8.98E+00
Vermont Yankee 1	N/D	N/D	1.60E+00	8.44E+01	N/D	4.04E+00	N/D	3.70E+01	N/D	N/D
WNP-2										
Total	3.08E+02	4.69E+02	< 3.41E+02	2.77E+02	3.41E+02	2.20E+02	4.80E+02	< 2.84E+02	< 3.42E+02	< 4.99E+02
- Fort St. Vrain						1.23E+02	2.06E+02	2.19E+02	2.62E+02	3.89E+02

* High temperature gas cooled reactor
N/D = Not Detectable

Table 5

Liquid Effluents Comparison By Year

Tristram (Curies)

Boiling Water Reactors

Facility	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Big Rock Point 1	1 11E+00	1 27E+00	3 51E-01	5 85E-01	3 47E-01	6 39E-01	5 89E-01	2 51E-01	1 08E+00	1 58E-01
Browns Ferry 1 & 2	3 18E+01	3 31E+01	7 93E+00	2 03E+00	1 46E+00	7 01E-01	2 07E-01	5 96E+00	2 85E+01	1 24E+01
Brunswick 1&2	3 37E+01	9 88E+00	5 78E+00	1 93E+01	3 10E+01	1 79E+01	4 95E+01	7 99E+01	4 24E+01	4 72E+01
Clinton 1				1 87E+00	2 90E+00	1 49E+00	2 80E+00	4 45E+00	2 36E+00	N/D
Cooper	< 7 20E+00	< 5 05E+00	< 5 56E+00	5 02E+00	4 17E+00	5 45E+00	5 07E+00	9 05E+00	1 46E+01	1 08E+01
Dresden 1	N/D	N/D	N/D	N/D						
Dresden 2-3	3 93E+01	7 45E+00	1 27E+01	2 23E+01	1 72E+01	1 83E+01	2 04E+01	1 28E+01	4 26E+00	2 33E+01
Duane Arnold	1 41E-06	3 57E-02	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Fennu 2			3 00E-01	1 05E+00	9 33E-01	1 30E+00	7 47E-01	2 02E+00	3 52E-01	3 73E-01
James A. Fitzpatrick	4 77E+00	4 20E+00	4 99E+00	2 48E+00	8 87E+00	7 32E-01	3 08E+00	7 61E+00	2 85E+00	1 44E+00
Grand Gulf 1	7 27E-01	5 17E+00	1 47E+01	1 83E+01	1 34E+01	1 32E+01	1 89E+01	2 15E+01	2 30E+01	6 29E+01
Edwan 1 Hatch 1	8 02E+01	3 93E+01	1 85E+01	2 01E+01	+	+	+	+	+	+
Edwan 1 Hatch 2	2 13E+01	1 81E+01	1 01E+01	8 10E+00	4 40E+01	4 57E+01	2 26E+01	2 91E+01	4 46E+01	5 08E+01
Hope Creek 1			6 91E-03	9 53E+00	9 36E+00	2 35E+01	1 18E+01	2 45E+01	1 25E+02	6 17E+01
Humboldt Bay 3	2 93E-02	1 08E+00	6 67E-02	6 96E-04	9 44E-04	1 14E-03	3 48E-03	2 29E-03	1 62E-03	8 17E-04
LaCrosse	1 25E+02	1 28E+02	5 75E+01	4 66E+01	4 60E+00	2 78E+00	7 74E-01	5 36E-01	1 83E-01	5 24E-02
LaSalle 1&2	1 10E+00	3 89E-01	1 37E-01	1 10E+00	1 76E+00	1 07E+00	3 74E-01	N/D	2 98E-03	N/D
Limerick 1&2	N/D	1 15E+00	2 08E+00	6 02E+00	N/D	2 70E+01	3 02E+01	1 37E+01	1 05E+01	2 57E+01
Millstone 1	8 56E+00	1 79E+01	5 33E+00	1 79E+01	3 78E+01	4 58E+01	2 02E+01	8 40E+00	7 34E+00	2 45E+01
Monticello	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	1 88E-05
Nine Mile Point 1	N/D	N/D	2 19E+00	N/D	N/D	N/D	1 41E+00	N/D	N/D	N/D
Nine Mile Point 2				4 63E-01	7 92E+00	8 10E+00	4 78E+00	7 78E+00	8 95E+00	2 37E+01
Oyster Creek 1	1 03E+01	N/D	1 07E+00	1 96E+00	1 62E+01	3 96E+00	N/D	6 03E-01	N/D	N/D
Peach Bottom 2&3	3 58E+01	5 04E+01	4 46E+01	4 64E+01	9 69E+00	2 00E+01	2 35E+01	1 48E+01	1 77E+01	7 21E+00
Perry 1			2 67E-03	3 49E+00	7 34E+00	6 98E+00	8 79E+00	1 06E+01	9 27E+00	9 35E+00
Pilgrim 1	1 47E+01	7 81E+00	1 00E+01	3 21E+00	5 73E-01	2 37E+00	3 68E+00	1 02E+01	1 46E-02	3 75E+00
Quad-Cities 1&2	5 42E+00	3 41E+00	6 43E+00	6 92E+00	7 28E+00	2 91E+01	2 61E+01	4 43E+00	1 25E+01	3 67E+01
River Bend 1			4 56E+00	6 92E+00	9 65E+00	1 60E+01	8 35E+01	3 06E+01	2 34E+01	3 02E+01
Shoreham 1			3 80E-03	6 04E-03	N/D	N/D	N/D	N/D	N/D	N/D
Susquehanna 1&2	1 12E+01	9 14E+00	1 54E+01	1 87E+01	1 45E+01	2 74E+01	5 80E+01	4 62E+01	7 70E+01	6 79E+01
Vermont Yankee 1	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	4 02E-05	N/D
WNP-2	5 40E-01	1 50E+00	3 29E+00	1 21E+00	1 38E+00	2 03E+00	7 54E-01	1 81E+00	1 06E+01	3 40E+01
Total	< 4 53E+02	< 3 44E+02	< 2 34E+02	2 71E+02	2 52E+02	3 21E+02	3 98E+02	3 47E+02	4 67E+02	5 34E+02
* Fort St. Vrain	1 24E+02	1 53E+01	1 27E+02	5 61E+01	1 61E+02	1 12E+02	3 22E+00	1 11E+01	1 92E-01	2 49E-01

* High temperature gas cooled reactor

** Included with Dresden 2-3 total

+ Included with Edwan 1 Hatch 2 total

N/D = Not Detectable

Table 4
Liquid Effluents Comparison By Year

Pressurized Water Reactors	Tributary (Curies)									
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Arkansas One 1	2 56E+01	4 60E+02	2 12E+02	2 45E+02	2 94E+02	1 66E+02	2 12E+02	4 42E+02	2 05E+02	1 09E+02
Arkansas One 2						5 27E+01	2 89E+02	2 44E+02	1 39E+02	2 35E+02
Beaver Valley 1&2			8 60E+00	1 08E+02	3 49E+02	9 59E+01	3 96E+01	1 40E+02	1 84E+02	4 80E+02
Bradwood 1										
Bradwood 2										
Byron 1&2										
Callaway 1										
Calvert Cliffs 1&2		2 63E+02	2 74E+02	5 75E+02	4 56E+02	5 14E+02	4 91E+02	1 00E+03	4 35E+02	7 56E+02
Catawba 1										
Catawba 2										
Comanche Peak 1										
Donald C Cook 1&2		5 64E+01	1 92E+02	2 86E+02	6 24E+02	1 22E+03	7 82E+02	9 15E+02	1 23E+03	8 85E+02
Crystal River 3				1 66E+02	1 54E+02	1 66E+02	1 95E+02	2 71E+02	1 82E+02	1 99E+02
Dave-Besse 1				9 01E+00	2 15E+02	2 45E+02	1 06E+02	1 57E+02	5 68E+01	1 14E+02
Diablo Canyon 1&2										
Joseph M. Farley 1					5 81E+01	9 40E+01	5 70E+02	1 65E+02	3 37E+02	4 13E+02
Joseph M. Farley 2								6 34E+02	3 59E+02	3 17E+02
Fort Calhoun 1	1 24E+02	1 11E+02	1 22E+02	1 57E+02	1 50E+02	2 58E+02	5 44E+01	2 42E+02	3 08E+02	1 53E+02
R. E. Ginna	1 95E+02	2 60E+02	2 42E+02	1 19E+02	2 42E+02	3 40E+02	1 60E+02	2 40E+02	3 08E+02	3 50E+02
Haddam Neck	2 24E+03	5 67E+03	4 85E+03	6 67E+03	9 94E+03	3 55E+03	3 29E+03	5 29E+03	4 05E+03	3 90E+03
Harris 1										
Indian Point 1&2	4 79E+01	7 94E+01	3 32E+02	3 71E+02	5 12E+02	3 75E+02	2 76E+02	2 41E+02	1 72E+02	3 43E+02
Indian Point 3			Shown With Other Units		2 56E+02	1 15E+02	4 27E+02	6 42E+02	1 94E+02	3 19E+01
Kewaunee	9 24E+01	2 77E+02	1 80E+02	2 95E+02	2 96E+02	3 48E+02	2 33E+02	2 51E+02	3 18E+02	2 92E+02
Mane Yankee	2 19E+02	1 77E+02	3 67E+02	1 53E+02	3 15E+02	2 02E+02	2 18E+02	2 16E+02	1 85E+02	2 87E+02
McGuire 1								6 25E+00	1 60E+02	1 48E+02
McGuire 2										1 49E+02
Millstone 2		7 60E+00	2 77E+02	2 11E+02	2 01E+02	2 54E+02	2 68E+02	3 71E+02	2 91E+02	1 21E+02
Millstone 3										
North Anna 1&2					2 82E+02	3 13E+02	4 03E+02	1 28E+03	5 71E+02	1 61E+03
Oconee 1,2 & 3	3 50E+02	3 55E+03	2 19E+03	1 92E+03	1 17E+03	8 94E+02	7 12E+02	5 07E+02	3 54E+02	1 25E+03
Palo Verde	8 10E+00	4 16E+01	9 63E+00	5 58E+01	1 01E+02	1 26E+02	7 47E+01	2 78E+02	1 73E+02	2 38E+02
Palo Verde 1										
Palo Verde 2										
Palo Verde 3										
Point Beach 1&2	8 33E+02	6 85E+02	6 94E+02	9 98E+02	1 29E+03	8 92E+02	7 51E+02	6 52E+02	5 03E+02	5 39E+02
Prune Island 1&2	1 42E+02	4 54E+01	1 00E+01	1 35E+03	5 51E+02	6 25E+02	5 43E+02	5 52E+02	6 00E+02	5 20E+02
Rancho Seco 1		1 32E+02	N/D	8 55E+02	N/D	N/D	1 47E+02	8 35E+01	6 46E+01	7 43E+01
H. B. Robinson 2	4 49E+02	6 24E+02	9 80E+02	6 88E+02	4 73E+02	4 29E+02	1 89E+02	1 86E+02	9 51E+01	2 40E+02
Salem 1			4 00E+02	2 98E+02	4 46E+02	7 28E+02	N/D	4 93E+02	7 23E+02	3 08E+02
Salem 2							N/R	8 42E+02	5 25E+02	2 23E+02
San Onofre 1	3 81E+03	4 00E+03	3 39E+03	1 79E+03	2 50E+03	2 32E+03	1 03E+03	2 97E+02	5 45E+02	1 57E+01
San Onofre 2 & 3									8 92E+00	2 38E+02
Seabrook 1										
Sequoyah 1&2							3 23E+01	7 65E+01	9 34E+02	7 35E+02
South Texas 1										
South Texas 2										
St. Lucie 1			1 33E+01	2 42E+02	1 28E+02	1 28E+02	2 72E+02	3 25E+02	3 21E+02	3 46E+02
St. Lucie 2										3 77E+01
Summer 1									3 19E+01	2 27E+02
Surry 1&2	2 45E+02	4 42E+02	7 82E+02	4 08E+02	7 47E+02	3 57E+02	3 85E+02	5 31E+02	9 10E+02	7 17E+02
Three Mile Island 1	1 30E+02	4 63E+02	1 69E+02	1 92E+02	1 55E+02	5 98E+01	3 28E+01	7 11E+00	3 91E+00	3 09E+00
Three Mile Island 2					3 83E+01	7 81E+01	6 10E+04	5 06E+02	7 20E+02	3 75E+04
TMI 2/Bpico							N/D	N/D	N/D	N/D
Troyan			3 80E+01	3 11E+02	1 58E+02	6 80E+01	1 24E+02	1 03E+02	2 00E+02	2 34E+02

N/R = Not Reported
N/D = Not Detectable

Table 6

Liquid Effluent Concentrations By Year

Tritium (Curies)										
Pressurized Water Reactors										
Facility	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Turkey Point 3&4	5.80E+02	7.97E+02	7.71E+02	9.24E+02	1.17E+03	9.40E+02	7.49E+02	1.85E+02	8.27E+02	7.12E+02
Turkey Point 3										
Turkey Point 4										
Vogtle 1&2										
Waterford 3										
Wolf Creek 1										
Yankee Rowe 1	3.14E+02	2.47E+02	1.56E+02	1.39E+02	1.96E+02	1.75E+02	5.84E+01	1.03E+02	1.88E+02	1.68E+02
Zion 1	2.74E+02	1.03E+03	7.47E+02	7.24E+02	7.25E+02	6.01E+02	7.45E+02	6.04E+02	6.78E+02	1.74E+03
Zion 2								2.66E+02	3.77E+02	2.55E+02
Total	1.01E+04	1.36E+04	1.70E+04	1.94E+04	1.82E+04	1.65E+04	1.37E+04	1.88E+04	1.75E+04	1.81E+04

Table 8

Liquid Effluents Compositions By Year

Pressurized Water Reactors	Trifluoromethane (CFC-113)									
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Arkansas One 1	3 05E+02	3 27E+02	2 12E+02	1 50E+02	2 50E+02	3 81E+02	2 67E+02	5 18E+02	5 06E+02	4 51E+02
Arkansas One 2	3 09E+02	2 41E+02	2 30E+02	3 52E+02	2 44E+02	4 40E+02	5 33E+02	9 40E+02	2 98E+02	3 08E+02
Beaver Valley 1&2	4 12E+02	1 50E+02	2 08E+02	5 72E+02	4 09E+02	6 21E+02	4 91E+02	4 85E+02	4 65E+02	5 53E+02
Braidwood 1				4 12E+01	2 74E+02	5 58E+02	6 50E+02	3 43E+02	9 58E+02	8 05E+02
Braidwood 2					2 44E+02	5 58E+02	6 50E+02	3 43E+02	9 58E+02	8 05E+02
Byron 1&2		2 51E+02	6 70E+01	4 10E+02	1 01E+03	1 29E+03	9 88E+02	1 43E+03	1 58E+03	2 06E+03
Calhoun 1	2 90E+01	5 88E+02	4 35E+02	4 48E+02	8 93E+02	6 09E+02	1 02E+03	1 23E+03	5 92E+02	1 41E+03
Calvert Cliffs 1&2	7 87E+02	4 83E+02	7 35E+02	7 35E+02	6 24E+02	2 36E+02	7 29E+01	1 02E+03	1 77E+03	6 36E+02
Catawba 1		1 75E+02	1 18E+02	3 64E+02	3 53E+02	4 48E+02	2 97E+02	3 23E+02	3 86E+02	4 13E+02
Catawba 2			1 18E+02	3 64E+02	3 53E+02	4 48E+02	2 97E+02	3 23E+02	3 86E+02	4 13E+02
Comanche Peak 1							1 87E+02	4 80E+02	6 11E+02	5 04E+02
Donald C Cook 1&2	1 37E+03	1 14E+03	8 95E+02	1 97E+03	1 10E+03	8 74E+02	1 56E+03	1 55E+03	4 33E+02	6 01E+02
Crystal River 3	4 20E+02	1 76E+02	1 73E+02	3 56E+02	5 11E+02	3 44E+02	5 10E+02	4 49E+02	3 64E+02	5 89E+02
Davis-Besse 1	1 22E+02	6 74E+01	2 09E+01	2 46E+02	3 50E+01	2 38E+02	1 27E+02	3 36E+02	3 80E+02	1 81E+02
DuBois Canyon 1&2	1 07E+00	4 28E+02	6 98E+02	6 91E+02	4 29E+02	9 35E+02	9 68E+02	1 05E+03	1 22E+03	1 03E+03
Joseph M Farley 1	4 23E+02	6 03E+02	7 14E+02	6 37E+02	5 16E+02	6 99E+02	7 35E+02	4 71E+02	8 18E+02	9 35E+02
Joseph M Farley 2	3 56E+02	5 02E+02	6 22E+02	5 05E+02	7 53E+02	6 09E+02	6 72E+02	3 53E+02	7 90E+02	8 85E+02
Port Calhoun 1	2 35E+02	1 67E+02	1 84E+02	2 28E+02	2 32E+02	2 28E+02	1 74E+02	1 77E+02	1 06E+02	2 39E+02
R. E. Ginna	4 58E+02	5 01E+02	3 57E+02	5 64E+02	3 47E+02	5 92E+02	3 21E+02	3 76E+02	2 13E+02	1 77E+02
Haddam Neck	3 66E+03	5 76E+03	2 55E+03	3 17E+03	1 18E+03	4 81E+03	9 89E+02	4 63E+03	8 63E+02	4 00E+03
Harris 1				2 48E+02	4 01E+02	4 58E+02	7 36E+03	2 92E+02	9 02E+02	5 55E+02
Indian Point 1&2	2 22E+02	3 51E+02	3 36E+02	5 63E+02	4 39E+02	5 60E+02	6 44E+02	5 45E+02	6 95E+02	2 89E+02
Indian Point 3	5 87E+02	3 40E+02	5 67E+02	3 40E+02	5 73E+02	3 51E+02	3 33E+02	5 38E+02	4 50E+02	2 95E+02
Kewaunee	4 40E+02	3 79E+02	2 94E+02	3 51E+02	3 32E+02	3 41E+02	3 79E+02	4 34E+02	2 90E+02	2 36E+02
Mame Yankee	1 72E+02	1 84E+02	3 50E+02	1 18E+02	2 91E+02	4 22E+02	2 43E+02	3 88E+02	2 17E+02	2 73E+02
McGuire 1	3 23E+02	4 02E+02	4 58E+02	4 92E+02	5 29E+02	4 23E+02	4 58E+02	4 38E+02	4 33E+02	3 88E+02
McGuire 2	3 23E+02	4 02E+02	4 58E+02	4 92E+02	5 29E+02	4 23E+02	4 58E+02	4 38E+02	4 33E+02	3 88E+02
Millstone 2	3 97E+02	1 66E+02	2 80E+02	2 86E+02	2 59E+02	8 66E+02	5 28E+02	2 66E+02	1 06E+02	3 29E+02
Millstone 3			5 41E+02	5 90E+02	5 47E+02	6 97E+02	7 74E+02	3 04E+02	5 96E+02	5 16E+02
North Anna 1&2	6 20E+02	1 48E+03	1 86E+03	8 36E+02	1 94E+03	1 40E+03	1 67E+03	1 16E+03	9 29E+02	6 93E+02
Oconee 1,2&3	1 28E+03	1 24E+03	1 84E+03	9 49E+02	7 10E+02	1 02E+03	9 92E+02	1 13E+03	9 98E+02	1 10E+03
Pahsades	6 95E+01	4 29E+02	6 33E+01	1 19E+02	2 83E+02	8 08E+01	1 49E+02	5 52E+01	6 09E+01	2 10E+02
Palo Verde 1		N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Palo Verde 2			N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Palo Verde 3				N/D	N/D	N/D	N/D	N/D	N/D	N/D
Point Beach 1&2	2 10E+03	8 05E+02	8 11E+02	7 08E+02	3 57E+02	5 59E+02	8 72E+02	7 87E+02	4 16E+02	4 64E+02
Prairie Island 1&2	6 41E+02	6 96E+02	6 70E+02	4 49E+02	4 05E+02	4 64E+02	3 98E+02	5 58E+02	4 72E+02	4 80E+02
Rancho Seco 1	2 97E+02	9 00E+01	8 50E+01	1 83E+01	1 01E+02	7 29E+01	1 37E+01	9 84E+01	2 42E+01	7 44E+00
R. B. Robinson 2	1 34E+01	3 09E+02	3 42E+02	2 74E+02	5 36E+02	1 64E+02	3 53E+02	1 86E+02	3 94E+02	8 45E+02
Salmon 1	3 80E+02	8 23E+02	4 10E+02	3 79E+02	6 25E+02	6 09E+02	3 53E+02	6 06E+02	2 45E+02	3 93E+02
Salmon 2	3 08E+02	5 77E+02	4 38E+02	6 61E+02	3 68E+02	5 11E+02	3 03E+02	4 42E+02	2 25E+02	5 08E+02
San Onofre 1	3 39E+01	2 38E+03	4 53E+02	2 27E+03	1 53E+03	9 82E+02	1 42E+03	1 25E+03	3 00E+03	4 45E+02
San Onofre 2-3	4 58E+02	4 75E+02	7 41E+02	8 30E+02	6 43E+02	1 30E+03	9 27E+02	1 08E+03	9 89E+02	9 78E+02
Seabrook 1						1 83E+03	1 13E+02	3 86E+02	5 01E+02	5 63E+02
Sequoyah 1&2	1 82E+03	6 33E+02	2 46E+02	1 19E+02	2 01E+02	1 15E+03	8 53E+02	1 65E+03	1 44E+03	5 60E+02
South Texas 1					1 99E+02	3 17E+02	3 45E+02	6 21E+02	6 19E+02	1 13E+02
South Texas 2						2 72E+02	4 70E+02	4 69E+02	7 62E+02	1 13E+02
St. Lucie 1	2 21E+02	2 88E+02	2 78E+02	3 38E+02	2 75E+02	4 05E+02	2 84E+02	4 06E+02	4 00E+02	2 58E+02
St. Lucie 2	2 21E+02	3 84E+02	2 78E+02	3 38E+02	2 75E+02	4 05E+02	2 84E+02	4 06E+02	4 00E+02	2 51E+02
Summer 1	2 25E+03	3 11E+02	3 75E+02	7 36E+02	7 55E+02	6 85E+02	4 22E+02	8 13E+02	6 08E+02	4 75E+02
Surry 1&2	8 12E+02	7 50E+02	8 73E+02	8 15E+02	4 94E+02	4 29E+02	1 11E+03	9 13E+02	9 74E+02	1 32E+03
Three Mile Island 1	1 72E+00	9 06E+00	1 69E+02	1 97E+02	3 02E+02	3 73E+02	2 10E+02	3 39E+02	5 61E+02	3 76E+02
Three Mile Island 2	1 56E+04	2 22E+03	1 60E+03	1 49E+03	5 49E+03	9 76E+04	8 80E+04	6 19E+03	2 53E+03	1 59E+03
TMI 2/Eprocor	N/D	"	"	"	"	"	"	"	"	"
Troyan	1 87E+02	2 65E+02	2 43E+02	1 75E+02	3 75E+02	3 18E+02	2 19E+02	1 69E+02	1 96E+02	1 32E+03

" Included with Three Mile Island 2 total

N/D = Not Detectable

Table G

Liquid Effluents Comparison By Year

Tritium (Curies)										
Pressurized Water Reactors										
Facility	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Turkey Point 3&4	8.91E+02									
Turkey Point 3		4.33E+02	3.84E+02	2.89E+02	2.99E+02	2.29E+02	3.22E+02	1.02E+02	2.21E+02	2.57E+02
Turkey Point 4		4.33E+02	3.84E+02	2.89E+02	2.99E+02	2.29E+02	3.22E+02	1.02E+02	2.21E+02	2.57E+02
Vogtle 1&2				3.21E+02	3.90E+02	9.18E+02	1.17E+03	1.09E+03	1.48E+03	7.81E+02
Waukegan 3		2.54E+01	4.81E+02	5.25E+02	5.03E+02	3.58E+02	7.12E+02	3.44E+02	4.95E+02	4.90E+02
Wolf Creek 1		1.83E+02	3.77E+02	3.17E+02	4.06E+02	5.88E+02	5.90E+02	7.17E+02	4.51E+02	9.99E+02
Yankee Rowe 1	1.84E+02	2.28E+02	1.76E+02	2.19E+02	1.96E+02	1.68E+02	1.92E+02	2.03E+02	8.31E+01	5.01E+01
Zion 1	1.74E+02	1.35E+02	2.87E+02	2.16E+02	4.11E+02	1.81E+02	2.90E+02	"	"	"
Zion 2	5.11E+02	5.21E+02	4.46E+02	4.40E+02	5.58E+02	8.66E+02	3.91E+02	9.30E+02	5.22E+02	1.24E+03
Total	2.27E+04	2.78E+04	2.32E+04	2.81E+04	2.71E+04	3.40E+04	3.18E+04	3.74E+04	3.55E+04	3.58E+04

" Included with Zion 2 total

Table 7

Liquid Effluents Comparison By Year

Mixed Plutonium and Activation Products (Curies)

Boiling Water Reactors

Facility	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Big Rock Point 1	1.10E+00	2.02E+00	7.70E-01	3.92E-01	2.74E-01	9.03E-01	7.82E-01	3.91E-01	2.60E-01	7.82E-02
Browns Ferry 1,2, & 3	8.00E-01	2.70E+00	3.95E+00	1.19E+00	1.32E+01	1.02E+01	9.36E+00	2.24E+00	5.38E+01	1.28E+01
Brunswick 1&2		1.88E+00	3.28E+00	6.22E+00	3.48E+00	5.10E+00	1.26E+00	2.20E+00	2.32E+00	1.08E+00
Clinton 1										
Cooper	1.40E+00	1.74E+00	7.00E-02	7.50E-01	3.05E+00	< 2.48E+00	< 1.10E+01	< 3.61E+00	< 5.44E+00	< 1.23E+01
Dresden 1	6.80E+00	8.40E-01	3.60E-01	6.00E-01	3.25E-01	2.65E-02	N/D	N/D	N/D	N/D
Dresden 2-3	3.31E+01	8.10E-01	1.21E+00	4.40E-01	3.99E-01	2.65E-01	7.16E-01	6.12E-02	1.91E-02	1.24E-02
Duane Arnold		< 1.00E-02	< 1.00E-02	2.32E-03	2.73E-01	5.10E-04	N/D	N/D	4.16E-06	N/D
Form 2										
James A. Fitzpatrick		5.32E+00	8.01E+00	8.85E-01	1.58E+00	6.48E-01	1.51E+00	2.51E+00	6.50E-01	7.71E-01
Grand Gulf 1										4.42E-03
Edwin I. Hatch 1		6.00E-03	4.00E-02	2.50E+01	4.03E-02	4.82E-02	6.83E-02	3.73E-01	7.00E-01	9.09E-01
Edwin I. Hatch 2							4.57E-02	1.63E-01	1.83E-01	3.28E-01
Hope Creek 1										
Humboldt Bay 3	4.40E+00	3.79E+00	9.90E-01	9.17E-01	1.95E-01	9.55E-02	1.39E-01	1.55E-01	3.46E-01	9.89E-02
LaCrosse	1.31E+01	1.42E+01	< 5.78E+00	2.13E+01	8.86E+00	1.67E+00	2.13E+00	2.36E-01	5.83E+00	3.75E+00
LaSalle 1&2									9.82E-01	8.60E+00
Limerick 1&2										
Millstone 1	1.98E+02	1.98E+02	9.65E+00	5.27E-01	1.75E-01	2.10E-01	7.24E-01	3.94E-01	1.15E+00	8.08E-01
Monticello	N/D	N/D	N/D	N/D	N/D	N/D	N/D	3.11E-06	5.80E-07	N/D
Nine Mile Point 1	2.56E-01	2.10E+01	2.14E+00	3.03E-01	N/D	1.89E+00	N/D	5.35E+00	2.51E-03	1.11E-02
Nine Mile Point 2										
Oyster Creek 1	7.00E-01	4.10E-01	2.20E-01	9.81E-02	1.53E-02	6.59E-03	5.06E-01	2.48E-01	8.10E-03	3.63E-03
Peach Bottom 2&3	9.00E-01	9.30E-01	3.38E+00	2.23E+00	5.11E+00	1.95E+01	1.90E+00	1.97E+00	9.33E+00	2.24E+00
Perry 1										
Piggin 1	4.20E+00	8.01E+00	2.33E+00	3.41E+00	1.77E+00	5.12E-01	2.73E+00	1.94E+00	8.72E-01	9.35E-01
Quad-Cities 1&2	3.88E+01	1.71E+01	8.99E+00	1.34E+00	2.24E+00	1.31E+00	1.31E+01	3.27E+00	4.03E-01	1.37E-01
River Bend 1										
Shoreham 1										
Susquehanna 1&2									< 1.99E-01	2.49E+00
Vermont Yankee 1	N/D	< 1.00E-02	< 1.00E-02	1.55E-01	N/D	2.40E-04	N/D	1.02E-02	N/D	N/D
WNP-2										
Total	3.29E+02	< 2.80E+02	< 4.72E+01	6.58E+01	4.10E+01	< 4.49E+01	< 4.80E+01	< 2.51E+01	< 8.24E+01	< 4.74E+01
* Fort St. Vrain						1.88E-04	6.37E-05	3.64E-04	4.34E-04	1.73E-02

* High temperature gas cooled reactor

N/D = Not Detectable

Table 7

Liquid Effluents Comparison By Year

Mixed Plutonium and Activation Products (Curies)

Boiling Water Reactors

Facility	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Big Rock Point 1	1.48E-01	1.53E-01	7.09E-02	2.73E-01	2.18E-01	2.32E-01	3.64E-02	1.32E-01	1.50E-01	9.71E-02
Browns Ferry 1, 2 & 3	6.30E+00	1.34E+00	5.39E-01	3.25E-01	2.42E-01	1.71E-01	3.02E-01	8.39E-01	2.41E+00	4.80E+00
Brunswick 1&2	5.65E-01	1.15E-01	1.26E-01	7.15E-01	8.32E-01	1.56E+00	4.57E-01	4.36E-01	4.94E-02	1.04E-01
Clinton 1				1.54E-02	1.10E-01	1.74E-02	2.53E-02	3.28E-02	1.82E-02	N/D
Cooper	< 6.30E+00	< 1.30E+01	< 7.40E+00	2.25E+00	2.33E+00	2.18E+00	2.04E+00	2.29E+00	3.97E+00	2.31E+00
Dresden 1	N/D	N/D	N/D	N/D	+	+	+	+	+	+
Dresden 2-3	1.15E-01	2.03E+00	2.14E-01	3.78E-01	1.16E-01	6.53E-01	7.12E-01	7.63E-01	2.21E-02	1.62E-01
Duane Arnold	1.90E-09	8.24E-04	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Form 2			3.67E-03	2.10E-02	7.41E-02	1.68E-01	2.18E-01	2.15E-01	1.52E-04	1.48E-03
James A. Fitzpatrick	9.79E-02	1.80E-01	1.82E-02	7.84E-02	4.86E-02	5.48E-02	2.74E-02	3.08E-02	1.15E-02	1.89E-03
Grand Gulf 1	3.16E-02	2.13E-01	3.01E-01	3.64E-01	3.96E-01	3.20E-01	6.45E-01	8.76E-01	1.20E-01	1.66E-01
Edwin 1 Hatch 1	1.05E+00	4.80E-01	4.88E-01	6.85E-01	=	=	=	=	=	=
Edwin 1 Hatch 2	2.67E-01	2.63E-01	3.02E-01	1.30E-01	9.83E-01	2.48E-01	3.01E-01	7.23E-01	7.54E-01	5.55E-01
Hope Creek 1			7.55E-01	1.62E+00	7.24E-01	1.05E+00	1.49E+00	7.88E-01	3.06E-01	3.61E-01
Humboldt Bay 3	1.64E-01	1.25E-01	4.69E-02	1.19E-02	7.60E-03	8.42E-03	5.77E-03	6.88E-03	9.81E-03	9.68E-03
LaCrosse	3.26E+00	1.83E+00	5.00E+00	1.18E+00	4.47E-01	1.69E-01	6.86E-02	1.59E-01	5.23E-02	3.82E-02
LaSalle 1&2	8.48E-02	3.84E+00	1.78E-02	8.69E-01	1.10E+01	4.01E-01	2.46E-02	N/D	2.84E-04	N/D
Limerick 1&2	6.45E-04	2.18E-02	5.74E-03	7.45E-02	N/D	1.12E-01	3.43E-01	3.34E-02	2.95E-02	1.45E-01
Millstone 1	3.78E-02	4.68E-01	7.73E-01	1.14E+00	1.06E+00	9.08E-01	1.39E-01	1.36E+00	4.63E-01	1.28E-01
Monroville	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Nine Mile Point 1	N/D	N/D	< 6.70E-04	N/D	N/D	N/D	1.95E-03	N/D	N/D	N/D
Nine Mile Point 2				1.30E+00	3.08E+00	2.20E-01	6.34E-02	1.68E-01	2.60E-01	1.17E-01
Oyster Creek 1	6.84E-03	N/D	N/D	6.63E-03	2.65E-02	5.01E-02	6.70E-05	1.61E-04	N/D	N/D
Peach Bottom 2&3	6.15E+00	2.18E+00	4.59E-01	3.31E-01	2.02E-01	1.13E-01	1.36E-02	3.73E-02	2.62E-02	5.66E-02
Perry 1			3.67E-03	1.47E-02	2.50E-01	1.16E+00	6.10E-01	1.18E-01	5.98E-02	1.55E-01
Pilgrim 1	4.75E+00	1.06E+00	< 2.11E-01	< 1.47E+00	3.56E-02	2.48E-02	1.56E-02	3.40E-02	3.36E-03	2.28E-02
Quad-Cities 1&2	7.23E-02	1.46E+00	2.36E-01	7.10E-02	5.60E-02	4.84E-01	1.13E-01	7.33E-01	3.92E-02	6.14E-02
River Bend 1			1.06E-01	7.96E-02	5.58E-01	1.11E+00	7.37E-01	3.62E-01	1.66E+00	9.73E-01
Shoreham 1			7.17E-03	3.41E-03	1.98E-05	1.78E-05	N/D	1.74E-04	6.03E-04	2.59E-05
Susquehanna 1&2	1.45E-01	6.35E-01	7.92E-01	3.12E-01	9.48E-02	1.02E-01	1.34E-01	6.21E-02	4.84E-02	4.92E-02
Vermont Yankee 1	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	2.66E-05	N/D
WNP-2	2.74E-02	1.09E-02	2.32E-02	1.21E-02	6.10E-03	5.04E-02	1.53E-02	3.45E-02	9.49E-02	2.06E-01
Total	< 2.96E+01	< 2.94E+01	< 1.79E+01	< 1.37E+01	2.29E+01	1.16E+01	8.54E+00	1.02E+01	1.06E+01	1.05E+01
* Fort St. Vrain	1.27E-03	1.84E-03	2.30E-05	1.18E-08	1.69E-04	1.22E-05	8.22E-05	1.21E-04	4.35E-05	1.73E-02

* High temperature gas cooled reactor

** Included with Edwin 1 Hatch 2 total

+ Included with Dresden 2-3 total

N/D = Not Detectable

Table 6

Liquid Effluents Comparison By Year

Mixed Fission and Activation Products (Curies)

Pressurized Water Reactors

Facility	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Arkansas One 1	6.50E+00	3.11E+00	1.31E+01	4.50E+00	6.05E+00	3.09E+00	3.42E+00	7.50E+00	5.90E+00	4.30E+00
Arkansas One 2						1.30E+00	4.13E+00	2.95E+00	5.90E+00	3.70E+00
Beaver Valley 1&2			1.70E-01	6.52E-01	2.63E-01	1.21E-01	1.04E-01	1.44E-01	1.47E-01	6.06E-02
Bridgwood 1										
Bridgwood 2										
Byron 1&2										
Calhoun 1										
Calvert Cliffs 1&2		1.44E+00	1.18E+00	3.48E+00	6.13E+00	7.80E+00	4.53E+00	2.68E+00	5.26E+00	2.24E+00
Catawba 1										
Catawba 2										
Comanche Peak 1										
Donald C. Cook 1&2		2.60E-01	1.87E+00	1.52E+00	1.48E+00	2.58E+00	1.37E+00	1.86E+00	1.90E+00	6.83E-01
Crystal River 3				1.54E-02	2.96E-02	4.16E-01	1.46E-01	1.29E-01	1.07E-01	1.50E-01
Davis-Besse 1				2.60E-02	9.01E-02	4.28E-02	2.07E-01	7.92E-01	2.19E-01	3.39E-01
Diablo Canyon 1&2										
Joseph M. Farley 1					1.03E-01	5.86E-02	6.18E-02	1.31E-01	5.94E-02	5.75E-02
Joseph M. Farley 2								2.69E-02	2.80E-02	2.04E-02
Port Calhoun 1	2.30E+00	3.60E-01	5.50E-01	3.63E-01	5.95E-01	2.45E-01	5.33E-01	1.75E-01	2.03E-01	1.44E-01
R. B. Ginna	1.00E-01	4.20E-01	6.90E-01	6.47E-02	6.07E-02	6.63E-02	1.96E-02	3.65E-02	6.17E-01	1.93E-01
Hackensack Neck	2.20E+00	1.20E+00	1.30E-01	1.71E+00	9.80E-01	8.67E-01	2.75E-01	7.12E-01	6.93E-02	4.80E-01
Harris 1										
Indian Point 1&2	4.20E+00	4.93E+00	4.98E+00	3.02E+00	1.99E+00	1.94E+00	1.26E+00	5.67E+00	2.41E+00	4.02E+00
Indian Point 3			Shown With Other Unit		1.03E+00	4.02E-01	2.90E+00	2.62E+00	5.46E-01	5.44E-01
Kewaunee	4.00E-01	7.20E-01	2.83E+00	1.28E+00	6.99E-01	8.94E-01	6.17E-01	6.15E-01	1.32E+00	6.43E-01
Maine Yankee	4.00E+00	3.21E+00	2.84E+00	4.42E-01	1.04E-01	4.63E-01	2.97E-01	4.36E-01	7.03E-01	1.99E-01
McGuire 1								3.94E-01	1.75E+00	1.87E+00
McGuire 2										1.87E+00
Millstone 2		2.00E-02	2.80E-01	1.56E+00	2.79E+00	4.87E+00	2.81E+00	4.18E+00	1.39E+01	7.81E+00
Millstone 3										
North Anna 1&2					2.88E-01	5.89E-01	1.05E+00	6.76E-01	1.32E+00	5.89E+00
Oconee 1,2, & 3	1.90E+00	5.05E+00	7.93E+00	3.62E+01	6.51E+00	9.24E-01	1.54E+00	1.75E+00	1.04E+00	1.43E+00
Palisades	5.90E+00	3.45E+00	4.40E-01	9.29E-02	9.85E-02	1.28E-01	8.73E-03	3.31E-02	1.27E-01	7.48E-02
Palo Verde 1										
Palo Verde 2										
Palo Verde 3										
Point Beach 1&2	2.00E-01	2.34E+00	3.24E+00	1.50E+00	6.96E-01	7.25E-01	6.29E-01	1.01E+00	2.95E+00	1.27E+00
Prairie Island 1&2	< 1.00E-01	4.50E-01	1.00E-01	1.33E-03	4.94E-03	9.00E-03	1.32E-03	9.13E-03	2.23E-03	3.16E-02
Rancho Seco 1		< 1.00E-03	N/D	N/D	N/D	N/D	3.78E-03	6.92E-01	2.16E-01	2.81E-01
H. B. Robinson 2	2.50E+00	4.50E-01	3.80E-01	3.29E-01	1.78E-01	2.99E-01	3.56E-01	1.84E+00	1.20E+00	8.23E-01
Salem 1			< 1.00E-02	2.86E+00	4.03E+00	3.98E+00	2.65E+00	2.80E+00	3.22E+00	2.97E+00
Salem 2							3.89E-01	1.51E+00	3.21E+00	2.85E+00
San Onofre 1	5.00E+00	1.22E+00	7.43E+00	9.84E+00	1.18E+01	1.10E+01	1.12E+01	3.64E+00	2.15E+00	1.22E+00
San Onofre 2-3									6.32E-01	2.79E+00
Seabrook 1										
Sequoyah 1&2							N/R	2.76E+00	9.82E+00	4.61E+00
South Texas 1										
South Texas 2										
St. Lucie 1			8.00E-02	5.80E+00	2.82E+00	2.67E+00	2.36E+00	2.46E+00	3.07E+00	2.99E+00
St. Lucie 2										4.37E-01
Summer 1									1.24E-04	1.47E+00
Surry 1&2	3.80E+00	9.27E+00	3.37E+01	6.55E+01	2.41E+00	2.53E+00	3.85E+00	6.11E+00	6.68E+00	1.45E+01
Three Mile Island 1	1.30E+00	7.00E-02	1.00E-01	1.94E-01	6.14E-01	4.91E-01	1.83E-01	6.69E-02	5.29E-02	8.12E-02
Three Mile Island 2					3.92E-01	3.31E-01	1.45E-05	2.22E-05	4.25E-05	9.03E-05
TMI 2/Epicur							N/D	N/D	N/D	N/D
Trujillo			2.77E+00	4.19E+00	7.07E-01	5.55E-01	7.87E-01	9.94E-01	5.56E-01	3.10E-01

N/R = Not Reported

N/D = Not Detectable

Table 8

Liquid Effluents Comparison By Year

Mixed Fission and Activation Products (Curies)

Pressurized Water Reactors

Facility	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Turkey Point 3&4	1.60E+00	3.07E+00	< 8.65E+00	8.90E+00	3.32E+00	4.10E-01	6.78E-01	3.03E-01	1.68E+00	1.13E+00
Turkey Point 3										
Turkey Point 4										
Vogtle 1&2										
Waterford 3										
Wolf Creek 1										
Yankee Rowe 1	< 1.00E-01	2.00E-02	< 1.00E-02	1.80E-02	8.14E-03	1.17E-03	1.75E-02	1.43E-02	9.53E-03	1.30E-02
Zion 1	< 1.00E-01	< 1.00E-02	1.60E-01	9.50E-01	9.51E-01	7.00E-01	4.74E-01	1.61E+00	7.22E-01	1.50E+00
Zion 2								1.05E+00	1.53E+00	1.15E+00
Total	< 4.22E+01	< 4.11E+01	< 9.36E+01	1.55E+02	5.72E+01	5.05E+01	4.89E+01	6.05E+01	8.17E+01	7.72E+01

Table 8

Liquid Effluents Comparison By Year

Mixed Plutonium and Activation Products (Curies)

Pressurized Water Reactors

Facility	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Arkansas One 1	4.10E+00	3.53E+00	5.09E+00	2.45E+00	3.73E+00	2.04E+00	2.36E+00	1.12E+00	3.59E+00	1.75E+00
Arkansas One 2	2.48E+00	4.36E+00	3.43E+00	1.85E+00	4.46E+00	2.65E+00	2.82E+01	2.73E+00	1.85E+00	4.77E-01
Beaver Valley 1&2	2.03E-01	1.13E-01	1.19E-01	6.99E-01	1.02E-01	5.45E-01	2.55E+00	3.14E-01	3.41E-01	3.96E-01
Bradwood 1				5.00E-02	8.57E+00	2.50E+00	2.13E+00	1.01E+01	5.23E-01	4.77E-01
Bradwood 2					3.04E+00	2.52E+00	2.13E+00	1.01E+01	5.23E-01	4.77E-01
Byron 1&2		1.68E+01	4.05E+00	2.48E+00	1.40E+00	6.35E-01	1.18E+00	6.70E-01	4.10E+00	1.25E+00
Callaway 1	1.07E-03	4.97E-03	3.83E-02	4.92E-01	7.74E-02	1.01E-02	3.85E-02	1.59E-02	4.54E-03	4.01E-02
Calvert Cliffs 1&2	1.64E+00	2.38E+00	1.79E+00	5.19E+00	2.64E+00	2.07E+00	1.42E+00	1.59E+00	1.44E+00	1.55E+00
Catawba 1		1.26E+00	3.82E-01	6.53E-01	5.42E-01	3.42E-01	9.78E-01	9.91E-01	4.65E-01	4.47E-01
Catawba 2			3.82E-01	6.53E-01	5.42E-01	3.42E-01	9.78E-01	9.91E-01	4.65E-01	4.47E-01
Cocumchee Peak 1							1.19E-02	1.57E-01	3.99E-01	4.18E-01
Donald C. Cook 1&2	1.19E+00	2.26E+00	3.34E-01	2.00E+00	4.44E-01	6.08E-01	1.61E+00	1.03E+00	1.12E+00	5.37E-01
Crystal River 3	2.34E-01	1.51E+00	8.12E-01	9.55E-01	2.31E-01	2.36E-01	6.19E-01	1.80E-01	1.63E+00	5.30E-01
Davis-Besse 1	1.89E-01	1.85E-01	6.15E-02	6.51E-02	1.68E-01	1.84E-01	1.41E-01	1.84E-01	1.10E-01	5.21E-02
Dixie Canyon 1&2	1.16E-02	3.20E+00	1.11E-01	2.88E+00	2.00E+00	1.61E+00	2.80E+00	8.47E-01	7.44E-01	9.85E-01
Joseph M. Farley 1	8.34E-02	6.72E-02	1.02E-01	5.09E-02	7.97E-02	7.31E-02	7.47E-02	2.14E-01	1.77E-01	7.60E-02
Joseph M. Farley 2	6.63E-02	3.77E-02	8.26E-02	4.63E-02	8.53E-02	7.34E-02	8.29E-02	1.90E-01	1.77E-01	1.12E-01
Fort Calhoun 1	2.91E+00	2.88E-01	8.37E-02	2.03E-01	3.08E-01	3.62E-01	8.05E-01	2.08E+00	5.90E-01	5.19E-01
R. E. Ginna	1.69E-01	5.22E-01	6.47E-02	5.88E-02	3.43E-02	8.12E-03	1.50E-01	1.52E-01	3.42E-01	1.37E-01
Haddam Neck	2.63E-01	8.44E-02	3.10E-01	4.26E-01	6.87E-01	3.90E-01	2.69E+00	7.43E-01	1.73E-01	8.36E-01
Harris 1				9.08E-01	8.04E-02	2.42E-01	7.31E-01	6.62E-01	3.14E-01	7.79E-02
Indian Point 1&2	2.67E+00	1.85E+00	3.61E+00	6.02E+00	2.84E+00	6.38E-01	1.08E+00	1.30E+00	1.53E+00	7.24E-01
Indian Point 3	1.26E+00	4.18E-01	1.95E-01	3.47E-01	3.22E-01	6.92E-01	3.09E-01	2.86E-01	2.13E-01	1.07E-01
Kewanee	1.01E+00	1.95E+00	5.83E-01	1.29E+00	5.01E-01	1.22E+00	2.06E-01	2.35E-01	6.42E-02	1.20E-01
Maine Yankee	8.62E-02	3.11E-02	2.99E-01	8.81E-01	3.49E-01	1.85E-01	1.87E-01	4.13E-01	2.51E-01	1.82E-01
McGuire 1	1.51E+00	6.21E-01	7.73E-01	1.57E+00	2.57E+00	1.54E+00	2.00E+00	1.04E+00	3.27E-01	2.85E-01
McGuire 2	1.51E+00	6.21E-01	7.73E-01	1.57E+00	2.57E+00	1.54E+00	2.00E+00	1.04E+00	3.27E-01	2.85E-01
Millstone 1	3.55E+00	4.60E+00	4.49E+00	4.07E+00	8.89E+00	1.06E+01	8.76E+00	2.08E+00	3.14E+00	1.16E+00
Millstone 3			3.01E+00	5.40E+00	3.15E+00	5.94E+00	2.47E+00	2.99E+00	2.42E+00	2.24E+00
North Anna 1&2	4.51E+00	5.07E+00	9.41E-01	1.33E+00	4.32E-01	1.16E+00	8.75E-01	3.20E-01	4.99E-01	4.83E-01
Oconee 1,2 & 3	1.58E+00	4.16E+00	3.02E+00	2.90E+00	3.10E+00	3.82E+00	3.11E+00	1.40E+00	2.58E+00	4.70E-01
Paltadia	3.68E-02	5.33E-02	1.40E-01	9.23E-02	3.43E-02	3.75E-03	7.75E-03	1.14E-02	3.88E-03	1.40E-02
Palo Verde 1		N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Palo Verde 2			N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Palo Verde 3				N/D	N/D	N/D	N/D	N/D	N/D	N/D
Point Beach 1&2	1.22E+01	1.90E+00	1.60E+01	7.95E-01	9.58E-02	5.58E-02	1.16E-02	5.89E-02	4.29E-01	2.32E-01
Prarie Island 1&2	1.91E-02	2.75E-02	6.01E-01	6.04E-02	2.55E-01	1.73E-01	1.30E-01	1.65E-01	6.68E-01	1.95E-01
Rancho Seco 1	8.33E-01	7.39E-03	1.45E-03	6.78E-04	5.79E-03	2.15E-03	2.08E-04	2.04E-04	4.83E-04	3.92E-04
H. B. Robinson 2	3.90E-01	9.41E-02	2.61E-01	7.36E-01	9.64E-01	2.82E-01	3.60E-01	2.36E-01	2.20E-01	5.47E-02
Salem 1	3.31E+00	2.88E+00	4.35E+00	3.33E+00	3.21E+00	3.11E+00	3.00E+00	3.35E+00	3.27E+00	3.21E+00
Salem 2	2.75E+00	2.80E+00	6.11E+00	4.07E+00	3.23E+00	3.56E+00	3.14E+00	2.31E+00	3.63E+00	3.85E+00
San Onofre 1	2.74E+00	7.73E+00	6.51E-01	8.42E-01	7.11E-01	8.87E-01	4.03E-01	4.23E-01	3.79E-01	1.14E+00
San Onofre 2-3	1.30E+01	1.12E+01	8.20E-01	5.37E-01	1.16E+00	9.19E-01	2.02E-01	6.94E-02	1.03E-01	2.94E-01
Seabrook 1						1.09E-04	2.21E-03	1.22E-01	1.19E-01	9.18E-02
Sequoyah 1&2	3.23E+00	1.45E+00	1.65E-01	4.66E-01	4.48E-01	3.54E-01	1.22E+00	1.48E+00	1.45E+00	1.62E+00
South Texas 1					2.24E-01	3.02E+00	7.09E+00	5.08E+00	2.12E+00	5.73E-01
South Texas 2						1.17E-02	5.72E+00	3.61E+00	1.74E+00	2.94E-01
St. Lucie 1	1.93E+00	2.72E+00	2.53E+00	5.95E-01	2.64E-01	2.56E-01	8.27E-01	3.68E-01	5.12E-01	7.55E-01
St. Lucie 2	1.93E+00	3.75E+00	2.43E+00	5.42E-01	2.59E-01	2.53E-01	7.68E-01	3.09E-01	5.12E-01	6.79E-01
Summer 1	4.54E+00	7.09E-01	3.26E-01	4.68E-01	7.55E-01	1.37E+00	3.56E-01	6.68E-01	2.23E-01	1.93E-01
Surry 1&2	9.73E+00	8.55E+00	8.77E+00	5.17E+00	2.41E+00	3.87E+00	4.80E+00	2.84E+00	8.27E-02	2.08E-02
Three Mile Island 1	3.41E-02	6.30E-03	1.41E-02	4.41E-02	4.66E-02	1.61E-02	2.36E-02	3.50E-02	2.60E-02	8.82E-02
Three Mile Island 2	6.46E-04	1.77E-04	1.87E-04	1.16E-04	1.12E-03	3.15E-04	1.77E-04	8.82E-05	1.32E-04	7.68E-04
TMI 2/Epicure	N/D									
Trojan	3.49E-01	4.65E-01	2.64E-01	2.06E-01	2.01E-01	1.61E-01	1.44E-01	5.60E-02	6.95E-02	1.06E-01

* This number is a correction to that reported in the 1990 report.

** Included with Three Mile Island 2 total

N/D = Not Detectable

Table B

Liquid Effluents Comparison By Year

Mixed Fission and Activation Products (Curies)

Pressurized Water Reactors

Facility	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Turkey Point 3&4	2.27E-01									
Turkey Point 3		4.48E-01	2.53E-01	3.74E-01	3.27E-01	1.58E-01	1.41E-01	4.08E-01	2.98E-01	2.38E-01
Turkey Point 4		4.48E-01	2.53E-01	3.74E-01	3.26E-01	1.58E-01	1.40E-01	3.29E-01	2.98E-01	2.39E-01
Vogtle 1&2				5.77E-01	1.88E+00	4.03E-01	1.01E+00	2.76E-01	1.94E-01	1.52E+00
Waterford 3		2.88E-01	4.02E+00	1.28E+00	1.41E+00	1.28E+00	7.30E-01	9.10E-01	1.31E+00	6.04E-01
Wolf Creek 1		6.35E-01	2.26E+00	2.90E-01	3.78E-01	7.23E-01	3.15E-01	2.12E+00	2.91E-01	7.05E-01
Yankee Rowe 1	3.06E-02	1.69E-02	1.38E-02	1.58E-02	7.10E-02	4.88E-03	4.17E-03	1.33E-02	6.23E-03	7.19E-04
Zion 1	6.82E+00	3.24E-01	5.57E-01	7.53E-01	1.81E+00	9.07E-01	2.65E+00	=	=	=
Zion 2	7.08E+00	2.05E+00	1.04E+00	8.20E-01	1.97E+00	2.57E+00	9.26E-01	1.68E+00	1.81E+00	1.13E+00
Total	1.02E+02	1.02E+02	9.79E+01	6.89E+01	7.60E+01	6.95E+01	7.54E+01	7.19E+01	4.92E+01	3.52E+01

= Included with Zion 2 total

Table B

Solid Waste Summary 1983

Boiling Water Reactors			
Facility	Volume Cubic Meters	Activity Curies	No. Of Shipments
Big Rock Point 1	0.00E+00	0.00E+00	0 ^{***}
Browns Ferry 1,2,&3	2.69E+02	6.44E+04	86
Brunswick 1&2	3.92E+02	2.10E+03	114
Clinton 1	8.77E+01	5.68E+02	27
Cooper	3.04E+02	1.04E+03	33
Dresden 1,2,&3	2.13E+03	2.06E+04	138
Duane Arnold	4.46E+01	5.13E+04	16
Fermi 2	0.00E+00	0.00E+00	0 ^{***}
James A. Fitzpatrick	4.54E+02	3.45E+04	39
Grand Gulf 1	1.90E+02	3.79E+02	62
Edwin I. Hatch 1&2	2.43E+02	2.19E+05	49
Hope Creek 1	1.86E+02	6.64E+03	57
Humboldt Bay 3	0.00E+00	0.00E+00	0
LaCrosse	5.04E+00	2.43E+01	3
LaSalle 1&2	1.21E+03	1.45E+04	63
Lancroek 1&2	3.51E+02	5.74E+02	254
Milstone 1	1.01E+02	1.21E+03	30
Monticello	4.07E+01	8.25E+02	8
Nine Mile Plant 1	1.41E+02	8.33E+02	80
Nine Mile Plant 2	1.87E+02	3.66E+03	95
Oyster Creek 1	8.04E+02	9.35E+02	52
Patch Bottom 2&3	4.45E+02	6.85E+04	217
Perry 1	1.26E+03	2.90E+03	32
Piggen 1	1.56E+02	5.75E+02	72
Quad-Cities 1&2	3.05E+04	2.40E+03	70
River Bend 1	1.62E+02	1.52E+02	75
Shoreham 1	1.52E+02	1.91E+02	25
Susquehanna 1&2	2.73E+02	6.12E+02	61
Vermont Yankee 1	1.30E+02	7.37E+02	93
WNP-2	4.26E+02	1.04E+03	46
Total	4.07E+04	5.00E+05	1907
* Fort St. Vrain	1.10E+03	2.70E+04	120

* High temperature gas cooled reactor

*** These plants store waste on-site

Note: If the volume before compaction and the volume after compaction were both given, the volume used for this table is the volume after compaction. If more than one volume was given, both are shown in the individual plant report. If a description of what the volume represents was given, that is also shown in the individual plant report.

Table 10

Solid Waste Summary 1993

Presumed Water Reactors			
Facility	Volume (Cubic Meters)	Activity (Curie)	No. Of Shipments
Arizona One 1&2	7.85E+01	1.99E+02	10
Beaver Valley 1&2	1.47E+02	1.37E+03	48
Brachwood 1&2	1.07E+02	1.57E+03	23
Byron 1&2	9.48E+01	4.09E+02	15
Callaway 1	5.18E+01	5.71E+02	19
Calvert Cliffs 1&2	1.39E+03	4.89E+03	31
Catawba 1&2	1.58E+02	1.05E+02	7
Comanche Peak 1	1.04E+02	1.11E+02	26
Donald C. Cook 1&2	0.00E+00	0.00E+00	0 ***
Crystal River 3	4.99E+02	8.89E+02	25
Davis-Besse 1	7.50E+01	7.81E+02	18
Dixie Canyon 1&2	5.53E+01	1.94E+03	42
Joseph M. Farley 1&2	6.67E+01	5.06E+02	84
Port Calhoun 1	2.42E+01	1.27E+01	33
R.E. Ginna	5.02E+02	6.87E+02	13
Haddam Neck	6.05E+01	3.66E+03	21
Horns 1	6.51E+01	3.75E+03	87
Indian Point 1&2	1.94E+02	4.07E+02	21
Indian Point 3	2.46E+02	3.12E+01	7
Kewaunee	4.38E+00	4.30E+00	1
Magne Yankee	0.00E+00	0.00E+00	0
McGuire 1&3	9.90E+01	3.02E+02	25
Millstone 2	1.07E+02	4.48E+02	18
Millstone 3	5.44E+01	3.70E+01	9
North Anna 1&2	2.77E+02	6.07E+02	68
Oconee 1,2,&3	1.23E+02	2.03E+04	46
Pahoa	0.00E+00	0.00E+00	0 ***
Palo Verde 1,2,&3	2.29E+02	6.43E+02	145
Point Beach 1&2	5.32E+01	2.42E+02	42
Prairie Island 1&2	7.70E+00	2.83E+02	2
Rancho Seco 1	0.00E+00	0.00E+00	0
H.B. Robinson 2	4.41E+01	2.57E+01	75
Salem 1&2	5.62E+01	5.04E+01	18
San Onofre	7.39E+01	4.74E+01	99
San Onofre 1	1.85E+01	6.39E+03	0
Seabrook 1	0.00E+00	0.00E+00	0 ***
Sequoyah 1&2	6.47E+01	8.63E+01	68
South Texas 1&2	5.62E+01	6.30E+03	21
St. Lucie 1&2	8.80E+01	1.24E+04	26
Summer 1	1.08E+02	1.24E+02	82
Surry 1&2	2.13E+02	5.62E+02	41
Three Mile Island 1	6.14E+02	7.59E+00	24
Three Mile Island 2	5.36E+02	3.31E+02	17
TMI 2/Excess	"	"	"
Trojan	1.33E+02	3.90E+02	22
Turkey Point 3&4	9.05E+01	1.41E+02	28
Vogtle 1&2	6.85E+01	2.23E+02	40
Waterford 3	2.51E+02	1.03E+02	8
Wolf Creek 1	6.88E+01	7.62E+02	6
Yankee Rowe 1	2.98E+02	1.71E+04	73
Zion 1&2	1.22E+02	9.94E+02	24
Total	7.76E+03	8.75E+04	1519

* Represents solid waste shipped by plant but not broken down into units 1, 2, & 3

** Included with Three Mile Island 2 totals

*** These plants store waste on-site

Note: If the volume before compaction and the volume after compaction were both given, the volume used for this table is the volume after compaction. If more than one volume was given, both are shown in the individual plant report. If a description of what the volume represents was given, that is also shown in the individual plant report.

Table 11

Solid Waste Comparisons By Year

Boiling Water Reactors

Volume (Cubic Meters) - Activity (Curies)

Facility	1975		1976		1980		1981	
Big Rock Point 1	3.10E+01	2.58E+01	8.98E+01	2.77E+02	4.20E+01	3.09E+01	1.44E+02	3.17E+02
Browns Ferry 1,2&3	2.90E+03	1.33E+03	2.29E+03	4.17E+03	2.49E+03	6.46E+03	2.23E+03	4.79E+03
Brunswick 1&2	2.02E+03	2.14E+03	3.09E+03	4.29E+03	6.73E+03	7.55E+03	4.30E+03	7.47E+03
Canton 1								
Cooper	3.29E+02	3.84E+02	5.65E+02	9.69E+01	4.35E+02	7.05E+02	4.99E+02	4.43E+02
Dresden 1,2&3	1.77E+03	1.88E+03	1.04E+03	6.45E+02	1.16E+03	4.46E+03	1.14E+03	4.59E+03
Duane Arnold	1.10E+03	1.66E+03	7.99E+02	6.01E+02	7.95E+02	7.00E+02	6.97E+02	1.07E+03
Ferns 2								
James A. Fitzpatrick	8.70E+02	3.19E+02	8.04E+02	1.06E+03	7.50E+02	8.86E+02	8.61E+02	1.63E+03
Grand Gulf 1								
Edwin I. Hatch 1	7.50E+02	1.09E+04	9.76E+02	2.70E+02	4.64E+02	9.82E+02	1.29E+03	4.45E+03
Edwin I. Hatch 2					2.59E+02	8.27E+01	1.40E+03	3.65E+02
Hope Creek 1								
Humboldt Bay 3	1.79E+02	7.91E+01	9.06E+01	3.35E+03	8.20E+01	6.95E+01	8.43E+01	5.46E+01
LaCrosse	3.60E+01	6.18E+01	5.08E+00	1.25E+02	4.32E+01	2.02E+01	4.82E+00	6.11E+01
LaSalle 1&2								
Limerick 1&2								
Millstone 1	2.00E+03	8.15E+04	2.11E+03	1.16E+03	2.30E+03	2.36E+03	1.96E+03	1.82E+03
Monticello	4.99E+02	6.35E+04	4.74E+02	1.31E+04	7.42E+02	7.57E+02	5.54E+02	4.42E+02
Nine Mile Point 1	3.85E+02	2.24E+04	4.97E+02	1.52E+03	6.14E+02	2.32E+04	5.31E+02	1.72E+03
Nine Mile Point 2								
Oyster Creek 1	1.54E+03	1.15E+03	1.13E+03	1.34E+03	2.03E+03	1.33E+03	1.78E+03	4.21E+02
Peach Bottom 2&3	1.96E+03	4.97E+03	2.40E+03	8.03E+03	2.64E+03	6.69E+03	2.34E+03	5.93E+03
Perry 1								
Pilgrim 1	1.97E+03	4.92E+04	3.03E+03	2.22E+04	2.94E+03	1.60E+03	1.06E+03	9.38E+02
Quad-Cities 1&2	1.34E+03	3.27E+03	7.82E+02	4.26E+03	1.67E+03	4.07E+03	1.72E+03	5.16E+03
River Bend 1								
Shoreham 1								
Susquehanna 1&2								
Vermont Yankee 1	3.99E+02	5.39E+04	2.71E+02	9.96E+02	4.84E+02	9.20E+02	4.39E+02	1.11E+03
WNP-2								
Total	2.01E+04	2.96E+05	2.04E+04	6.79E+04	2.65E+04	6.28E+04	2.80E+04	4.21E+04
* Port St. Vrain			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

* High temperature gas cooled reactor

Table 11

Solid Waste Comparison By Year

Boiling Water Reactors

Volume (Cubic Meters) - Activity (Curies)

Facility	1982		1983		1984		1985	
Big Rock Point 1	1.09E+02	4.33E+00	1.01E+02	2.74E+02	3.67E+01	2.13E+00	5.22E+01	1.14E+02
Browns Ferry 1,2, & 3	5.91E+03	5.51E+03	3.72E+03	6.90E+03	1.92E+03	2.15E+03	2.30E+03	3.08E+03
Brunswick 1&2	3.53E+03	5.50E+03	3.51E+03	8.36E+03	1.37E+03	3.48E+03	1.82E+03	2.50E+03
Clinton 1								
Cooper	4.45E+02	4.27E+02	5.03E+02	8.53E+02	4.37E+02	4.91E+02	6.35E+02	2.98E+04
Dresden 1,2, & 3	8.89E+02	1.68E+05+	1.42E+03	2.91E+03	1.26E+03	4.37E+03	1.05E+04	6.63E+04
Duane Arnold	4.57E+02	1.27E+03	6.81E+02	1.44E+03	2.68E+02	9.13E+02	7.98E+02	5.24E+02
Fenu 2								
James A. Fitzpatrick	1.84E+03	7.89E+02	7.11E+02	7.03E+02	4.31E+02	1.26E+03	7.77E+02	7.79E+02
Grand Gulf 1			3.12E+02	7.21E+00	4.31E+02	9.09E+00	6.02E+02	2.60E+02
Edwin I. Hatch 1	9.13E+02	3.10E+03	1.87E+03	3.27E+03	2.50E+03	2.58E+03	2.04E+03	3.83E+04
Edwin I. Hatch 2	7.79E+02	9.40E+02	"	"	"	"	"	"
Hope Creek 1								
Humboldt Bay 3	7.71E+01	1.34E+00	2.78E+01	1.75E+04	6.56E+01	7.29E+00	8.81E+02	2.80E+02
LaCrosse	3.53E+01	5.26E+01	1.26E+01	1.88E+02	4.22E+01	1.98E+02	6.30E+01	2.35E+02
LaSalle 1&2	0.00E+00	0.00E+00	6.83E+02	3.01E+01	6.40E+02	1.80E+02	1.21E+03	4.87E+02
Limerick 1&2					0.00E+00	0.00E+00	3.06E+02	2.06E+01
Millstone 1	9.77E+02	1.08E+03	6.93E+02	6.81E+02	9.40E+02	1.97E+03	1.17E+03	9.36E+04
Monticello	7.50E+02	3.99E+03	3.57E+02	4.43E+04	1.24E+03	5.73E+02	5.44E+02	4.87E+03
Nine Mile Point 1	5.76E+02	7.07E+03	7.21E+02	5.42E+04	6.39E+02	1.34E+04	5.75E+02	6.80E+03
Nine Mile Point 2								
Oyster Creek 1	9.96E+02	4.67E+03	1.00E+03	5.61E+02	1.38E+03	4.39E+04	4.62E+02	6.30E+02
Peach Bottom 2&3	3.23E+03	4.51E+03	2.68E+03	2.24E+04	2.26E+03	9.22E+04	2.33E+03	1.21E+05
Perry 1								
Pilgrim 1	2.28E+03	9.59E+02	6.65E+02	1.48E+03	3.12E+03	1.54E+03	1.41E+03	7.48E+04
Quad-Cities 1&2	1.46E+03	3.98E+03	1.58E+03	5.85E+03	1.35E+03	4.06E+04	1.33E+03	5.53E+04
River Bend 1								
Shoreham 1								
Susquehanna 1&2	4.51E+01	6.32E+02	1.26E+03	2.84E+02	1.30E+03	9.27E+02	1.13E+03	2.07E+03
Vermont Yankee 1	4.51E+03	2.09E+02	4.15E+03	5.75E+04	3.48E+02	2.85E+02	5.43E+02	1.73E+04
WNP-2					3.87E+02	3.58E+01	4.02E+02	2.96E+02
Total	2.56E+04	2.10E+05	2.29E+04	2.39E+05	2.26E+04	2.11E+05	3.13E+04	5.19E+05
* Fort St. Vrain	0.00E+00	0.00E+00	2.39E+01	1.84E+01	0.00E+00	0.00E+00	1.10E+02	4.19E+02

* High temperature gas cooled reactor

+ Includes 12 shipments of poison curtains (irradiated components) to Barnwell, SC

** Included with Edwin I. Hatch 1 totals

Table 11

Solid Waste Compositions By Year

Boiling Water Reactors

Volume (Cubic Meters) - Activity (Curies)

Facility	1986	1987	1988	1989
Big Rock Point 1	9.48E+00	2.52E+02	7.40E+01	2.30E+03
Browns Ferry 1,2, & 3	1.36E+03	1.49E+03	1.32E+03	6.44E+02
Brunswick 1&2	9.35E+02	9.83E+03	8.43E+03	4.48E+04
Clinton 1		5.10E+01	1.41E+01	2.87E+02
Cooper	4.49E+02	5.83E+02	3.41E+02	3.90E+02
Dresden 1,2, & 3	2.14E+03	3.74E+04	1.80E+03	8.26E+02
Duane Arnold	2.17E+02	2.15E+04	4.94E+02	2.82E+02
Fernald 2	1.48E+03	2.13E+01	3.36E+02	9.37E+01
James A. Fitzpatrick	4.82E+02	7.21E+02	6.44E+02	3.81E+02
Grand Gulf 1	4.39E+02	1.38E+03	3.92E+02	1.85E+03
Edwin I. Hatch 1	1.36E+03	8.82E+03	7.78E+02	1.82E+03
Edwin I. Hatch 2	"	"	"	"
Hope Creek 1	8.45E+01	5.14E+00	4.21E+02	3.63E+02
Humboldt Bay 3	5.99E+02	3.50E+02	0.00E+00	0.00E+00
LaCrosse	4.81E+00	7.78E+01	2.93E+01	2.88E+03
LaSalle 1&2	8.02E+02	1.20E+03	7.88E+02	2.30E+03
Limerick 1&2	5.76E+03	7.59E+02	3.81E+02	2.15E+03
Millstone 1	7.00E+02	7.85E+02	6.68E+02	5.05E+02
Monticello	2.94E+02	2.81E+04	2.19E+02	5.66E+02
Nine Mile Point 1	1.08E+03	7.27E+02	5.07E+02	2.30E+02
Nine Mile Point 2			9.89E+01	1.14E+01
Oyster Creek 1	5.92E+02	7.96E+02	2.36E+02	3.48E+04
Peach Bottom 2&3	1.48E+03	1.88E+04	1.58E+03	3.89E+03
Perry 1	0.00E+00	0.00E+00	4.89E+02	4.52E+01
Pilgrim 1	6.01E+02	4.38E+02	5.27E+02	3.15E+02
Quad-Cities 1&2	1.32E+03	2.14E+03	9.19E+02	2.90E+04
River Bend 1	4.63E+02	7.99E+01	4.07E+02	3.45E+02
Shoreham 1	4.47E+01	1.47E+01	6.26E+01	9.57E+02
Susquehanna 1&2	8.68E+02	2.53E+03	7.18E+02	2.11E+03
Vermont Yankee 1	3.10E+02	3.33E+02	2.23E+02	1.19E+04
WNP-2	3.02E+02	5.07E+02	3.75E+02	1.09E+03
Total	1.77E+04	1.32E+05	1.55E+04	1.43E+05
* Fort St. Vrain	0.00E+00	0.00E+00	3.02E+01	1.03E+02

* High temperature gas cooled reactor

** Included with Edwin I. Hatch 1 totals

Table 11

Solid Waste Comparison By Year

Boiling Water Reactors

Volume (Cubic Meters) - Activity (Curies)

Facility	+1990	+1991	+1992	+1993
Big Rock Point 1	8.30E+01	1.28E+02	0.00E+00	0.00E+00 ***
Browns Ferry 1,2 & 3	2.12E+02	1.04E+02	2.60E+02	3.36E+04
Brunswick 1&2	4.89E+02	1.28E+03	3.33E+02	1.23E+03
Clinton 1	2.72E+02	5.44E+02	2.48E+02	8.03E+02
Cooper	3.06E+02	3.89E+02	2.49E+02	6.17E+02
Dresden 1,2 & 3	2.41E+03	5.09E+02	2.61E+03	9.87E+02
Duane Arnold	3.34E+02	3.79E+04	1.06E+02	4.57E+02
Fermi 2	1.23E+03	2.09E+04	2.18E+01	2.02E+00
James A. Fitzpatrick	2.83E+02	2.05E+03	1.07E+03	2.85E+02
Grand Gulf 1	1.62E+02	1.83E+03	2.15E+02	2.68E+03
Edwin I. Hatch 1	1.36E+03	2.83E+04	7.90E+02	2.00E+03
Edwin I. Hatch 2	-	-	-	-
Hope Creek 1	3.06E+02	2.30E+03	2.46E+02	4.31E+04
Humboldt Bay 3	2.89E+01	9.06E-02	6.48E+01	1.42E-01
LaCrosse	4.59E+00	7.44E-01	2.40E+01	3.23E-01
LaSalle 1&2	9.04E+02	2.95E+03	8.99E+02	5.53E+03
Limerick 1&2	8.86E+02	1.24E+03	6.61E+02	5.85E+02
Millstone 1	2.94E+02	8.41E+04	3.51E+02	2.25E+03
Monticello	9.40E+01	1.17E+03	2.18E+02	1.45E+03
Nine Mile Point 1	2.45E+02	4.34E+02	1.77E+02	1.00E+05
Nine Mile Point 2	3.40E+02	6.73E+02	2.67E+02	1.39E+03
Oyster Creek 1	3.23E+02	1.13E+03	4.93E+02	1.39E+03
Peach Bottom 2&3	8.08E+02	3.02E+04	8.68E+02	8.56E+04
Perry 1	1.38E+03	1.94E+03	9.20E+02	3.68E+03
Pilgrim 1	3.71E+02	6.82E+02	3.50E+02	7.06E+02
Quad-Cities 1&2	1.21E+03	1.24E+03	7.56E+02	1.04E+03
River Bend 1	2.44E+02	4.02E+02	3.30E+01	2.67E+00
Shoreham 1	5.04E+01	9.17E-01	6.99E+01	2.92E+00
Susquehanna 1&2	4.07E+02	2.95E+03	4.73E+02	2.61E+05
Vermont Yankee 1	0.00E+00	0.00E+00	4.70E+02	1.82E+05
WNP-2	3.34E+02	1.29E+03	3.01E+02	1.42E+03
Total	1.52E+04	1.76E+05	1.35E+04	7.33E+05
* Fort St. Vrain	1.01E+02	2.30E+00	6.75E+01	8.10E-03

* High temperature gas cooled reactor

** Included with Edwin I. Hatch 1 totals

*** These plants store waste on-site

+ Note: If the volume before compaction and the volume after compaction were both given, the volume used for this table is the volume after compaction. If more than one volume was given, both are shown in the individual plant report. If a description of what the volume represents was given, that is also shown in the individual plant report.

Table 12

Solid Waste Comparison By Year

Pressurized Water Reactors

Volume (Cubic Meters) - Activity (Curies)

Facility	1975		1976		1980		1981	
Arkansas One 1&2	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
Bever Valley 1&2	4.39E+02	2.25E+02	2.44E+02	2.95E+02	2.84E+02	5.34E+02	2.13E+02	9.30E+01
Brushwood 1&2								
Byron 1&2								
Callaway 1								
Calvert Cliffs 1&2	6.03E+02	1.12E+03	4.32E+02	9.71E+02	2.51E+02	1.48E+04	5.00E+02	9.86E+01
Catawba 1&2								
Comanche Peak 1								
Donald C. Cook 1&2	1.28E+03	2.25E+02	1.09E+03	3.37E+02	2.10E+03	1.04E+03	9.63E+02	1.43E+03
Crystal River 3	5.87E+02	2.72E+04	1.24E+03	1.20E+03	9.27E+02	2.05E+03	1.27E+03	1.38E+03
Davis-Besse 1	3.40E+02	3.30E+00	2.60E+02	2.86E+00	3.30E+02	3.00E+01	3.25E+02	3.95E+01
Diablo Canyon 1&2								
Joseph M. Farley 1&2	2.69E+02	5.72E+00	1.11E+03	2.32E+02	4.41E+02	2.26E+02	5.64E+02	7.20E+02
Fort Calhoun 1	5.84E+02	1.06E+02	2.44E+02	2.99E+01	4.06E+02	1.32E+03	2.53E+02	1.01E+02
R. E. Ginna	5.98E+01	6.27E+02	3.06E+02	1.53E+03	4.00E+02	4.60E+02	3.76E+02	6.35E+02
Haddam Neck	2.29E+02	1.44E+02	1.29E+03	3.05E+02	1.26E+03	4.89E+02	4.38E+02	6.61E+02
Harris 1								
Indian Point 1&2	8.43E+03	2.37E+03	1.17E+03	2.16E+03	1.03E+03	3.32E+02	1.58E+03	1.71E+03
Indian Point 3	5.94E+02	5.49E+01	2.25E+02	1.63E+02	3.47E+02	2.02E+02	3.17E+02	6.40E+01
Kewaunee	7.98E+01	1.50E+03	1.70E+02	3.54E+02	1.03E+02	1.37E+03	7.38E+01	1.98E+02
Maine Yankee	5.81E+02	4.14E+03	3.63E+02	2.77E+03	4.57E+02	4.79E+03	4.14E+02	1.67E+03
McGuire 1&2							1.98E+01	1.31E+01
Millstone 2	1.55E+02	1.70E+01	2.46E+02	1.78E+03	7.51E+00	2.28E+02	1.63E+01	3.21E+02
Millstone 3								
North Anna 1&2	2.14E+01	3.59E+00	2.95E+02	5.89E+01	2.64E+02	1.54E+02	3.02E+02	2.62E+03
Oconee 1,2 & 3	1.58E+03	5.93E+03	1.83E+03	2.59E+03	1.32E+03	2.91E+03	2.48E+03	1.12E+04
Pakistan	7.17E+02	3.40E+03	6.34E+02	3.92E+02	7.31E+02	1.18E+02	8.64E+02	1.57E+04
Palo Verde 1,2 & 3								
Point Beach 1&2	1.61E+02	1.51E+03	2.66E+02	1.22E+03	4.48E+02	9.35E+02	1.77E+02	4.87E+02
Prattville Island 1&2	1.95E+02	1.53E+02	1.99E+01	8.83E+01	5.25E+02	1.93E+02	2.97E+02	5.64E+01
Rancho Seco 1	1.29E+02	1.27E+03	1.01E+02	4.03E+00	4.60E+02	1.12E+02	2.31E+02	1.44E+02
H. H. Robinson 2	8.22E+02	2.40E+02	8.34E+02	8.72E+01	3.99E+03	3.08E+02	9.02E+02	1.88E+01
Salem 1&2	2.27E+02	1.94E+02	6.68E+02	1.25E+02	1.01E+03	4.59E+02	9.36E+02	1.14E+03
San Onofre								
San Onofre 1	1.31E+02	7.17E+00	8.35E+01	9.24E+01	7.12E+02	4.35E+02	1.62E+03	1.26E+03
San Onofre 2-3								
Seabrook 1								
Serpent 1&2					N/R	N/R	1.61E+02	2.92E+01
South Texas 1&2								
St. Lucie 1&2	3.58E+02	1.26E+04	3.08E+02	1.76E+02	3.12E+02	7.46E+02	2.50E+02	2.96E+02
Summer 1								
Sunny 1&2	6.03E+02	5.86E+02	2.74E+03	3.45E+02	2.01E+03	7.06E+02	2.60E+03	1.36E+03
Three Mile Island 1	3.89E+02	2.34E+02	7.51E+02	3.12E+01	4.62E+02	2.30E+03	7.98E+02	2.34E+02
Three Mile Island 2	Shown With	Other Unit	Shown With	Other Unit	7.67E+02	1.29E+02	2.74E+02	5.11E+01
TMI 2/Epicor					0.00E+00	0.00E+00	1.51E+02	3.50E+03
Trojan	2.26E+02	4.48E+02	6.37E+02	3.30E+02	5.14E+02	4.58E+01	3.75E+02	1.04E+03
Turkey Point 3&4	1.75E+03	1.72E+03	9.20E+02	2.48E+02	7.24E+02	1.61E+02	1.25E+03	1.17E+02
Vogtle 1&2								
Waterford 3								
Wolf Creek 1								
Yankee Rowe 1	2.60E+02	6.75E+00	2.36E+02	1.63E+02	2.07E+02	9.57E+01	3.08E+02	6.79E+01
Zion 1&2	1.63E+03	1.86E+03	5.97E+02	3.69E+03	1.64E+03	2.55E+03	1.53E+03	3.44E+03
Total	2.35E+04	6.79E+04	1.92E+04	1.94E+04	2.44E+04	3.82E+04	2.30E+04	4.87E+04

N/R = Not Reported

Table 12

Solid Waste Comparison By Year

Pressurized Water Reactors

Volume (Cubic Meters) - Activity (Curies)

Facility	1982		1983		1984		1985	
Arkansas One 1&2	N/R	N/R	7 08E+02	2 09E+03	8 10E+02	1 46E+03	6 88E+02	1 75E+03
Beaver Valley 1&2	2 94E+02	3 83E+02	2 19E+02	4 75E+02	1 56E+02	7 11E+02	1 56E+02	9 71E+01
Bradwood 1&2								
Byron 1&2							1 78E+02	1 39E+01
Callaway 1					0 00E+00	0 00E+00	1 39E+02	6 29E+00
Calvert Cliffs 1&2	1 57E+02	9 16E+02	5 06E+02	1 07E+02	5 29E+02	3 77E+04	3 89E+02	1 51E+04
Catawba 1&2							3 49E+01	6 80E+02
Cranmache Peak 1								
Donald C Cook 1&2	7 14E+02	6 45E+02	6 68E+02	2 01E+03	4 94E+02	6 69E+02	6 24E+02	2 00E+03
Crystal River 3	6 62E+02	6 28E+02	5 40E+02	1 55E+03	4 11E+02	1 15E+03	4 98E+02	4 60E+03
Davis-Besse 1	0 00E+00	0 00E+00	1 13E+02	6 37E+02	1 51E+02	4 73E+02	1 97E+02	9 58E+01
DuBois Canyon 1&2					0 00E+00	0 00E+00	3 11E+01	4 40E+01
Joseph M Farley 1&2	3 48E+02	1 03E+02	4 41E+02	1 05E+03	5 62E+02	2 98E+02	4 95E+02	8 20E+02
Fort Calhoun 1	3 42E+02	3 54E+01	4 65E+02	7 00E+02	3 93E+02	7 17E+01	3 43E+02	2 24E+02
R E Ganna	4 89E+02	2 02E+02	3 36E+02	5 21E+02	2 52E+02	3 23E+02	2 23E+02	1 19E+02
Hackam Neck	3 12E+02	2 57E+02	6 32E+02	1 52E+03	4 26E+02	3 75E+02	1 73E+02	5 33E+01
Harris 1								
Indian Point 1&2	1 17E+03	6 46E+03	1 29E+03	2 12E+03	9 81E+02	2 03E+03	6 89E+02	5 75E+02
Indian Point 3	3 78E+02	6 14E+01	3 16E+02	7 32E+02	1 53E+02	4 12E+02	2 39E+02	5 48E+02
Kewaunee	6 73E+01	2 74E+02	5 52E+01	6 85E+02	6 32E+01	1 60E+03	7 77E+01	9 56E+02
Maumee Yankee	2 20E+02	3 09E+01	3 37E+02	1 03E+02	3 49E+02	3 59E+02	3 58E+02	1 11E+02
McGuire 1&2	9 91E+01	6 43E+00	2 44E+02	2 82E+01	4 14E+02	1 89E+03	6 80E+02	1 97E+02
Millstone 2	6 85E+00	4 84E+02	4 48E+01	2 58E+02	6 06E+01	1 10E+05	2 87E+01	6 16E+03
Millstone 3								
North Anna 1&2	4 21E+02	3 05E+02	5 39E+02	1 87E+03	9 00E+02	9 53E+02	6 50E+02	2 90E+02
Oconee 1,2 & 3	3 06E+03	1 08E+04	1 16E+03	2 84E+03	3 36E+02	6 17E+03	4 33E+02	1 41E+03
Palmatrix	7 08E+01	7 98E+01	5 75E+02	2 56E+04	4 48E+02	2 58E+02	4 76E+02	1 83E+02
Palo Verde 1,2&3							6 42E+01	6 80E+01
Point Beach 1&2	2 52E+02	9 46E+02	7 11E+02	1 12E+03	7 12E+02	1 64E+03	2 61E+02	1 25E+03
Prune Island 1&2	8 91E+01	3 64E+02	2 39E+02	1 92E+02	4 19E+01	1 19E+01	1 73E+02	4 02E+02
Rancho Seco 1	2 40E+02	4 66E+02	2 72E+02	2 35E+02	4 26E+02	4 60E+01	9 76E+02	1 57E+03
H B Robinson 2	1 38E+03	6 38E+01	1 09E+03	4 63E+01	3 05E+03	1 95E+02	6 42E+02	3 35E+03
Salmon 1&2	1 91E+03	3 19E+02	2 07E+03	2 99E+02	1 52E+03	6 23E+02	4 55E+02	2 02E+03
San Onofre							1 36E+01	8 96E+01
San Onofre 1	9 27E+02	7 52E+01	3 33E+02	2 27E+02	2 91E+02	1 54E+01	1 80E+02	6 04E+00
San Onofre 2 & 3	0 00E+00	0 00E+00	1 89E+02	7 98E+00	2 02E+02	5 48E+02	5 45E+02	1 72E+03
Seabrook 1								
Sequoyah 1&2	3 58E+02	2 28E+02	6 93E+02	2 30E+03	9 67E+02	2 43E+03	7 52E+02	2 45E+03
South Texas 1&2								
St. Lucie 1&2	3 07E+02	7 95E+02	6 20E+02	9 39E+04	1 22E+03	6 36E+04	5 45E+02	1 59E+03
Summer 1	0 00E+00	0 00E+00	9 25E+01	1 37E+01	4 80E+02	1 55E+02	4 46E+02	1 30E+02
Surry 1&2	2 17E+03	8 88E+02	3 08E+03	3 55E+03	9 45E+02	1 16E+03	2 02E+03	1 31E+03
Three Mile Island 1	5 32E+02	8 91E+00	6 05E+02	8 84E+02	4 34E+02	4 18E+02	4 69E+02	1 94E+01
Three Mile Island 2	1 80E+02	1 22E+01	3 16E+02	5 17E+05	2 58E+02	9 89E+03	4 83E+02	6 35E+03
TMI 2/Epocor	0 00E+00	0 00E+00	2 23E+02	4 62E+04	4 53E+00	2 35E+01	"	"
Trojan	2 17E+01	2 87E+02	2 28E+02	1 67E+03	2 30E+02	5 85E+01	3 09E+02	3 52E+03
Turkey Point 3&4	1 01E+03	1 13E+03	1 21E+03	9 26E+02	8 50E+02	1 91E+03	6 08E+02	1 50E+03
Vogtle 1&2								
Waterford 3							2 82E+02	3 39E+01
Wolf Creek 1							0 00E+00	0 00E+00
Yankee Rowe 1	2 09E+02	2 81E+01	1 58E+02	5 12E+00	2 00E+02	1 63E+02	2 00E+02	2 68E+02
Zion 1&2	6 82E+02	2 17E+03	9 21E+02	2 97E+03	6 49E+02	2 62E+03	6 73E+02	2 69E+03
Total	1 98E+04	2 98E+04	2 23E+04	7 16E+05	2 10E+04	2 52E+05	1 81E+04	6 55E+04

N/R = Not Reported

Table 12

Solid Waste Comparison By Year

Pressurized Water Reactors

Volume (Cubic Meters) - Activity (Curies)

Facility	1986	1987	1988	1989
Arizona One 1&2	1.21E+02	2.18E+02	5.23E+02	1.63E+03
Beaver Valley 1&2	9.48E+01	4.45E+02	7.65E+01	3.22E+01
Braidwood 1&2			0.00E+00	0.00E+00
Byron 1&2	3.18E+02	9.90E+01	3.06E+02	8.65E+02
Callaway 1	1.88E+02	1.91E+01	1.98E+02	3.13E+02
Calvert Cliffs 1&2	2.13E+02	4.51E+02	2.44E+02	8.41E+02
Catawba 1&2	1.93E+02	1.33E+01	2.73E+02	2.79E+02
Comanche Peak 1			2.56E+02	7.05E+02
Donald C. Cook 1&2	5.26E+02	1.59E+03	4.63E+02	2.30E+03
Crystal River 3	3.64E+02	1.35E+03	2.90E+02	6.75E+02
Davis-Besse 1	1.40E+02	2.19E+00	8.48E+01	3.20E+00
Diablo Canyon 1&2	9.08E+01	6.97E+00	1.65E+02	1.21E+02
Joseph M. Farley 1&2	2.45E+02	1.80E+03	5.33E+02	3.34E+02
Fort Calhoun 1	1.16E+02	2.82E+01	1.25E+02	5.47E+02
R. E. Ginna	1.12E+02	1.39E+02	1.65E+02	2.16E+02
Haddam Neck	4.14E+02	5.86E+02	3.20E+02	5.45E+02
Harris 1			1.05E+02	2.61E+00
Indian Point 1&2	5.90E+02	2.59E+02	2.30E+02	8.94E+02
Indian Point 3	6.28E+01	2.58E+01	3.17E+02	3.33E+02
Kewaunee	5.31E+01	1.33E+02	8.25E+01	4.56E+02
Maine Yankee	1.98E+02	1.64E+02	7.50E+01	1.90E+02
McGuire 1&2	7.83E+02	6.73E+02	6.92E+02	3.23E+02
Millstone 2	8.89E+01	6.17E+03	1.98E+02	2.13E+04
Millstone 3	5.47E+00	5.17E+01	9.95E+01	5.91E+01
North Anna 1&2	5.30E+03	7.97E+02	4.89E+02	1.84E+03
Oconee 1,2 & 3	7.60E+02	8.51E+02	8.53E+02	2.01E+03
Palisades	2.39E+03	2.65E+02	2.23E+02	1.06E+02
Palo Verde 1,2 & 3	1.16E+02	4.22E+01	4.63E+02	9.76E+02
Point Beach 1&2	1.08E+02	1.35E+02	1.55E+02	1.48E+03
Prairie Island 1&2	1.28E+02	1.55E+02	1.42E+02	4.30E+02
Rancho Seco 1	1.96E+02	1.00E+03	1.59E+02	3.51E+00
H. B. Robinson 2	4.53E+02	1.58E+02	1.01E+02	2.59E+02
Salem 1&2	4.71E+02	4.53E+02	3.29E+02	9.69E+02
San Onofre	2.33E+00	4.65E+01	4.04E+00	4.32E+01
San Onofre 1	2.51E+02	3.82E+02	3.69E+01	4.83E+01
San Onofre 2-3	2.94E+02	1.83E+02	2.45E+02	2.71E+02
Seabrook 1				
Sequoyah 1&2	4.27E+02	1.33E+04	4.12E+02	9.78E+02
South Texas 1&2				
St. Lucie 1&2	4.60E+02	2.13E+03	3.53E+02	1.05E+03
Summer 1	1.12E+02	1.90E+01	3.80E+02	6.79E+02
Surry 1&2	6.38E+02	1.16E+03	5.15E+02	2.94E+04
Three Mile Island 1	2.13E+02	7.70E+00	2.49E+02	3.38E+02
Three Mile Island 2	3.29E+02	5.81E+01	6.59E+02	3.18E+02
TMI 2/Epsilon	--	--	--	--
Trojan	2.49E+02	8.25E+02	3.31E+02	4.09E+02
Turkey Point 3&4	3.23E+02	8.87E+01	3.07E+02	9.32E+02
Vogtle 1&2			0.00E+00	0.00E+00
Waterford 3	1.74E+02	3.75E+01	3.83E+02	1.78E+02
Wolf Creek 1	1.73E+02	1.48E+02	1.68E+02	1.15E+01
Yankee Rowe 1	1.13E+02	5.21E+00	1.86E+02	8.83E+00
Zion 1&2	3.31E+02	6.74E+02	4.11E+02	7.13E+02
Total	1.19E+04	3.81E+04	1.30E+04	7.51E+04

* Represents solid waste shipped by plant but not broken down into units 1, 2, & 3

- Included with Three Mile Island 2 totals

Table 12

Solid Waste Compositions By Year

Pressurized Water Reactors

Volume (Cubic Meters) - Activity (Curies)

Facility	+1990	+1991	+1992	+1993				
Arkansas One 1&2	1.68E+02	1.43E+01	4.18E+02	8.03E+02	1.75E+02	2.61E+03	7.85E+01	1.98E+02
Beverly Valley 1&2	1.57E+02	5.44E+02	1.74E+02	1.08E+03	1.63E+02	4.71E+02	1.47E+02	1.37E+03
Broadwood 1&2	1.48E+02	5.55E+01	4.57E+02	6.52E+01	5.98E+02	9.10E+02	1.07E+02	1.57E+03
Byron 1&2	2.43E+02	4.99E+02	2.81E+02	3.77E+02	1.59E+02	8.78E+02	9.46E+01	4.09E+02
Callaway 1	8.70E+01	3.12E+02	1.38E+02	2.48E+03	8.85E+01	1.03E+03	5.18E+01	5.71E+02
Calvert Cliffs 1&2	1.35E+02	4.12E+03	1.90E+02	4.50E+03	1.04E+03	6.33E+03	1.39E+03	4.99E+03
Catawba 1&2	1.19E+02	2.09E+01	1.16E+02	3.35E+02	2.08E+02	9.88E+02	1.55E+02	1.08E+02
Comanche Peak 1	0.00E+00	0.00E+00	6.99E+01	7.76E+01	1.27E+02	2.33E+02	1.04E+02	1.11E+02
Donald C. Cook 1&2	1.95E+02	1.44E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Crystal River 3	9.22E+02	2.20E+02	3.45E+02	2.39E+02	6.42E+02	3.30E+02	4.99E+02	8.89E+02
Davis-Besse 1	3.99E+02	2.26E+03	2.38E+02	5.47E+02	3.71E+01	4.10E+01	7.50E+01	7.81E+02
Diablo Canyon 1&2	6.32E+01	2.91E+02	1.89E+02	1.70E+03	1.77E+01	9.95E+02	5.53E+01	1.94E+03
Joseph M. Farley 1&2	1.51E+02	2.88E+02	1.50E+02	1.03E+03	2.88E+02	2.15E+03	6.67E+01	5.06E+02
Fort Calhoun 1	1.22E+02	7.48E+00	3.79E+01	1.97E+01	6.45E+01	4.41E+02	2.42E+01	1.27E+01
R. E. Ginna	1.98E+02	2.32E+02	5.00E+01	3.19E+00	6.48E+01	5.84E+02	5.02E+02	6.37E+02
Haddam Neck	1.68E+02	2.21E+05	1.34E+02	3.37E+02	1.41E+02	1.48E+03	6.05E+01	3.66E+03
Harris 1	7.73E+01	6.25E+01	7.84E+01	3.03E+02	7.12E+01	2.90E+02	6.51E+01	3.75E+02
Indian Point 1&2	2.60E+02	2.08E+03	4.88E+02	9.62E+01	1.64E+02	6.07E+02	1.94E+02	4.07E+02
Indian Point 3	6.68E+02	1.50E+02	1.29E+02	2.00E+01	1.81E+02	2.23E+02	2.46E+02	3.12E+01
Kewaunee	1.11E+02	3.54E+02	6.90E+01	5.28E+02	2.35E+01	1.93E+02	4.38E+00	4.30E+00
Maine Yankee	1.70E+02	1.85E+02	1.47E+02	3.46E+02	1.83E+02	6.06E+03	0.00E+00	0.00E+00
McGuire 1&2	2.63E+02	9.80E+02	4.52E+01	9.29E+02	1.65E+02	1.19E+03	9.90E+01	3.02E+02
Millstone 2	1.59E+02	9.34E+00	1.37E+02	8.79E+02	7.59E+02	3.67E+03	1.07E+02	4.49E+02
Millstone 3	7.60E+01	1.76E+02	1.16E+02	1.04E+02	4.13E+01	4.81E+02	5.44E+01	3.70E+01
North Anna 1&2	2.13E+02	7.24E+02	2.85E+02	3.01E+02	2.17E+02	3.84E+02	2.77E+02	6.07E+02
Oconee 1,2 & 3	4.39E+02	1.79E+03	1.02E+02	4.04E+02	1.48E+02	4.35E+02	1.23E+02	2.03E+04
Palisades	2.85E+02	8.74E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Palo Verde 1,2 & 3	7.66E+02	2.40E+02	4.83E+02	8.91E+02	4.25E+02	1.54E+03	2.29E+02	6.43E+02
Point Beach 1&2	1.30E+02	3.07E+02	9.64E+01	2.20E+02	1.28E+02	3.71E+02	5.32E+01	2.42E+02
Prairie Island 1&2	5.54E+01	3.23E+02	1.11E+02	1.90E+02	1.12E+01	2.79E+01	7.70E+00	2.88E+02
Rancho Seco 1	2.16E+01	3.68E+02	3.97E+01	2.46E+02	3.47E+01	3.88E+00	0.00E+00	0.00E+00
H. B. Robinson 2	6.99E+01	1.44E+01	6.46E+01	9.54E+01	6.25E+01	4.47E+02	4.41E+01	2.57E+01
Salem 1&2	8.92E+01	1.45E+02	1.03E+02	6.79E+02	9.78E+01	8.32E+02	5.62E+01	5.04E+01
San Onofre	2.12E+01	1.04E+00	0.00E+00	0.00E+00	2.04E+01	4.15E+01	7.39E+01	4.74E+01
San Onofre 1	5.81E+01	1.27E+01	6.39E+01	5.75E+00	9.36E+01	6.84E+02	1.85E+01	6.39E+03
Seabrook 1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Serpukhah 1&2	2.59E+02	9.06E+03	1.42E+02	1.82E+03	1.27E+02	1.35E+03	5.47E+01	8.65E+01
South Texas 1&2	5.76E+01	1.38E+01	9.99E+01	9.81E+01	8.27E+01	4.67E+02	5.62E+01	6.30E+03
St. Lucie 1&2	2.26E+02	5.89E+03	1.82E+02	8.26E+02	2.14E+02	3.88E+02	8.80E+01	1.24E+04
Summer 1	1.10E+02	2.22E+02	8.82E+01	1.84E+02	1.14E+02	2.68E+02	1.06E+02	1.24E+02
Surry 1&2	1.48E+02	1.13E+03	1.73E+02	8.18E+02	2.10E+02	4.10E+02	2.13E+02	5.62E+02
Three Mile Island 1	5.83E+02	6.53E+02	5.19E+02	3.85E+02	6.87E+02	2.03E+02	6.14E+02	7.59E+00
Three Mile Island 2	3.40E+02	7.74E+03	3.88E+02	2.21E+02	1.19E+03	1.27E+03	5.36E+02	3.31E+02
THN 2/Epicor	-	-	-	-	-	-	-	-
Trojan	1.80E+02	5.84E+02	1.09E+02	2.40E+02	1.30E+02	7.10E+02	1.33E+02	3.80E+02
Turkey Point 3&4	2.15E+02	6.94E+02	1.89E+02	1.16E+01	2.14E+03	2.30E+02	9.05E+01	1.41E+02
Vogtle 1&2	9.29E+01	1.84E+02	6.87E+01	6.99E+02	1.09E+02	1.07E+03	8.88E+01	2.23E+02
Waterford 3	5.50E+01	5.91E+02	1.48E+02	7.01E+02	8.25E+02	3.93E+03	2.51E+02	1.03E+02
Wolf Creek 1	8.31E+01	3.17E+01	8.39E+01	4.14E+02	5.24E+01	2.43E+02	6.88E+01	7.62E+02
Yankee Rowe 1	1.82E+02	1.69E+02	1.81E+02	8.49E+01	2.02E+02	3.24E+04	2.98E+02	1.71E+04
Zion 1&2	1.44E+02	2.02E+03	9.59E+01	1.95E+03	2.74E+02	2.19E+04	1.22E+02	9.94E+02
Total	6.88E+03	2.59E+05	6.02E+03	2.79E+04	1.39E+04	1.04E+05	7.76E+03	8.75E+04

* Represents solid waste shipped by plant but not broken down into units 1, 2, & 3

** Included with Three Mile Island 2 totals

*** These plants store waste on-site

* This number is a correction to that entered in earlier reports

+ Note: If the volume before compaction and the volume after compaction were both given, the volume used for this table is the volume after compaction. If more than one volume was given, both are shown in the individual plant report. If a description of what the volume represents was given, that is also shown in the individual plant report.

Table 13

Net Electrical Energy Generation Comparison By Year

Boiling Water Reactors	Megawatt Hours									
	Initial Criticality	Commercial Operation	1979	1980	1981	1982	1983	1984	1985	1986
Big Rock Point 1	09/27/62	03/29/63	1.14E+05	4.05E+05	4.70E+05	3.60E+05	3.49E+05	4.15E+05	3.62E+05	5.06E+05
Browns Ferry 1	08/17/73	08/01/74	2.04E+07	6.06E+06	4.41E+06	7.83E+06	2.18E+06	7.85E+06	1.54E+06	0.00E+00
Browns Ferry 2	07/20/74	03/01/75		5.83E+06	7.47E+06	4.45E+06	6.39E+06	4.04E+06	0.00E+00	0.00E+00
Browns Ferry 3	08/08/78	03/01/77		6.94E+06	6.25E+06	4.89E+06	5.39E+06	2.91E+05	1.47E+06	0.00E+00
Brunswick 1	10/08/76	03/18/77	6.82E+06	3.94E+06	2.56E+06	2.92E+06	1.39E+06	5.03E+06	1.91E+06	5.97E+06
Brunswick 2	03/20/75	11/03/75		1.86E+05	3.28E+06	1.91E+06	3.94E+06	1.39E+06	5.02E+06	2.91E+06
Clinton 1	03/27/87	11/24/87								
Cooper	02/21/74	07/01/74	4.99E+06	3.79E+06	3.85E+06	5.28E+06	3.34E+06	3.47E+06	1.07E+06	4.05E+06
Dresden 1	10/15/59	07/04/60	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E+06	0.00E+00	0.00E+00
Dresden 2	01/07/70	06/09/70	8.42E+06	4.58E+06	3.41E+06	5.12E+06	3.40E+06	2.11E+06	3.09E+06	4.65E+06
Dresden 3	01/31/71	11/16/71		4.33E+06	5.18E+06	3.89E+06	4.15E+06	2.11E+05	4.39E+06	1.46E+06
Duane Arnold	03/23/74	03/01/75	3.90E+06	2.80E+06	2.22E+06	2.28E+06	2.32E+06	2.72E+06	1.94E+06	3.01E+06
Fernald 2	06/21/85	01/23/86								0.00E+00
James A. Fitzpatrick	11/17/74	07/28/75	2.96E+06	4.33E+06	4.78E+06	4.96E+06	4.63E+06	4.90E+06	4.17E+06	6.02E+06
Grand Gulf 1	08/18/82	07/01/85					0.00E+00	1.65E+05	2.65E+06	4.10E+06
Edwin I. Hatch 1	09/12/74	12/31/75	5.10E+06	4.79E+06	2.76E+06	2.68E+06	3.98E+06	3.98E+06	4.76E+06	3.65E+06
Edwin I. Hatch 2	07/04/78	09/05/79		3.64E+06	4.48E+06	3.73E+06	3.81E+06	1.85E+06	5.38E+06	3.62E+06
Hope Creek 1	06/28/86	12/20/86								1.03E+06
Humboldt Bay 3	02/16/63	08/ /63	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LaCrosse	07/11/67	11/01/68	2.01E+05	2.15E+06	2.41E+06	1.38E+05	2.01E+05	3.19E+05	3.25E+05	1.57E+05
LaSalle 1	06/21/82	01/01/84				4.61E+05	1.64E+06		5.21E+06	4.81E+06
LaSalle 2	03/10/84	10/19/84						1.36E+06	3.43E+06	5.72E+06
Limerick 1	12/22/84	02/01/86						0.00E+00	1.14E+06	6.85E+06
Limerick 2	08/12/89	01/08/90								
Millstone 1	10/26/70	03/01/71	4.22E+06	3.40E+06	2.52E+06	4.08E+06	5.35E+06	4.32E+06	4.59E+06	5.25E+06
Monticello	12/10/70	06/30/71	4.40E+06	3.45E+06	3.26E+06	2.42E+06	4.15E+06	2.63E+05	4.28E+06	3.36E+06
Nine Mile Point 1	09/05/69	12/01/69	3.00E+06	4.54E+06	3.27E+06	1.13E+06	2.80E+06	3.64E+06	4.93E+06	3.15E+06
Nine Mile Point 2	05/23/87	04/05/88								
Oyster Creek 1	05/03/69	12/01/69	4.56E+06	1.96E+06	2.63E+06	2.01E+06	2.05E+06	2.79E+05	3.75E+06	1.30E+06
Peach Bottom 2	09/18/73	07/05/74	1.47E+07	4.34E+06	6.63E+06	4.79E+06	4.45E+06	2.43E+06	2.33E+06	6.90E+06
Peach Bottom 3	06/07/74	12/23/74		7.23E+06	3.13E+06	8.53E+06	2.42E+06	7.45E+06	3.23E+06	4.85E+06
Perry 1	06/06/66	11/18/67								
Pilgrim 1	06/16/72	12/01/72	4.84E+06	3.04E+06	3.44E+06	3.29E+06	4.71E+06	3.52E+05	4.95E+06	1.03E+06
Quad-Cities 1	10/18/71	02/18/73	8.76E+06	3.44E+06	5.73E+06	3.24E+06	5.78E+06	3.35E+06	6.07E+06	4.42E+06
Quad-Cities 2	04/28/73	03/10/73		3.61E+06	3.77E+06	5.08E+06	3.15E+06	4.98E+06	4.56E+06	4.73E+06
River Bend 1	10/31/85	08/18/86								3.00E+06
Shoreham 1	02/15/85									
Susquehanna 1	09/10/82	08/08/83				3.21E+06	3.54E+06	6.08E+06	5.26E+06	5.83E+06
Susquehanna 2	05/08/84	02/12/85						9.32E+05	8.95E+06	5.45E+06
Vermont Yankee 1	03/24/72	11/30/72	3.45E+06	2.98E+06	3.57E+06	4.17E+06	2.87E+06	3.34E+06	3.00E+06	2.06E+06
WNP-2	01/19/84	12/13/84						4.10E+05	5.18E+06	5.18E+06

Total 9.98E+07 9.16E+07 8.93E+07 9.02E+07 8.65E+07 8.68E+07 1.07E+08 1.12E+08

* Fort St. Vrain 1 01/31/74 07/01/79 1.24E+05 6.75E+05 7.55E+05 8.68E+05 7.48E+05 5.67E+04 0.00E+00 5.20E+04

* High temperature gas cooled reactor

Table 18

Net Electrical Energy Generation Comparison By Year
Megawatt Hours

Boiling Water Reactors

Facility	Initial Criticality	Commercial Operation	1987	1988	1989	1990	1991	1992	1993
Big Rock Point 1	08/27/62	03/29/63	3.75E+05	3.84E+05	4.17E+05	4.26E+05	4.92E+05	2.71E+05	4.26E+05
Browns Ferry 1	06/17/73	08/01/74	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Browns Ferry 2	07/20/74	03/01/75	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.76E+08	8.39E+08	5.79E+08
Browns Ferry 3	08/08/76	03/01/77	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Brunswick 1	10/08/76	08/18/77	4.05E+06	4.45E+06	4.18E+06	4.32E+06	4.39E+06	1.82E+06	0.00E+00
Brunswick 2	08/20/75	11/03/75	5.69E+06	3.92E+06	4.19E+06	4.05E+06	3.54E+06	1.28E+06	3.86E+06
Clinton 1	02/27/87	11/24/87	6.84E+05	5.86E+06	2.86E+06	3.60E+06	6.05E+06	4.94E+06	5.68E+06
Cooper	02/21/74	07/01/74	5.52E+06	4.20E+06	4.79E+06	5.11E+06	4.80E+06	6.23E+06	3.71E+06
Dresden 1	10/15/59	07/04/60	0.00E+00						
Dresden 2	01/07/70	06/09/70	3.34E+06	4.32E+06	4.75E+06	4.08E+06	2.97E+06	4.18E+06	3.06E+06
Dresden 3	01/31/71	11/18/71	4.40E+06	4.16E+06	5.12E+06	5.14E+06	2.57E+06	3.06E+06	4.97E+06
Duane Arnold	03/23/74	02/01/75	2.54E+06	3.14E+06	3.14E+06	3.01E+06	4.15E+06	3.43E+06	3.24E+06
Ferns 2	06/21/85	01/23/86	1.39E+06	4.08E+06	5.22E+06	7.10E+06	6.18E+06	5.41E+06	8.28E+06
James A. Fitzpatrick	11/17/74	07/28/75	4.20E+06	4.36E+06	6.16E+06	4.60E+06	3.36E+06	0.00E+00	4.75E+06
Grand Gulf 1	08/18/82	07/01/85	7.73E+06	9.59E+06	7.85E+06	7.40E+06	9.12E+06	8.17E+06	7.90E+06
Edwin I. Hatch 1	09/12/74	12/31/75	5.08E+06	4.11E+06	6.48E+06	4.07E+06	4.70E+06	6.18E+06	4.85E+06
Edwin I. Hatch 2	07/04/78	09/05/79	5.76E+06	4.25E+06	4.14E+06	6.53E+06	4.92E+06	4.69E+06	5.00E+06
Hope Creek 1	06/28/86	12/20/88	7.28E+06	6.99E+06	6.61E+06	4.07E+06	7.39E+06	7.05E+06	8.83E+06
Humboldt Bay 3	02/16/63	08/ / 63	0.00E+00						
LaCrosse	07/11/67	11/01/69							
LaSalle 1	06/21/82	01/01/84	4.08E+06	5.44E+06	6.16E+06	8.64E+06	6.83E+06	5.45E+06	7.20E+06
LaSalle 2	09/10/84	10/19/84	4.54E+06	5.66E+06	6.50E+06	6.18E+06	8.71E+06	6.78E+06	5.84E+06
Limerick 1	12/22/84	02/01/88	5.32E+06	6.67E+06	5.21E+06	5.62E+06	8.13E+06	6.23E+06	8.75E+06
Limerick 2	08/12/89	01/08/90			1.06E+05	7.23E+05	7.14E+05	8.49E+05	7.47E+05
Millstone 1	10/28/70	03/01/71	4.38E+06	5.54E+06	4.64E+06	5.09E+06	1.75E+06	3.61E+06	5.27E+06
Monticello	12/10/70	08/30/71	3.53E+06	4.57E+06	2.65E+06	4.51E+06	3.59E+06	4.45E+06	3.88E+06
Nine Mile Point 1	09/05/68	12/01/69	4.62E+06	0.00E+00	0.00E+00	1.28E+06	3.67E+06	2.93E+06	4.35E+06
Nine Mile Point 2	05/23/87	04/05/88	2.61E+05	2.51E+06	4.25E+06	4.14E+06	8.56E+06	4.25E+06	7.19E+06
Oyster Creek 1	05/03/69	12/01/69	3.11E+06	3.54E+06	2.40E+06	4.31E+06	2.95E+06	4.53E+06	4.66E+06
Peach Bottom 2	09/16/73	07/05/74	1.55E+06	0.00E+00	3.86E+06	6.70E+06	5.06E+06	5.67E+06	7.70E+06
Peach Bottom 3	08/07/74	12/23/74	1.46E+06	0.00E+00	1.69E+05	7.53E+05	5.11E+06	7.18E+06	6.31E+06
Perry 1	06/08/86	11/18/87	6.28E+05	7.23E+06	5.32E+06	6.59E+06	8.96E+06	7.17E+06	3.97E+06
Pilgrim 1	06/16/72	12/01/72	0.00E+00	0.00E+00	1.71E+06	4.24E+06	3.42E+06	4.74E+06	4.34E+06
Quad-Cubes 1	10/18/71	02/18/73	4.48E+06	5.66E+06	4.28E+06	5.33E+06	3.54E+06	4.17E+06	5.04E+06
Quad-Cubes 2	04/28/72	03/10/73	4.96E+06	4.18E+06	5.74E+06	4.35E+06	5.30E+06	3.90E+06	3.11E+06
River Bend 1	10/31/85	08/16/88	4.98E+06	7.25E+06	4.79E+06	5.58E+06	6.68E+06	2.76E+06	5.26E+06
Shoreham 1	02/15/85								
Susquehanna 1	09/10/82	08/08/83	6.13E+06	8.41E+06	6.47E+06	6.44E+06	8.62E+06	6.39E+06	5.20E+06
Susquehanna 2	05/08/84	03/12/85	8.60E+06	5.90E+06	6.77E+06	6.29E+06	7.04E+06	7.18E+06	8.34E+06
Vermont Yankee 1	03/24/72	11/30/72	3.54E+06	4.11E+06	3.81E+06	3.62E+06	4.11E+06	3.73E+06	3.87E+06
WNP-2	01/19/84	12/13/84	5.40E+06	6.00E+06	6.12E+06	5.74E+06	4.23E+06	5.69E+06	7.13E+06
Total			1.30E+08	1.46E+08	1.48E+08	1.75E+08	1.80E+08	1.70E+08	1.85E+08
* Fort St. Vrain 1	01/31/74	07/01/79	1.81E+05	8.80E+05					

* High temperature gas cooled reactor

Table 14

Net Electrical Energy Generation Comparison By Year

Pressurized Water Reactors	Megawatt Hours									
	Initial Criticality	Commercial Operation	1979	1980	1981	1982	1983	1984	1985	1986
Arkansas One 1	08/06/74	12/19/74	3 32E+06	3 78E+06	4 90E+06	3 72E+06	3 22E+06	4 60E+06	5 19E+06	5 57E+06
Arkansas One 2	12/05/78	03/26/80	8 81E+05	3 65E+06	4 32E+06	3 81E+06	4 43E+06	6 20E+06	4 70E+06	5 31E+06
Beaver Valley 1	05/10/76	10/01/76	1 79E+06	3 01E+06	4 86E+06	2 69E+06	4 68E+06	4 75E+06	5 90E+06	4 78E+06
Beaver Valley 2	08/04/87	11/17/87								
Bradwood 1	05/29/87	07/29/88								
Bradwood 2	03/08/83	10/17/88								
Byron 1	02/02/85	09/16/85							1 01E+06	7 40E+06
Byron 2	01/09/87	08/21/87								
Callaway 1	10/02/84	12/19/84						3 23E+05	6 05E+06	7 20E+06
Calvert Cliffs 1	10/07/74	05/08/75	9 68E+06	4 53E+06	6 11E+06	5 36E+06	5 57E+06	6 22E+06	4 38E+06	5 83E+06
Calvert Cliffs 2	11/30/76	04/01/77		6 41E+06	5 42E+06	5 00E+06	6 11E+06	5 34E+06	5 61E+06	7 01E+06
Catawba 1	01/07/85	06/29/85							3 44E+06	5 18E+06
Catawba 2	05/08/86	08/19/86								1 30E+06
Comanche Peak 1	04/03/90	08/13/90								
Comanche Peak 2	03/24/93	08/03/93								
Donald C Cook 1	01/18/76	08/27/75	1 18E+07	6 46E+06	6 79E+06	5 35E+06	5 29E+06	7 75E+06	2 12E+06	6 65E+06
Donald C Cook 2	03/10/78	07/01/78		6 70E+06	6 38E+06	7 00E+06	7 01E+06	5 96E+06	5 86E+06	4 34E+06
Crystal River 3	01/14/77	03/13/77	3 76E+06	3 35E+06	4 01E+06	4 92E+06	3 77E+06	6 48E+06	2 85E+06	2 65E+06
Davis Besse 1	08/12/77	07/31/78	3 13E+06	2 09E+06	4 36E+06	3 22E+06	4 88E+06	4 29E+06	1 94E+06	3 49E+06
Diablo Canyon 1	04/29/84	05/07/85						2 04E+05	5 23E+06	5 29E+06
Diablo Canyon 2	09/19/85	03/13/86							5 41E+06	6 53E+06
Joseph M Farley 1	08/09/77	12/01/77	1 74E+06	4 60E+06	2 62E+06	5 22E+06	5 26E+06	5 43E+06	5 87E+06	5 73E+06
Joseph M Farley 2	05/05/81	07/30/81			2 92E+06	5 30E+06	5 98E+06	6 62E+06	5 47E+06	5 96E+06
Fort Calhoun 1	08/08/73	08/20/74	3 67E+06	2 01E+06	2 15E+06	3 48E+06	2 75E+06	2 37E+06	3 07E+06	3 61E+06
R E Ginna	11/08/69	07/01/70	2 96E+06	3 09E+06	3 32E+06	2 41E+06	3 04E+06	3 16E+06	3 62E+06	3 61E+06
Haddam Neck	07/24/87	01/01/88	4 12E+06	3 56E+06	4 06E+06	4 54E+06	3 78E+06	3 36E+06	4 64E+06	2 13E+06
Harris 1	01/03/87	05/02/87								
Indian Point 1	08/02/82	10/ /82	4 80E+06	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00
Indian Point 2	05/22/73	08/01/74		4 28E+06	3 06E+06	4 45E+06	5 90E+06	2 89E+06	6 67E+06	3 81E+06
Indian Point 3	04/06/76	08/30/76	4 78E+06	3 07E+06	3 03E+06	1 44E+06	6 07E+04	6 04E+06	4 73E+06	5 53E+06
Kewaunee	03/07/74	06/16/74	3 44E+06	3 63E+06	3 77E+06	3 82E+06	3 71E+06	3 81E+06	3 70E+06	3 85E+06
Manne Yankee	10/23/72	12/28/72	4 54E+06	4 40E+06	5 21E+06	4 52E+06	0 00E+00	5 13E+06	5 35E+06	6 24E+06
McGuire 1	06/08/81	12/01/81			1 91E+04	4 30E+06	4 63E+06	6 42E+06	6 78E+06	5 16E+06
McGuire 2	05/08/83	03/01/84					0 00E+00	6 56E+06	5 60E+06	6 21E+06
Millstone 2	10/17/76	12/26/76	4 36E+06	4 88E+06	6 09E+06	5 01E+06	2 45E+06	6 61E+06	3 80E+06	5 16E+06
Millstone 3	01/23/86	04/23/86								5 80E+06
North Anna 1	04/05/78	06/06/78	4 19E+06	5 63E+06	4 64E+06	2 40E+06	5 31E+06	3 78E+06	5 80E+06	6 31E+06
North Anna 2	06/12/80	12/14/80		3 50E+05	5 65E+06	4 05E+06	5 80E+06	4 72E+06	6 81E+06	6 02E+06
Oconee 1	04/19/73	07/13/73	1 32E+07	5 12E+06	3 00E+06	5 15E+06	5 67E+06	6 17E+06	7 07E+06	4 78E+06
Oconee 2	11/11/73	09/09/74		3 88E+06	5 19E+06	3 44E+06	5 14E+06	7 30E+06	5 08E+06	5 80E+06
Oconee 3	09/05/74	12/16/74		5 22E+06	5 64E+06	2 12E+06	7 10E+06	5 35E+06	4 86E+06	5 06E+06
Paksades	05/24/71	12/31/71	3 43E+06	2 38E+06	3 46E+06	3 35E+06	3 77E+06	6 13E+06	5 80E+06	6 41E+06
Palo Verde 1	05/25/85	02/13/86							1 13E+06	6 85E+06
Palo Verde 2	04/18/86	09/19/86								2 65E+06
Palo Verde 3	10/25/87	01/08/88								
Point Beach 1	11/02/70	12/21/70	6 77E+06	2 48E+06	2 61E+06	2 70E+06	2 38E+06	3 11E+06	3 35E+06	3 77E+06
Point Beach 2	05/30/72	10/01/71		3 59E+06	3 72E+06	3 81E+06	3 02E+06	3 51E+06	3 60E+06	3 42E+06
Praine Island 1	12/01/73	12/18/73	7 10E+06	3 11E+06	3 84E+06	3 92E+06	3 89E+06	4 16E+06	3 68E+06	3 83E+06
Praine Island 2	12/17/74	12/21/74		3 47E+06	3 09E+06	3 66E+06	3 72E+06	3 91E+06	3 61E+06	3 86E+06
Rancho Seco 1	08/18/74	04/17/75	5 71E+06	4 42E+06	2 63E+06	3 37E+06	2 85E+06	3 77E+06	1 94E+06	0 00E+00
H B Robinson 2	09/20/70	03/07/71	4 00E+06	3 21E+06	3 50E+06	2 25E+06	3 35E+06	1 90E+06	5 24E+06	4 80E+06
Salem 1	12/11/76	06/30/77	2 04E+06	5 66E+06	6 19E+06	4 09E+06	5 38E+06	2 13E+06	9 01E+06	7 08E+06
Salem 2	08/08/80	10/13/81		0 00E+00	1 63E+06	7 94E+06	7 44E+06	3 20E+06	5 02E+06	5 31E+06
San Onofre 1	06/14/67	01/01/68	3 36E+06	6 17E+05	7 78E+05	5 10E+05	0 00E+00	2 63E+06	2 46E+06	9 74E+05
San Onofre 2	07/26/82	08/08/83				1 26E+05	3 78E+06	5 27E+06	5 15E+06	6 36E+06
San Onofre 3	08/29/83	04/01/84					9 97E+05	4 10E+06	3 71E+06	6 76E+06
Seabrook 1	06/13/89	08/19/90								
Sequoyah 1	07/05/80	07/01/81		5 18E+05	2 53E+06	4 91E+06	7 34E+06	6 10E+06	4 08E+06	0 00E+00
Sequoyah 2	11/05/81	06/01/82					6 69E+06	6 40E+06	5 61E+06	0 00E+00
South Texas 1	03/08/68	08/25/68								
South Texas 2	03/13/69	06/19/69								

Table 14

Net Electrical Energy Generation Comparison By Year

Pressurized Water Reactors	Megawatt Hours									
	Initial Commerciality	Commercial Operation	1979	1980	1981	1982	1983	1984	1985	1986
St. Lucie 1	04/22/76	12/21/76	4.88E+06	5.20E+06	4.98E+06	8.78E+06	1.07E+06	4.23E+06	5.87E+06	7.05E+06
St. Lucie 2	06/02/83	06/08/83					2.40E+06	5.56E+06	6.11E+06	6.15E+06
Summer 1	10/22/82	01/01/84				1.91E+05	4.33E+06	4.20E+06	5.23E+06	7.16E+06
Surry 1	07/01/72	12/22/72	2.87E+06	2.47E+06	2.38E+06	5.46E+06	3.62E+06	3.33E+06	5.82E+06	4.49E+06
Surry 2	03/07/73	05/01/73		2.24E+06	5.15E+06	5.49E+06	4.09E+06	5.21E+06	4.07E+06	4.50E+06
Three Mile Island 1	06/05/74	09/02/74	8.48E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.12E+05	4.82E+06
Three Mile Island 2	03/28/78	12/30/78	N/R	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Trojan	12/15/75	05/20/76	5.27E+06	6.07E+06	6.42E+06	4.80E+06	4.06E+06	4.74E+06	6.91E+06	7.09E+06
Turkey Point 3	10/20/72	12/14/72	6.71E+06	4.39E+06	9.12E+05	3.77E+06	4.33E+06	4.78E+06	3.41E+06	4.51E+06
Turkey Point 4	06/11/73	09/07/73		3.85E+06	4.90E+06	3.84E+06	2.97E+06	3.08E+06	5.18E+06	1.72E+06
Vogtle 1	03/09/87	05/31/87								
Vogtle 2	03/28/89	05/20/89								
Waldenford 3	03/04/85	06/24/85							1.81E+06	7.30E+06
Wolf Creek 1	05/22/85	09/03/85							2.94E+06	6.97E+06
Yankee Rowe 1	08/19/60	07/01/61	1.23E+06	2.92E+05	8.85E+05	8.82E+06	1.34E+06	1.03E+06	1.18E+06	1.39E+06
Zion 1	06/19/73	12/31/73	1.03E+07	6.51E+06	6.19E+06	4.70E+06	4.02E+06	5.69E+06	4.81E+06	4.90E+06
Zion 2	12/24/73	09/17/74		5.28E+06	5.66E+06	5.16E+06	5.18E+06	5.99E+06	5.11E+06	7.33E+06
Total			1.50E+08	1.57E+08	1.78E+08	1.84E+08	1.96E+08	2.32E+08	2.73E+08	2.86E+08

N/R = Not Reported

Table 14

Net Electrical Energy Generation Comparisons By Year

Facility	Megawatt Hours								
	Initial Criticality	Commercial Operation	1987	1988	1989	1990	1991	1992	1993
Pressurized Water Reactors									
Arkansas One 1	08/06/74	12/19/74	4.76E+06	3.95E+06	3.37E+06	4.12E+06	6.34E+06	5.83E+06	6.13E+06
Arkansas One 2	12/05/78	03/26/80	6.61E+06	4.95E+06	5.47E+06	7.13E+06	6.12E+06	5.50E+06	7.34E+06
Beaver Valley 1	05/10/76	10/01/78	5.62E+06	4.88E+06	3.79E+06	6.17E+06	3.70E+06	6.30E+06	4.35E+06
Beaver Valley 2	08/04/87	11/17/87	7.38E+06	6.40E+06	4.54E+06	4.29E+06	6.76E+06	5.64E+06	5.20E+06
Braidwood 1	05/29/87	07/29/88	1.46E+06	3.42E+06	4.63E+06	8.26E+06	4.98E+06	7.15E+06	8.69E+06
Braidwood 2	03/05/88	10/17/88		1.35E+06	7.14E+06	6.33E+06	6.54E+06	8.75E+06	7.35E+06
Byron 1	02/02/85	09/16/86	5.33E+06	6.29E+06	8.95E+06	8.83E+06	6.31E+06	8.98E+06	7.36E+06
Byron 2	01/08/87	08/21/87	1.97E+06	6.36E+06	6.08E+06	6.01E+06	8.77E+06	6.98E+06	7.62E+06
Callaway 1	10/02/84	12/19/84	6.32E+06	8.94E+06	8.35E+06	8.01E+06	9.95E+06	8.09E+06	8.39E+06
Calvert Cliffs 1	10/07/74	05/08/75	5.27E+06	5.16E+06	1.35E+06	1.34E+06	5.47E+06	4.11E+06	7.33E+06
Calvert Cliffs 2	11/30/76	04/01/77	4.83E+06	6.80E+06	4.53E+06	0.00E+00	3.64E+06	6.69E+06	4.97E+06
Catawba 1	01/07/85	06/29/85	6.38E+06	7.83E+06	7.76E+06	6.87E+06	6.67E+06	7.03E+06	7.58E+06
Catawba 2	05/08/86	06/19/86	7.17E+06	6.17E+06	6.51E+06	8.44E+06	7.27E+06	9.27E+06	8.16E+06
Comanche Peak 1	04/03/90	08/13/90				2.51E+06	5.38E+06	6.95E+06	7.15E+06
Comanche Peak 2	03/24/93	08/03/93							3.43E+06
Donald C. Cook 1	01/18/75	08/27/75	5.03E+06	7.47E+06	5.43E+06	6.30E+06	7.34E+06	4.98E+06	8.76E+06
Donald C. Cook 2	03/10/78	07/01/78	5.08E+06	2.32E+06	6.64E+06	4.61E+06	6.19E+06	1.43E+06	7.55E+06
Crystal River 3	01/14/77	03/13/77	3.62E+06	5.77E+06	2.93E+06	4.14E+06	5.46E+06	5.30E+06	6.06E+06
Davis-Besse 1	08/12/77	07/31/78	5.06E+06	1.16E+06	7.32E+06	4.16E+06	5.84E+06	7.65E+06	6.06E+06
Diablo Canyon 1	04/29/84	05/07/85	8.28E+06	5.26E+06	7.20E+06	8.71E+06	7.36E+06	7.45E+06	9.03E+06
Diablo Canyon 2	08/18/85	03/13/86	5.72E+06	6.23E+06	8.62E+06	7.56E+06	7.71E+06	9.25E+06	7.79E+06
Joseph M. Farley 1	08/09/77	12/01/77	6.44E+06	5.91E+06	6.02E+06	6.91E+06	5.41E+06	8.65E+06	6.87E+06
Joseph M. Farley 2	05/05/81	07/30/81	4.80E+06	7.17E+06	5.62E+06	5.25E+06	6.74E+06	5.41E+06	5.34E+06
Fort Calhoun 1	08/08/73	06/20/74	3.06E+06	2.63E+06	3.30E+06	2.42E+06	3.25E+06	2.54E+06	3.10E+06
R. E. Girna	11/06/89	07/01/90	3.80E+06	3.53E+06	3.07E+06	3.45E+06	3.48E+06	3.48E+06	3.50E+06
Haddam Neck	07/24/87	01/01/88	2.53E+06	3.31E+06	2.96E+06	1.15E+06	3.70E+06	3.88E+06	3.74E+06
Harris 1	01/03/87	05/02/87	3.38E+06	5.83E+06	5.63E+06	6.34E+06	5.92E+06	5.41E+06	7.53E+06
Indian Point 1	08/02/82	10/ /82	0.00E+00						0.00E+00
Indian Point 2	05/22/73	08/01/74	5.15E+06	6.06E+06	4.47E+06	5.21E+06	3.86E+06	7.88E+06	5.93E+06
Indian Point 3	04/06/78	08/30/78	4.88E+06	6.71E+06	4.97E+06	5.03E+06	7.30E+06	4.76E+06	1.19E+06
Kewaunee	03/07/74	06/16/74	4.01E+06	3.91E+06	3.74E+06	3.90E+06	3.67E+06	3.94E+06	3.82E+06
Maine Yankee	10/23/72	12/28/72	4.04E+06	5.02E+06	6.94E+06	4.88E+06	6.28E+06	5.36E+06	5.74E+06
McGuire 1	08/06/81	12/01/81	7.35E+06	7.39E+06	7.80E+06	4.73E+06	6.84E+06	7.49E+06	5.52E+06
McGuire 2	05/08/83	03/01/84	7.57E+06	8.05E+06	7.41E+06	6.45E+06	9.52E+06	6.78E+06	6.81E+06
Millstone 2	10/17/75	12/28/75	8.89E+06	5.73E+06	4.89E+06	8.30E+06	3.94E+06	2.71E+06	6.30E+06
Millstone 3	01/23/86	04/23/86	6.74E+06	7.67E+06	7.06E+06	8.22E+06	2.84E+06	6.57E+06	6.46E+06
North Anna 1	04/05/78	06/08/78	3.57E+06	6.90E+06	4.30E+06	7.23E+06	5.63E+06	5.96E+06	5.69E+06
North Anna 2	05/12/80	12/14/80	6.55E+06	7.88E+06	5.90E+06	5.96E+06	7.68E+06	6.32E+06	6.23E+06
Oconee 1	04/19/73	07/15/73	5.03E+06	7.19E+06	5.94E+06	6.45E+06	6.01E+06	6.28E+06	5.52E+06
Oconee 2	11/11/73	09/09/74	6.23E+06	5.54E+06	6.01E+06	6.27E+06	7.43E+06	5.94E+06	6.23E+06
Oconee 3	09/05/74	12/16/74	5.08E+06	5.97E+06	6.34E+06	7.43E+06	5.58E+06	5.45E+06	7.39E+06
Palisades	05/24/71	12/31/71	2.63E+06	3.44E+06	3.64E+06	3.01E+06	4.67E+06	4.87E+06	3.55E+06
Palo Verde 1	05/25/85	02/13/86	5.27E+06	6.87E+06	1.80E+06	4.72E+06	9.31E+06	7.12E+06	7.51E+06
Palo Verde 2	04/18/86	09/19/86	5.19E+06	6.75E+06	4.70E+06	6.34E+06	8.27E+06	1.01E+07	5.13E+06
Palo Verde 3	10/25/87	01/08/88	3.20E+06	3.55E+06	1.33E+06	9.64E+06	7.52E+06	8.39E+06	9.39E+06
Point Beach 1	11/02/70	12/21/70	3.57E+06	3.83E+06	3.61E+06	3.53E+06	3.63E+06	3.60E+06	3.80E+06
Point Beach 2	05/30/72	10/01/71	5.61E+06	3.72E+06	3.49E+06	3.79E+06	3.69E+06	3.67E+06	3.84E+06
Prairie Island 1	12/01/73	12/16/73	3.59E+06	3.82E+06	4.39E+06	3.83E+06	3.98E+06	3.60E+06	4.38E+06
Prairie Island 2	12/17/74	12/21/74	4.43E+06	3.89E+06	3.89E+06	3.60E+06	4.48E+06	3.22E+06	3.75E+06
Runcho Seco 1	09/18/74	04/17/75	0.00E+00	2.81E+06	1.41E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
H. B. Robinson 2	09/20/70	03/07/71	4.23E+06	3.18E+06	2.78E+06	3.31E+06	4.79E+06	4.06E+06	4.19E+06
Salem 1	12/11/76	06/30/77	6.21E+06	7.41E+06	6.21E+06	5.96E+06	6.81E+06	5.30E+06	5.87E+06
Salem 2	08/08/80	10/13/81	6.17E+06	5.97E+06	7.82E+06	5.41E+06	7.66E+06	4.72E+06	5.54E+06
San Onofre 1	06/14/87	01/01/88	2.71E+06	1.37E+06	1.17E+06	1.54E+06	2.03E+06	1.17E+06	0.00E+00
San Onofre 2	07/26/82	08/08/83	6.23E+06	9.00E+06	5.22E+06	8.31E+06	5.76E+06	6.60E+06	7.65E+06
San Onofre 3	08/29/83	04/01/84	7.52E+06	8.13E+06	8.84E+06	6.58E+06	8.68E+06	6.83E+06	7.12E+06
Seabrook 1	08/13/89	08/19/90				4.09E+06	6.61E+06	7.87E+06	9.05E+06
Sequoyah 1	07/05/80	07/01/81	0.00E+00	6.71E+04	9.55E+06	6.82E+06	7.27E+06	8.36E+06	1.24E+06
Sequoyah 2	11/05/81	06/01/82	0.00E+00	3.88E+06	9.55E+06	7.18E+06	9.32E+06	7.27E+06	2.06E+06
South Texas 1	03/08/88	08/25/88		2.79E+06	6.88E+06	6.00E+06	7.20E+06	7.27E+06	6.66E+06
South Texas 2	03/12/89	08/19/89			3.02E+06	6.43E+06	7.26E+06	1.03E+07	6.90E+06

Table 14

Net Electrical Energy Generation Comparison By Year

			Megawatt Hours							
Pressurized Water Reactors										
Facility	Initial Criticality	Commercial Operation	1987	1988	1989	1990	1991	1992	1993	
St. Lucie 1	04/22/76	12/21/76	5 72E+06	6 25E+06	6 95E+06	4 49E+06	5 79E+06	7 14E+06	7 14E+06	
St. Lucie 2	06/02/88	08/08/88	5 95E+06	7 41E+06	5 44E+06	5 32E+06	7 43E+06	5 43E+06	5 43E+06	
Summer 1	10/22/82	01/01/84	5 15E+06	5 05E+06	5 41E+06	6 11E+06	5 34E+06	7 52E+06	6 10E+06	
Surry 1	07/01/72	12/22/72	4 63E+06	2 68E+06	3 17E+06	4 77E+06	6 59E+06	5 22E+06	6 23E+06	
Surry 2	03/07/73	05/01/73	4 79E+06	3 57E+06	8 94E+05	5 84E+06	3 99E+06	6 43E+06	4 54E+06	
Three Mile Island 1	06/05/74	09/02/74	5 03E+05	5 47E+06	7 22E+06	5 30E+06	5 67E+06	7 32E+06	5 96E+06	
Three Mile Island 2	03/28/78	12/30/78	0 00E+00							
Trojan	12/15/75	06/20/76	4 35E+06	6 34E+06	5 53E+06	6 07E+06	1 46E+06	4 57E+06	0 00E+00	
Turkey Point 3	10/20/72	13/14/72	8 56E+05	9 45E+06	3 59E+06	3 36E+06	1 31E+06	3 42E+06	3 59E+06	
Turkey Point 4	06/11/73	09/07/73	2 64E+06	3 28E+06	2 09E+06	4 38E+06	7 89E+05	4 64E+06	2 09E+06	
Vogtle 1	03/09/87	05/31/87	3 92E+06	6 79E+06	8 71E+06	7 34E+06	7 50E+06	9 38E+06	8 60E+06	
Vogtle 2	03/28/89	05/20/89			5 55E+06	6 85E+06	8 90E+06	7 77E+06	8 68E+06	
Waterford 3	03/04/85	09/24/85	7 43E+06	6 54E+06	7 61E+06	8 60E+06	7 27E+06	7 62E+06	9 14E+06	
Wolf Creek 1	05/22/85	09/03/85	6 50E+06	6 66E+06	9 71E+06	7 87E+06	5 86E+06	8 49E+06	7 90E+06	
Yankee Rowe 1	08/19/60	07/01/61	1 14E+06	1 12E+06	1 31E+06	8 26E+05	9 92E+05	0 00E+00	0 00E+00	
Zion 1	06/19/79	12/31/79	8 06E+06	6 34E+06	5 00E+06	4 45E+06	4 26E+06	4 11E+06	7 02E+06	
Zion 2	12/24/73	09/17/74	5 11E+06	6 65E+06	7 89E+06	2 65E+06	5 13E+06	5 37E+06	5 29E+06	
Total			3 19E+08	3 65E+08	3 88E+08	3 97E+08	4 33E+08	4 45E+08	4 23E+08	

* High temperature gas cooled reactor

Table 15

Thermal Energy Generation Comparison By Year

Boiling Water Reactors	Megawatt Hours									
	Initial Criticality	Commercial Operation	1979	1980	1981	1982	1983	1984	1985	1986
Big Rock Point 1	09/27/62	03/29/63	3.86E+06	1.40E+06	1.63E+06	1.20E+06	1.14E+06	1.37E+06	1.19E+06	1.66E+06
Browns Ferry 1	08/17/73	08/01/74	6.31E+07	1.92E+07	1.36E+07	2.49E+07	6.78E+06	2.45E+07	4.95E+06	0.00E+00
Browns Ferry 2	07/20/74	03/01/75		1.74E+07	2.31E+07	1.35E+07	1.97E+07	1.31E+07	0.00E+00	0.00E+00
Browns Ferry 3	08/08/76	03/01/77		2.13E+07	1.95E+07	1.55E+07	1.70E+07	9.11E+05	4.65E+06	0.00E+00
Brunswick 1	10/08/78	03/18/77	2.12E+07	1.23E+07	8.29E+06	9.48E+06	4.53E+06	1.58E+07	6.06E+06	1.88E+07
Brunswick 2	03/20/75	11/03/75		5.35E+06	1.04E+07	6.30E+06	1.23E+07	4.53E+06	1.57E+07	9.43E+06
Clinton 1	02/27/87	11/24/87								
Cooper	02/21/74	07/01/74	1.58E+07	1.38E+07	1.39E+07	1.84E+07	1.05E+07	1.09E+07	3.42E+06	1.26E+07
Dresden 1	10/15/59	07/04/80	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E+07	0.00E+00	0.00E+00
Dresden 2	01/07/70	08/09/70	2.77E+07	1.57E+07	1.13E+07	1.69E+07	1.13E+07	7.10E+06	1.03E+07	1.52E+07
Dresden 3	01/31/71	11/18/71		1.42E+07	1.71E+07	1.27E+07	1.37E+07	7.10E+06	1.47E+07	5.04E+06
Duane Arnold	03/23/74	02/01/75	9.07E+06	8.87E+06	7.05E+06	7.32E+06	7.38E+06	8.71E+06	6.15E+06	9.48E+06
Fort St. Vrain 1	05/21/85	01/23/86								2.23E+05
James A. Fitzpatrick	11/17/74	07/28/75	6.97E+06	1.30E+07	1.42E+07	1.51E+07	1.42E+07	1.52E+07	1.28E+07	1.34E+07
Grand Gulf 1	08/18/82	07/01/85					0.00E+00	6.80E+05	9.80E+06	1.47E+07
Edwin I. Hatch 1	09/12/74	12/31/75	1.62E+07	1.54E+07	8.97E+06	8.42E+06	1.29E+07	1.20E+07	1.53E+07	1.18E+07
Edwin I. Hatch 2	07/04/76	09/05/79		1.16E+07	1.47E+07	1.18E+07	1.19E+07	5.99E+06	1.70E+07	1.19E+07
Hope Creek 1	08/28/88	12/20/88								3.62E+06
Humboldt Bay 3	02/16/83	08/ 83	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LaCrosse	07/11/67	11/01/69	7.48E+05	8.00E+05	9.11E+05	5.27E+05	7.60E+05	1.07E+06	1.11E+06	5.56E+05
LaSalle 1	08/21/82	01/01/84				2.08E+06	5.86E+06	2.30E+07	1.54E+07	6.54E+06
LaSalle 2	03/10/84	10/19/84						4.51E+06	1.10E+07	1.80E+07
Limerick 1	12/22/84	02/01/86						0.00E+00	4.42E+06	2.18E+07
Limerick 2	08/12/89	01/08/90								
Millstone 1	10/26/70	03/01/71	1.30E+07	1.04E+07	8.60E+06	1.86E+07	1.64E+07	1.34E+07	1.42E+07	1.61E+07
Monticello	12/10/70	08/30/71	1.35E+07	1.07E+07	1.01E+07	7.68E+06	1.30E+07	8.98E+05	1.31E+07	1.04E+07
Nine Mile Point 1	09/05/69	12/01/69	9.67E+06	1.41E+07	1.01E+07	3.42E+06	8.72E+06	1.12E+07	1.52E+07	9.76E+06
Nine Mile Point 2	05/23/87	04/05/88								
Oyster Creek 1	05/03/69	12/01/69	1.36E+07	6.27E+06	8.44E+06	8.79E+06	9.23E+06	1.04E+06	1.16E+07	4.12E+06
Peach Bottom 2	09/16/73	07/05/74	4.58E+07	1.37E+07	2.08E+07	1.53E+07	1.40E+07	7.87E+06	7.65E+06	2.18E+07
Peach Bottom 3	08/07/74	12/23/74		2.28E+07	9.85E+06	2.65E+07	7.62E+06	2.32E+07	1.08E+07	1.55E+07
Perry 1	06/06/86	11/18/87								
Plymouth 1	06/16/72	12/01/72	1.47E+07	9.20E+06	1.05E+07	9.90E+06	1.42E+07	4.99E+05	1.50E+07	3.09E+06
Quad-Cities 1	10/18/71	02/18/73	3.00E+07	1.17E+07	1.88E+07	1.12E+07	1.89E+07	1.08E+07	1.32E+07	1.41E+07
Quad-Cities 2	04/26/72	03/10/73		1.22E+07	1.27E+07	1.67E+07	1.08E+07	1.61E+07	1.48E+07	1.52E+07
River Bend 1	10/31/85	06/18/86								9.85E+06
Shoreham 1	02/15/85									
Susquehanna 1	09/10/82	06/08/83				1.16E+06	1.12E+07	1.94E+07	1.70E+07	1.87E+07
Susquehanna 2	05/08/84	02/12/85						3.23E+06	2.20E+07	1.74E+07
Vermont Yankee 1	03/24/72	11/20/72	1.08E+07	9.38E+06	1.13E+07	1.31E+07	9.12E+06	1.04E+07	9.55E+06	6.57E+06
WNP-2	01/19/84	12/13/84						1.21E+06	1.64E+07	1.61E+07
Total			3.14E+08	2.90E+08	2.86E+08	2.89E+08	2.75E+08	2.90E+08	3.40E+08	3.58E+08
* Fort St. Vrain 1	01/31/74	07/01/79	4.78E+05	2.23E+06	2.23E+06	1.88E+06	2.59E+06	3.40E+05	3.34E+04	3.70E+05

* High temperature gas cooled reactor

Table 15

Thermal Energy Generation Comparison By Year

Boiling Water Reactors	Megawatt Hours								
	Initial Construction	Commercial Operation	1987	1988	1989	1990	1991	1992	1993
Big Rock Point 1	09/27/62	03/29/63	1.23E+06	1.26E+06	1.14E+07	1.40E+06	1.63E+06	8.97E+06	1.41E+06
Browns Ferry 1	08/17/73	08/01/74	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Browns Ferry 2	07/20/74	03/01/75	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E+07	2.57E+07	1.78E+07
Browns Ferry 3	08/08/76	03/01/77	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Brunswick 1	10/08/76	03/18/77	1.26E+07	1.43E+07	1.32E+07	1.37E+07	1.39E+07	5.90E+06	0.00E+00
Brunswick 2	03/20/79	11/03/75	1.83E+07	1.24E+07	1.34E+07	1.30E+07	1.18E+07	4.20E+06	1.26E+07
Clinton 1	02/27/87	11/24/87	2.15E+06	1.89E+07	9.28E+06	1.15E+07	1.92E+07	1.57E+07	1.86E+07
Cooper	02/21/74	07/01/74	1.73E+07	1.31E+07	1.50E+07	1.59E+07	1.50E+07	1.93E+07	1.15E+07
Dresden 1	10/15/59	07/04/60	0.00E+00						0.00E+00
Dresden 2	01/07/70	08/09/70	1.11E+07	1.45E+07	1.58E+07	1.35E+07	1.00E+07	1.41E+07	1.03E+07
Dresden 3	01/31/71	11/16/71	1.46E+07	1.36E+07	1.67E+07	1.67E+07	9.00E+06	1.02E+07	1.62E+07
Duane Arnold	03/23/74	02/01/75	7.96E+06	9.97E+06	1.00E+07	9.64E+06	1.33E+07	1.10E+07	1.04E+07
Ferns 2	06/21/85	01/23/86	5.99E+06	1.30E+07	1.63E+07	2.25E+07	1.96E+07	1.79E+07	2.56E+07
James A. Fitzpatrick	11/17/74	07/28/75	1.31E+07	1.34E+07	1.88E+07	1.42E+07	1.04E+07	0.00E+00	1.48E+07
Grand Gulf 1	08/18/82	07/01/83	2.55E+07	3.05E+07	2.51E+07	2.43E+07	2.98E+07	2.65E+07	2.56E+07
Edwin I. Hatch 1	09/12/74	12/31/75	1.65E+07	1.35E+07	2.09E+07	1.35E+07	1.56E+07	2.02E+07	1.64E+07
Edwin I. Hatch 2	07/04/78	09/05/79	1.83E+07	1.36E+07	1.35E+07	2.08E+07	1.59E+07	1.53E+07	1.60E+07
Hope Creek 1	08/28/86	12/20/86	2.29E+07	2.22E+07	2.10E+07	1.35E+07	2.35E+07	2.23E+07	2.78E+07
Humboldt Bay 3	02/16/63	08/ / 63	0.00E+00						
LaCrosse	07/11/67	11/01/69							
LaSalle 1	06/21/82	01/01/84	1.31E+07	1.89E+07	1.91E+07	2.64E+07	2.10E+07	1.99E+07	2.23E+07
LaSalle 2	03/10/84	10/19/84	1.43E+07	1.81E+07	2.04E+07	1.91E+07	2.68E+07	1.78E+07	1.81E+07
Limerick 1	12/22/84	02/01/85	1.73E+07	2.19E+07	1.71E+07	1.82E+07	2.59E+07	1.97E+07	2.77E+07
Limerick 2	08/12/89	01/08/90			3.54E+06	2.29E+07	2.24E+07	2.67E+07	2.33E+07
Millstone 1	10/26/70	03/01/71	1.34E+07	1.70E+07	1.42E+07	1.56E+07	5.52E+06	1.14E+07	1.67E+07
Monticello	12/10/70	08/30/71	1.10E+07	1.43E+07	8.49E+06	1.40E+07	1.12E+07	1.39E+07	1.19E+07
Nine Mile Point 1	08/05/69	12/01/69	1.42E+07	0.00E+00	0.00E+00	4.07E+06	1.19E+07	8.94E+06	1.34E+07
Nine Mile Point 2	08/23/87	04/05/88	1.53E+06	8.33E+06	1.41E+07	1.34E+07	2.05E+07	1.41E+07	2.33E+07
Oyster Creek 1	05/03/68	12/01/69	9.69E+06	1.09E+07	7.75E+06	1.36E+07	9.43E+06	1.41E+07	1.46E+07
Peach Bottom 2	09/16/73	07/05/74	4.96E+06	0.00E+00	1.25E+07	2.11E+07	1.61E+07	1.78E+07	2.41E+07
Peach Bottom 3	08/07/74	12/23/74	4.76E+06	0.00E+00	8.84E+06	2.37E+07	1.63E+07	2.35E+07	2.02E+07
Perry 1	06/06/86	11/18/87	2.56E+06	2.23E+07	1.62E+07	2.00E+07	2.75E+07	2.19E+07	1.24E+07
Pilgrim 1	08/16/72	12/01/72	0.00E+00	0.00E+00	5.48E+06	1.29E+07	1.04E+07	1.43E+07	1.31E+07
Quad Cities 1	10/18/71	02/18/73	1.42E+07	1.83E+07	1.40E+07	1.70E+07	1.13E+07	1.35E+07	1.61E+07
Quad Cities 2	04/26/72	03/10/73	1.60E+07	1.36E+07	1.65E+07	1.36E+07	1.69E+07	1.26E+07	1.01E+07
River Bend 1	10/31/85	08/16/86	1.55E+07	2.25E+07	1.53E+07	1.75E+07	2.11E+07	8.77E+06	1.66E+07
Shoreham 1	02/15/85								
Susquehanna 1	09/10/82	06/08/83	1.96E+07	2.65E+07	2.05E+07	2.05E+07	2.78E+07	2.03E+07	1.67E+07
Susquehanna 2	05/08/84	02/12/85	2.72E+07	1.87E+07	2.14E+07	2.69E+07	2.23E+07	2.26E+07	2.63E+07
Vermont Yankee 1	03/24/72	11/30/72	1.11E+07	1.30E+07	1.13E+07	1.13E+07	1.29E+07	1.18E+07	1.06E+07
WNP-2	01/19/84	12/13/84	1.67E+07	1.87E+07	1.92E+07	1.80E+07	1.33E+07	1.25E+07	2.16E+07
Total			4.15E+06	4.65E+06	4.80E+06	5.54E+06	5.71E+06	5.39E+06	5.54E+06
* Fort St. Vrain 1	01/31/74	07/01/79	6.68E+05	1.95E+06					

* High temperature gas cooled reactor

Table 16

Thermal Energy Generation Comparison By Year

Facility	Megawatt Hours									
	Initial Criticality	Commercial Operation	1978	1980	1981	1982	1983	1984	1985	1986
Pressurized Water Reactors										
Arkansas One 1	08/06/74	12/18/74	1.05E+07	1.29E+07	1.54E+07	1.22E+07	1.02E+07	1.44E+07	1.62E+07	1.11E+07
Arkansas One 2	12/05/78	03/26/80	3.45E+06	1.16E+07	1.39E+07	1.25E+07	1.43E+07	1.95E+07	1.50E+07	1.68E+07
Beaver Valley 1	05/10/76	10/01/76	6.11E+06	1.13E+06	1.55E+07	8.88E+06	1.51E+07	1.58E+07	1.96E+07	1.55E+07
Beaver Valley 2	08/04/87	11/17/87								
Brickwood 1	05/29/87	07/29/88								
Brickwood 2	03/08/88	10/17/88								
Byron 1	02/02/85	09/16/85							3.34E+06	2.32E+07
Byron 2	01/09/87	08/21/87								
Callaway 1	10/02/84	12/18/84						1.00E+06	2.49E+07	2.26E+07
Calvert Cliffs 1	10/07/74	05/08/75	3.15E+07	1.52E+07	1.96E+07	1.68E+07	1.75E+07	1.96E+07	1.35E+07	1.82E+07
Calvert Cliffs 2	11/30/76	04/01/77		2.05E+07	1.71E+07	1.62E+07	1.96E+07	1.68E+07	1.78E+07	2.18E+07
Catawba 1	01/07/85	06/29/85							1.07E+07	1.59E+07
Catawba 2	05/08/86	08/19/86								4.04E+06
Comanche Peak 1	04/03/90	08/13/90								
Comanche Peak 2	09/24/90	08/03/93								
Donald C. Cook 1	01/18/76	08/27/75	3.88E+07	3.02E+07	2.11E+07	1.69E+07	1.68E+07	2.41E+07	5.83E+06	2.16E+07
Donald C. Cook 2	03/10/78	07/01/78		2.14E+07	2.04E+07	2.22E+07	2.22E+07	1.70E+07	1.82E+07	1.44E+07
Crystal River 3	01/14/77	08/13/77	1.17E+07	1.04E+07	1.27E+07	1.52E+07	1.14E+07	1.97E+07	1.17E+07	8.14E+06
Davis-Besse 1	08/12/77	07/31/78	1.00E+07	6.71E+06	1.40E+07	1.03E+07	1.57E+07	1.35E+07	6.31E+06	1.29E+06
Diablo Canyon 1	04/29/84	05/07/85						9.48E+05	1.68E+07	1.70E+07
Diablo Canyon 2	08/19/85	03/13/86						2.12E+06	2.11E+07	
Joseph M. Farley 1	08/09/77	12/01/77	5.77E+06	1.54E+07	8.96E+06	1.75E+07	1.76E+07	1.78E+07	1.90E+07	1.85E+07
Joseph M. Farley 2	05/05/81	07/30/81			9.47E+06	1.75E+07	1.99E+07	2.15E+07	1.74E+07	1.91E+07
Fort Calhoun 1	08/08/73	06/20/74	1.16E+07	6.46E+06	6.98E+06	1.09E+07	9.14E+06	7.43E+06	9.58E+06	1.13E+07
R. E. Ginna	11/08/89	07/01/70	9.35E+06	9.93E+06	1.07E+07	7.88E+06	9.87E+06	1.00E+07	1.14E+07	1.13E+07
Haddam Neck	07/24/87	01/01/88	1.32E+07	1.14E+07	1.31E+07	1.45E+07	1.22E+07	1.08E+07	1.48E+07	7.28E+06
Harris 1	01/03/87	05/02/87								
Indian Point 1	08/02/82	10/ /82	1.81E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indian Point 2	05/22/73	08/01/74		1.50E+07	1.05E+07	1.51E+07	1.98E+07	1.17E+07	2.21E+07	1.29E+07
Indian Point 3	04/06/76	08/30/76	1.57E+07	1.15E+07	1.14E+07	5.06E+06	2.82E+05	1.93E+07	1.51E+07	1.77E+07
Kewaunee	03/07/74	06/16/74	1.09E+07	1.15E+07	1.21E+07	1.23E+07	1.19E+07	1.21E+07	1.16E+07	1.21E+07
Maine Yankee	10/23/72	12/28/72	1.41E+07	1.41E+07	1.67E+07	1.47E+07	1.83E+07	1.62E+07	1.87E+07	1.93E+07
McGuire 1	06/08/81	12/01/81			8.50E+04	1.34E+07	1.39E+07	1.94E+07	2.06E+07	1.56E+07
McGuire 2	05/08/83	03/01/84					0.00E+00	1.84E+07	1.68E+07	1.86E+07
Millstone 2	10/17/75	12/26/75	1.38E+07	1.55E+07	1.92E+07	1.60E+07	7.88E+06	2.14E+07	1.12E+07	1.66E+07
Millstone 3	01/23/86	04/23/86								2.17E+07
North Anna 1	04/08/78	06/06/78	1.41E+07	1.89E+07	1.51E+07	7.85E+06	1.68E+07	1.18E+07	1.81E+07	1.98E+07
North Anna 2	06/12/80	12/14/80		1.12E+06	1.77E+07	1.29E+07	1.87E+07	1.51E+07	2.16E+07	1.82E+07
Oconee 1	04/19/73	07/15/73	4.37E+07	1.52E+07	9.00E+06	1.57E+07	1.72E+07	1.86E+07	2.14E+07	1.46E+07
Oconee 2	11/11/73	09/09/74		1.20E+07	1.59E+07	1.08E+07	1.58E+07	2.23E+07	1.88E+07	1.79E+07
Oconee 3	09/05/74	12/16/74		1.58E+07	1.72E+07	6.53E+06	2.14E+07	1.63E+07	1.49E+07	1.88E+07
Palisades	05/24/71	12/31/71	1.20E+07	8.19E+06	1.17E+07	1.12E+07	1.27E+07	2.72E+06	1.75E+07	2.76E+06
Palo Verde 1	05/25/85	02/13/86							4.39E+06	1.22E+07
Palo Verde 2	04/18/88	09/19/88								7.02E+06
Palo Verde 3	10/25/87	01/08/88								
Point Beach 1	11/02/70	12/21/70	2.08E+07	8.09E+06	8.51E+06	8.60E+06	7.59E+06	9.41E+06	1.02E+07	1.15E+07
Point Beach 2	05/30/72	10/01/71		1.11E+07	1.15E+07	1.13E+07	9.38E+06	1.09E+07	1.11E+07	1.06E+07
Prairie Island 1	12/01/73	12/16/73	1.12E+06	1.06E+07	1.25E+07	1.27E+07	1.24E+07	1.33E+07	1.18E+07	1.22E+07
Prairie Island 2	12/17/74	12/21/74		1.14E+07	1.01E+07	1.26E+07	1.19E+07	1.24E+07	1.15E+07	1.23E+07
Rancho Seco 1	09/18/74	04/17/75	1.79E+07	1.39E+07	8.92E+06	1.08E+07	9.16E+06	1.21E+07	6.28E+06	0.00E+00
H. B. Robinson 2	09/20/70	03/07/71	1.80E+07	1.07E+07	1.19E+07	7.67E+06	1.13E+07	7.84E+05	1.66E+07	1.52E+07
Salem 1	12/11/76	06/30/77	6.80E+06	1.84E+07	2.02E+07	1.31E+07	1.67E+07	6.95E+06	2.77E+07	3.24E+07
Salem 2	08/08/80	10/13/81		0.00E+00	5.11E+06	2.54E+07	2.95E+06	1.03E+07	1.60E+07	1.74E+07
San Onofre 1	08/14/67	01/01/68	1.05E+07	2.55E+06	2.59E+06	1.59E+06	0.00E+00	9.24E+05	8.12E+06	3.00E+06
San Onofre 2	07/26/82	08/08/83				9.28E+05	1.23E+07	1.88E+07	1.65E+07	2.61E+07
San Onofre 3	08/29/83	04/01/84					3.55E+06	1.29E+07	1.21E+07	2.13E+07
Seabrook 1	08/13/89	08/19/90								
Sequoyah 1	07/05/80	07/01/81		1.87E+06	8.06E+06	1.52E+07	2.22E+07	1.92E+07	1.24E+07	0.00E+00
Sequoyah 2	11/05/81	06/01/82					2.03E+07	1.98E+07	1.71E+07	0.00E+00
South Texas 1	03/08/88	08/25/88								
South Texas 3	03/12/89	05/19/89								

Table 16

Thermal Energy Generation Comparison By Year

Pressurized Water Reactors	Megawatt Hours									
	Initial Criticality	Commercial Operation	1979	1980	1981	1982	1983	1984	1985	1986
St. Lucie 1	04/22/76	12/21/76	1.60E+07	1.70E+07	1.81E+07	2.18E+07	3.53E+06	1.35E+07	1.88E+07	2.23E+07
St. Lucie 2	06/02/83	08/08/83					7.66E+06	1.77E+07	1.93E+07	1.94E+07
Summer 1	10/22/82	01/01/84				7.95E+06	1.35E+07	1.33E+07	1.65E+07	2.26E+07
Surry 1	07/01/72	12/23/72	8.32E+06	8.87E+06	7.94E+06	1.83E+07	1.22E+07	1.11E+07	1.79E+07	1.42E+07
Surry 2	03/07/73	05/01/73		7.26E+06	1.68E+07	1.79E+07	1.35E+07	1.73E+07	1.33E+07	1.45E+07
Three Mile Island 1	06/05/74	08/02/74	2.83E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.82E+06	1.56E+07
Three Mile Island 2	03/28/78	12/30/78	N/R	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Trojan	13/15/75	05/20/76	1.70E+07	1.87E+07	2.10E+07	1.56E+07	1.34E+07	1.54E+07	2.25E+07	2.29E+07
Turkey Point 3	10/20/72	12/14/72	2.28E+07	1.47E+07	3.03E+06	1.22E+07	1.41E+07	1.56E+07	1.11E+07	1.46E+07
Turkey Point 4	06/11/73	09/07/73		1.32E+07	1.48E+07	1.27E+07	9.83E+06	1.04E+07	1.69E+07	5.73E+06
Vogtle 1	03/09/87	05/31/87								
Vogtle 2	03/26/89	05/20/89								
Waterford 3	03/04/85	08/24/85							5.64E+06	2.27E+07
Wolf Creek 1	05/22/85	09/03/85							6.87E+06	2.08E+07
Yankee Rowe 1	08/19/60	07/01/61	4.17E+06	1.13E+06	3.63E+06	3.89E+06	4.69E+06	3.61E+06	4.19E+06	4.90E+06
Zion 1	06/19/73	12/31/73	3.31E+07	2.22E+07	1.98E+07	1.52E+07	1.34E+07	1.83E+07	1.85E+07	1.58E+07
Zion 2	12/24/78	09/17/74		1.75E+07	1.77E+07	1.71E+07	2.00E+07	1.92E+07	2.16E+07	2.30E+07
Total			5.76E+08	5.12E+08	5.76E+08	5.96E+08	6.52E+08	7.37E+08	8.58E+08	9.38E+08

N/R = Not Reported

Table 16

Thermal Energy Generation Comparison By Year

Facility	Megawatt Hours								
	Pressurized Water Reactors								
	Initial Criticality	Commercial Operation	1987	1988	1989	1990	1991	1992	1993
Arkansas One 1	08/08/74	12/19/74	1.51E+07	1.24E+07	1.07E+07	1.30E+07	2.01E+07	1.80E+07	1.58E+07
Arkansas One 2	12/05/78	03/26/80	2.10E+07	1.58E+07	1.78E+07	2.28E+07	1.94E+07	1.78E+07	2.32E+07
Beaver Valley 1	05/10/76	10/01/76	1.84E+07	1.84E+07	1.27E+07	3.02E+07	1.23E+07	2.05E+07	1.44E+07
Beaver Valley 2	08/04/87	11/17/87	2.39E+06	2.13E+07	1.51E+07	1.43E+07	2.23E+07	1.82E+07	1.87E+07
Braidwood 1	05/28/87	07/29/88	5.02E+06	1.04E+07	1.44E+07	2.48E+07	1.53E+07	2.19E+07	2.80E+07
Braidwood 2	03/08/88	10/17/88		4.08E+06	2.13E+07	1.85E+07	2.00E+07	2.87E+07	2.25E+07
Byron 1	02/02/85	09/16/85	1.71E+07	1.98E+07	2.77E+07	2.16E+07	1.99E+07	2.77E+07	2.66E+07
Byron 2	01/09/87	06/21/87	6.47E+06	2.04E+07	1.87E+07	1.87E+07	2.72E+07	2.12E+07	2.33E+07
Callaway 1	10/02/84	12/19/84	1.98E+07	2.76E+07	3.13E+07	2.45E+07	3.04E+07	2.48E+07	2.58E+07
Calvert Cliffs 1	10/07/74	05/08/75	1.65E+07	1.62E+07	4.23E+06	4.34E+06	1.73E+07	1.29E+07	2.30E+07
Calvert Cliffs 2	11/30/76	04/01/77	1.50E+07	2.07E+07	1.46E+08	0.00E+00	1.17E+07	2.10E+07	1.57E+06
Catawba 1	01/07/85	06/29/85	1.95E+07	2.29E+07	2.36E+07	2.08E+07	2.02E+07	2.11E+07	2.27E+07
Catawba 2	05/08/88	08/19/88	2.17E+07	1.88E+07	1.95E+07	1.93E+07	2.18E+07	2.76E+07	2.42E+07
Comanche Peak 1	04/03/90	08/13/90				8.16E+06	1.72E+07	2.20E+07	2.25E+07
Comanche Peak 2	03/24/93	08/03/93							1.08E+07
Donald C. Cook 1	01/18/75	06/27/75	1.84E+07	2.42E+07	1.74E+07	2.05E+07	2.38E+07	1.63E+07	2.81E+07
Donald C. Cook 2	03/10/78	07/01/78	1.85E+07	7.41E+06	2.13E+07	1.53E+07	2.65E+07	4.89E+06	2.45E+07
Crystal River 3	01/14/77	03/13/77	1.11E+07	1.78E+07	9.14E+06	1.28E+07	1.88E+07	1.82E+07	1.86E+07
Davis-Besse 1	08/12/77	07/31/78	1.65E+07	3.91E+06	2.35E+07	1.32E+07	1.85E+07	2.41E+07	1.92E+07
Diable Canyon 1	04/28/84	05/07/85	2.54E+07	1.86E+07	2.25E+07	2.72E+07	2.31E+07	2.34E+07	2.81E+07
Diable Canyon 2	06/19/85	03/13/86	1.82E+07	1.98E+07	2.69E+07	2.38E+07	2.45E+07	2.91E+07	2.44E+07
Joseph M. Farley 1	08/09/77	12/01/77	2.11E+07	1.82E+07	1.96E+07	2.25E+07	1.78E+07	1.86E+07	2.25E+07
Joseph M. Farley 2	05/06/81	07/30/81	1.60E+07	2.29E+07	1.81E+07	1.89E+07	2.18E+07	1.76E+07	1.70E+07
Fort Calhoun 1	08/08/73	06/20/74	9.48E+06	8.34E+06	1.07E+07	7.67E+06	1.03E+07	7.94E+06	9.72E+06
R. E. Ginna	11/08/69	07/01/70	1.19E+07	1.10E+07	9.85E+06	1.07E+07	1.09E+07	1.06E+07	1.06E+07
Haddam Neck	07/24/67	01/01/68	8.39E+06	1.06E+07	9.47E+06	3.81E+06	1.19E+07	1.24E+07	1.15E+07
Harris 1	01/03/67	05/02/67	1.12E+07	1.71E+07	1.83E+07	2.05E+07	1.89E+07	1.74E+07	2.38E+07
Indian Point 1	08/02/62	10/ /62	0.00E+00						0.00E+00
Indian Point 2	05/22/73	06/01/74	1.71E+07	1.95E+07	1.45E+07	1.66E+07	1.29E+07	2.57E+07	1.95E+07
Indian Point 3	04/08/76	08/30/76	1.56E+07	2.14E+07	1.55E+07	1.57E+07	2.25E+07	1.47E+07	3.68E+07
Kewaunee	03/07/74	06/16/74	1.28E+07	1.22E+07	1.18E+07	1.24E+07	1.16E+07	1.24E+07	1.20E+07
Maine Yankee	10/23/72	12/26/72	1.31E+07	1.67E+07	2.11E+07	1.50E+07	1.94E+07	1.68E+07	1.77E+07
McGuire 1	08/08/81	12/01/81	2.21E+07	2.26E+07	2.88E+07	1.48E+07	2.08E+07	2.28E+07	1.70E+07
McGuire 2	05/08/83	03/01/84	2.25E+07	2.41E+07	2.19E+07	1.93E+07	2.84E+07	2.04E+07	2.05E+07
Millstone 2	10/17/75	12/26/75	2.18E+07	1.81E+07	1.55E+07	1.69E+07	1.25E+07	8.51E+06	1.98E+07
Millstone 3	01/23/86	04/23/86	2.05E+07	2.33E+07	2.17E+07	2.52E+07	8.88E+06	2.02E+07	2.01E+07
North Anna 1	04/05/78	08/08/78	1.14E+07	2.20E+07	1.37E+07	2.31E+07	1.80E+07	1.72E+07	1.83E+07
North Anna 2	06/12/80	12/14/80	1.80E+07	2.50E+07	1.88E+07	1.91E+07	2.45E+07	2.03E+07	2.01E+07
Oconee 1	04/19/73	07/15/73	1.56E+07	2.21E+07	1.82E+07	1.98E+07	1.83E+07	1.91E+07	1.98E+07
Oconee 2	11/11/73	09/09/74	1.93E+07	1.72E+07	1.84E+07	1.90E+07	2.23E+07	1.81E+07	1.88E+07
Oconee 3	09/06/74	12/16/74	1.55E+07	1.80E+07	1.94E+07	2.23E+07	1.89E+07	1.66E+07	2.21E+07
Paisades	03/24/71	12/31/71	8.83E+06	1.14E+07	1.21E+07	1.01E+07	1.58E+07	1.56E+07	1.14E+07
Palo Verde 1	05/28/85	02/13/86	1.61E+07	2.03E+07	5.57E+06	1.45E+07	2.85E+07	2.19E+07	2.33E+07
Palo Verde 2	04/18/86	09/19/86	2.49E+07	2.07E+07	1.47E+07	1.91E+07	2.52E+07	3.11E+07	1.58E+07
Palo Verde 3	10/25/87	01/08/88	1.24E+06	3.03E+07	4.10E+08	2.92E+07	2.29E+07	2.55E+07	2.87E+07
Point Beach 1	11/02/70	12/21/70	1.09E+07	1.17E+07	1.11E+07	1.09E+07	1.12E+07	1.11E+07	1.17E+07
Point Beach 2	05/30/72	10/01/71	1.11E+07	1.14E+07	1.09E+07	1.16E+07	1.13E+07	1.12E+07	1.17E+07
Prairie Island 1	12/01/73	12/16/73	1.14E+07	1.23E+07	1.40E+07	1.23E+07	1.26E+07	1.11E+07	1.38E+07
Prairie Island 2	12/17/74	12/21/74	1.41E+07	1.28E+07	1.25E+07	1.22E+07	1.43E+07	1.03E+07	1.18E+07
Rancho Seco 1	08/16/74	04/17/75	0.00E+00	9.47E+06	4.62E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
H. B. Robinson 2	09/20/70	03/07/71	1.35E+07	1.06E+07	9.86E+06	1.08E+07	1.53E+07	1.29E+07	1.35E+07
Salem 1	12/11/76	06/30/77	1.86E+07	2.32E+07	1.97E+07	1.90E+07	2.14E+07	1.67E+07	1.86E+07
Salem 2	08/08/80	10/13/81	1.86E+07	1.90E+07	2.44E+07	1.69E+07	2.41E+07	1.50E+07	1.74E+07
San Onofre 1	06/14/67	01/01/68	8.82E+06	4.52E+06	3.92E+06	5.04E+06	8.74E+06	3.92E+06	0.00E+00
San Onofre 2	07/28/83	08/08/83	1.83E+07	2.75E+07	1.63E+07	2.55E+07	1.80E+07	2.73E+07	2.38E+07
San Onofre 3	08/29/83	04/01/84	2.32E+07	1.89E+07	2.73E+07	2.04E+07	2.70E+07	2.13E+07	2.20E+07
Seabrook 1	06/13/89	08/19/90				1.26E+07	2.05E+07	2.35E+07	2.68E+07
Sequoyah 1	07/05/80	07/01/81	0.00E+00	5.16E+05	2.88E+07	2.16E+07	2.23E+07	2.54E+07	3.92E+06
Sequoyah 2	11/05/81	06/01/82	0.00E+00	1.28E+07	2.88E+07	2.19E+07	2.87E+07	2.73E+07	8.58E+06
South Texas 1	03/08/86	08/25/88		8.81E+06	1.99E+07	1.90E+07	2.25E+07	2.24E+07	2.08E+06
South Texas 2	03/12/89	06/19/89			9.52E+06	2.02E+07	2.27E+07	3.18E+07	2.23E+06

Table 16

Thermal Energy Generation Comparison By Year

Pressurized Water Reactors	Megawatt Hours								
	Initial Criticality	Commercial Operation	1987	1988	1989	1990	1991	1992	1993
St. Lucie 1	04/22/76	12/21/76	1.81E+07	1.97E+07	2.19E+07	1.49E+07	1.95E+07	2.26E+07	2.26E+07
St. Lucie 2	06/03/83	08/08/83	1.90E+07	2.35E+07	1.73E+07	1.70E+07	2.33E+07	1.73E+07	1.73E+07
Summer 1	10/22/82	01/01/84	1.84E+07	1.81E+07	1.78E+07	1.93E+07	1.69E+07	2.35E+07	1.82E+07
Surry 1	07/01/72	12/22/72	1.47E+07	8.45E+06	9.95E+06	1.51E+07	2.09E+07	1.85E+07	1.95E+07
Surry 2	03/07/73	05/01/73	1.54E+07	1.18E+07	2.87E+06	1.85E+07	1.27E+07	2.05E+07	1.43E+07
Three Mile Island 1	06/05/74	09/02/74	1.58E+07	1.89E+07	2.22E+07	1.89E+07	1.74E+07	2.22E+07	1.18E+07
Three Mile Island 2	03/28/78	12/30/78	0.00E+00						
Troyan	12/15/75	05/20/76	1.38E+07	1.99E+07	1.73E+07	1.90E+07	4.72E+06	1.46E+07	0.00E+00
Turkey Point 3	10/20/72	12/14/72	2.96E+06	1.14E+07	1.18E+07	1.12E+07	4.34E+07	1.13E+07	1.18E+07
Turkey Point 4	06/11/73	09/07/73	8.69E+06	1.06E+07	7.14E+06	1.44E+07	2.58E+07	1.53E+07	7.14E+06
Vogtle 1	03/09/87	06/31/87	1.27E+07	2.18E+07	2.78E+07	2.32E+07	2.33E+07	2.88E+07	2.64E+07
Vogtle 2	03/28/89	05/20/89			1.72E+07	2.17E+07	2.75E+07	2.40E+07	2.68E+07
Waterford 3	03/04/85	09/24/85	2.31E+07	2.06E+07	2.37E+07	2.69E+07	2.29E+07	2.41E+07	2.94E+07
Wolf Creek 1	05/22/85	09/03/85	1.97E+07	2.01E+07	2.88E+07	2.36E+07	1.89E+07	2.54E+07	2.27E+07
Yankee Rowe 1	08/19/60	07/01/61	4.03E+06	4.03E+06	4.68E+06	2.94E+06	3.53E+06	0.00E+00	0.00E+00
Zion 1	06/19/73	12/31/73	1.85E+07	1.97E+07	1.58E+07	1.41E+07	1.34E+07	1.27E+07	2.18E+07
Zion 2	12/24/73	09/17/74	1.81E+07	2.08E+07	2.40E+07	8.42E+06	1.81E+07	1.67E+07	1.84E+07
Total			1.01E+09	1.18E+09	1.21E+09	1.24E+09	1.42E+09	1.39E+09	1.33E+09

APPENDIX A

Installation: Arkansas One
Unit No.: 1

Location: 6 MI WNW Russellville, AR

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-313
Thermal Power(MWH): 1.89E+07
Commercial Operation: 12/19/74
Cooling Water Source: Dardanelle Reservoir

Licensee: Arkansas Power & Light
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 6.13E+06
Initial Criticality: 08/06/74

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-58	3.65E-07
KR-85	1.05E-02
SR-89	7.55E-07
I-131	6.17E-06
XE-131M	2.22E-03
I-132	8.38E-06
I-133	2.12E-06
XE-133	2.92E+00
XE-133M	1.49E+01
XE-135	6.72E-02
CS-137	9.05E-09

Liquid Effluents

Nuclide Released	Activity (Ci)
BB-7	3.36E-04
NA-24	1.43E-04
AR-41	2.42E-04
CR-51	3.45E-02
MN-54	8.63E-03
FE-55	9.29E-02
CO-57	3.86E-03
CO-58	8.58E-01
FE-59	4.14E-04
CO-60	8.29E-02
SE-75	4.09E-03
KR-85M	2.52E-05
KR-87	2.29E-05
SR-89	1.07E-03
MO-90	4.00E-05
SR-90	8.05E-04
Y-90	3.81E-02
Y-91M	3.85E-04
SR-92	5.42E-04
NB-95	1.21E-02
ZR-95	7.94E-03
NB-97	4.57E-04
ZR-97	1.64E-05
MO-99	4.12E-03
TC-99M	3.46E-03
RU-103	1.66E-04
AG-110M	8.56E-02
SN-113	5.66E-04
SB-122	8.21E-03
SB-124	5.54E-02

Installation: Arkansas One
Unit No.: 1

Location: 6 Mi WNW Russellville, AR

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
SB-125	3.64E-01
SB-126	2.88E-03
SB-127	9.88E-04
I-131	1.49E-02
XE-131M	3.66E-03
I-132	5.75E-03
TE-132	1.86E-03
I-133	1.10E-03
XE-133	9.10E-01
XE-133M	1.02E-02
CS-134	1.56E-02
KE-135	3.79E-03
XE-135M	2.61E-04
CS-137	4.24E-02
BA-140	1.39E-04
LA-140	1.13E-03
Unidentified	2.94E-05

Total Airborne Tritium Released	1.01E+01 Ci
Total Liquid Tritium Released	4.51E+02 Ci
Volume of Waste Released (Prior to Dilution)	2.66E+07 liters
Volume of Dilution Water Used During Period	1.82E+11 liters

Installation: Arkansas One
Unit No.: 2

Location: 6 Mi WNW Russellville, AR

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-368
Thermal Power(MWH): 2.32E+07
Commercial Operation: 03/26/80
Cooling Water Source: Dardanelle Reservoir

Licensee: Arkansas Power & Light
Licensed Power(MWT): 2.82E+03
Net Electrical Power(MWH): 7.34E+06
Initial Criticality: 12/05/78

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-57	5.36E-07
CO-58	3.62E-06
KR-85	1.38E+01
SR-89	2.00E-07
I-131	1.43E-07
XE-131M	8.13E-04
I-132	8.47E-06
BA-133	3.48E-07
I-133	2.07E-06
XE-133	3.81E+01
XE-133M	2.89E-04
XE-135	1.49E-01
CS-137	2.61E-08

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	4.33E-04
CR-51	8.12E-03
MN-54	2.53E-02
FE-55	1.78E-02
CO-57	3.55E-04
CO-58	1.21E-01
FE-59	1.65E-04
CO-60	1.44E-02
SE-75	1.14E-04
KR-85	1.65E-01
SR-89	1.74E-03
SR-90	3.65E-04
SR-92	4.33E-05
NB-95	1.88E-03
ZR-95	1.12E-03
NB-97	1.73E-04
ZR-97	8.16E-06
MO-99	2.36E-04
TC-99M	2.49E-04
AG-110M	1.27E-02
SN-113	1.68E-04
SB-122	1.00E-03
SB-124	1.74E-02
SB-125	1.03E-01
SB-126	5.92E-04
SB-127	2.47E-05
I-131	9.32E-03
I-132	2.01E-02

Installation: Arkansas One
Unit No.: 2

Location: 6 Mi WNW Russellville, AR

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
TE-132	1.26E-02
I-133	2.25E-03
XE-133	1.52E-01
XE-133M	8.17E-04
CS-134	3.81E-02
I-134	8.83E-06
I-135	1.76E-04
XE-135	4.13E-04
CS-137	6.69E-02
LA-140	2.37E-04
CE-143	8.63E-06
W-187	1.71E-04

Total Airborne Tritium Released	7.30E+00 Ci
Total Liquid Tritium Released	3.08E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.61E+07 liters
Volume of Dilution Water Used During Period	1.91E+11 liters

Installation: Arkansas One
Unit No.: 142

Location: 6 Mi WNW Russellville, AR

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-313
Thermal Power(MWH): 1.89E+07
Commercial Operation: 12/19/74
Cooling Water Source: Dardanelle Reservoir

Licensee: Arkansas Power & Light
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 6.13E+06
Initial Criticality: 08/06/74

Unit Number: 2 Type: PWR
Docket Number: 50-368
Thermal Power(MWH): 2.32E+07
Commercial Operation: 03/26/80
Cooling Water Source: Dardanelle Reservoir

Licensee: Arkansas Power & Light
Licensed Power(MWT): 2.82E+03
Net Electrical Power(MWH): 7.34E+06
Initial Criticality: 12/05/78

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
2	Cask Shipment	Barnwell, SC
8	Unshielded Van/Truck	Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

AG-110M		5.00E-01
CO-58	1.58E+01	8.30E+00
CO-60	5.70E+00	4.60E+00
CS-134		1.50E+01
CS-137	1.60E+00	2.30E+01
FE-55	1.27E+01	1.53E+01
MN-54		2.30E+00
NB-95	4.30E+00	
NI-63	5.06E+01	1.59E+01
SB-125	5.20E+00	1.24E+01
SR-89	1.20E+00	
TE-125M	6.00E-01	2.80E+00
ZR-95	2.20E+00	

B

C-14	1.10E+00	3.00E-01
CO-58	1.84E+01	
CO-60	7.60E+00	2.10E+00
CS-134	1.93E+01	4.70E+00
CS-137	3.12E+01	8.70E+01
FE-55	9.40E+00	2.70E+00
H-3		1.00E-02
I-129		6.00E-02
NI-63	1.10E+01	3.10E+00
SB-125	1.70E+00	
SR-89	1.00E-01	
TC-99		8.00E-02
TE-125M	1.00E-01	

Installation: Arkansas One
Unit No.: 1&2

Location: 6 Mi WNW Russellville, AR

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 7.87E+00 Ci 1.94E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 7.06E+01 Ci 5.66E+00	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Beaver Valley
Unit No.: 1

Location: Shippingport, PA

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-334
Thermal Power(MWH): 1.44E+07
Commercial Operation: 10/01/76
Cooling Water Source: Ohio River

Licenses: Duquesne Light
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 4.35E+06
Initial Criticality: 05/10/76

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.18E+00
CR-51	5.45E-04
MM-54	5.09E-05
CO-57	1.68E-05
CO-58	1.24E-02
CO-60	2.77E-04
KR-85	7.49E+00
KR-85M	1.49E-01
ZR/NB-95	1.40E-04
I-131	5.08E-03
XE-131M	9.68E+00
I-133	4.06E-05
XE-133	3.78E+02
XE-133M	6.89E+00
XE-135	5.29E+00

Installation: Beaver Valley
Unit No.: 2

Location: Shippingport, PA

Effluent and Waste Disposal Annual Report for 1993

Type: FWR
Docket Number: 50-412
Thermal Power(MWH): 1.67E+07
Commercial Operation: 11/17/87
Cooling Water Source: Ohio River

Licensee: Duquesne Light
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 5.20E+06
Initial Criticality: 08/04/87

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-58	9.27E-04
CO-60	5.81E-06
KR-85	3.02E+00
TC-99M	2.16E-08
I-131	1.10E-03
XE-131M	1.92E+00
I-133	2.51E-05
XE-133	5.78E+01
XE-133M	6.29E-02
XE-135	6.95E+00
CE-141	5.95E-07
CE-144	1.59E-07

Installation: Beaver Valley
Unit No.: 1&2

Location: Shippingport, PA

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: PWR
Docket Number: 50-334
Thermal Power(MWH): 1.44E+07
Commercial Operation: 10/01/76
Cooling Water Source: Ohio River
Unit Number: 2 Type: PWR
Docket Number: 50-412
Thermal Power(MWH): 1.67E+07
Commercial Operation: 11/17/87
Cooling Water Source: Ohio River

Licensee: Duquesne Light
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 4.35E+06
Initial Criticality: 05/10/76

Licensee: Duquesne Light
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 5.20E+06
Initial Criticality: 08/04/87

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	4.21E-05
CO-58	8.41E-04
KR-85	7.67E+00
I-131	5.75E-04
XE-131M	1.02E+00
I-133	1.03E-05
XE-133	6.71E+01
XE-133M	3.62E-01
XE-135	1.02E-01

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.06E-04
CR-51	1.27E-02
MN-54	9.71E-04
FE-55	1.74E-01
CO-57	5.92E-04
CO-58	1.16E-01
FE-59	4.20E-03
CO-60	3.35E-02
KR-85	1.76E-03
BR-89	8.23E-05
ZR/NB-95	2.30E-03
NB-97	8.97E-03
MO-99	3.62E-05
TC-99M	3.94E-05
RU-103	2.22E-05
AG-110M	1.07E-02
SB-124	9.47E-03
SB-125	1.73E-02
I-131	1.54E-03
I-133	8.22E-05
XE-133	2.47E-02
CS-134	1.21E-03
XE-135	1.51E-04
CS-137	2.34E-03

Installation: Beaver Valley
Unit No.: 1&2

Location: Shippingport, PA

Effluent and Waste Disposal Annual Report for 1993

Total Airborne Tritium Released	3.46E+02 Ci
Total Liquid Tritium Released	5.53E+02 Ci
Volume of Waste Released (Prior to Dilution)	6.08E+06 liters
Volume of Dilution Water Used During Period	3.91E+09 liters

Installation: Beaver Valley
Unit No.: 142

Location: Shippingport, PA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-334
Thermal Power(MWH): 1.44E+07
Commercial Operation: 10/01/76
Cooling Water Source: Ohio River

Licensee: Duquesne Light
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 4.35E+06
Initial Criticality: 05/10/76

Unit Number: 2 Type: PWR
Docket Number: 50-412
Thermal Power(MWH): 1.67E+07
Commercial Operation: 11/17/87
Cooling Water Source: Ohio River

Licensee: Duquesne Light
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 5.20E+06
Initial Criticality: 08/04/87

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
11	Truck	Barnwell, SC
35	Truck	Oak Ridge, TN
2	Truck	Wampum, PA

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

BE-7		1.00E-01
C-14	8.00E-02	4.00E-02
CO-57	2.00E-02	2.30E-01
CO-58	4.00E+00	5.77E+01
CO-60	1.89E+01	6.95E+00
CR-51		1.90E-01
CS-134	1.75E+00	4.35E+00
CS-137	2.87E+00	4.63E+00
FE-55	3.61E+01	5.12E+00
FE-59		2.00E-02
H-3	3.70E-01	1.83E+00
I-131	7.00E-02	2.00E-02
MO-54	2.00E-02	5.30E-01
NB-95		1.00E-02
NI-59	2.42E+01	6.80E-01
NI-63	1.13E+01	1.69E+01
P-32		2.00E-02
PU-241	1.40E-01	3.00E-02
RU-106		2.60E-01
SB-124		3.30E-01
SB-125	8.00E-02	2.00E-02
SR-89		5.00E-02

B

AG-110M	2.30E-01	6.00E-02
C-14	1.10E-01	5.00E-02
CM-242	2.00E-02	
CO-57	5.00E-02	2.00E-02
CO-58	8.70E-01	4.69E+01
CO-60	2.31E+01	1.39E+01

Installation: Beaver Valley
Unit No.: 1&2

Location: Shippingport, PA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

B

CS-134	6.31E+00	3.66E+00
CS-137	1.54E+01	6.17E+00
FE-55	2.88E+01	1.77E+01
H-3	2.12E+00	7.50E-01
I-129	2.70E-01	7.00E-02
I-131	1.41E+00	1.08E+00
MO-94	5.50E-01	1.08E+00
NR-95	3.00E-02	4.00E-02
NI-59	3.68E+00	1.03E+00
NI-63	1.50E+01	6.98E+00
PU-241	6.40E-01	1.80E-01
SB-124	1.32E+00	3.10E-01
SB-125	6.00E-02	
TC-99	8.00E-02	2.00E-02
ZR-95	4.00E-02	1.00E-02

C

AG-108M	4.00E-02
CO-60	4.23E+01
CR-51	1.00E-02
CS-137	1.00E-02
FE-55	4.29E+01
NI-59	1.60E-01
NI-63	1.44E+01
SB-125	2.10E-01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.14E+02	Volume Shipped
	m3 8.28E+01	Volume Buried
	ci 1.18E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.47E+03	Volume Shipped
	m3 6.21E+01	Volume Buried
	ci 1.85E+01	
C. Irradiated Components, Control Rods, etc.	m3 1.60E+00	Volume Buried
	ci 1.70E+02	
D. Other (describe)	m3	
	ci	

Installation: Big Rock Point
Unit No.: 1

Location: 4 Mi NE Charlevoix, MI

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-155
Thermal Power(MWH): 1.41E+06
Commercial Operation: 03/29/63
Cooling Water Source: Lake Michigan

Licenses: Consumers Power
Licensed Power(MWT): 2.40E+02
Net Electrical Power(MWH): 4.26E+05
Initial Criticality: 09/27/62

Airborne Effluents

Nuclide Released	Activity (Ci)
HA-24	1.82E-04
CR-51	1.45E-04
MN-54	9.35E-05
CO-58	5.02E-07
CO-60	1.98E-04
ZN-65	6.67E-06
AS-76	3.89E-05
BR-82	1.15E-03
KR-85M	1.61E+02
KR-87	5.34E+02
KR-88	4.36E+02
SR-89	2.09E-04
SR-90	6.09E-06
SR-91	2.73E-03
NB-95	3.27E-07
MO-99	5.64E-05
AG-110M	1.52E-05
SN-113	4.01E-07
SB-124	3.19E-06
I-131	2.57E-03
I-133	1.05E-02
XE-133	2.23E+02
CS-134	1.07E-05
I-135	4.73E-04
XE-135	6.52E+02
XE-135M	7.21E+02
CS-137	1.54E-04
XE-138	2.42E+03
BA-140	3.99E-04
LA-140	9.56E-04
NP-239	1.85E-06

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	9.28E-04
MN-54	3.89E-02
CO-58	4.78E-04
FE-59	4.68E-03
CO-60	3.66E-02
ZN-65	8.11E-04
SR-89	2.03E-05
SR-90	1.71E-04
NB-95	2.04E-04
AG-110M	3.96E-04

Installation: Big Rock Point
Unit No.: 1

Location: 4 Mi NE Charlevoix, MI

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
SN-113	1.06E-04
SB-124	7.62E-05
I-131	1.61E-04
CS-134	9.54E-04
CS-137	1.19E-02
TA-182	2.19E-04
Unidentified	4.52E-04

Total Airborne Tritium Released	2.29E+00 Ci
Total Liquid Tritium Released	1.58E-01 Ci
Volume of Waste Released (Prior to Dilution)	1.79E+05 liters
Volume of Dilution Water Used During Period	7.32E+10 liters

Installation: Braidwood
Unit No.: 1

Location: 24 Mi SSW of Joliet, IL

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-456
Thermal Power(MWH): 2.60E+07
Commercial Operation: 07/29/88
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 8.69E+06
Initial Criticality: 05/29/87

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.90E-01
KR-85	4.03E-01
KR-85M	2.38E-01
KR-87	5.58E-03
KR-88	1.41E-01
I-131	3.19E-04
XE-131M	1.45E+00
I-133	1.49E-04
XE-133	3.38E+02
XE-133M	1.55E+00
XE-135	7.17E+00

Liquid Effluents

Nuclide Released	Activity (Ci)
AR-41	4.90E-06
CR-51	3.27E-02
MM-54	3.96E-03
FE-55	4.34E-02
CO-57	3.17E-04
CO-58	2.37E-01
FE-59	3.97E-03
CO-60	1.98E-02
ZN-65	4.63E-05
KR-85	7.20E-03
SR-89	1.84E-03
SR-90	7.92E-02
SR-92	8.41E-06
NB-95	3.34E-03
ZR-95	2.05E-03
ZR-97	5.00E-06
TC-99M	6.75E-05
RU-105	2.79E-05
AG-110M	4.34E-06
SN-113	1.57E-04
SN-117M	1.57E-05
SB-124	1.89E-03
SB-125	3.01E-02
SB-126	9.19E-06
I-131	1.39E-02
I-132	9.69E-05
I-133	5.44E-04
XE-133	4.09E-02
CS-134	6.53E-04
I-135	3.80E-05

Installation: Braidwood
Unit No.: 1

Location: 24 Mi SSW of Joliet, IL

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
XE-135	8.08E-04
CS-137	1.69E-03
CE-144	2.33E-04
HF-181	1.13E-04

Total Airborne Tritium Released	1.07E+01 Ci
Total Liquid Tritium Released	8.05E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.69E+07 liters
Volume of Dilution Water Used During Period	9.38E+09 liters

Installation: Braidwood
Unit No.: 2

Location: 24 Mi SSW of Joliet, IL

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-457
Thermal Power(MWH): 2.25E+07
Commercial Operation: 10/17/88
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.35E+06
Initial Criticality: 03/08/88

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.47E-01
KR-85	1.24E+00
KR-85M	4.97E+01
KR-87	5.58E-03
KR-88	4.14E-01
I-131	2.87E-03
XE-131M	7.34E+00
I-132	5.09E-05
I-133	4.82E-04
XE-133	2.28E+03
XE-133M	7.52E+00
XE-135	5.24E+01

Liquid Effluents

Nuclide Released	Activity (Ci)
AR-41	4.90E-06
CR-51	3.27E-02
MN-54	3.96E-03
FE-55	4.34E-02
CO-57	3.17E-04
CO-58	2.37E-01
FE-59	3.97E-03
CO-60	1.98E-02
ZN-65	4.63E-05
KR-85	7.20E-03
SR-89	1.84E-03
SR-90	7.92E-02
SR-92	8.41E-06
NB-95	3.34E-03
ZR-95	2.05E-03
ZR-97	5.00E-06
TC-99M	6.75E-05
RU-105	2.79E-05
AG-110M	4.34E-06
SN-113	1.57E-04
SN-117M	1.57E-05
SB-124	1.89E-03
SB-125	3.01E-02
SB-126	9.19E-06
I-131	1.39E-02
I-132	9.69E-05
I-133	5.44E-04
XE-133	4.09E-02
CS-134	6.53E-04

Installation: Braidwood
Unit No.: 2

Location: 24 Mi SSW of Joliet, IL

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
I-135	3.80E-05
XE-135	8.08E-04
CS-137	1.69E-03
CE-144	2.33E-04
HF-181	1.13E-04

Total Airborne Tritium Released	2.81E+01 Ci
Total Liquid Tritium Released	8.05E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.69E+07 liters
Volume of Dilution Water Used During Period	9.38E+09 liters

Installation: Braidwood
Unit No.: 1&2

Location: 24 Mi SSW of Joliet, IL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-456
Thermal Power(MWH): 2.60E+07
Commercial Operation: 07/29/88
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWE): 8.69E+06
Initial Criticality: 05/29/87

Unit Number: 2 Type: PWR
Docket Number: 50-457
Thermal Power(MWH): 2.25E+07
Commercial Operation: 10/17/88
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWE): 7.35E+06
Initial Criticality: 03/08/88

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
23	Exclusive Use Vehicle	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

A

	Jan-June	Jul-Dec
C-14	2.30E-01	4.00E-01
CD-144		2.00E-01
CO-57	2.46E-01	3.00E-01
CO-58	5.89E+01	3.06E+01
CO-60	5.26E+00	9.30E+00
CR-51	1.92E+00	1.00E+00
CS-134	5.00E-01	2.00E-01
CS-137	4.26E-01	5.00E-01
FE-55	2.44E+01	4.34E+01
FE-59	2.00E-01	2.00E-01
H-3	4.03E-01	
MN-54	2.78E+00	4.20E+00
NB-95	5.44E-01	1.80E+00
NI-63	3.31E+00	5.90E+00
SB-125	4.65E-01	1.20E+00
ZR-95	2.96E-01	9.00E-01

B

	Jan-June	Jul-Dec
C-14	1.07E-01	1.00E-01
CM-242	1.18E-03	
CM-244	2.60E-04	
CO-58	1.77E+00	1.70E+00
CO-60	3.81E+01	3.62E+01
FE-55	5.25E+01	5.25E+01
FE-59	2.06E+00	2.00E+00
I-129	2.07E-04	
MN-54	3.69E+00	3.70E+00
NI-59	4.92E-02	
NI-63	1.72E+00	1.70E+00
PU-238	1.66E-04	
PU-241	9.34E-03	
SR-90	2.42E-02	
TC-99	3.79E-03	

Installation: Braidwood
Unit No.: 1&2

Location: 24 Mi SSW of Joliet, IL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 8.69E+01 Ci 1.56E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 3.75E+02 m3 1.99E+01 Ci 6.38E+00	Before Compaction After Compaction
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Browns Ferry
Unit No.: 1&2&3

Location: 10 Mi NW Decatur, AL

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: BWR
Docket Number: 50-259
Thermal Power(MWH): 0.00E+00
Commercial Operation: 08/01/74
Cooling Water Source: Tennessee River
Unit Number: 2 Type: BWR
Docket Number: 50-260
Thermal Power(MWH): 1.78E+07
Commercial Operation: 03/01/75
Cooling Water Source: Tennessee River
Unit Number: 3 Type: BWR
Docket Number: 50-296
Thermal Power(MWH): 0.00E+00
Commercial Operation: 03/01/77
Cooling Water Source: Tennessee River

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 08/17/73

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 5.78E+06
Initial Criticality: 07/20/74

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 08/08/76

Airborne Effluents

Nuclide Released	Activity (Ci)
NA-24	8.36E-02
AR-41	2.86E+01
CR-51	9.51E-03
DN-54	1.22E-03
CO-58	6.60E-04
FE-59	8.33E-05
CO-60	3.29E-03
ZN-65	2.24E-03
KR-85M	6.90E+02
KR-87	3.57E+02
KR-88	1.16E+03
SR-89	1.87E-04
Y-91M	3.47E-02
MB-95	3.15E-04
MO/TC-99M	1.98E-03
AG-110M	1.44E-03
I-131	5.03E-03
I-132	1.80E-03
I-133	3.32E-02
XE-133	1.55E+03
XE-133M	5.56E+01
CS-134	3.51E-04
I-135	1.47E-03
XB-135	1.31E+02
XE-135M	2.40E+00
CS-137	8.96E-04
XE-137	5.29E+00
CS-138	3.17E-03
XE-138	3.17E+01
BA-139	4.96E-01
BA-140	4.24E-04
LA-140	1.26E-04

Installation: Browns Ferry
Unit No.: 1&2&3

Location: 10 Mi NW Decatur, AL

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents

Nuclide Released	Activity (Ci)
HA-24	5.47E-01
AR-41	5.68E-06
CR-51	4.32E-01
MN-54	5.52E-01
FE-55	2.54E-01
CO-57	7.31E-04
CO-58	2.64E-01
FE-59	1.48E-02
CO-60	1.84E+00
ZN-65	4.75E-01
ZN-69M	3.26E-05
RB-88	2.93E-08
SR-89	4.11E-02
SR-90	2.05E-03
Y-91M	2.48E-04
SR-92	4.03E-04
NB-97	4.17E-04
MO/TC-99M	6.83E-02
RU-103	3.04E-03
TC-104	3.04E-09
AG-110M	6.26E-03
SB-124	4.53E-03
SB-125	5.01E-05
I-131	4.07E-02
I-132	4.42E-04
I-133	3.21E-02
XE-133	1.36E-01
XE-133M	3.01E-03
CS-134	3.33E-02
I-134	1.13E-05
I-135	6.54E-03
XE-135	3.70E-02
XE-135M	1.51E-07
CS-136	4.38E-04
CS-137	1.84E-01
BA-140	4.94E-04

Total Airborne Tritium Released	9.35E+00 Ci
Total Liquid Tritium Released	1.24E+01 Ci
Volume of Waste Released (Prior to Dilution)	3.37E+07 liters
Volume of Dilution Water Used During Period	1.55E+11 liters

Installation: Browns Ferry
Unit No.: 1A2A3

Location: 10 Mi NW Decatur, AL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: BWR
Docket Number: 50-259
Thermal Power(MWH): 0.00E+00
Commercial Operation: 08/01/74
Cooling Water Source: Tennessee River

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 08/17/73

Unit Number: 2 Type: BWR
Docket Number: 50-260
Thermal Power(MWH): 1.78E+07
Commercial Operation: 03/01/75
Cooling Water Source: Tennessee River

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 5.78E+06
Initial Criticality: 07/20/74

Unit Number: 3 Type: BWR
Docket Number: 50-296
Thermal Power(MWH): 0.00E+00
Commercial Operation: 03/01/77
Cooling Water Source: Tennessee River

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 08/08/76

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
1	Sole Use Truck	Alaron, Wampum, PA
42	Sole Use Truck	Barnwell, SC
19	Sole Use Truck	Quadrex, Oak Ridge, TN
24	Sole Use Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

AG-110M	5.26E+00	5.45E+00
CO-58	2.36E+00	
CO-60	3.49E+01	3.02E+01
CR-51	4.83E+00	
CS-134	1.12E+00	4.97E+00
CS-137	4.07E+00	2.13E+01
FE-55	1.43E+01	7.61E+00
MN-54	1.08E+01	5.49E+00
NI-63	4.30E+00	1.40E+01
ZN-65	1.74E+01	9.24E+00

B

AG-110M		6.70E+00
CO-58		3.20E+00
CO-60	4.82E+01	2.63E+01
CR-51		2.13E+01
CS-137	1.00E+01	
FE-55	3.79E+01	1.34E+01
MN-54		1.00E+01
NI-63	2.86E+00	
ZN-65		1.90E+01

C

CO-58	6.90E+00	
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Installation: Browns Ferry
Unit No.: 1A2&3

Location: 10 Mi NW Decatur, AL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

C

CO-60	3.10E+01	3.82E+01
CR-51	7.70E+00	1.00E+00
FE-55	4.29E+01	4.87E+01
FE-59	9.00E-01	
MO-54	4.80E+00	8.50E+00
NI-63	3.70E+00	2.00E+00
SB-124		2.00E+00
ZN-65	1.20E+00	

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.78E+02 C1 1.27E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 8.37E+01 C1 2.71E+01	
C. Irradiated Components, Control Rods, etc.	m3 2.81E+01 C1 6.31E+04	
D. Other (describe)	m3 C1	

Installation: Brunswick
Unit No.: 1&2

Location: 20 Mi S Wilmington, NC

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: BWR
Docket Number: 50-325
Thermal Power(MWH): 0.00E+00
Commercial Operation: 03/18/77
Cooling Water Source: Cape Fear River
Unit Number: 2 Type: BWR
Docket Number: 50-324
Thermal Power(MWH): 1.28E+07
Commercial Operation: 11/03/75
Cooling Water Source: Cape Fear River

Licenses: Carolina Power & Light
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 10/08/75

Licenses: Carolina Power & Light
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 3.98E+06
Initial Criticality: 03/20/75

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	9.76E-04
MN-54	2.52E-04
CO-58	6.12E-05
CO-60	5.37E-03
KR-85M	1.67E+01
KR-87	3.03E+01
KR-88	4.45E+01
SR-89	9.86E-05
SR-90	2.67E-06
I-131	3.28E-04
I-133	1.92E-03
XE-133	5.01E+00
XE-135	1.34E+02
XE-135M	3.74E+01
CS-137	6.98E-04
XE-138	5.29E+01
BA-140	9.83E-05
LA-140	5.98E-05
AM-241	1.14E-05

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	5.80E-06
CR-51	2.01E-02
MN-54	3.11E-03
FE-55	3.65E-03
MN-56	7.99E-04
CO-58	1.32E-03
CO-60	7.22E-02
AS-76	1.67E-04
KR-85M	4.33E-06
SR-92	6.22E-06
NB-95	6.49E-06
TC-99M	6.97E-04
AG-110M	2.83E-05
SB-125	1.77E-04
I-131	1.18E-06
I-133	3.54E-07
XE-133	1.26E-03

Installation: Brunswick
Unit No.: 1A2

Location: 20 Mi S Wilmington, NC

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
CS-134	2.93E-04
KE-135	5.74E-03
KE-135M	1.36E-05
CS-137	1.72E-03
BA-140	4.28E-06
CE-144	2.20E-05
W-187	1.06E-03

Total Airborne Tritium Released	2.00E+01 Ci
Total Liquid Tritium Released	4.72E+01 Ci
Volume of Waste Released (Prior to Dilution)	2.80E+07 liters
Volume of Dilution Water Used During Period	1.01E+11 liters

Installation: Brunswick
Unit No.: 1&2

Location: 20 Mi S Wilmington, NC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: BWR
Docket Number: 50-325
Thermal Power(MWH): 0.00E+00
Commercial Operation: 03/18/77
Cooling Water Source: Cape Fear River

Licensee: Carolina Power & Light
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 10/08/76

Unit Number: 2 Type: BWR
Docket Number: 50-324
Thermal Power(MWH): 1.28E+07
Commercial Operation: 11/03/75
Cooling Water Source: Cape Fear River

Licensee: Carolina Power & Light
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 3.98E+06
Initial Criticality: 03/20/75

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
104	Sole use	CNSI, Barnwell, SC

Irradiated Fuel Shipments (Disposition)

Number of Shipments	Mode of Transportation	Destination
10	Railcar	CP&L/SEHFF

Estimate of Major Nuclide Composition (%)
(by type of waste)

	Jan-June	Jul-Dec
A		
CO-58	1.11E+00	
CO-60	3.73E+01	2.37E+01
CR-51	2.46E+00	
CS-137	2.49E+00	1.15E+00
FE-55	4.60E+01	5.46E+01
MN-54	6.72E+00	
NI-63	1.19E+00	1.08E+00
B		
CO-58	3.17E+00	
CO-60	2.19E+01	4.36E+01
FE-55	6.57E+01	4.91E+01
MN-54	6.12E+00	
NI-63	1.69E+00	2.25E+00
C		
CO-60		6.57E+01
FE-55		3.15E+01
NI-63		2.83E+00

Installation: Brunswick
Unit No.: 1&2

Location: 20 Mi S Wilmington, NC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.14E+02 Ci 1.05E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 2.47E+02 Ci 1.57E+01	
C. Irradiated Components, Control Rods, etc.	m3 3.11E+01 Ci 1.03E+03	
D. Other (describe)	m3 Ci	

Installation: Byron
Unit No.: 1

Location: 3 Mi SW Byron, IL

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-454
Thermal Power(MWH): 3.26E+07
Commercial Operation: 09/16/85
Cooling Water Source: Rock River

Licensee: Commonwealth Edison Co.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.36E+06
Initial Criticality: 02/02/85

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.03E-02
CO-58	5.75E-06
KR-85	9.47E-01
KR-85M	1.21E-03
KR-88	6.76E+00
I-131	2.78E-04
XE-131M	3.30E+01
I-133	3.51E-05
XE-133	4.41E+01
XE-133M	2.86E-01
XE-135	9.05E-02

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	2.98E-02
MN-54	2.87E-03
FE-55	6.58E-02
CO-57	1.06E-04
CO-58	8.04E-02
FE-59	6.19E-03
CO-60	3.18E-02
ZN-65	2.43E-04
BR-82	1.04E-05
KR-85	2.14E-03
KR-88	2.63E-03
SR-89	7.62E-02
SR-92	2.78E-04
NB-95	3.87E-03
ZR-95	2.22E-03
MO-99	3.89E-05
RU-103	1.07E-05
RU-105	2.14E-04
AG-110M	1.13E-03
SN-113	1.87E-04
SN-117M	2.03E-04
SB-122	2.46E-04
SB-124	9.91E-03
SB-125	1.94E-01
TE-125M	1.09E-01
SB-126	1.02E-02
I-131	9.60E-04
XE-131M	1.25E-03
XE-133	1.82E-01
XE-133M	9.25E-04

Installation: Byron
Unit No.: 1

Location: 3 Mi SW Byron, IL

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
CS-134	5.63E-04
XE-135	1.76E-04
CS-137	1.46E-03
W-187	8.72E-05

Total Airborne Tritium Released	5.94E-01 Ci
Total Liquid Tritium Released	1.03E+03 Ci
Volume of Waste Released (Prior to Dilution)	1.66E+07 liters
Volume of Dilution Water Used During Period	1.01E+10 liters

Installation: Byron
Unit No.: 2

Location: 3 Mi SW Byron, IL

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-455
Thermal Power(MWH): 2.33E+07
Commercial Operation: 08/21/87
Cooling Water Source: Rock River

Licenses: Commonwealth Edison Co.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.62E+06
Initial Criticality: 01/09/87

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	6.28E-02
KR-85	9.47E-01
KR-85M	3.74E-04
KR-88	3.66E+00
I-131	1.54E-04
XE-131M	2.29E-01
XE-133	3.27E+01
XE-133M	7.71E-02
XE-135	1.97E-02

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	2.98E-02
MM-54	2.87E-03
FE-55	6.58E-02
CO-57	1.06E-04
CO-58	8.04E-02
FE-59	6.19E-03
CO-60	3.18E-02
ZN-65	2.43E-04
BR-82	1.04E-05
KR-85	2.14E-03
KR-88	2.63E-03
SR-89	7.62E-02
SR-92	2.78E-04
NB-95	3.87E-03
ZR-95	2.22E-03
MO-99	3.89E-05
RU-103	1.07E-05
RU-105	2.14E-04
AG-110M	1.13E-03
SM-113	1.87E-04
SM-117M	2.03E-04
SB-122	2.46E-04
SB-124	9.91E-03
SB-125	1.94E-01
TE-125M	1.09E-01
SB-126	1.02E-02
I-131	9.60E-04
XE-131M	1.25E-03
XE-133	1.82E-01
XE-133M	9.25E-04
CS-134	5.63E-04
XE-135	1.76E-04

Installation: Byron
Unit No.: 2

Location: 3 Mi SW Byron, IL

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
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CS-137	1.46E-03
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W-187	8.72E-05
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Total Airborne Tritium Released

3.38E-01 Ci

Total Liquid Tritium Released

1.03E+03 Ci

Volume of Waste Released (Prior to Dilution)

1.66E+07 liters

Volume of Dilution Water Used During Period

1.01E+10 liters

Installation: Byron
Unit No.: 1&2

Location: 3 Mi SW Byron, IL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-454
Thermal Power(MWH): 2.26E+07
Commercial operation: 09/16/85
Cooling Water Source: Rock River

Licenses: Commonwealth Edison Co.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.36E+06
Initial Criticality: 02/02/85

Unit Number: 2 Type: PWR
Docket Number: 50-455
Thermal Power(MWH): 2.33E+07
Commercial operation: 08/21/87
Cooling Water Source: Rock River

Licenses: Commonwealth Edison Co.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.62E+06
Initial Criticality: 01/09/87

Solid Waste Disposition

Number of Shipments Mode of Transportation
15 Exclusive Use

Destination
Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

C-14	1.83E+00	4.70E-01
CO-57	5.60E-01	6.20E-01
CO-58	9.64E+00	1.14E+01
CO-60	2.54E+01	1.54E+01
CS-134	1.90E-01	1.48E+01
CS-137	3.20E-01	1.65E+01
FE-55	3.81E+01	2.61E+01
H-3	1.80E-01	
MN-54	8.12E+00	5.82E+00
NI-63	1.47E+01	7.69E+00
PU-241	6.00E-02	3.00E-02
SB-124		1.00E-02
SB-125	8.60E-01	1.17E+00
SR-90	7.00E-02	3.00E-02

B

C-14	1.40E-01	3.70E-01
CO-58	1.40E+01	2.03E+01
CO-60	2.27E+00	1.41E+01
CR-51	3.23E+01	1.28E+01
CS-134	1.10E-01	4.60E-01
CS-137	4.10E-01	1.76E+00
FE-55	3.85E+00	2.39E+01
FE-59	7.70E-01	2.10E-01
H-3	4.80E-01	2.96E+00
MN-54	8.20E-01	1.63E+00
NB-95	3.47E+01	1.11E+01
NI-63	1.13E+00	7.04E+00
SN-113		9.00E-02
SN-133	3.10E-01	
ZR-95	8.68E+00	3.26E+00

Installation: Byron
Unit No.: 1&2

Location: 3 Mi SW Byron, IL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 5.26E+01	Non-compacted, Burial Volume
	ci 4.06E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.13E+02	
	m3 4.22E+01	Compacted, Burial Volume
	ci 3.47E+00	
C. Irradiated Components, Control Rods, etc.	m3	
	ci	
D. Other (describe)	m3	
	ci	

Installation: Callaway
Unit No.: 1

Location: 10 MI SE Fulton, MO

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-483
Thermal Power(MWH): 2.58E+07
Commercial Operation: 12/19/84
Cooling Water Source: Missouri River

Licensee: Union Electric Company
Licensed Power(MWT): 3.57E+03
Net Electrical Power(MWH): 8.39E+06
Initial Criticality: 10/02/84

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	7.77E-01
CR-51	6.23E-07
CO-58	3.15E-06
CO-60	1.59E-07
BR-82	2.27E-08
KR-85	4.71E+00
KR-85M	2.60E+00
KR-88	1.51E+00
RB-88	8.39E-04
SR-89	3.86E-06
NB-95	1.36E-07
I-131	6.20E-04
XE-131M	7.89E+00
I-132	2.25E-04
I-133	4.32E-04
XE-133	7.36E+02
XE-133M	4.99E+00
I-135	5.44E-05
XE-135	4.88E+01
XE-135M	3.89E-01
CS-138	2.14E-04

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	1.59E-05
MX-54	2.12E-04
FE-55	1.53E-02
CO-57	2.78E-06
CO-58	1.01E-03
FE-59	1.44E-05
CO-60	2.94E-03
ZN-65	4.61E-05
SR-89	1.76E-02
SR-90	1.12E-03
NB-95	1.98E-04
ZR-95	1.35E-04
TC-99M	2.13E-06
SB-124	6.97E-06
SB-125	1.96E-05
XE-127	4.54E-06
I-131	6.25E-05
XE-131M	6.36E-03
BA-133M	9.12E-08
KR-133	9.65E-01

Installation: Callaway
Unit No.: 1

Location: 10 Mi SE Fulton, MO

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
XE-133M	1.10E-02
CS-134	5.32E-04
XE-135	4.08E-03
CS-137	7.81E-04
CE-141	7.81E-06
CE-144	8.01E-05

Total Airborne Tritium Released	9.12E+01 Ci
Total Liquid Tritium Released	1.41E+03 Ci
Volume of Waste Released (Prior to Dilution)	8.81E+07 liters
Volume of Dilution Water Used During Period	2.50E+09 liters

Installation: Callaway
Unit No.: 1

Location: 10 Mi SE Fulton, MO

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR
Docket Number: 50-483
Thermal Power(MWH): 2.58E+07
Commercial Operation: 12/19/84
Cooling Water Source: Missouri River

Licensee: Union Electric Company
Licensed Power(MWT): 3.57E+03
Net Electrical Power(MWE): 8.39E+06
Initial Criticality: 10/02/84

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
8	Cask	Barnwell, SC
1	Truck	Quadrex, Oak Ridge, TN
10	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A		
CO-58		1.01E+01
CO-60		2.51E+01
CS-134		8.22E+00
CS-137		1.13E+01
FE-55		2.55E+01
MN-54		2.74E+00
NI-63		1.16E+01
SB-125		1.13E+00
B		
CO-58	1.48E+00	1.45E+00
CO-60	5.52E+01	5.41E+01
FE-55	2.26E+00	2.22E+00
MN-54	1.24E+01	1.22E+01
NI-63	2.65E+01	2.60E+01
SB-125	2.09E+00	2.04E+00
C		
CO-58		1.79E+01
CO-60		2.47E+01
CS-134		7.21E+00
CS-137		8.42E+00
FE-55		2.05E+01
MN-54		2.31E+00
NI-63		1.34E+00
NI-63		1.35E+01

Installation: Callaway
Unit No.: 1

Location: 10 Mi SE Fulton, MO

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 2.19E+01 Ci 4.29E+02	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 2.17E+01 Ci 1.84E-01	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 9.27E+00 Ci 1.42E+02	Burial Volume
D. Other (describe)	m3 Ci	

Installation: Calvert Cliffs
Unit No.: 1&2

Location: 45 Mi SE Washington, DC

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: PWR
Docket Number: 50-317
Thermal Power(MWH): 2.30E+07
Commercial Operation: 05/08/75
Cooling Water Source: Chesapeake Bay
Unit Number: 2 Type: PWR
Docket Number: 50-318
Thermal Power(MWH): 1.57E+06
Commercial Operation: 04/01/77
Cooling Water Source: Chesapeake Bay

Licensee: Baltimore Gas & Electric
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 7.33E+06
Initial Criticality: 10/07/74

Licensee: Baltimore Gas & Electric
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 4.97E+06
Initial Criticality: 11/30/76

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.78E-02
CO-60	1.33E-05
KR-85	9.90E+00
KR-85M	6.59E-01
I-131	1.39E-02
XE-131M	1.73E+00
I-133	2.47E-02
XE-133	1.78E+02
XE-133M	6.09E-01
CS-134	3.40E-03
XE-135	2.28E+01
CS-137	4.20E-03

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	3.44E-04
CR-51	2.40E-02
MN-54	3.77E-03
FE-55	2.00E-01
CO-57	6.93E-04
CO-58	5.76E-01
FE-59	1.43E-02
CO-60	1.67E-02
ZN-65	1.82E-03
SR-89	8.28E-04
SR-90	3.66E-04
HB-95	7.78E-03
ZR-95	3.65E-03
TC-99M	2.76E-04
RU-103	2.39E-03
AG-110M	1.54E-01
SN-113	1.58E-03
SB-122	1.26E-04
SB-124	1.75E-02
SB-125	1.06E-01
TE-129	7.19E-03
I-131	3.78E-02
XE-131M	3.11E-04
I-133	6.11E-03

Installation: Calvert Cliffs
Unit No.: 1&2

Location: 45 Mi SE Washington, DC

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
XE-133	9.85E-02
CS-134	1.43E-01
XE-135	2.32E-03
CS-136	2.50E-03
CS-137	2.12E-01
BA-140	7.93E-06
LA-140	3.40E-03
CE-141	1.45E-04
CE-144	1.14E-04

Total Airborne Tritium Released	2.46E+01 Ci
Total Liquid Tritium Released	6.36E+02 Ci
Volume of Waste Released (Prior to Dilution)	3.74E+08 liters
Volume of Dilution Water Used During Period	2.39E+12 liters

Installation: Calvert Cliffs
Unit No.: 1&2

Location: 45 Mi SE Washington, DC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-317
Thermal Power(MWH): 2.30E+07
Commercial Operation: 05/08/75
Cooling Water Source: Chesapeake Bay

Licenses: Baltimore Gas & Electric
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 7.33E+06
Initial Criticality: 10/07/74

Unit Number: 2 Type: PWR
Docket Number: 50-318
Thermal Power(MWH): 1.57E+06
Commercial Operation: 04/01/77
Cooling Water Source: Chesapeake Bay

Licenses: Baltimore Gas & Electric
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 4.97E+06
Initial Criticality: 11/30/76

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
8	Motor Surface Transit	CMSI, Barnwell, SC
23	Motor Surface Transit	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

CO-58		1.20E+01
CO-60	5.58E+00	2.49E+00
CS-134	8.98E+00	3.33E+01
CS-137	4.32E+01	4.12E+01
FE-55	5.96E+00	2.34E+00
NI-63	3.62E+01	7.12E+00

B

AG-110M	1.37E+00	
C-14	1.99E+00	1.56E+00
CE-144	1.97E+00	1.17E+00
CO-58	1.48E+00	1.37E+01
CO-60	9.82E+00	2.34E+00
CR-51	9.36E+00	7.90E+00
CS-134	2.63E+00	1.34E+01
CS-137	1.04E+01	3.04E+01
FE-55	3.45E+01	2.32E+01
H-3		1.61E+00
NB-95	1.01E+00	1.59E+00
NI-63	1.27E+01	1.61E+01
RU-106	2.45E+00	
SB-125	4.62E+00	
ZR-95		1.29E+00

C

CO-58		1.88E+00
CO-60		3.17E+01
FE-55		5.77E+01
MN-54		5.55E+00
NI-63		2.75E+00

Installation: Calvert Cliffs
Unit No.: 1&2

Location: 45 Mi SE Washington, DC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

D

AG-110M	2.49E+00
C-14	2.46E+00
CE-144	2.33E+00
CO-58	1.14E+01
CO-60	1.07E+01
CR-51	7.05E+00
FE-35	2.37E+01
NE-95	1.16E+01
NI-63	8.30E+00
RU-106	2.49E+00
SB-125	2.15E+00
SN-113	1.50E+00
ZR-95	7.13E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.70E+01 Ci 3.35E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.37E+03 Ci 3.22E+01	
C. Irradiated Components, Control Rods, etc.	m3 1.63E+00 Ci 4.61E+03	
D. Other (describe) Cartridge Filters	m3 3.41E+00 Ci 1.11E+01	

Installation: Catawba
Unit No.: 1

Location: 6 Mi NNW of Rock Hill, SC

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-413
Thermal Power(MWH): 2.27E+07
Commercial Operation: 06/29/85
Cooling Water Source: Lake Wylie

Licensee: Duke Power Co
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.58E+06
Initial Criticality: 01/07/85

Airborne Effluents

Nuclide Released	Activity (Ci)
F-18	2.31E-06
NA-24	3.31E-08
AR-41	5.10E+01
MN-54	4.71E-06
CO-58	9.32E-05
CO-60	9.59E-09
BR-80M	1.14E-08
BR-82	7.46E-08
KR-85	2.72E-01
KR-85M	6.23E-01
KR-87	1.60E-02
KR-88	3.66E-01
RB-88	1.91E-06
SB-124	1.73E-09
I-131	3.60E-04
XE-131M	2.81E+00
I-132	4.77E-05
I-133	1.38E-04
XE-133	5.67E+02
XE-133M	3.98E+00
XE-135	1.99E+01
XE-135M	1.94E-02
CS-138	1.21E-07

Liquid Effluents

Nuclide Released	Activity (Ci)
F-18	3.78E-03
NA-24	7.27E-05
AR-41	9.06E-07
CR-51	1.95E-02
MN-54	6.75E-03
FE-55	8.33E-02
MN-56	8.19E-07
CO-57	8.56E-04
CO-58	1.99E-01
FE-59	2.97E-03
CO-60	3.35E-02
NI-65	1.80E-05
ZN-65	5.35E-05
SE-75	8.13E-06
BR-82	5.88E-06
KR-85	3.13E-03
KR-85M	1.03E-06
RB-86	9.54E-06

Installation: Catawba
Unit No.: 1

Location: 6 Mi EBNW of Rock Hill, SC

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
KR-87	2.56E-06
KR-88	2.40E-06
RB-88	2.05E-05
RB-89	1.61E-07
SR-92	2.07E-04
NB-95	1.76E-03
ZR-95	8.54E-04
NB-97	2.23E-03
ZR-97	7.63E-05
KU-103	3.54E-03
AG-110M	3.72E-03
SN-113	1.39E-04
SB-122	1.47E-04
SB-124	1.63E-02
SB-125	6.18E-02
I-131	3.32E-03
I-132	2.25E-05
I-133	1.22E-04
XE-133	8.18E-03
CS-134	1.60E-03
XE-135	2.39E-05
CS-136	5.51E-03
CS-137	3.92E-03
CS-138	3.16E-04
BA-139	1.59E-05
BA-140	2.32E-06
LA-140	6.99E-05
CE-141	2.81E-06
W-187	6.25E-05

Total Airborne Tritium Released	5.72E+01 Ci
Total Liquid Tritium Released	4.13E+02 Ci
Volume of Waste Released (Prior to Dilution)	3.17E+08 liters
Volume of Dilution Water Used During Period	8.83E+10 liters

Installation: Catawba
Unit No.: 2

Location: 5 Mi NNW of Rock Hill, SC

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-414
Thermal Power(MWH): 2.42E+07
Commercial Operation: 08/19/86
Cooling Water Source: Lake Wylie

Licensee: Duke Power Co
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 8.16E+06
Initial Criticality: 05/08/86

Airborne Effluents

Nuclide Released	Activity (Ci)
F-18	2.31E-06
NA-24	3.31E-08
AR-41	5.10E+01
MN-54	4.71E-06
CO-58	9.32E-05
CO-60	9.59E-09
BR-80M	1.14E-08
BR-82	7.46E-08
KR-85	2.72E-01
KR-85M	6.23E-01
KR-87	1.60E-02
KR-88	3.66E-01
RB-88	1.91E-06
SE-124	1.73E-09
I-131	3.60E-04
XE-131M	2.81E+00
I-132	4.77E-05
I-133	1.38E-04
XE-133	5.67E+02
XE-133M	5.98E+00
XE-135	1.99E+01
XE-135M	1.94E-02
CS-138	1.21E-07

Liquid Effluents

Nuclide Released	Activity (Ci)
F-18	3.78E-03
NA-24	7.27E-05
AR-41	9.06E-07
CR-51	1.95E-02
MN-54	6.75E-03
FE-55	8.33E-02
MN-56	8.19E-07
CO-57	8.55E-04
CO-58	1.99E-01
FE-59	2.97E-03
CO-60	3.35E-02
NI-65	1.80E-05
ZN-65	5.35E-05
SE-75	8.15E-06
BR-82	5.88E-06
KR-85	3.13E-03
KR-85M	1.03E-06
RB-86	9.54E-06

Installation: Catawba
Unit No.: 2

Location: 6 MI NNW of Rock Hill, SC

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
KR-87	2.56E-06
KR-88	2.40E-06
RB-88	2.05E-05
RB-89	1.61E-07
SR-92	2.07E-04
NB-95	1.76E-03
ZR-95	8.54E-04
NB-97	2.23E-03
ZR-97	7.63E-05
RU-103	3.54E-05
AG-110M	3.72E-03
SN-113	1.39E-04
SB-122	1.47E-04
SB-124	1.63E-02
SB-125	6.18E-02
I-131	3.32E-03
I-132	2.25E-05
I-133	1.22E-04
XE-133	8.18E-03
CS-134	1.60E-03
XE-135	2.39E-05
CS-136	5.51E-05
CS-137	3.92E-03
CS-138	3.16E-04
BA-139	1.59E-05
BA-140	2.32E-06
LA-140	6.99E-05
CE-141	2.81E-06
W-187	6.25E-05

Total Airborne Tritium Released	5.72E+01 Ci
Total Liquid Tritium Released	4.13E+02 Ci
Volume of Waste Released (Prior to Dilution)	3.17E+08 liters
Volume of Dilution Water Used During Period	8.83E+10 liters

Installation: Catawba
Unit No.: 1A2

Location: 6 Mi NNW of Rock Hill, SC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: FWR
Docket Number: 50-413
Thermal Power(MWH): 2.27E+07
Commercial Operation: 06/29/85
Cooling Water Source: Lake Wylie

Licensee: Duke Power Co
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.58E+06
Initial Criticality: 01/07/85

Unit Number: 2 Type: FWR
Docket Number: 50-414
Thermal Power(MWH): 2.42E+07
Commercial Operation: 08/19/86
Cooling Water Source: Lake Wylie

Licensee: Duke Power Co
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 8.16E+06
Initial Criticality: 05/08/86

Solid Waste Disposition

Number of Shipments Mode of Transportation

Destination

7

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

CE-144		2.08E-01
CO-58	8.61E+01	1.36E+01
CO-60	1.71E+00	6.63E+00
CS-134	3.26E-03	7.63E+00
CS-137	1.11E+00	1.44E+01
FE-55	8.44E+00	3.22E+01
H-3		6.12E+00
MN-54	1.21E+00	2.07E+00
NI-63	1.31E+00	1.70E+01
SB-125	1.95E-04	

B

C-14	1.50E+00	1.30E+00
CO-58	9.50E+00	1.39E+01
CO-60	1.40E+01	1.33E+01
CS-134	1.40E+00	1.30E+00
CS-137	1.99E+00	1.80E+00
FE-55	6.26E+01	5.94E+01
MN-54	3.11E+00	3.10E+00
NI-63	6.21E+00	5.90E+00

D

CO-58	1.84E+01	1.85E+01
CO-60	1.11E+01	1.10E+01
FE-55	5.55E+01	5.53E+01
MN-54	3.70E+00	3.70E+00
NB-95	1.50E+00	1.50E+00
NI-63	9.80E+00	9.80E+00

Installation: Catawba
Unit No.: 1&2

Location: 6 Mi NW of Rock Hill, SC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.01E+02 Ci 4.49E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 4.99E+01 Ci 1.24E+01	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe) Dewatered Filters	m3 4.44E+00 Ci 4.76E+01	

Installation: Clinton
Unit No.: 1

Location: 6 Mi E Clinton, IL

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-461
Thermal Power(MWH): 1.86E+07
Commercial Operation: 11/24/87
Cooling Water Source: Salt Creek

Licensee: Illinois Power
Licensed Power(MWT): 2.89E+03
Net Electrical Power(MWH): 5.88E+06
Initial Criticality: 02/27/87

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.78E+00
CR-51	1.77E-02
DN-54	1.86E-04
CO-58	1.11E-04
CO-60	3.38E-04
KR-85	2.47E+00
KR-85M	1.82E-01
KR-87	1.06E-02
SR-89	6.16E-05
I-131	1.27E-04
XE-131M	1.46E-03
I-133	2.18E-04
XE-133	1.46E-01
XE-133M	1.47E-04
XE-135	7.57E-01
XE-135M	1.00E+00

Total Airborne Tritium Released

1.14E+01 Ci

Installation: Clinton
Unit No.: 1

Location: 6 Mi E Clinton, IL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-461
Thermal Power(MWH): 1.86E+07
Commercial Operation: 11/24/87
Cooling Water Source: Salt Creek

Licenses: Illinois Power
Licensed Power(MWT): 2.89E+03
Net Electrical Power(MWH): 5.88E+06
Initial Criticality: 02/27/87

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
11	Truck	Barnwell, SC
16	Truck	Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A		
	CO-58	1.71E+00
	CO-60	3.02E+01
	CR-51	5.84E+00
	FE-55	4.72E+01
	FE-59	2.04E+00
	MN-54	1.20E+01
	Unidentified	1.04E+00
B		
	CO-58	1.83E+00
	CO-60	3.29E+01
	FE-55	4.93E+01
	MN-54	1.43E+01
	Unidentified	1.62E+00
C		
	CO-60	3.57E+01
	FE-55	6.29E+01
	NI-63	1.30E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 4.48E+01 Ci 5.35E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 3.80E+01 Ci 2.76E+01	
C. Irradiated Components, Control Rods, etc.	m3 4.90E+00 Ci 5.17E+00	
D. Other (describe)	m3 Ci	

Installation: Comanche Peak
Unit No.: 1&2

Location: 4.5 Mi N of Glen Rose, TX

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: FWR
Docket Number: 50-445
Thermal Power(MWH): 2.25E+07
Commercial Operation: 08/13/90
Cooling Water Source: Squaw Creek Reservoir
Unit Number: 2 Type: FWR
Docket Number: 50-446
Thermal Power(MWH): 1.06E+07
Commercial Operation: 08/03/93
Cooling Water Source: Squaw Creek Reservoir

Licensee: TU Electric Company
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.15E+06
Initial Criticality: 04/03/90
Licensee: TU Electric Company
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 3.43E+06
Initial Criticality: 03/24/93

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	4.89E-01
CO-58	3.68E-06
BR-82	1.63E-06
KR-85	7.90E-01
I-131	7.19E-05
XE-131M	6.85E-03
I-133	2.82E-05
XE-133	1.88E+02
XE-133M	4.69E-05
XE-135	2.86E+00

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	8.64E-05
NA-24	3.99E-04
CR-51	1.70E-02
MM-54	2.74E-03
FE-55	1.22E-01
CO-57	3.82E-04
CO-58	1.48E-01
FE-59	9.08E-03
CO-60	3.63E-02
ZN-65	2.14E-04
SE-75	1.06E-04
BR-82	1.42E-04
KR-85	1.18E-02
SR-92	2.90E-05
NB-95	1.73E-03
ZR-95	6.96E-04
ZR-97	1.01E-05
MO-99	8.39E-04
TC-99M	3.18E-04
RU-103	7.75E-05
RU-105	3.97E-05
RU-106	5.26E-05
AG-110M	7.76E-04
IN-113M	1.99E-05
SN-113	2.19E-04
SB-122	5.67E-04

Installation: Comanche Peak
Unit No.: 1&2

Location: 4.5 Mi N of Glen Rose, TX

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
SB-124	7.54E-03
SB-125	3.56E-02
I-131	1.45E-02
XE-131M	1.46E-02
TE-132	6.92E-06
I-133	1.73E-05
XE-133	1.11E+00
XE-133M	7.14E-03
CS-134	8.74E-03
XE-135	1.20E-04
CS-136	2.59E-05
CS-137	8.75E-03
LA-140	1.38E-04
CE-141	1.84E-04
CE-144	2.39E-04

Total Airborne Tritium Released	6.00E+00 Ci
Total Liquid Tritium Released	5.04E+02 Ci
Volume of Waste Released (Prior to Dilution)	2.07E+07 liters
Volume of Dilution Water Used During Period	2.86E+11 liters

Installation: Comanche Peak
Unit No.: 1&2

Location: 4.5 Mi N of Glen Rose, TX

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-445
Thermal Power(MWH): 2.25E+07
Commercial Operation: 08/13/90
Cooling Water Source: Squaw Creek Reservoir

Licensee: TU Electric Company
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.15E+06
Initial Criticality: 04/03/90

Unit Number: 2 Type: PWR
Docket Number: 50-446
Thermal Power(MWH): 1.06E+07
Commercial Operation: 08/03/93
Cooling Water Source: Squaw Creek Reservoir

Licensee: TU Electric Company
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 3.43E+06
Initial Criticality: 03/24/93

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
3	Truck	Alaron, Wampum, PA
10	Truck	CNSI, Barnwell, SC
8	Truck	Quadrex, Oak Ridge, TN
5	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

	Jan-June	Jul-Dec
A		
C-14	1.00E-01	5.00E-01
CO-58	2.82E+01	1.09E+01
CO-60	1.86E+01	2.43E+01
CR-51, FE-59, ZN-65, NB-95, CE-144, FU-241, PU-242	3.00E+00	
CS-134	1.50E+01	1.10E+01
CS-137	1.50E+01	1.57E+01
FE-55	1.70E+00	2.23E+01
H-3	5.00E-01	1.00E-01
I-131	5.90E+00	
MN-54	3.80E+00	3.70E+00
NI-63	6.00E+00	9.50E+00
TC-99, ZN-65, SR-90, ZR-95, CE-144, PU-241, PU-242		2.00E+00
ZR-95	2.20E+00	
B		
CO-58	2.84E+01	7.10E+01
CO-60	1.64E+01	1.18E+01
CR-51	4.60E+00	6.00E+00
FE-55	3.12E+01	4.00E+00
FE-59	2.40E+00	
H-3	4.00E-01	
H-3, C-14, SB-125, CS-134, CS-137		3.00E-01
I-131	2.00E+00	
MN-54	4.50E+00	1.00E+00
NB-95	5.50E+00	
NI-63	1.10E+00	5.70E+00
SB-125, CS-137, CS-134, CE-144, CS-136, SR-89, C-14	3.00E+00	
ZR-95	3.20E+00	

Installation: Comanche Peak
Unit No.: 1a2

Location: 4.5 Mi N of Glen Rose, TX

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.84E+01	Shipped
	m3 1.30E+01	Buried
	Ci 9.94E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 8.85E+02	Shipped
	m3 7.29E+01	Buried
	Ci 1.11E+01	
C. Irradiated Components, Control Rods, etc.	m3	
	Ci	
D. Other (describe)	m3	
	Ci	

Installation: Donald C. Cook
Unit No.: 1&2

Location: 11 Mi SSW St. Joseph, MI

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: PWR
Docket Number: 50-315
Thermal Power(MWH): 2.81E+07
Commercial Operation: 08/27/75
Cooling Water Source: Lake Michigan
Unit Number: 2 Type: PWR
Docket Number: 50-315
Thermal Power(MWH): 2.45E+07
Commercial Operation: 07/01/78
Cooling Water Source: Lake Michigan

Licensee: Indiana Michigan Power Co.
Licensed Power(MWT): 3.25E+03
Net Electrical Power(MWH): 8.76E+06
Initial Criticality: 01/18/75

Licensee: Indiana Michigan Power Co.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.55E+06
Initial Criticality: 03/10/78

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	4.19E+01
CR-51	2.84E-06
MN-54	1.10E-06
CO-57	2.14E-08
CO-58	3.08E-07
CO-60	6.48E-05
ZN-65	3.43E-07
KR-85	1.19E+03
KR-85M	1.29E+00
KR-87	2.78E-02
KR-88	1.18E+00
RB-88	7.20E-06
SR-89	7.96E-05
SR-90	4.83E-07
ZR-95	2.05E-07
AG-110M	2.16E-06
SN-113	4.62E-08
SB-125	2.62E-07
I-131	7.69E-05
XE-131M	3.53E+00
I-132	1.63E-05
I-133	8.60E-05
XE-133	7.85E+02
XE-133M	1.21E+00
CS-134	3.34E-05
I-134	1.91E-05
I-135	6.99E-06
XE-135	3.09E+01
XE-135M	2.33E-02
CS-137	2.39E-04
CS-138	4.42E-06
XE-138	2.13E-03

Liquid Effluents

Nuclide Released	Activity (Ci)
BR-7	5.48E-04
HA-24	6.66E-04
CR-51	4.18E-02
MN-54	1.14E-02

Installation: Donald C. Cook
Unit No.: 1A2

Location: 11 Mi SSW St. Joseph, MI

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
FE-55	1.00E-01
CO-57	5.54E-04
CO-58	6.13E-02
FE-59	6.08E-04
CO-60	9.60E-02
ZN-65	3.34E-03
RB-88	1.63E-04
SR-90	2.90E-05
ZR/NB-95	1.05E-02
KU-103	1.71E-05
AG-110M	4.24E-02
SN-113	6.91E-04
SB-124	9.90E-03
SB-125	4.48E-02
I-131	2.47E-03
XE-131M	5.57E-05
I-132	1.85E-03
I-133	5.99E-03
XE-133	6.02E-03
XE-133M	1.21E-05
CS-134	3.55E-02
I-134	8.19E-04
I-135	1.60E-03
XE-135	5.36E-05
XE-135M	3.98E-04
CS-137	6.42E-02
CS-138	8.11E-06
XE-138	4.09E-05
LA-140	8.76E-06
HF-181	1.38E-05

Total Airborne Tritium Released	2.58E+01 Ci
Total Liquid Tritium Released	6.01E+02 Ci
Volume of Waste Released (Prior to Dilution)	5.59E+08 liters
Volume of Dilution Water Used During Period	3.30E+12 liters

Installation: Cooper
Unit No.: 1

Location: 70 Mi S Omaha, NE

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-298
Thermal Power(MWH): 1.15E+07
Commercial Operation: 07/01/74
Cooling Water Source: Missouri River

Licensee: Nebraska Public Power District
Licensed Power(MWT): 2.38E+03
Net Electrical Power(MWH): 3.71E+06
Initial Criticality: 02/21/74

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-60	1.48E-04
KR-83M	5.40E-02
KR-85	3.10E-01
KR-85M	9.80E-02
KR-87	3.20E-01
KR-89	3.20E-01
RB-88	6.02E-04
KR-89	1.51E+00
RB-89	4.76E-05
I-131	2.77E-05
TE-132	1.59E-05
XE-133	2.25E-01
XE-133M	4.50E-03
I-134	1.47E-05
I-135	6.22E-05
XE-135	4.00E-01
XE-135M	1.08E-01
XE-137	1.75E+00
CS-138	2.38E-03
XE-138	1.32E+00
BA-139	2.22E-04

Liquid Effluents

Nuclide Released	Activity (Ci)
HA-24	4.12E-05
CR-51	6.43E-03
MM-54	4.71E-01
FE-55	2.46E-01
CO-58	4.13E-02
FE-59	7.98E-03
CO-60	1.43E+00
ZM-65	3.85E-04
SR-89	4.69E-03
SR-90	1.58E-02
SR-91	8.18E-05
NB-95	2.29E-04
AG-110M	2.65E-02
CS-134	9.34E-03
CS-137	5.15E-02
LA-140	1.07E-04

Total Liquid Tritium Released	1.08E+01 Ci
Volume of Waste Released (Prior to Dilution)	7.53E+06 liters
Volume of Dilution Water Used During Period	3.69E+10 liters

Installation: Cooper
Unit No.: 1

Location: 70 Mi S Omaha, NE

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-298
Thermal Power(MWH): 1.15E+07
Commercial Operation: 07/01/74
Cooling Water Source: Missouri River

Licensee: Nebraska Public Power District
Licensed Power(MWT): 2.38E+03
Net Electrical Power(MWH): 3.71E+06
Initial Criticality: 02/21/74

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
33	Exclusive use vehicle	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

A

	Jan-June	Jul-Dec
AG-110M	1.51E+00	1.41E+00
C-14	2.63E-01	1.31E+00
CM-242	6.59E-06	1.89E-05
CO-58	3.84E+00	5.45E-01
CO-60	4.08E+01	3.80E+01
CR-51	6.42E+00	
CS-134	1.09E-01	
CS-137	5.30E-01	6.30E-01
FE-55	2.48E+01	3.80E+01
H-3	5.56E-03	2.46E-02
I-131		7.03E-03
NH-54	1.83E+01	9.89E+00
NI-59	2.39E-02	7.58E-02
NI-63	2.07E+00	7.58E+00
PU-241	1.12E-04	2.52E-04
SR-89	7.94E-01	2.52E+00
SR-90	1.01E-02	3.15E-02
TC-99	6.65E-06	
TRU	2.21E-05	6.30E-05
ZH-65	6.06E-01	

B

AG-110M	8.16E-01	
AM-241	6.24E-02	
BA-133	3.47E-06	
C-14	2.78E-02	3.77E-01
CD-109	1.42E-08	
CE-144	8.22E-01	
CL-36	1.22E-05	
CM-242	7.43E-05	8.44E-04
CM-243/244	8.53E-06	
CO-57	5.48E-12	
CO-58	3.59E+00	7.13E-01
CO-60	4.51E+01	2.39E+01
CS-134	1.61E+00	2.21E+00
CS-137	3.59E+00	1.13E+01
FE-55	2.51E+01	5.19E+01
FE-59	1.01E-01	1.45E+00
H-3	9.02E-04	

Installation: Cooper
Unit No.: 1

Location: 70 Mi S Omaha, NE

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

B

KR-85	1.82E+00	
MW-54	1.58E+01	7.17E+00
NA-22	9.59E-08	
NI-59	1.20E-02	
NI-63	6.55E-01	9.37E-01
PO-210	2.61E-06	
PU-238	8.16E-06	
PU-239/240	3.35E-06	
PU-241	2.76E-04	
SR-89	9.59E-04	1.35E-02
SR-90	2.04E-03	1.69E-03
TC-99	5.73E-05	
TRU	6.52E-05	
U-235	2.39E-08	
U-238	1.31E-03	
ZN-65	9.26E-01	

C

AM-241	9.23E-12
C-14	5.67E-03
CM-242	1.41E-11
CM-243/244	3.05E-11
CO-60	3.78E+01
CR-51	1.38E-03
FE-55	5.67E+01
H-3	1.61E-04
MW-54	2.11E+00
NB-94	5.26E-05
NI-59	1.70E-02
NI-63	3.39E+00
PU-238	2.98E-11
PU-239/240	1.22E-11
PU-241	9.86E-10
TC-99	2.53E-05

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 8.76E+01 Ci 7.36E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 2.13E+02 m3 3.41E+00 Ci 3.29E+01	Compacted and Incinerated
C. Irradiated Components, Control Rods, etc.	m3 4.81E-02 Ci 2.70E+02	Non-compacted
D. Other (describe)	m3 Ci	

Installation: Crystal River
Unit No.: 3

Location: 70 Mi N Tampa, FL

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-302
Thermal Power(MWH): 1.86E+07
Commercial Operation: 03/13/77
Cooling Water Source: Gulf of Mexico

Licensee: Florida Power
Licensed Power(MWT): 2.54E+03
Net Electrical Power(MWE): 6.08E+06
Initial Criticality: 01/14/77

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-57	1.99E-10
CO-58	2.94E-07
CO-60	1.65E-08
KR-85	4.82E-01
KR-85M	5.60E-03
RB-88	1.42E-06
SR-89	1.02E-06
SR-90	1.15E-06
Y-93	3.27E-06
I-131	1.96E-05
XE-131M	2.84E-02
TE-132	1.35E-07
I-133	2.54E-04
XE-133	2.84E+01
XE-133M	7.89E-03
I-135	1.27E-07
XE-135	9.25E+00
CS-137	3.11E-06
CE-141	3.93E-08
CE-143	1.91E-07
CE-144	1.26E-06
RH-188	8.74E-07

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.61E-03
AR-41	1.20E-07
CR-51	1.74E-03
MN-54	1.69E-02
FE-55	3.72E-02
CO-57	9.49E-04
CO-58	1.80E-01
FE-59	3.76E-04
CO-60	1.07E-01
ZN-69	3.36E-05
ZN-72	1.32E-05
KR-85	9.53E-03
KR-85M	3.69E-05
SR-85	2.85E-05
KR-87	4.69E-07
SR-89	3.03E-03
SR-90	1.02E-02
Y-91M	3.06E-06
SR-92	3.57E-03

Installation: Crystal River
Unit No.: 3

Location: 70 Mi N Tampa, FL

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
Y-92	2.80E-05
Y-93	2.04E-04
NB-95	2.44E-02
ZR-95	1.36E-03
NB-97	6.25E-03
ZR-97	2.68E-04
MO-99	4.79E-05
TC-99M	1.01E-03
TC-101	1.70E-06
RU-103	9.46E-05
RU-106	6.03E-03
AG-110M	7.06E-03
SB-122	8.39E-04
SB-124	5.79E-02
SB-125	3.41E-02
TE-129	3.63E-05
I-131	2.17E-03
XE-131M	3.57E-03
I-132	5.71E-05
TE-132	3.71E-04
BA-133M	4.82E-05
I-133	2.31E-04
XE-133	7.64E-01
XE-133M	7.20E-03
CS-134	2.71E-03
I-135	2.75E-06
XE-135	5.14E-02
XE-135M	1.40E-05
CS-137	9.29E-03
BA-139	4.84E-05
BA-140	1.67E-04
LA-140	1.79E-03
CE-141	4.72E-05
LA-142	7.94E-07
CE-143	1.29E-05
CE-144	4.49E-03
PA-144	6.08E-03
ND-147	2.39E-05
NP-239	2.18E-05

Total Airborne Tritium Released	1.32E+01 Ci
Total Liquid Tritium Released	5.89E+02 Ci
Volume of Waste Released (Prior to Dilution)	3.54E+07 liters
Volume of Dilution Water Used During Period	2.12E+12 liters

Installation: Crystal River
Unit No.: 3

Location: 70 MI N Tampa, FL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: FWR
Docket Number: 50-302
Thermal Power(MWH): 1.86E+07
Commercial Operation: 03/13/77
Cooling Water Source: Gulf of Mexico

Licenses: Florida Power
Licensed Power(MWT): 2.54E+03
Net Electrical Power(MWH): 6.08E+06
Initial Criticality: 01/14/77

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
9	Exclusive Use Vehicle	CHSI, Barnwell, SC
3	Exclusive Use Vehicle	Quadrex, Oak Ridge, TN
13	Exclusive Use Vehicle	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

CO-60	5.90E+00	5.90E+00
CS-134	2.16E+01	1.71E+01
CS-137	6.12E+01	6.68E+01
FE-55	3.40E+00	2.90E+00
NI-63	6.20E+00	7.00E+00

B

C-14	1.04E+01	1.14E+01
CO-58		1.40E+00
CO-60	1.42E+01	1.57E+01
CS-134	3.40E+00	3.80E+00
CS-137	1.03E+01	1.15E+01
FE-55	4.40E+01	4.57E+01
NI-63	1.02E+01	1.13E+01

D

CO-58		1.90E+00
CO-60		1.75E+01
FE-55		4.51E+01
H-3		2.03E+01
NI-63		1.36E+01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.34E+02 Ci 8.79E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 3.60E+02 Ci 4.49E+00	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe) Tank Sediment	m3 5.07E+00 Ci 5.68E+00	

Installation: Davis-Besse
Unit No.: 1

Location: 21 Mi E Toledo, OH

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-346
Thermal Power(MWH): 1.92E+07
Commercial Operation: 07/31/78
Cooling Water Source: Lake Erie

Licenses: Toledo Edison Co.
Licensed Power(MWT): 2.77E+03
Net Electrical Power(MWH): 6.08E+06
Initial Criticality: 08/12/77

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.42E-01
MN-54	2.51E-06
CO-58	8.03E-05
CO-60	6.64E-06
KR-85	2.69E+02
KR-85M	2.67E-01
KR-87	9.67E-02
KR-88	3.07E-01
RU-103	2.26E-06
I-131	7.36E-03
XE-131M	9.13E+00
I-132	4.84E-05
I-133	1.39E-03
XE-133	6.41E+01
XE-133M	2.47E+00
CS-134	1.33E-04
I-135	4.91E-05
XE-135	2.55E+00
XE-135M	3.51E-02
CS-137	1.94E-04
BA-140	1.24E-05
CE-144	9.87E-07

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.46E-05
CR-51	2.34E-04
MN-54	8.40E-05
FE-55	6.43E-03
CO-57	7.56E-05
CO-58	1.97E-02
FE-59	3.74E-05
CO-60	3.70E-03
SE-75	9.08E-05
KR-85	2.81E-02
NB-95	5.55E-04
ZR-95	3.18E-04
NB-97	3.10E-05
ZR-97	1.75E-04
TC-99M	1.70E-06
RU-103	2.05E-04
RU-106	9.08E-05
AG-110M	3.70E-03
SN-113	8.23E-04

Installation: Davis-Besse
Unit No.: 1

Location: 21 Mi E Toledo, OH

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
SB-124	7.66E-04
SB-125	5.05E-03
I-131	1.31E-04
XE-131M	2.36E-03
I-132	5.21E-04
TE-132	5.23E-04
I-133	2.47E-06
XE-133	2.25E-01
XE-133M	1.01E-03
CS-134	3.42E-03
XE-135	9.19E-05
CS-137	5.33E-03
CE-144	5.24E-05
NP-239	7.94E-05

Total Airborne Tritium Released	2.24E+01 Ci
Total Liquid Tritium Released	1.81E+02 Ci
Volume of Waste Released (Prior to Dilution)	2.71E+08 liters
Volume of Dilution Water Used During Period	3.37E+10 liters

Installation: Davis-Besse
Unit No.: 1

Location: 21 Mi E Toledo, OH

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR
Docket Number: 50-346
Thermal Power(MWH): 1.92E+07
Commercial Operation: 07/31/78
Cooling Water Source: Lake Erie

Licensee: Toledo Edison Co.
Licensed Power(MWT): 2.77E+03
Net Electrical Power(MWH): 6.08E+06
Initial Criticality: 08/12/77

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
1	Truck	Amer. Ecology, Oak Ridge, TN
6	Truck	Barnwell, SC
2	Truck	Quadrox, Oak Ridge, TN
10	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

AG-110M	1.60E+00	
CO-58	6.67E+01	1.46E+00
CO-60	7.10E+00	9.19E+00
CS-134	4.90E+00	2.10E+01
CS-137	8.00E+00	4.71E+01
FE-55	6.40E+00	4.30E+00
NI-63	3.30E+00	1.70E+01

B

BA/LA-140		6.64E+01
CO-58	7.00E+01	6.90E-01
CO-60	2.30E+01	4.13E+00
CS-134		6.84E+00
CS-137		1.29E+01
FE-55	7.00E+00	3.92E+00
NI-63		1.44E+00
SN-113		3.12E+00

D

BA/LA-140		1.46E+01
CO-58		7.01E+01
CO-60		1.36E+00
CR-51		2.70E+00
FE-55		2.27E+00
MN-54		1.34E+00
NB-95		1.46E+00
NI-63		1.60E+00
ZR-95		1.20E+00

Installation: Davis-Besse
Unit No.: 1

Location: 21 Mi E Toledo, OH

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 4.20E+01 Ci 7.68E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 3.82E+01 m3 2.23E+01 Ci 2.64E+00	After Volume Reduction
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe) Cartridge Filters	m3 1.74E+00 Ci 9.79E+00	

Installation: Diablo Canyon
Unit No.: 1&2

Location: 12 Mi WSW of San Luis Obispo, CA

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: PWR
Docket Number: 50-275
Thermal Power(MWH): 2.81E+07
Commercial Operation: 05/07/85
Cooling Water Source: Pacific Ocean
Unit Number: 2 Type: PWR
Docket Number: 50-323
Thermal Power(MWH): 2.44E+07
Commercial Operation: 03/13/86
Cooling Water Source: Pacific Ocean

Licensee: Pacific Gas & Electric Co
Licensed Power(MWT): 3.34E+03
Net Electrical Power(MWH): 9.03E+06
Initial Criticality: 04/29/84

Licensee: Pacific Gas & Electric Co
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.79E+06
Initial Criticality: 08/19/85

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	6.16E-01
CO-58	4.19E-05
CO-60	3.42E-06
KR-85	2.72E-01
I-131	5.27E-06
XE-131M	2.75E-04
XE-133	9.95E-01
XE-135	2.55E-01

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	6.57E-04
BA-24	5.50E-04
CR-51	1.73E-02
MM-54	2.44E-02
FE-55	2.23E-01
CO-57	2.65E-03
CO-58	2.88E-01
FE-59	4.68E-04
CO-60	2.60E-01
ZN-65	2.03E-04
AS-76	5.12E-05
KR-86	1.10E-05
SR-89	1.58E-04
SR-90	5.68E-05
SR-91	1.42E-05
SR-92	2.54E-06
ZR-95	1.58E-02
MO-99	5.16E-04
RU-103	5.86E-05
AG-110M	5.47E-04
SN-113	1.00E-03
SN-117M	1.15E-04
SB-122	3.46E-03
SB-124	1.78E-02
SB-125	1.15E-01
TE-129	2.37E-07
I-131	1.98E-03
TE-131	5.94E-31

Installation: Diablo Canyon
Unit No.: 1&2

Location: 12 Mi WSW of San Luis Obispo, CA

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
I-132	1.33E-04
TE-132	1.50E-03
I-133	9.29E-04
XE-133	2.37E-03
CS-134	1.45E-03
I-135	5.88E-05
XE-135	2.46E-04
CS-137	6.16E-03
CS-138	4.19E-08
BA-139	9.86E-08
CE-139	1.04E-05
BA-140	2.76E-05
LA-140	7.22E-07
CE-143	2.89E-05
CE-144	9.59E-07

Total Airborne Tritium Released	1.56E+02 Ci
Total Liquid Tritium Released	1.03E+03 Ci
Volume of Waste Released (Prior to Dilution)	1.88E+08 liters
Volume of Dilution Water Used During Period	5.24E+11 liters

Installation: Diablo Canyon
Unit No.: 1&2

Location: 12 MI WSW of San Luis Obispo, CA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-275
Thermal Power(MWH): 2.81E+07
Commercial Operation: 05/07/85
Cooling Water Source: Pacific Ocean

Licensee: Pacific Gas & Electric Co
Licensed Power(MWT): 3.34E+03
Net Electrical Power(MWH): 9.03E+06
Initial Criticality: 04/29/84

Unit Number: 2 Type: PWR
Docket Number: 50-323
Thermal Power(MWH): 2.44E+07
Commercial Operation: 03/13/86
Cooling Water Source: Pacific Ocean

Licensee: Pacific Gas & Electric Co
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.79E+06
Initial Criticality: 08/19/85

Solid Waste Disposition

Number of Shipments Mode of Transportation
42 Truck

Destination
Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

CO-60	1.09E+01
CS-137	1.11E+00
FE-55	7.29E+01
NI-63	1.25E+01

B

C-14	1.11E+00
CO-58	2.69E+01
CO-60	1.32E+01
CR-51	1.59E+00
FE-55	3.42E+01
MM-54	1.46E+00
NB-95	7.41E+00
NI-63	5.90E+00
ZR-95	5.93E+00

Type of Waste

Unit

Description

A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 2.96E+01 Ci 1.94E+03	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 2.57E+01 Ci 2.91E+00	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Dresden
Unit No.: 1

Location: 14 Mi SW Joliet, IL

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-10
Thermal Power(MWH): 0.00E+00
Commercial Operation: 07/04/60
Cooling Water Source: Rankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 7.00E+02
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 10/15/59

Airborne Effluents

Nuclide Released	Activity (Ci)
KN-54	9.55E-07
FE-55	3.53E-05
CO-60	1.06E-05
SR-89	1.21E-06
SR-90	6.92E-07
I-131	1.36E-07
CS-137	7.47E-05

Installation: Dresden
Unit No.: 2&3

Location: 14 Mi SW Joliet, IL

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 2 Type: BWR
Docket Number: 50-237
Thermal Power(MWH): 1.03E+07
Commercial Operation: 06/09/70
Cooling Water Source: Kankakee River
Unit Number: 3 Type: BWR
Docket Number: 50-249
Thermal Power(MWH): 1.62E+07
Commercial Operation: 11/16/71
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 3.06E+06
Initial Criticality: 01/07/70

Licensee: Commonwealth Edison
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 4.97E+06
Initial Criticality: 01/31/71

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	1.60E-03
MM-54	2.69E-03
FE-55	2.32E-02
CO-58	3.02E-04
FE-59	3.55E-04
CO-60	8.07E-03
KR-85	2.24E-03
KR-87	1.34E+00
SR-89	6.68E-04
SR-90	2.84E-06
I-131	1.01E-03
BA-133	7.68E-05
I-133	6.17E-03
XE-133	2.84E+01
I-135	1.20E-03
XE-135	1.86E+01
CS-137	1.15E-04
BA-140	5.33E-05
LA-140	5.33E-05

Liquid Effluents

Nuclide Released	Activity (Ci)
FE-55	1.82E-06
CO-60	2.62E-05
CS-134	1.16E-06
CS-137	5.25E-04

Installation: Dresden
Unit No.: 14243

Location: 14 Mi SW Joliet, IL

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: BWR
Docket Number: 50-10
Thermal Power(MWH): 0.00E+00
Commercial Operation: 07/04/60
Cooling Water Source: Kankakee River
Unit Number: 2 Type: BWR
Docket Number: 50-237
Thermal Power(MWH): 1.03E+07
Commercial Operation: 06/09/70
Cooling Water Source: Kankakee River
Unit Number: 3 Type: BWR
Docket Number: 50-249
Thermal Power(MWH): 1.62E+07
Commercial Operation: 11/16/71
Cooling Water Source: Kankakee River

Licenses: Commonwealth Edison
Licensed Power(MWT): 7.00E+02
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 10/15/59

Licenses: Commonwealth Edison
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 3.06E+06
Initial Criticality: 01/07/70

Licenses: Commonwealth Edison
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 4.97E+06
Initial Criticality: 01/31/71

Liquid Effluents

Nuclide Released	Activity (Ci)
MN-54	1.88E-02
FE-55	4.53E-02
FE-59	9.04E-05
CO-60	6.07E-02
SR-89	5.59E-05
SR-90	8.48E-05
RU-103	4.88E-06
CS-137	2.46E-02
BI-214	1.09E-02

Total Airborne Tritium Released	7.05E+00 Ci
Total Liquid Tritium Released	2.33E+01 Ci
Volume of Waste Released (Prior to Dilution)	7.63E+08 liters
Volume of Dilution Water Used During Period	5.91E+10 liters

Installation: Dresden
Unit No.: 1&2&3

Location: 14 Mi SW Joliet, IL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: BWR
Docket Number: 50-10
Thermal Power(MWH): 0.00E+00
Commercial Operation: 07/04/60
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 7.00E+02
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 10/15/59

Unit Number: 2 Type: BWR
Docket Number: 50-237
Thermal Power(MWH): 1.03E+07
Commercial Operation: 06/09/70
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 3.06E+06
Initial Criticality: 01/07/70

Unit Number: 3 Type: BWR
Docket Number: 50-249
Thermal Power(MWH): 1.62E+07
Commercial Operation: 11/16/71
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 4.97E+06
Initial Criticality: 01/31/71

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
109	Motor freight (exclusive use only)	CNSI, Barnwell, SC
6	Motor freight (exclusive use only)	CNSI, Channahon, IL
12	Motor freight (exclusive use only)	Quadrex, Oak Ridge, TN
11	Motor freight (exclusive use only)	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

	Jan-June	Jul-Dec
A		
CO-60	2.92E+01	6.60E+01
CS-137	3.98E+00	1.16E+01
FE-55	5.87E+01	5.71E+00
MN-54	6.40E+00	1.32E+01
NI-63		1.67E+00
B		
CO-60	2.08E+01	2.52E+01
CS-137	2.96E+00	2.62E+00
FE-55	6.32E+01	5.88E+01
MN-54	1.02E+01	9.35E+00
NI-59	1.30E+00	2.23E+00
NI-63	1.01E+00	
C		
CO-60	3.23E+01	3.85E+01
FE-55	5.82E+01	4.70E+00
MN-54	2.58E+00	
NI-63	6.51E+00	6.58E+01

Installation: Dresden
Unit No.: 1&2&3

Location: 14 Mi SW Joliet, IL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

D

CO-60	5.68E+01
FE-55	2.68E+00
MN-54	3.21E+00
NI-59	9.11E+00
ZN-65	1.87E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 4.52E+02 Ci 1.17E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.66E+03 Ci 2.20E+01	
C. Irradiated Components, Control Rods, etc.	m3 8.19E+00 Ci 1.94E+04	
D. Other (describe) Sewage Treatment Plant Dirt	m3 1.09E+01 Ci 1.00E-01	

Installation: Duane Arnold
Unit No.: 1

Location: 8 Mi NW Cedar Rapids, IA

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-331
Thermal Power(MWH): 1.04E+07
Commercial Operation: 02/01/75
Cooling Water Source: Cedar Rapids River

Licensee: IES Utilities Inc.
Licensed Power(MWT): 1.66E+03
Net Electrical Power(MWH): 3.24E+06
Initial Criticality: 03/23/74

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.57E+00
CR-51	6.44E-05
MM-54	5.80E-04
CO-58	2.37E-05
FE-59	1.68E-05
CO-60	1.38E-03
KR-85M	3.11E+00
SR-89	1.78E-05
SR-90	0.63E-07
I-131	9.11E-05
I-132	1.31E-06
I-133	1.13E-04
XE-133	2.53E+01
I-134	7.74E-07
I-135	1.87E-05
XE-135	1.86E+01
XE-135M	8.38E+00
CS-137	1.39E-06

Total Airborne Tritium Released

3.69E+01 Ci

Installation: Duane Arnold
Unit No.: 1

Location: 8 Mi NW Cedar Rapids, IA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-331
Thermal Power(MWH): 1.04E+07
Commercial Operation: 02/01/75
Cooling Water Source: Cedar Rapids River

Licensee: IES Utilities Inc.
Licensed Power(MWT): 1.66E+03
Net Electrical Power(MWH): 3.24E+06
Initial Criticality: 03/23/74

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
11	Exclusive-Use Vehicle	Barnwell, SC
4	Exclusive-Use Vehicle	SEC, Oak Ridge, TN

Irradiated Fuel Shipments (Disposition)

Number of Shipments	Mode of Transportation	Destination
1	Exclusive-Use Vehicle	Pleasanton, CA

Estimate of Major Nuclide Composition (%)
(by type of waste)

	Jan-June	Jul-Dec
A		
C-14	4.20E-01	1.20E-01
CE-144	2.00E-02	
CO-58	4.40E-01	2.76E+00
CO-60	3.60E+01	2.52E+01
CR-51		2.08E+00
CS-134	2.90E-01	
CS-137	1.10E+00	4.60E-01
FE-55	5.20E+01	4.79E+01
FE-59		6.00E-02
H-3	4.00E-02	2.00E-02
MN-54	8.14E+00	2.09E+01
NI-59		1.00E-02
NI-63	7.90E-01	5.10E-01
B		
C-14		1.00E-02
CO-58		1.10E-01
CO-60		2.91E+01
CR-51		5.70E-01
CS-137		1.00E-02
FE-55		6.65E+01
FE-59		1.00E-01
MN-54		1.50E+00
NI-63		1.96E+00
C		
CO-60		3.20E+01
CR-51		4.82E+00
FE-55		5.63E+01
MN-54		3.70E+00
NI-63		2.35E+00

Installation: Duane Arnold
Unit No.: 1

Location: 8 Mi NW Cedar Rapids, IA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.66E+01	Burial Volume
	m3 1.78E+01	
	Ci 4.70E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.18E+02	
	m3 7.20E+00	Volume after
		Incineration
	Ci 4.69E-01	
C. Irradiated Components, Control Rods, etc.	m3 3.00E+00	
	Ci 5.08E+04	
D. Other (describe)	m3	
	Ci	

Installation: Joseph M. Farley
Unit No.: 1

Location: Dothan, AL

Effluent and Waste Disposal Annual Report for 1993

Type: FWR
Docket Number: 50-348
Thermal Power(MWH): 2.25E+07
Commercial Operation: 12/01/77
Cooling Water Source: Chatahoochee River

Licensee: Southern Nuclear
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 6.87E+06
Initial Criticality: 08/09/77

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.29E+01
KR-85	6.25E-01
XE-131M	4.01E-01
I-133	2.73E-06
XE-133	1.70E+02
XE-133M	1.06E-01
XE-135	4.45E-02

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	4.00E-03
MN-54	1.70E-03
FE-55	7.17E-03
CO-57	8.27E-05
CO-58	3.16E-02
FE-59	4.15E-04
CO-60	1.65E-02
AS-76	1.94E-06
SR-90	2.81E-05
SR-92	6.37E-05
NB-95	1.15E-03
ZR-95	4.82E-04
NB-97	1.05E-04
TC-99M	4.47E-05
RU-103	3.59E-06
RU-105	1.48E-05
AG-110M	3.63E-03
SB-124	7.81E-04
SB-125	3.68E-03
I-131	1.59E-04
XE-131M	5.58E-04
I-133	1.04E-04
XE-133	7.95E-02
XE-133M	1.11E-04
CS-134	1.39E-03
XE-135	1.42E-04
CS-137	2.94E-03

Total Airborne Tritium Released	2.63E+01 Ci
Total Liquid Tritium Released	9.35E+02 Ci
Volume of Waste Released (Prior to Dilution)	3.11E+08 liters
Volume of Dilution Water Used During Period	5.53E+10 liters

Installation: Joseph M. Farley
Unit No.: 2

Location: Dothan, AL

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-364
Thermal Power(MWH): 1.70E+07
Commercial Operation: 07/30/81
Cooling Water Source: Chatahoochee River

Licensee: Southern Nuclear
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 5.24E+06
Initial Criticality: 05/08/81

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.56E+01
CO-58	1.26E-07
KR-85M	5.00E-04
I-133	1.88E-08
XE-133	5.05E-01
XE-135	7.92E-03

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	2.02E-04
CR-51	1.14E-02
MM-54	2.77E-03
FE-55	6.88E-03
CO-57	5.51E-05
CO-58	4.89E-02
FE-59	7.66E-04
CO-60	2.38E-02
ZN-65	7.63E-06
AS-76	2.52E-06
KR-88	2.01E-06
RB-88	4.46E-05
SR-92	4.12E-05
NB-95	7.90E-03
ZR-95	4.09E-03
NB-97	2.43E-04
TC-99M	5.94E-05
RU-105	4.60E-05
AG-110M	1.81E-03
SB-124	2.76E-04
SB-125	1.65E-03
I-131	3.30E-05
XE-131M	4.15E-04
TE-132	5.47E-07
I-133	8.06E-05
XE-133	9.12E-02
XE-133M	2.63E-04
CS-134	1.00E-04
I-135	2.61E-05
XE-135	1.30E-04
CS-137	6.47E-04
BA-140	2.97E-06
CE-144	2.57E-06

Installation: Joseph M. Farley
Unit No.: 2

Location: Dothan, AL

Effluent and Waste Disposal Annual Report for 1993

Total Airborne Tritium Released	4.60E+01 Ci
Total Liquid Tritium Released	8.85E+02 Ci
Volume of Waste Released (Prior to Dilution)	3.28E+08 liters
Volume of Dilution Water Used During Period	5.85E+10 liters

Installation: Joseph M. Farley
Unit No.: 1&2

Location: Dothan, AL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-348
Thermal Power(MWH): 2.25E+07
Commercial Operation: 12/01/77
Cooling Water Source: Chatahoochee River

Licensee: Southern Nuclear
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 6.87E+06
Initial Criticality: 08/09/77

Unit Number: 2 Type: PWR
Docket Number: 50-364
Thermal Power(MWH): 1.70E+07
Commercial Operation: 07/30/81
Cooling Water Source: Chatahoochee River

Licensee: Southern Nuclear
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 5.24E+06
Initial Criticality: 05/08/81

Solid Waste Disposition

Number of Shipments Mode of Transportation
64 Highway

Destination
CNSI, Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

CO-58	3.52E+01	1.36E+01
CO-60	1.00E+01	1.87E+01
CR-51	1.20E+00	
CS-134		7.80E+00
CS-137		6.10E+00
FE-55	3.97E+01	2.57E+01
MN-54	1.00E+00	5.00E+00
NB-95	1.10E+00	
NI-63	7.30E+00	2.04E+01
SB-125		1.00E+00

B

BE-7		1.00E+00
CO-58	1.77E+01	1.49E+01
CO-60	9.70E+00	1.21E+01
CR-51	8.50E+00	1.10E+00
FE-55	3.94E+01	4.83E+01
MN-54	1.60E+00	5.60E+00
NB-95	5.90E+00	2.00E+00
NI-63	8.40E+00	8.20E+00
PU-241	2.10E+00	2.00E+00
ZR-95	4.00E+00	1.60E+00

Installation: Joseph M. Farley
Unit No.: 1&2

Location: Dothan, AL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 3.00E+01 Ci 5.00E+02	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 3.67E+01 Ci 5.74E+00	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Fermi
Unit No.: 2

Location: Laguna Beach, MI

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-341
Thermal Power(MWH): 2.56E+07
Commercial Operation: 01/23/88
Cooling Water Source: Lake Erie

Licensee: Detroit Edison Company
Licensed Power(MW): 3.29E+03
Net Electrical Power(MWH): 8.28E+06
Initial Criticality: 06/21/85

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.62E+00
CR-51	1.45E-03
MN-54	4.97E-04
CO-58	1.41E-05
CO-60	3.48E-04
ZN-65	8.94E-05
SE-75	5.49E-06
AS-76	2.83E-04
BR-82	7.39E-05
KR-85	1.49E-01
KR-85M	1.49E+00
KR-87	3.40E+00
KR-88	2.12E+00
RB-88	1.55E-01
KR-89	3.63E+00
RB-89	3.72E-01
SR-89	1.40E-04
SR-90	2.51E-06
SR-91	3.99E-03
Y-91M	6.84E-02
TC-99M	2.68E-03
AG-110M	2.47E-06
I-131	6.17E-03
XE-131M	1.25E-02
I-132	2.87E-02
I-133	2.22E-02
XE-133	7.59E+00
XE-133M	8.68E-02
I-134	6.69E-03
I-135	2.12E-02
XE-135	5.89E+00
XE-135M	1.94E+01
XE-137	7.19E+01
CS-138	7.13E-01
XE-138	3.80E+01
BA-139	5.06E-01
BA-140	2.94E-04
LA-140	6.24E-04

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	1.56E-04
MN-54	3.51E-04
CO-58	6.13E-05

Installation: Fermi
Unit No.: 2

Location: Laguna Beach, MI

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
CO-60	5.52E-04
ZN-65	1.40E-04
SR-89	1.89E-04
SB-125	1.87E-05
XE-133	9.17E-06
CS-137	8.29E-06

Total Airborne Tritium Released	2.36E+00 Ci
Total Liquid Tritium Released	3.73E-01 Ci
Volume of Waste Released (Prior to Dilution)	3.94E+05 liters
Volume of Dilution Water Used During Period	3.86E+10 liters

Installation: James A. Fitzpatrick
Unit No.: 1

Location: 36 Mi N Syracuse, NY

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-333
Thermal Power(MWH): 1.48E+07
Commercial Operation: 07/28/75
Cooling Water Source: Lake Ontario

Licensee: Power Authority of the State of NY
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 4.75E+06
Initial Criticality: 11/17/74

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.61E+01
CR-51	5.61E-04
MN-54	7.76E-05
CO-58	2.12E-05
FE-59	3.92E-06
CO-60	4.17E-04
ZN-65	6.35E-04
AS-76	3.97E-04
KR-85M	1.31E+01
KR-87	8.44E+00
KR-88	1.75E+01
SR-89	4.54E-05
SR-90	7.29E-10
NB-95M	1.23E-05
I-131	4.94E-04
I-133	4.15E-03
XE-133	2.66E+02
XE-133M	8.26E+00
I-135	9.29E-04
XE-135	4.65E+01
XE-135M	5.53E+00
CS-137	6.60E-06
XE-137	1.23E+00
XE-138	3.20E+01
BA/LA-140	1.65E-05
CE-144	3.06E-05

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	1.23E-04
MN-54	1.56E-04
CO-58	2.08E-06
CO-60	8.51E-04
ZN-65	2.57E-04
AS-76	1.30E-06
SR-89	4.35E-04
TC-99M	1.81E-06
AG-110M	9.74E-06
CS-134	1.74E-05
XE-135	4.28E-05
CS-137	4.06E-05

Installation: James A. Fitzpatrick
Unit No.: 1

Location: 36 Mi N Syracuse, NY

Effluent and Waste Disposal Annual Report for 1993

Total Airborne Tritium Released	7.93E+00 Ci
Total Liquid Tritium Released	1.44E+00 Ci
Volume of Waste Released (Prior to Dilution)	1.20E+06 liters
Volume of Dilution Water Used During Period	6.09E+11 liters

Installation: James A. Fitzpatrick
Unit No.: 1

Location: 36 Mi N Syracuse, NY

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-333
Thermal Power(MWH): 1.48E+07
Commercial Operation: 07/28/75
Cooling Water Source: Lake Ontario

Licensee: Power Authority of the State of NY
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 4.75E+06
Initial Criticality: 11/17/74

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
10	Truck	Alaron, Wampum, PA
27	Truck	Barnwell, SC
1	Truck	Quadrex, Oak Ridge, TN
1	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A		
CO-58	2.11E+00	3.36E+00
CO-60	3.34E+01	3.22E+01
CR-51	6.40E-01	3.64E+00
CS-134	1.08E+00	9.77E-01
CS-137	2.63E+00	2.50E+00
FE-55	2.59E+01	2.17E+01
MN-54	7.52E+00	1.06E+01
ZN-65	2.57E+01	2.35E+01
B		
C-14	1.02E-01	
CO-60	1.96E+01	4.62E+01
CS-134	4.48E+00	3.48E-01
CS-137	7.49E+00	5.82E-01
FE-55	1.30E+01	2.87E+01
H-3		1.68E+01
MN-54	4.87E+00	3.79E-01
NI-63		3.05E+00
ZN-65	5.04E+01	3.92E+00
C		
C-14		8.15E-03
CO-60		4.76E+01
FE-55		4.69E+01
H-3		1.73E-04
MN-54		5.20E-01
NI-94		7.94E-05
NI-59		2.72E-02
NI-63		4.96E+00
D		
C-14		1.80E-01
CO-60		5.34E+01
CS-137		1.16E+00
FE-55		2.30E+01
H-3		9.00E-02
MN-54		7.56E+00

Installation: James A. Fitzpatrick
Unit No.: 1

Location: 36 Mi N Syracuse, NY

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

D

NI-63

7.40E-01

ZM-65

1.39E+01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.14E+02 Ci 3.95E+02	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 3.20E+02 Ci 3.90E+00	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 8.74E+00 Ci 3.41E+04	Burial Volume
D. Other (describe) Water & Water/Oil Mixtures	m3 1.08E+01 Ci 2.76E-04	Burial Volume

Installation: Fort Calhoun
Unit No.: 1

Location: 19 Mi N Omaha, NE

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-285
Thermal Power(MWH): 9.72E+06
Commercial Operation: 06/20/74
Cooling Water Source: Missouri River

Licensee: Omaha Public Power
Licensed Power(MWT): 1.50E+03
Net Electrical Power(MWH): 3.10E+06
Initial Criticality: 08/06/73

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	5.79E-01
KR-85	2.19E-07
KR-85M	1.60E-03
SR-90	7.26E-07
Y-90	7.26E-07
I-131	2.12E-05
XE-131M	3.41E-03
XE-133	8.56E+00
XE-133M	1.51E-02
XE-135	9.56E-02
CS-137	7.34E-07

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	7.94E-05
C-14	1.53E-03
P-32	1.19E-05
AR-41	4.65E-06
CR-51	1.45E-02
MN-54	9.45E-04
FE-55	2.38E-01
CO-57	1.73E-04
CO-58	1.21E-01
FE-59	2.36E-04
CO-60	6.00E-03
NI-63	4.71E-04
ZN-65	4.07E-05
SE-75	1.01E-03
KR-85M	5.38E-06
KR-87	5.16E-06
KR-88	8.43E-06
SR-89	6.05E-04
SR-90	7.69E-04
Y-90	7.69E-04
NB-95	6.03E-03
ZR-95	3.93E-03
MO-99	3.26E-05
TC-99M	3.26E-05
RH-103M	2.77E-04
RU-103	2.77E-04
RH-106	1.06E-04
RU-106	1.06E-04
AG-110M	4.46E-03
SW-113	2.08E-04

Installation: Fort Calhoun
Unit No.: 1

Location: 19 Mi N Omaha, NE

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
SB-122	2.95E-04
SB-124	1.88E-02
SB-125	8.06E-02
SB-126	4.65E-04
I-129	8.18E-05
I-131	7.90E-03
XE-131M	3.77E-05
I-132	2.06E-05
TE-132	2.11E-05
I-133	2.38E-04
XE-133	1.04E-01
XE-133M	6.97E-04
CS-134	1.29E-03
XE-135	6.98E-04
XE-135M	7.48E-06
CS-137	6.32E-03
BA-140	1.63E-04
LA-140	8.88E-04
CE-141	1.10E-04
LA-141	4.52E-05
CE-144	1.86E-04
PR-144	1.86E-04
HF-181	4.82E-05

Total Airborne Tritium Released	1.19E+00 Ci
Total Liquid Tritium Released	2.39E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.35E+08 liters
Volume of Dilution Water Used During Period	1.22E+12 liters

Installation: Fort Calhoun
Unit No.: 1

Location: 19 Mi N Omaha, NE

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR
Docket Number: 50-285
Thermal Power(MWH): 9.72E+06
Commercial Operation: 06/20/74
Cooling Water Source: Missouri River

Licensee: Omaha Public Power
Licensed Power(MWT): 1.50E+03
Net Electrical Power(MWH): 3.10E+06
Initial Criticality: 08/06/73

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
33		Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

CS-134	3.16E+01
CS-137	5.80E+01
FE-55	4.80E+00
MN-54	2.20E+00
NI-63	1.60E+00

B

CO-58	5.90E+00
CO-60	2.37E+01
CS-137	1.49E+01
FE-55	3.63E+01
MN-54	1.00E+00
NI-63	5.00E+00
SB-125	1.10E+00
TC-99	2.50E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 5.52E+00 Ci 1.18E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.87E+01 Ci 8.81E-01	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Fort St. Vrain
Unit No.: 1

Location: 35 Mi N Denver, CO

Effluent and Waste Disposal Annual Report for 1993

Type: HTG
Docket Number: 50-267
Thermal Power(MWH): 0.00E+00
Commercial Operation: 07/01/79
Cooling Water Source: South Platte River

Licensee: Public Service Co of Colorado
Licensed Power(MWT): 8.42E+02
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 01/31/74

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-60	5.05E-06
CS-137	1.70E-06

Liquid Effluents

Nuclide Released	Activity (Ci)
MN-54	3.68E-05
CO-60	2.39E-03
BA-133	1.61E-05
CS-134	1.30E-03
CS-137	1.23E-02
HU-152	5.08E-04
HU-154	3.71E-04
HU-155	2.27E-04

Total Airborne Tritium Released	1.17E+00 Ci
Total Liquid Tritium Released	2.49E-01 Ci
Volume of Waste Released (Prior to Dilution)	2.55E+08 liters
Volume of Dilution Water Used During Period	2.09E+08 liters

Installation: Fort St. Vrain
Unit No.: 1

Location: 35 Mi N Denver, CO

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: HTG
Docket Number: 50-267
Thermal Power(MWH): 0.00E+00
Commercial Operation: 07/01/79
Cooling Water Source: South Platte River

Licensee: Public Service Co of Colorado
Licensed Power(MWT): 8.42E+02
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 01/31/74

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
120	Public Highway	US Ecology, Richland, WA

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A		
	CS-134	7.90E+00
	CS-137	8.21E+01
	FE-55	1.10E+00
	SR-90	8.90E+00
B		
	CO-60	7.70E+00
	FE-55	8.58E+01
	H-3	5.60E+00
C		
	CO-60	3.55E+01
	EU-152	5.10E+00
	EU-154	3.50E+00
	FE-55	4.04E+01
	H-3	1.05E+01
	NI-63	4.70E+00
D		
	CO-60	1.00E+00
	EU-152	5.40E+00
	FE-55	2.51E+01
	H-3	6.79E+01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 5.07E+00 Ci 4.39E+00	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 3.11E+01 Ci 2.44E-01	
C. Irradiated Components, Control Rods, etc.	m3 3.98E+02 Ci 2.63E+04	
D. Other (describe) Irradiated Concrete	m3 6.63E+02 Ci 6.58E+02	

Installation: R. E. Ginna
Unit No.: 1

Location: 16 Mi NE Rochester, NY

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-244
Thermal Power(MWH): 1.09E+07
Commercial Operation: 07/01/70
Cooling Water Source: Lake Ontario

Licensee: Rochester Gas&Electric
Licensed Power(MWT): 1.52E+03
Net Electrical Power(MWH): 3.50E+06
Initial Criticality: 11/08/69

Airborne Effluents

Nuclide Released	Activity (Ci)
C-14	3.16E+00
AR-41	1.98E+00
CO-58	1.28E-06
KR-85	1.77E+00
KR-85M	2.82E-01
KR-87	2.70E-01
KR-88	3.96E-01
I-131	7.31E-04
XE-131M	7.26E-01
I-133	1.12E-04
XE-133	1.11E+02
XE-133M	6.04E-01
XE-135	1.59E+01
XE-135M	2.61E+00
CS-137	5.17E-06
XE-138	9.65E-01
Unidentified	8.69E-06

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	3.15E-04
MR-54	2.17E-05
FE-55	2.62E-03
CO-58	2.12E-03
FE-59	2.85E-06
CO-60	1.14E-03
SR-89	2.99E-04
SR-90	8.95E-05
ZR/NB-95	3.51E-04
MO-99	6.07E-05
HU-106	1.17E-04
AG-110M	1.27E-03
SB-124	2.85E-03
SB-125	6.53E-03
I-131	1.13E-02
I-133	1.53E-02
XE-133	7.78E-02
CS-134	4.19E-02
I-135	1.00E-02
XE-135	2.83E-02
CS-136	2.25E-04
CS-137	4.07E-02
BA/LA-140	9.88E-05

Installation: R. E. Ginna
Unit No.: 1

Location: 16 Mi NE Rochester, NY

Effluent and Waste Disposal Annual Report for 1993

Total Airborne Tritium Released	5.15E+01 Ci
Total Liquid Tritium Released	1.77E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.14E+08 liters
Volume of Dilution Water Used During Period	6.02E+11 liters

Installation: R. E. Ginna
Unit No.: 1

Location: 15 Mi NE Rochester, NY

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR
Docket Number: 50-244
Thermal Power(MWH): 1.09E+07
Commercial Operation: 07/01/70
Cooling Water Source: Lake Ontario

Licensee: Rochester Gas&Electric
Licensed Power(MWT): 1.52E+03
Net Electrical Power(MWH): 3.50E+06
Initial Criticality: 11/08/69

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
7	Sole Use Truck	Barnwell, SC
2	Sole Use Truck	Oak Ridge, TN
1	Sole Use Truck	Quadrex
3	Sole Use Truck	SEG

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

C-14		5.00E+00
CO-58	2.95E+01	
CO-60	2.05E+01	3.00E+01
CS-134	1.03E+01	
CS-137	1.56E+01	7.00E+00
FE-55	6.20E+00	3.10E+01
H-3		2.00E+00
MX-54	1.60E+00	
NI-63	1.21E+01	1.90E+01
SB-124	2.40E+00	
SB-125		2.00E+00

B

C-14	1.40E+00	
CE-144		5.00E+00
CO-58		7.00E+00
CO-60	9.20E+00	1.00E+01
CR-51		6.00E+00
CS-134	1.04E+01	2.00E+00
CS-137	2.24E+01	9.00E+00
FE-55	4.80E+01	3.80E+01
MX-54	1.90E+00	2.00E+00
NB-95		1.00E+01
NI-63	5.00E+00	4.00E+00
ZR-95		7.00E+00

Installation: R. E. Ginna
Unit No.: 1

Location: 16 Mi NE Rochester, NY

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 7.12E+00 Ci 6.86E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 4.95E+02 Ci 8.53E-01	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Grand Gulf
Unit No.: 1

Location: 25 Mi Vicksburg, MS

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-416
Thermal Power(MWH): 2.56E+07
Commercial Operation: 07/01/85
Cooling Water Source: Wells

Licensee: Entergy Operations, Inc.
Licensed Power(MWT): 3.83E+03
Net Electrical Power(MWH): 7.90E+06
Initial Criticality: 08/18/82

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	6.06E-01
CR-51	1.17E-05
MO-54	2.28E-05
CO-58	1.64E-06
CO-60	4.00E-05
KR-85M	4.82E+00
KR-88	2.64E+00
SR-89	2.70E-06
SR-90	1.48E-06
I-131	4.71E-04
XE-131M	2.25E+00
I-133	1.70E-04
XE-133	4.61E+01
CS-134	2.12E-06
XE-135	3.57E+01
XE-135M	1.92E+00
CS-137	2.33E-06
XE-138	4.04E-01
BA-140	4.53E-08

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	2.10E-03
CR-51	2.94E-02
MO-54	2.46E-02
FE-55	7.01E-02
MO-56	1.03E-05
CO-58	2.20E-03
FE-59	6.20E-03
CO-60	2.84E-02
CU-64	7.13E-04
ZN-65	3.55E-05
AS-76	7.21E-05
SR-89	3.23E-04
SR-90	2.93E-04
ZR/NB-95	3.26E-05
TC-99M	7.55E-05
SB-124	1.04E-04
SB-125	1.79E-05
I-131	2.96E-06
I-133	1.05E-05
XE-133	3.14E-04
CS-134	3.52E-04
XE-135	2.62E-04

Installation: Grand Gulf
Unit No.: 1

Location: 25 Mi Vicksburg, MS

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
CS-137	5.98E-04
CE-144	1.79E-05
W-187	1.38E-05

Total Airborne Tritium Released	2.29E+01 Ci
Total Liquid Tritium Released	6.29E+01 Ci
Volume of Waste Released (Prior to Dilution)	2.68E+07 liters
Volume of Dilution Water Used During Period	2.07E+09 liters

Installation: Grand Gulf
Unit No.: 1

Location: 25 Mi Vicksburg, MS

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-416
Thermal Power(MWE): 2.56E+07
Commercial Operation: 07/01/85
Cooling Water Source: Wells

Licensee: Entergy Operations, Inc.
Licensed Power(MWT): 3.83E+03
Net Electrical Power(MWE): 7.90E+06
Initial Criticality: 08/18/82

Solid Waste Disposition

Number of Shipments	Mode of Transportation
82	Truck

Destination
Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June	Jul-Dec
----------	---------

A

CO-58	2.00E+00	
CO-60	2.30E+01	9.10E+00
CR-51	2.10E+01	1.20E+00
CS-134	2.00E+00	
CS-137	2.00E+00	
FE-55	3.50E+01	7.51E+01
FE-59		1.20E+00
MN-54	1.30E+01	7.80E+00
NI-63		1.40E+00
Unidentified	2.00E+00	2.70E+00
ZN-65		1.50E+00

B

C-14	2.00E+00	1.20E+00
CO-60	7.00E+00	1.85E+01
FE-55	7.80E+01	6.51E+01
FE-59	6.00E+00	2.90E+00
MN-54	7.00E+00	1.23E+01

Type of Waste

Unit

Description

A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.63E+02	
	ci 3.76E+02	

B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 2.68E+01	
	ci 3.16E+00	

C. Irradiated Components, Control Rods, etc.	m3	
	ci	

D. Other (describe)	m3	
	ci	

Installation: Haddam Neck
Unit No.: 1

Location: 9.5 Mi SE Middletown, CT

Effluent and Waste Disposal Annual Report for 1993

Type: PWR

Licensee: Connecticut Yankee Atomic
Power

Docket Number: 50-213

Licensed Power(MWT): 1.82E+03

Thermal Power(MWH): 1.19E+07

Net Electrical Power(MWH): 3.74E+06

Commercial Operation: 01/01/68

Initial Criticality: 07/24/67

Cooling Water Source: Connecticut River

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	7.04E-02
MO-54	1.51E-05
CO-60	2.16E-04
KR-85	1.59E+02
KR-85M	6.43E-02
KR-87	3.43E-02
KR-88	3.01E-02
SR-89	1.61E-07
SR-90	2.19E-07
I-131	2.66E-03
XE-131M	1.98E+01
I-133	2.48E-04
XE-133	1.88E+03
XE-133M	1.36E+01
CS-134	8.02E-04
XE-135	1.18E+01
XE-135M	2.52E-02
CS-137	8.76E-03
XE-137	8.92E-02
XE-138	7.41E-02

Liquid Effluents

Nuclide Released	Activity (Ci)
MO-54	4.82E-04
FE-55	7.73E-01
CO-58	9.63E-03
FE-59	2.25E-04
CO-60	1.06E-02
KR-85	1.78E-02
SR-89	7.61E-05
SR-90	1.52E-03
I-131	4.34E-03
XE-131M	4.78E-02
I-133	2.64E-05
XE-133	1.37E+00
XE-133M	7.41E-03
CS-134	1.31E-02
XE-135	8.18E-04
CS-137	2.32E-02

Total Airborne Tritium Released	6.43E+01 Ci
Total Liquid Tritium Released	4.00E+03 Ci
Volume of Waste Released (Prior to Dilution)	1.39E+09 liters
Volume of Dilution Water Used During Period	7.01E+11 liters

Installation: Haddam Neck
Unit No.: 1

Location: 9.5 Mi SE Middletown, CT

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: FWR

Licensee: Connecticut Yankee Atomic
Power

Docket Number: 50-213

Licensed Power(MWT): 1.62E+03

Thermal Power(MWH): 1.19E+07

Net Electrical Power(MWH): 3.74E+06

Commercial Operation: 01/01/68

Initial Criticality: 07/24/67

Cooling Water Source: Connecticut River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
13	Truck	Barnwell, SC
4	Truck	Quadrex, Oak Ridge, TN
4	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

AM-241	3.36E-03
C-14	3.00E-02
CM-242	1.94E-03
CM-243	1.34E-03
CM-244	1.34E-03
CO-58	2.00E+01
CO-60	7.40E+00
CS-134	2.16E+01
CS-137	3.13E+01
FE-55	1.27E+01
H-3	1.95E-03
I-129	8.07E-04
MN-54	4.30E+00
NI-63	2.22E+00
PU-238	5.46E-03
PU-239	7.59E-04
PU-240	7.59E-04
PU-241	1.63E-01
SR-90	2.03E-01
TC-99	2.15E-04

B

AM-241	2.11E-02
C-14	1.61E-01
CM-242	1.40E-02
CM-243	1.76E-03
CM-244	1.76E-03
CO-58	2.31E+00
CO-60	1.39E+01
CS-134	6.25E+00
CS-137	1.29E+01
FE-55	5.36E+01
H-3	3.95E+00
I-129	1.30E-02
MN-54	2.55E-01
NI-63	6.21E+00

Installation: Haddam Neck
Unit No.: 1

Location: 9.5 Mi SE Middletown, CT

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

B

FU-238	8.13E-03
FU-239	1.38E-03
FU-240	1.38E-03
FU-241	3.06E-01
FU-242	6.22E-04
SR-90	8.00E-02
TC-99	1.83E-03

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 4.43E+01	Dewatered
	ci 3.66E+03	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.62E+01	Burial Volume
	ci 2.12E+00	after Compaction
C. Irradiated Components, Control Rods, etc.	m3	
	ci	
D. Other (describe)	m3	
	ci	

Installation: Harris
Unit No.: 1

Location: 20 Mi SW Raleigh, NC

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-400
Thermal Power(MWE): 2.39E+07
Commercial Operation: 05/02/87
Cooling Water Source: Makeup Reservoir

Licensee: Carolina Power & Light
Licensed Power(MWT): 2.77E+03
Net Electrical Power(MWE): 7.53E+06
Initial Criticality: 01/03/87

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-60	1.73E-04
KR-85	3.27E+01
KR-85M	6.29E+00
KR-87	2.10E+00
KR-88	1.05E+01
I-131	7.35E-06
XE-131M	4.57E-01
I-133	2.41E-06
XE-133	2.64E+02
XE-133M	4.20E+00
XE-135	2.70E+01
XE-136	2.10E+00

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	4.30E-05
MR-54	1.50E-04
FE-55	2.27E-02
CO-57	1.19E-04
CO-58	2.40E-02
CO-60	7.60E-03
Y-93	5.19E-05
NB-95	1.26E-05
SB-125	1.91E-02
I-131	3.35E-03
XE-131M	4.10E-03
I-133	3.66E-05
XE-133	1.33E-02
XE-133M	1.79E-04
CS-134	2.91E-04
XE-135	3.45E-04
CS-137	3.89E-04

Total Airborne Tritium Released	5.08E+01 Ci
Total Liquid Tritium Released	5.55E+02 Ci
Volume of Waste Released (Prior to Dilution)	9.46E+07 liters
Volume of Dilution Water Used During Period	2.74E+10 liters

Installation: Harris
Unit No.: 1

Location: 20 Mi SW Raleigh, NC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR
Docket Number: 50-400
Thermal Power(MWH): 2.39E+07
Commercial Operation: 05/02/87
Cooling Water Source: Makeup Reservoir

Licensee: Carolina Power & Light
Licensed Power(MWT): 2.77E+03
Net Electrical Power(MWH): 7.53E+06
Initial Criticality: 01/03/87

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
87	Truck	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

A

	Jan-June	Jul-Dec
AM-241	3.36E-05	1.34E-04
C-14	5.13E-02	4.50E-03
CD-109		3.25E+00
CE-144		1.83E-01
CM-242		7.30E-05
CM-243/244	3.31E-05	1.73E-04
CO-58	1.04E+00	5.92E+00
CO-60	2.80E+01	2.15E+01
CS-134	5.11E-01	1.08E+01
CS-137	9.01E-01	1.06E+01
FE-55	2.41E+01	1.86E+01
H-3	1.44E-02	6.34E-02
MN-54	9.61E+00	5.80E+00
NB-94		1.51E-04
NI-59		1.40E-01
NI-63	3.53E+01	2.17E+01
PU-238	5.32E-05	3.03E-04
PU-239/240	5.24E-05	2.09E-04
PU-241	8.68E-03	5.32E-02
SB-125	4.18E-01	1.72E+00
SR-90	7.08E-03	2.13E-02
TC-99		3.00E-04

B

AM-241		2.64E-01
AM-243		2.80E-11
C-14	2.22E-01	7.21E-02
CE-144	1.40E+00	4.54E-01
CM-242		1.40E-07
CM-243		7.40E-12
CM-244		3.00E-10
CO-58	1.11E+01	4.61E+00
CO-60	2.25E+01	2.22E+01
CS-137	9.45E-01	5.89E-01
FE-55	5.86E+01	6.67E+01
H-3	5.95E-01	1.93E-01
MN-54	1.72E+00	5.61E-01
NI-63	2.94E+00	4.30E+00
NP-237		1.60E-07

Installation: Harris
Unit No.: 2

Location: 20 Mi SW Raleigh, NC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

B

PU-238	5.10E-05
PU-239	2.80E-05
PU-240	1.60E-06
PU-241	1.10E-04
PU-242	4.30E-11

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 3.37E+01	After Incineration
	ci 3.74E+02	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 3.14E+01	After Incineration
	ci 8.30E-01	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3	
	ci	
D. Other (describe)	m3	
	ci	

Installation: Edwin I. Hatch
Unit No.: 1&2

Location: 11 Mi N Baxley, GA

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: BWR
Docket Number: 50-321
Thermal Power(MWH): 1.64E+07
Commercial Operation: 12/31/75
Cooling Water Source: Altamaha River
Unit Number: 2 Type: BWR
Docket Number: 50-366
Thermal Power(MWH): 1.60E+07
Commercial Operation: 09/05/79
Cooling Water Source: Altamaha River

Licensee: Georgia Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 4.95E+06
Initial Criticality: 09/12/74

Licensee: Georgia Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 5.00E+06
Initial Criticality: 07/04/78

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.53E+00
MN-54	5.17E-06
CO-58	4.15E-06
CO-60	3.24E-05
ZN-65	1.36E-03
KR-85M	3.19E+01
KR-87	1.09E+02
KR-88	7.13E+00
SR-89	1.20E-02
SR-90	2.39E-04
MB-95	1.36E-05
I-131	2.60E-01
I-133	1.39E+00
XE-133	2.10E+03
I-135	2.66E+00
XE-135	3.92E+02
XE-135M	3.43E+02
CS-137	6.23E-05
XB-138	8.24E+02
BA-140	1.91E-03
LA-140	5.31E-02
CE-141	1.15E-03
Unidentified	4.41E-03

Liquid Effluents

Nuclide Released	Activity (Ci)
BA-24	7.92E-03
AR-41	2.75E-05
CR-51	1.01E-02
MN-54	7.58E-03
FE-55	1.48E-01
MN-56	7.69E-05
CO-58	4.03E-03
FE-59	4.95E-04
CO-60	5.91E-03
ZN-65	1.42E-01
ZN-69M	7.61E-05
AS-76	7.06E-03
KR-85	2.08E-03

Installation: Edwin I. Hatch
Unit No.: 1&2

Location: 11 Mi N Barley, GA

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
KR-85M	5.57E-07
RB-89	2.90E-04
SR-89	6.29E-03
SR-90	4.25E-04
SR-91	5.20E-03
Y-91M	2.14E-03
SR-92	6.47E-04
Y-92	6.61E-03
NB-95	2.56E-05
NB-97	8.00E-04
MO-99	5.48E-03
TC-99M	1.12E-02
RU-103	1.55E-06
SB-124	1.34E-05
SB-125	2.55E-04
I-131	1.27E-02
XE-131M	5.30E-03
I-132	5.76E-04
I-133	2.43E-02
XE-133	5.69E-02
XE-133M	1.12E-03
CS-134	6.31E-03
I-134	2.12E-05
I-135	1.19E-02
XE-135	2.01E-01
XE-135M	2.56E-02
CS-136	3.76E-04
CS-137	4.37E-02
CS-138	4.56E-04
BA-139	1.45E-04
BA-140	2.82E-03
LA-140	4.93E-03
CE-141	5.82E-04
CE-144	7.56E-05
NP-239	1.92E-02

Total Airborne Tritium Released	6.63E+01 Ci
Total Liquid Tritium Released	5.08E+01 Ci
Volume of Waste Released (Prior to Dilution)	3.52E+07 liters
Volume of Dilution Water Used During Period	7.75E+09 liters

Installation: Edwin I. Hatch
Unit No.: 1&2

Location: 11 Mi N Baxley, GA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: BWR
Docket Number: 50-321
Thermal Power(MWH): 1.64E+07
Commercial Operation: 12/31/75
Cooling Water Source: Altamaha River

Licensee: Georgia Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWE): 4.95E+06
Initial Criticality: 09/12/74

Unit Number: 2 Type: BWR
Docket Number: 50-366
Thermal Power(MWH): 1.60E+07
Commercial Operation: 09/05/79
Cooling Water Source: Altamaha River

Licensee: Georgia Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWE): 5.00E+06
Initial Criticality: 07/04/78

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
49	Tractor Trailer	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

	Jan-June	Jul-Dec
A		
CO-60	1.33E+01	1.35E+01
CS-137	3.25E+00	1.11E+00
FE-55	8.14E+00	7.11E+00
Unidentified	1.44E+01	1.01E+01
ZN-65	6.09E+01	6.82E+01
B		
CO-60	2.06E+01	1.68E+01
CS-137	2.62E+00	2.39E+00
FE-55	2.19E+01	1.57E+01
Unidentified	9.40E+00	9.61E+00
ZN-65	4.55E+01	5.59E+01
C		
CO-60	4.01E+01	3.66E+01
CS-137		1.36E-03
FE-55	5.36E+01	5.58E+01
Unidentified	6.31E+00	7.54E+00
D		
CO-60	6.36E+01	
FE-55	2.87E+01	
Unidentified	3.61E+00	
ZN-65	4.15E+00	

Installation: Edwin I. Hatch
Unit No.: 1&2

Location: 11 Mi N Baxley, GA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.59E+02 Ci 2.81E+03	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 5.80E+01 Ci 6.69E+00	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 2.47E+01 Ci 2.16E+05	Burial Volume
D. Other (describe) Control Rod Drive Filters	m3 1.08E+00 Ci 8.35E+00	Burial Volume

Installation: Hope Creek
Unit No.: 1

Location: 18 MI SE Wilmington, DE

Effluent and Waste Disposal Annual Report for 1993

Type: BWR

Licensee: Public Serv Elec & Gas Co of
NJ

Docket Number: 50-354

Licensed Power(MWT): 3.29E+03

Thermal Power(MWH): 2.78E+07

Net Electrical Power(MWH): 8.83E+06

Commercial Operation: 12/20/86

Initial Criticality: 06/28/86

Cooling Water Source: Delaware River

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	1.16E-03
MM-54	1.11E-04
CO-60	5.05E-05
ZN-65	6.17E-04
KR-83M	7.34E-01
KR-85M	7.34E-01
KR-87	2.93E+00
KR-88	2.93E+00
KR-89	1.98E+01
XE-133	1.46E+00
XE-135	3.67E+00
XE-135M	4.41E+00
XE-137	2.27E+01
XE-139	1.39E+01

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.20E-04
CR-51	1.57E-01
MM-54	6.30E-02
FE-55	4.51E-02
CO-58	1.35E-03
FE-59	8.74E-03
CO-60	1.15E-02
ZN-65	7.01E-02
ZN-69M	2.33E-05
AS-76	1.03E-05
NB-97	4.33E-04
ZR-97	1.45E-05
TC-99M	1.79E-03
AG-110M	2.16E-03
XE-133	7.28E-04
XE-135	7.82E-03
CS-137	4.85E-05

Total Airborne Tritium Released	1.66E+02 Ci
Total Liquid Tritium Released	6.17E+01 Ci
Volume of Waste Released (Prior to Dilution)	1.51E+07 liters
Volume of Dilution Water Used During Period	5.84E+10 liters

Installation: Hope Creek
Unit No.: 1

Location: 18 Mi SE Wilmington, DE

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR

Licenses: Public Serv Elec & Gas Co of
NJ

Docket Number: 50-354

Licensed Power(MWT): 3.29E+03

Thermal Power(MWH): 2.78E+07

Net Electrical Power(MWH): 9.83E+06

Commercial Operation: 12/20/86

Initial Criticality: 06/28/86

Cooling Water Source: Delaware River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
48	Truck	Barnwell, SC
9	Truck	Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

CE-144	2.10E+00	
CO-60	5.50E+00	1.00E+00
CS-137	9.00E-01	
FE-55	4.37E+01	1.35E+01
MN-54	1.26E+01	2.50E+00
ZN-65	3.37E+01	8.30E+01

B

CO-60	2.40E+00	2.40E+00
CR-51	1.36E+01	1.33E+01
FE-55	3.52E+01	3.52E+01
MN-54	4.00E+00	4.00E+00
ZN-65	4.30E+01	4.30E+01

D

CO-60	2.50E+00	
FE-55	3.68E+01	
MN-54	1.38E+01	
ZN-65	4.53E+01	

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.40E+02 Ci 6.64E+03	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.85E+01 Ci 2.09E+00	Compacted, Buried
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe) Oil	m3 2.68E+01 Ci 9.83E-03	Incinerated

Installation: Humboldt Bay
Unit No.: 3

Location: 4 Mi SW Eureka, CA

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-133
Thermal Power(MWH): 0.00E+00
Commercial Operation: 08/01/63
Cooling Water Source: Humboldt Bay

Licensee: Pacific Gas & Electric
Licensed Power(MWT): 0.00E+00
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 02/16/63

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-60	2.73E-05
SR-90	1.88E-06
Y-90	1.88E-06
CS-137	3.24E-05

Liquid Effluents

Nuclide Released	Activity (Ci)
CO-60	9.50E-05
SR-90	3.65E-04
Y-90	3.65E-04
CS-134	5.01E-06
CS-137	8.85E-03

Total Liquid Tritium Released	8.17E-04 Ci
Volume of Waste Released (Prior to Dilution)	1.49E+06 liters
Volume of Dilution Water Used During Period	7.35E+10 liters

Installation: Indian Point
Unit No.: 1&2

Location: 3 Mi SW Peekskill, NY

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: PWR
Docket Number: 50-3
Thermal Power(MWH): 0.00E+00
Commercial Operation: 10/01/62
Cooling Water Source: Hudson River
Unit Number: 2 Type: PWR
Docket Number: 50-247
Thermal Power(MWH): 1.95E+07
Commercial Operation: 08/01/74
Cooling Water Source: Hudson River

Licensee: Consolidated Edison
Licensed Power(MWT): 6.15E+02
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 08/02/62

Licensee: Consolidated Edison
Licensed Power(MWT): 3.07E+03
Net Electrical Power(MWH): 5.93E+06
Initial Criticality: 05/22/73

Airborne Effluents

Nuclide Released	Activity (Ci)
C-14	6.00E+00
AR-41	6.58E-01
MN-54	6.16E-06
CO-58	4.74E-06
CO-60	3.83E-04
NI-63	2.00E-06
KR-85	2.75E+01
KR-85M	3.96E-01
KR-87	2.14E-01
KR-88	4.28E-01
I-131	4.66E-03
XE-131M	1.04E+00
I-133	4.51E-03
XE-133	1.58E+03
XE-133M	2.96E+01
I-135	3.73E-03
XE-135	4.03E+01
XE-135M	5.88E-01
CS-137	6.98E-04
XE-139	3.00E-01

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	1.61E-03
MN-54	8.87E-05
FE-55	1.08E-02
CO-57	2.87E-05
CO-58	5.98E-02
FE-59	2.01E-05
CO-60	1.82E-02
NI-63	2.03E-02
SR-89	7.70E-05
SR-90	6.60E-06

Installation: Indian Point
Unit No.: 1&2

Location: 3 Mi SW Peekskill, NY

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
HB-95	2.71E-04
MO-99	5.12E-04
TC-99M	1.33E-04
RU-103	2.95E-05
CD-109	1.39E-03
AG-110M	1.26E-04
SN-113	1.19E-04
SB-122	1.16E-04
TE-123M	3.30E-02
SB-124	2.65E-01
SB-125	2.92E-04
I-131	3.97E-02
XE-131M	1.59E-02
I-132	1.76E-02
TE-132	9.19E-06
I-133	3.59E-02
XE-133	1.28E-01
XE-133M	2.37E-04
CS-134	8.53E-02
I-134	3.02E-03
I-135	2.60E-02
XE-135	3.80E-02
XE-135M	5.04E-02
CS-136	8.17E-04
CS-137	1.03E-01
BA-140	3.83E-04

Total Airborne Tritium Released	1.04E+00 Ci
Total Liquid Tritium Released	2.89E+02 Ci
Volume of Waste Released (Prior to Dilution)	2.36E+08 liters
Volume of Dilution Water Used During Period	7.39E+11 liters

Installation: Indian Point
Unit No.: 1&2

Location: 3 Mi SW Peekskill, NY

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: FWR
Docket Number: 50-3
Thermal Power(MWH): 0.00E+00
Commercial Operation: 10/01/62
Cooling Water Source: Hudson River

Licensee: Consolidated Edison
Licensed Power(MWT): 6.15E+02
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 08/02/62

Unit Number: 2 Type: FWR
Docket Number: 50-247
Thermal Power(MWH): 1.95E+07
Commercial Operation: 08/01/74
Cooling Water Source: Hudson River

Licensee: Consolidated Edison
Licensed Power(MWT): 3.07E+03
Net Electrical Power(MWH): 5.93E+06
Initial Criticality: 05/22/73

Solid Waste Disposition

Number of Shipments	Mode of Transportation
21	Truck

Destination
Channahon, IL

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June	Jul-Dec
----------	---------

A

CO-58		1.14E+01
CO-60		8.70E+00
CS-134		1.16E+01
CS-137		2.53E+01
FE-55		1.22E+01
H-3		3.10E+00
NI-63		1.55E+01
SB-124		7.70E+00

B

AG-108M	2.42E+00	4.46E+00
C-14	5.20E-01	
CO-58	1.56E+00	1.10E+00
CO-60	1.46E+01	1.96E+01
CS-137	1.86E+00	3.27E+00
FE-55	5.63E+01	5.15E+01
NI-63	1.79E+01	1.65E+01
SB-124	1.53E+00	
SR-89	1.55E+00	2.54E+00
SR-90	1.55E+00	

Installation: Indian Point
Unit No.: 1&2

Location: 3 Mi SW Peekskill, NY

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 3.90E+01 Ci 3.84E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.55E+02 Ci 2.27E+01	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Indian Point
Unit No.: 3

Location: 3 Mi SW Peekskill, NY

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-286
Thermal Power(MWH): 3.68E+07
Commercial Operation: 08/30/76
Cooling Water Source: Hudson River

Licensee: Power Authority of the State of NY
Licensed Power(MWT): 3.02E+03
Net Electrical Power(MWH): 1.19E+06
Initial Criticality: 04/06/76

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.40E-02
KR-85	5.25E-01
I-131	1.53E-04
XE-131M	2.77E-01
XE-133	3.95E+01
XE-133M	5.84E-02
XE-135	1.23E+00
CS-137	1.93E-06

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	8.02E-05
MM-54	7.79E-04
FE-55	2.18E-02
CO-57	5.70E-05
CO-58	6.70E-03
CO-60	2.18E-02
NI-63	4.17E-02
TC-99M	2.11E-06
AG-110M	1.74E-03
SB-124	2.48E-03
SB-125	8.74E-03
I-131	5.64E-05
XE-131M	2.90E-03
XE-133	1.84E-01
XE-133M	1.18E-03
CS-134	2.76E-04
XE-135	6.70E-04
CS-137	5.90E-04

Total Airborne Tritium Released	3.87E+00 Ci
Total Liquid Tritium Released	2.95E+02 Ci
Volume of Waste Released (Prior to Dilution)	2.87E+06 liters
Volume of Dilution Water Used During Period	7.39E+11 liters

Installation: Indian Point
Unit No.: 3

Location: 3 Mi SW Peekskill, NY

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR
Docket Number: 50-286
Thermal Power(MWH): 3.68E+07
Commercial Operation: 08/30/76
Cooling Water Source: Hudson River

Licensee: Power Authority of the State of NY
Licensed Power(MWT): 3.02E+03
Net Electrical Power(MWH): 1.19E+06
Initial Criticality: 04/06/76

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
1	Truck/Cask	Barnwell, SC
1	Truck/Van	Quadrex, Oak Ridge, TN
5	Truck/Van	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

CO-58	7.00E-01
CO-60	4.20E+01
CS-134	1.13E+01
CS-137	1.86E+01
FE-55	8.10E+00
MN-54	1.40E+00
NI-63	1.64E+01

B

CO-58	5.00E+00
CO-60	2.80E+01
CS-137	2.00E+00
FE-55	5.90E+01
NI-63	5.00E+00

C

CO-58	5.00E+00
CO-60	2.80E+01
CS-137	2.00E+00
FE-55	5.90E+01
NI-63	5.00E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 4.50E+01	Type A waste is Class C (Jan-Jun)
	m3 1.10E+01	Type A waste is Class A (Jul-Dec)
	ci 2.90E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 2.00E+01	Type B waste is Class A
	ci 9.50E-01	
C. Irradiated Components, Control Rods, etc.	m3	
	ci	
D. Other (describe)		
Dry comp. contaminated equip. vol. red.	m3 1.70E+02	Type D waste is Class A
	ci 1.25E+00	

Installation: Kewaunee
Unit No.: 1

Location: 27 Mi ESE Green Bay, WI

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-305
Thermal Power(MWH): 1.20E+07
Commercial Operation: 06/16/74
Cooling Water Source: Lake Michigan

Licensee: Wisconsin Public Service
Licensed Power(MWT): 1.65E+03
Net Electrical Power(MWH): 3.82E+06
Initial Criticality: 03/07/74

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.61E-01
CO-58	1.01E-06
CO-60	1.72E-05
KR-85	5.63E-03
KR-85M	4.36E-04
KR-87	1.37E-03
KR-88	7.08E-04
I-133	3.25E-07
XE-133	1.57E-01
XE-133M	2.16E-03
XE-135	2.86E-02
XE-135M	6.38E-03
CS-137	1.95E-06
XE-137	3.93E-04
XE-138	4.24E-03

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	6.42E-03
AR-41	2.23E-03
CR-51	1.79E-03
MN-54	3.71E-04
FE-55	3.34E-02
MN-56	5.94E-04
CO-57	6.60E-07
CO-58	3.05E-02
FE-59	5.08E-04
CO-60	6.48E-03
BR-82	3.30E-04
SR-89	9.23E-04
SR-90	5.11E-05
NB-95	5.91E-04
ZR-95	5.40E-04
ZR-97	1.86E-04
AG-110M	1.01E-02
SN-113	1.43E-04
SB-122	4.18E-05
SB-124	8.03E-04
SB-125	1.26E-03
I-131	3.04E-05
I-132	3.66E-03
I-133	7.77E-03
XE-133	2.33E-04
I-134	2.71E-03

Installation: Kewaunee
Unit No.: 1

Location: 27 Mi ESE Green Bay, WI

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
I-135	1.03E-02
XE-135	6.45E-04
CS-137	2.65E-06
XE-137	4.97E-06
CS-138	3.67E-04

Total Airborne Tritium Released	9.30E+00 Ci
Total Liquid Tritium Released	2.36E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.54E+08 liters
Volume of Dilution Water Used During Period	5.04E+11 liters

Installation: Kewaunee
Unit No.: 1

Location: 27 Mi ESE Green Bay, WI

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR
Docket Number: 50-305
Thermal Power(MWH): 1.20E+07
Commercial Operation: 06/16/74
Cooling Water Source: Lake Michigan

Licensee: Wisconsin Public Service
Licensed Power(MWT): 1.65E+03
Net Electrical Power(MWH): 3.82E+06
Initial Criticality: 03/07/74

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
1	CNSI	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

D

	Jan-June	Jul-Dec
AG-110M	1.61E+00	
C-14	3.65E+00	
CO-57	1.29E-01	
CO-58	2.03E+01	
CO-60	1.05E+01	
CR-51	1.74E+00	
FE-55	4.60E+01	
FE-59	2.51E-01	
MN-54	9.02E-01	
NB-95	4.51E+00	
SB-125	7.39E-01	
SN-113	5.00E-01	
ZN-65	9.11E+00	
ZR-95	7.58E-02	

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 Ci	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 Ci	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)		
Dewatered filter media	m3 4.38E+00 Ci 4.30E+00	

Installation: LaCrosse
Unit No.: 1

Location: 19 Mi S LaCrosse, WI

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-409
Thermal Power(MWH): 0.00E+00
Commercial Operation: 11/01/69
Cooling Water Source: Mississippi River

Licensee: Dairyland Power
Licensed Power(MWT): 0.00E+00
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 07/11/67

Airborne Effluents

Nuclide Released	Activity (Ci)
MN-54	1.96E-08
CO-60	1.51E-06
SR-90	3.93E-07
CS-137	1.02E-04

Liquid Effluents

Nuclide Released	Activity (Ci)
MN-54	1.88E-05
FE-55	8.50E-03
CO-60	1.90E-02
SR-90	2.79E-04
CS-134	3.24E-04
CS-137	1.01E-02

Total Airborne Tritium Released	1.01E-01 Ci
Total Liquid Tritium Released	5.24E-02 Ci
Volume of Waste Released (Prior to Dilution)	6.57E+05 liters
Volume of Dilution Water Used During Period	9.13E+09 liters

Installation: LaCrosse
Unit No.: 1

Location: 19 Mi S LaCrosse, WI

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-409
Thermal Power(MWH): 0.00E+00
Commercial Operation: 11/01/69
Cooling Water Source: Mississippi River

Licensee: Dairyland Power
Licensed Power(MWT): 0.00E+00
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 07/11/67

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
3	Sole Use	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

	Annual
B	
CO-60	4.44E+01
CS-137	5.51E+00
FE-55	3.49E+01
NI-63	1.32E+01
FU-241	1.70E+00
SR-90	2.90E-01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 Ci	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 5.04E+00 Ci 2.43E-01	Compacted DAW
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: LaSalle
Unit No.: 1&2

Location: 11 Mi SE Ottawa, IL

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: BWR
Docket Number: 50-373
Thermal Power(MWH): 2.23E+07
Commercial Operation: 01/01/84
Cooling Water Source: Reservoir
Unit Number: 2 Type: BWR
Docket Number: 50-374
Thermal Power(MWH): 1.81E+07
Commercial Operation: 10/19/84
Cooling Water Source: Reservoir

Licensee: Commonwealth Edison Company
Licensed Power(MWT): 3.32E+03
Net Electrical Power(MWH): 7.20E+06
Initial Criticality: 06/21/82

Licensee: Commonwealth Edison Company
Licensed Power(MWT): 3.32E+03
Net Electrical Power(MWH): 5.84E+06
Initial Criticality: 03/10/84

Airborne Effluents

Nuclide Released	Activity (Ci)
NA-24	2.70E-02
AR-41	2.81E-01
CR-51	1.98E-03
MN-54	1.92E-04
CO-58	6.70E-05
CO-60	3.83E-03
KR-85	2.89E-02
KR-85M	7.34E+00
KR-87	2.05E+01
KR-88	1.01E+03
TC-99M	1.43E-03
I-131	2.38E-03
I-132	3.36E-03
I-133	2.39E-02
XE-133	6.73E-02
XE-135	1.88E+00
CS-138	4.73E-02
BA-139	6.25E-02

Total Airborne Tritium Released

1.30E+02 Ci

Installation: LaSalle
Unit No.: 1&2

Location: 11 Mi SE Ottawa, IL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: BWR
Docket Number: 50-373
Thermal Power(MWH): 2.23E+07
Commercial Operation: 01/01/84
Cooling Water Source: Reservoir

Licensee: Commonwealth Edison Company
Licensed Power(MWT): 3.32E+03
Net Electrical Power(MWE): 7.20E+06
Initial Criticality: 06/21/82

Unit Number: 2 Type: BWR
Docket Number: 50-374
Thermal Power(MWH): 1.81E+07
Commercial Operation: 10/19/84
Cooling Water Source: Reservoir

Licensee: Commonwealth Edison Company
Licensed Power(MWT): 3.32E+03
Net Electrical Power(MWE): 5.84E+06
Initial Criticality: 03/10/84

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
49	Truck	Barnwell, SC
14	Truck	Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

CO-58	3.00E-01	
CO-60	1.30E+01	1.90E+01
FE-55	7.90E+01	7.20E+01
MO-54	4.00E+00	6.00E+00
NI-63	3.00E+00	4.00E-01

B

CO-60	2.70E+01	2.70E+01
CR-51	8.00E+00	8.00E+00
FE-55	2.20E+01	2.20E+01
FE-59	1.30E+01	
MO-54	2.80E+01	2.80E+01

D

CO-60		2.70E+01
CR-51		8.00E+00
FE-55		2.20E+01
FE-59		1.30E+01
MO-54		2.80E+01

Installation: LaSalle
Unit No.: 1&2

Location: 11 MI SE Ottawa, IL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 6.14E+02 Ci 2.94E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 5.92E+02 Ci 1.47E+02	
C. Irradiated Components, Control Rods, etc.	m3 6.38E-01 Ci 1.12E+04	
D. Other (describe)	m3 Ci	

Installation: Limerick
Unit No.: 1

Location: 21 Mi NW Philidelphia, PA

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-352
Thermal Power(MWH): 2.77E+07
Commercial Operation: 02/01/86
Cooling Water Source: Schuylkill River

Licensee: PECO Energy Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 8.75E+06
Initial Criticality: 12/22/84

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	3.43E-04
XE-135	2.61E-01
CE-144	2.19E-05

Installation: Limerick
Unit No.: 2

Location: 21 Mi NW Philidelphia, PA

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-353
Thermal Power(MWT): 2.33E+07
Commercial Operation: 01/08/90
Cooling Water Source: Schuylkill River

Licenses: PECO Energy Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWT): 7.47E+06
Initial Criticality: 08/12/89

Airborne Effluents

Nuclide Released	Activity (Ci)
MM-54	6.05E-08
CO-60	1.23E-07
KR-85M	3.06E-03
I-131	1.12E-05
I-133	2.01E-04
XE-133	2.10E+00
XE-135	9.12E+01
XE-135M	1.20E-01

Installation: Limerick
Unit No.: 1&2

Location: 21 Mi NW Philadelphia, PA

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: BWR
Docket Number: 50-352
Thermal Power(MWH): 2.77E+07
Commercial Operation: 02/01/86
Cooling Water Source: Schuylkill River
Unit Number: 2 Type: BWR
Docket Number: 50-353
Thermal Power(MWH): 2.33E+07
Commercial Operation: 01/08/90
Cooling Water Source: Schuylkill River

Licensee: PECO Energy Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 8.75E+06
Initial Criticality: 12/22/84

Licensee: PECO Energy Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 7.47E+06
Initial Criticality: 08/12/89

Airborne Effluents

Nuclide Released	Activity (Ci)
KR-85	1.18E-04
KR-85M	4.04E-05
SR-89	1.64E-02
SR-90	3.14E-04
I-131	1.14E-02
I-133	2.01E-02
XE-133	8.69E-01
XE-133M	9.04E-03
XE-135	6.61E+01
XE-135M	2.86E-01
BA-140	2.83E-06

Liquid Effluents

Nuclide Released	Activity (Ci)
HA-24	2.20E-04
CR-51	6.57E-02
MN-54	3.56E-03
FE-55	2.07E-03
CO-58	1.51E-03
FE-59	4.76E-04
CO-60	8.71E-03
ZN-65	2.23E-02
AS-76	1.97E-04
SR-89	2.00E-02
SR-90	4.43E-04
Y-91M	5.80E-05
Y-92	2.76E-04
NB-95	5.95E-04
ZR-95	2.43E-04
MO-99	1.80E-04
TC-99M	1.80E-04
RU-103	2.92E-04
I-131	7.69E-04
I-133	2.69E-04
XE-133	7.39E-02
CS-134	2.02E-03
XE-135	5.95E-02
CS-137	6.02E-03
BA-140	5.79E-05

Installation: Limerick
Unit No.: 1&2

Location: 21 Mi NW Philadelphia, PA

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
LA-140	6.92E-03
CE-141	1.37E-03
CE-144	8.35E-04
W-187	3.39E-05

Total Airborne Tritium Released	8.39E-01 Ci
Total Liquid Tritium Released	2.57E+01 Ci
Volume of Waste Released (Prior to Dilution)	6.46E+06 liters
Volume of Dilution Water Used During Period	5.88E+08 liters

Installation: Limerick
Unit No.: 1&2

Location: 21 MI NW Philidelphia, PA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: BWR
Docket Number: 50-352
Thermal Power(MWH): 2.77E+07
Commercial Operation: 02/01/86
Cooling Water Source: Schuylkill River

Licensee: PECO Energy Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWE): 8.75E+06
Initial Criticality: 12/22/84

Unit Number: 2 Type: BWR
Docket Number: 50-353
Thermal Power(MWH): 2.33E+07
Commercial Operation: 01/08/90
Cooling Water Source: Schuylkill River

Licensee: PECO Energy Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWE): 7.47E+06
Initial Criticality: 08/12/89

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
19	Truck	Barnwell, SC
18	Truck	Quadrex, to Barnwell, SC
217	Truck	SEG, to Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

BA-140		2.80E-02
BA/LA-140	1.00E-02	
C-14	9.00E-02	7.26E-02
CE-144		4.74E-06
CM-242		2.73E-03
CM-243/244		7.44E-05
CO-58	6.84E+00	3.65E+00
CO-60	1.25E+01	1.30E+01
CR-51	3.89E+01	3.41E+01
CS-134	3.66E+00	4.02E+00
CS-137	4.32E+00	6.29E+00
FE-55	1.00E-01	6.73E-01
H-3	1.00E-02	2.45E-02
I-129		5.09E-05
I-131	1.00E-02	1.79E-01
LA-140		2.80E-02
MN-54	1.11E+01	3.54E+00
NI-63	5.30E-01	4.76E-01
PU-238		3.44E-04
PU-239/240		1.75E-03
PU-241		1.84E-02
SR-89		2.57E+00
SR-90	1.00E-02	1.17E+00
TC-99		2.76E-04
ZN-65	2.19E+01	3.02E+01

B

BA-140		5.00E-02
C-14		5.00E-02
CO-58	3.98E+00	3.09E+00

Installation: Limerick
Unit No.: 142

Location: 21 Mi NW Philadelphia, PA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

B

CO-60	2.29E+01	2.67E+01
CR-51	2.68E+01	1.62E+01
CS-134		1.13E+00
CS-137	1.64E+00	3.96E+00
FE-55	1.23E+01	1.37E+01
H-3		1.00E-02
I-131		2.10E-01
LA-140		5.00E-02
MN-54	8.64E+00	9.32E+00
NI-63	1.68E+00	2.14E+00
SB-125	1.16E+00	1.31E+00
ZN-65	2.08E+01	2.22E+01

D

CO-58	4.01E+00
CO-60	2.30E+01
CR-51	2.67E+01
CS-137	1.65E+00
FE-55	1.21E+01
MN-54	8.73E+00
NI-63	1.69E+00
SB-125	1.19E+00
ZN-65	2.10E+01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 3.13E+02 Ci 4.72E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 3.36E+01 Ci 2.80E+00	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe) CRD Filter & Trash	m3 4.06E+00 Ci 9.91E+01	

Installation: Maine Yankee
Unit No.: 1

Location: 3.9 Mi S Wicassett, ME

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-309
Thermal Power(MWH): 1.77E+07
Commercial Operation: 12/28/72
Cooling Water Source: Back River

Licensee: Maine Yankee Atomic Power
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 5.74E+06
Initial Criticality: 10/23/72

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	5.07E-01
CR-51	7.26E-04
CO-58	4.25E-04
CO-60	4.37E-04
KR-85	5.86E+00
KR-85M	8.24E-03
KR-87	1.38E-02
KR-88	7.05E-03
NB-95	2.95E-06
I-131	3.98E-03
XE-131M	4.23E-01
I-133	1.09E-03
XE-133	3.68E+01
XE-133M	1.51E-01
I-135	4.86E-08
XE-135	1.04E+00
XE-135M	1.12E-01
CS-137	4.20E-05
XE-138	4.62E-02

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	1.50E-02
MR-54	8.99E-05
FE-55	4.45E-02
CO-57	8.17E-06
CO-58	1.63E-02
FE-59	1.27E-03
CO-60	1.06E-02
ZN-65	1.42E-05
KR-87	8.67E-06
SR-89	1.46E-04
ZR/NB-95	9.05E-04
TC-99M	2.12E-05
RU-103	1.49E-04
RH-105	4.44E-05
CD-109	2.57E-05
AG-110M	5.58E-03
SN-113	3.09E-05
SB-122	1.30E-04
SB-124	2.10E-02
SB-125	3.03E-02
I-131	3.96E-03
I-132	3.91E-06

Installation: Maine Yankee
Unit No.: 1

Location: 3.9 Mi S Wicasset, ME

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
TE-132	3.39E-05
I-133	5.20E-04
XE-133	4.28E-02
XE-133M	5.35E-04
CS-134	1.44E-03
I-135	3.12E-05
XE-135	9.89E-04
CS-137	8.18E-03
CS-138	2.45E-04
BA/LA-140	1.88E-04
CE-141	1.73E-05
LA-141	1.20E-03
CE-144	2.64E-04

Total Airborne Tritium Released	7.31E+00 Ci
Total Liquid Tritium Released	2.72E+02 Ci
Volume of Waste Released (Prior to Dilution)	9.88E+07 liters
Volume of Dilution Water Used During Period	6.84E+11 liters

Installation: McGuire
Unit No.: 1

Location: 17 Mi N of Charlotte, NC

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-369
Thermal Power(MWH): 1.70E+07
Commercial Operation: 12/01/81
Cooling Water Source: Lake Norman

Licensee: Duke Power Co.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 5.52E+06
Initial Criticality: 08/08/81

Airborne Effluents

Nuclide Released	Activity (Ci)
C-11	8.50E-06
F-18	5.09E-07
NA-24	4.76E-08
CL-36	1.58E-07
AR-41	1.21E+01
CR-51	9.68E-09
MM-56	2.68E-08
CO-58	1.44E-05
CO-60	3.65E-06
BR-82	1.83E-07
BR-84	4.80E-08
KR-85	3.46E+00
KR-85M	1.67E+00
KR-87	3.86E-01
KR-88	1.73E+00
RB-88	2.49E-05
RB-89	5.29E-07
AG-110M	6.42E-09
I-130	5.04E-07
I-131	8.38E-04
XE-131M	1.39E+00
I-132	1.40E-04
TE-132	1.30E-09
I-133	1.38E-04
XE-133	4.22E+02
XE-133M	7.05E+00
I-134	3.37E-06
I-135	8.11E-06
XE-135	3.41E+01
XE-135M	3.76E-02
CS-137	1.33E-06
CS-138	2.37E-06
XE-138	1.79E-02
BA-139	1.70E-07
W-187	8.71E-08

Liquid Effluents

Nuclide Released	Activity (Ci)
F-18	1.23E-04
NA-24	2.07E-04
K-40	1.40E-05
CR-51	1.21E-02
MM-54	5.71E-03
FE-55	1.26E-02

Installation: McGuire
Unit No.: 1

Location: 17 Mi N of Charlotte, NC

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
MN-56	3.22E-06
CO-57	3.01E-04
CO-58	1.51E-01
FE-59	5.38E-04
CO-60	2.45E-02
ZN-65	1.48E-05
BR-82	2.40E-05
KR-85	1.98E-04
KR-85M	1.30E-04
RB-86	7.91E-05
KR-87	7.80E-04
KR-88	4.04E-05
RB-88	2.06E-04
SR-89	9.76E-05
Y-91M	2.93E-06
SR-92	5.65E-05
NB-95	2.30E-03
ZR-95	1.33E-03
NB-97	7.91E-05
ZR-97	4.37E-06
MO-99	1.32E-04
TC-99M	2.91E-04
RU-103	6.76E-06
RU-106	1.01E-05
AG-110M	1.04E-03
SN-113	9.82E-05
SB-122	9.46E-04
SB-124	1.09E-02
SB-125	3.77E-02
SB-126	4.06E-05
I-131	1.04E-02
XE-131M	7.87E-04
I-132	4.66E-05
TE-132	4.86E-05
I-133	1.42E-03
XE-133	1.58E-01
XE-133M	2.65E-03
CS-134	1.64E-03
I-134	4.83E-06
I-135	2.57E-04
XE-135	9.74E-03
XE-135M	4.31E-05
CS-136	3.86E-06
CS-137	4.56E-03
CS-138	5.97E-05
BA-140	4.28E-05
LA-140	3.70E-03
CE-141	6.81E-06
CE-144	2.10E-05
NP-239	1.12E-04

Installation: McGuire
Unit No.: 1

Location: 17 Mi N of Charlotte, NC

Effluent and Waste Disposal Annual Report for 1993

Total Airborne Tritium Released	4.13E+01 Ci
Total Liquid Tritium Released	3.88E+02 Ci
Volume of Waste Released (Prior to Dilution)	6.91E+06 liters
Volume of Dilution Water Used During Period	3.33E+12 liters

Installation: McGuire
Unit No.: 2

Location: 17 Mi N of Charlotte, NC

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-370
Thermal Power(MWH): 2.05E+07
Commercial Operation: 03/01/84
Cooling Water Source: Lake Norman

Licensee: Duke Power Co.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.81E+06
Initial Criticality: 05/08/83

Airborne Effluents

Nuclide Released	Activity (Ci)
C-11	8.50E-06
F-18	5.09E-07
NA-24	4.76E-08
CL-38	1.58E-07
AR-41	1.21E+01
CR-51	9.68E-09
MN-56	2.68E-08
CO-58	1.44E-05
CO-60	3.65E-06
BR-82	1.83E-07
BR-84	4.80E-08
KR-85	3.46E+00
KR-85M	1.67E+00
KR-87	3.86E-01
KR-88	1.73E+00
RB-88	2.49E-05
RB-89	5.29E-07
AG-110M	6.42E-09
I-130	5.04E-07
I-131	8.38E-04
XE-131M	1.39E+00
I-132	1.40E-04
TE-132	1.30E-09
I-133	1.38E-04
XE-133	4.23E+02
XE-133M	7.05E+00
I-134	3.37E-06
I-135	8.11E-06
XE-135	3.41E+01
XE-135M	3.76E-02
CS-137	1.33E-06
CS-138	2.37E-06
XE-138	1.79E-02
BA-139	1.70E-07
W-187	8.71E-08

Liquid Effluents

Nuclide Released	Activity (Ci)
F-18	1.23E-04
NA-24	2.07E-04
K-40	1.40E-05
CR-51	1.21E-02
MN-54	5.71E-03
FE-55	1.26E-02

Installation: McGuire
Unit No.: 2

Location: 17 Mi N of Charlotte, NC

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
MM-56	3.22E-06
CO-57	3.01E-04
CO-58	1.51E-01
FE-59	5.39E-04
CO-60	2.45E-02
ZN-65	1.48E-05
BR-82	2.40E-05
KR-85	1.98E-04
KR-85M	1.30E-04
RB-86	7.91E-05
KR-87	7.80E-04
KR-88	4.04E-05
RB-88	2.06E-04
SR-89	9.76E-05
Y-91M	2.93E-06
SR-92	5.65E-05
NB-95	2.30E-03
ZR-95	1.33E-03
NB-97	7.91E-05
ZR-97	4.37E-06
MO-99	1.32E-04
TC-99M	2.91E-04
RU-103	6.76E-06
RU-106	1.01E-05
AG-110M	1.04E-03
SN-113	9.82E-05
SB-122	9.46E-04
SB-124	1.09E-02
SB-125	3.77E-02
SB-126	4.06E-05
I-131	1.04E-02
XE-131M	7.87E-04
I-132	4.66E-05
TE-132	4.86E-05
I-133	1.42E-03
XE-133	1.58E-01
XE-133M	2.65E-03
CS-134	1.64E-03
I-134	4.83E-06
I-135	2.57E-04
XE-135	6.74E-03
XE-135M	4.31E-05
CS-136	3.86E-06
CS-137	4.56E-03
CS-138	5.97E-05
SA-140	4.28E-05
LA-140	3.70E-03
CE-141	6.81E-06
CE-144	2.10E-05
NP-239	1.12E-04

Installation: McGuire
Unit No.: 2

Location: 17 Mi W of Charlotte, NC

Effluent and Waste Disposal Annual Report for 1993

Total Airborne Tritium Released	4.13E+01 Ci
Total Liquid Tritium Released	3.88E+02 Ci
Volume of Waste Released (Prior to Dilution)	6.91E+06 liters
Volume of Dilution Water Used During Period	3.33E+12 liters

Installation: McGuire
Unit No.: 1&2

Location: 17 Mi N of Charlotte, NC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-369
Thermal Power(MWH): 1.70E+07
Commercial Operation: 12/01/81
Cooling Water Source: Lake Norman

Licensee: Duke Power Co.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 5.52E+06
Initial Criticality: 08/08/81

Unit Number: 2 Type: PWR
Docket Number: 50-370
Thermal Power(MWH): 2.05E+07
Commercial Operation: 03/01/84
Cooling Water Source: Lake Norman

Licensee: Duke Power Co.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.81E+06
Initial Criticality: 05/08/83

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
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25

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

C-14	1.00E-01
CE-144	1.00E-01
CO-58	1.24E+01
CO-60	2.25E+01
CS-134	1.04E+01
CS-137	2.26E+01
FE-55	1.21E+01
MN-54	3.80E+00
NI-63	1.34E+01
PU-241	1.00E-01
SB-125	2.40E+00
SR-90	1.00E-01

B

CE-144	1.00E-02
CO-58	2.04E+00
CO-60	1.33E+01
CS-137	1.00E-01
FE-55	7.14E+01
MN-54	1.26E+00
NI-63	1.05E+01
PU-241	1.30E-01
SB-125	3.80E-01
SR-90	1.00E-02

C

CO-58	2.00E-02
CO-60	9.99E+01
CR-51	4.00E-02
FE-59	1.00E-02
MN-54	4.00E-02

D

CO-58	4.40E+00
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Installation: McGuire
Unit No.: 1&2

Location: 17 Mi N of Charlotte, NC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

D

CO-60	1.43E+01
CS-137	1.00E-01
FE-55	6.70E+01
H-3	1.00E-01
MN-54	2.75E+00
NI-63	1.09E+01
PU-241	4.40E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 3.96E+01 Ci 2.46E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 5.54E+01 Ci 5.21E+00	
C. Irradiated Components, Control Rods, etc.	m3 8.50E-01 Ci 4.56E-01	
D. Other (describe) Dewatered Mechanical Filter	m3 3.11E+00 Ci 5.03E+01	

Installation: Millstone
Unit No.: 1

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-245
Thermal Power(MWH): 1.67E+07
Commercial Operation: 03/01/71
Cooling Water Source: Miantic Bay

Licenses: Northeast Nuclear Energy
Licensed Power(MWT): 2.01E+03
Net Electrical Power(MWH): 5.27E+06
Initial Criticality: 10/26/70

Airborne Effluents

Nuclide Released	Activity (Ci)
BE-7	8.31E-06
AR-41	1.27E+00
CR-51	8.75E-04
MN-54	3.48E-04
CO-58	1.03E-04
FE-59	6.83E-05
CO-60	5.39E-04
ZN-65	1.02E-03
KR-85	1.29E+01
KR-85M	7.92E+00
KR-87	4.20E+01
KR-88	2.75E+01
SR-89	2.14E-04
SR-90	6.21E-07
I-131	1.39E-03
XE-131M	2.32E+00
I-133	1.35E-02
XE-133	1.61E+00
XE-135	4.98E+01
XE-135M	3.82E+01
CS-137	8.92E-05
XE-138	1.45E+02
BA-140	4.24E-04
CE-141	9.49E-07

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	7.12E-05
RA-24	1.09E-04
CR-51	5.67E-04
MN-54	1.02E-03
FE-55	3.34E-03
CO-58	3.37E-04
CO-60	7.69E-02
ZN-65	2.95E-02
KR-87	5.34E-06
SR-89	1.39E-04
SR-90	8.22E-05
MO-99	4.71E-04
TC-99M	5.06E-04
SN-113	2.11E-06
I-131	6.63E-05
BA-133	4.49E-06
I-133	9.02E-05

Installation: Millstone
Unit No.: 1

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
XE-133	1.91E-04
XE-133M	5.68E-05
CS-134	9.38E-06
I-135	2.65E-05
XE-135	2.33E-05
CS-137	1.50E-02
XE-138	3.14E-05
BA-140	2.80E-05
CE-143	1.60E-05
CE-144	1.77E-05
HF-181	4.08E-06
RE-188	1.24E-05

Total Airborne Tritium Released	2.55E+01 Ci
Total Liquid Tritium Released	2.45E+01 Ci
Volume of Waste Released (Prior to Dilution)	9.70E+06 liters
Volume of Dilution Water Used During Period	8.56E+11 liters

Installation: Millstone
Unit No.: 1

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-245
Thermal Power(MWE): 1.67E+07
Commercial Operation: 03/01/71
Cooling Water Source: Niantic Bay

Licensee: Northeast Nuclear Energy
Licensed Power(MWT): 2.01E+03
Net Electrical Power(MWE): 5.27E+06
Initial Criticality: 10/26/70

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
15	Truck	CNSI, Barnwell, SC
1	Truck	Quadrex, Oak Ridge, TN
4	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

AG-110M	3.90E-01
C-14	1.00E-01
CO-58	6.60E-01
CO-60	4.46E+00
CR-51	5.30E+00
CS-134	1.00E-02
CS-137	3.82E+00
FE-55	1.46E+01
FE-59	4.20E-01
H-3	8.00E-02
MN-54	3.22E+00
NI-63	2.60E-01
SR-89	4.00E-02
SR-90	1.00E-02
ZN-65	6.66E+01

B

AG-110M	2.52E-01
AM-241	1.53E-02
BA-140	3.36E-01
C-14	4.10E+00
CE-141	1.30E-01
CM-244	3.06E-02
CO-58	1.68E-01
CO-60	1.22E+01
CR-51	4.76E-01
CS-134	7.64E-02
CS-137	1.60E+00
FE-55	4.09E+01
FE-59	2.52E-01
H-3	4.86E-01
I-131	2.37E-01
LA-140	1.53E-02
MN-54	3.40E+00
NI-63	4.71E-01
PU-241	2.74E-01
SE-125	1.07E-01

Installation: Millstone
Unit No.: 1

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

SR-89	8.39E-02
SR-90	2.29E-02
ZM-65	3.45E+01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 7.31E+01 Ci 1.21E+03	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 2.76E+01 Ci 2.03E+00	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci m3 Ci m3 Ci	

Installation: Millstone
Unit No.: 2

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-336
Thermal Power(MWH): 1.96E+07
Commercial Operation: 12/26/75
Cooling Water Source: Niantic Bay

Licensee: Northeast Nuclear Energy
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 6.30E+06
Initial Criticality: 10/17/75

Airborne Effluents

Nuclide Released	Activity (Ci)
BE-7	3.35E-06
CO-58	6.99E-06
CO-60	8.68E-06
KR-85	3.07E+00
KR-85M	6.10E-03
KR-88	3.88E-01
I-131	1.04E-03
XE-131M	2.29E-04
I-133	3.71E-03
XE-133	6.04E+00
XE-135	3.68E+00
CS-137	1.64E-06
CR-144	2.49E-06

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	3.58E-04
NA-24	2.25E-01
CR-51	1.87E-02
MO-54	3.93E-03
FE-55	1.72E-01
CO-57	5.36E-04
CO-58	3.02E-01
FE-59	3.75E-03
CO-60	1.68E-01
ZM-69M	1.36E-05
KR-85	3.68E-02
KR-85M	1.81E-04
KR-88	1.10E-05
SR-89	6.02E-04
SR-90	4.96E-05
SR-92	4.76E-04
NB-95	7.43E-03
ZR-95	3.76E-03
NB-97	6.83E-04
ZR-97	4.27E-04
MO-99	5.47E-05
TC-99M	5.86E-05
TC-101	1.83E-05
TC-104	5.94E-05
RU-105	6.78E-04
AG-110M	5.67E-02
SN-113	5.66E-04
SB-122	6.34E-04

Installation: Millstone
Unit No.: 2

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
SB-124	5.94E-04
SB-125	1.24E-02
I-131	1.19E-03
I-133	1.29E-04
XE-133	3.30E-01
XE-133M	2.97E-03
CS-134	4.18E-02
I-134	1.51E-04
XE-135	2.82E-02
CS-137	1.56E-01
LA-140	3.91E-03
CE-144	6.17E-05

Total Airborne Tritium Released	6.92E+01 Ci
Total Liquid Tritium Released	3.29E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.08E+06 liters
Volume of Dilution Water Used During Period	9.84E+11 liters

Installation: Millstone
Unit No.: 2

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR
Docket Number: 50-336
Thermal Power(MWH): 1.96E+07
Commercial Operation: 12/26/75
Cooling Water Source: Niantic Bay

Licensee: Northeast Nuclear Energy
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 6.30E+06
Initial Criticality: 10/17/75

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
9	Truck	CNSI, Barnwell, SC
8	Truck	Quadrex, Barnwell, SC
1	Truck	SEG, Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

C-14	2.40E-01
CO-57	5.00E-02
CO-58	5.40E-01
CO-60	9.65E+00
CS-134	1.80E+01
CS-137	4.58E+01
FE-55	4.15E+00
MN-54	8.90E-01
NI-59	3.67E+00
NI-63	1.66E+01
PU-241	1.00E-02
RU-106	1.00E-02
SB-125	3.10E-01
SR-90	6.00E-02

B

AG-110M	3.69E-02
AM-241	1.48E-02
BA-140	5.17E-02
C-14	3.04E-01
CE-141	4.42E-02
CM-244	2.21E-02
CO-58	5.77E-01
CO-60	1.41E+01
CR-51	1.38E-01
CS-134	1.89E+00
CS-137	6.65E+00
FE-55	4.90E+01
H-3	1.79E+00
I-131	5.17E-02
MN-54	1.94E+00
NI-63	4.80E+00
PU-241	2.96E-02
SB-125	7.35E-04
SR-90	7.38E-03
ZN-65	1.85E+01

Installation: Millstone
Unit No.: 2

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

C

CO-58	1.60E-01
CO-60	2.94E+01
FE-55	6.36E+01
MN-54	3.36E+00
NI-59	2.00E-02
NI-63	3.38E+00

m3
Ci

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.93E+01 Ci 4.44E+02	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 8.31E+01 Ci 3.86E+00	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 4.93E+00 Ci 8.56E-01	Burial Volume
D. Other (describe)	m3 Ci m3 Ci	

Installation: Millstone
Unit No.: 3

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-423
Thermal Power(MWH): 2.01E+07
Commercial Operation: 04/23/86
Cooling Water Source: Niantic Bay

Licenses: Northeast Nuclear Energy
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.48E+06
Initial Criticality: 01/23/86

Airborne Effluents

Nuclide Released	Activity (Ci)
BE-7	1.50E-05
CR-51	1.23E-04
MM-54	3.94E-05
CO-58	4.46E-04
FE-59	2.07E-07
CO-60	7.36E-06
SR-89	1.55E-06
NB-95	1.26E-05
ZR-95	1.86E-07
RU-103	2.70E-06
SN-113	5.61E-06
SN-117M	2.02E-08
SB-125	5.30E-06
I-131	3.61E-04
I-133	5.43E-04
XE-133	1.16E-01
CS-134	6.93E-06
XE-135	2.99E+01
CS-137	1.47E-05
CE-141	4.41E-08
CE-144	9.27E-06

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	2.47E-04
NA-24	1.38E-03
AR-41	1.76E-05
CR-51	2.43E-01
MM-54	9.82E-02
FE-55	1.09E-01
CO-57	2.03E-03
CO-58	1.03E+00
FE-59	1.88E-02
CO-60	3.05E-01
ZN-65	3.27E-03
AS-76	1.29E-04
KR-85	3.99E-03
KR-85M	4.72E-05
KR-87	1.63E-04
SR-87M	2.15E-06
KR-88	4.28E-06
SR-89	2.56E-03
SR-90	2.11E-05
SR-92	7.25E-05

Installation: Millstone
Unit No.: 3

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
NB-95	6.92E-02
NB-95M	2.64E-06
ZR-95	4.02E-02
NB-97	1.31E-02
ZR-97	1.34E-03
MO-99	3.23E-04
TC-99M	3.59E-04
TC-101	1.13E-05
RU-103	1.40E-05
RU-105	9.72E-04
RU-106	4.16E-03
AG-110M	3.73E-02
SN-113	3.69E-03
SN-117M	3.39E-04
SB-122	2.66E-03
SB-124	1.30E-02
SB-125	1.41E-01
SB-126	2.37E-04
I-131	2.19E-03
XE-131M	2.59E-04
I-132	2.64E-03
TE-132	2.21E-03
I-133	1.45E-03
XE-133	1.69E-02
XE-133M	7.55E-06
CS-134	2.39E-02
I-135	4.09E-05
XE-135	1.80E-02
XE-135M	6.25E-05
CS-137	5.31E-02
XE-137	6.43E-05
CS-138	9.87E-05
XE-138	5.32E-05
BA-139	1.12E-05
BA-140	8.10E-05
LA-140	7.85E-05
CE-141	6.62E-05
BA-142	5.02E-05
CE-144	1.85E-03
PR-144	5.69E-03
HF-181	5.91E-04
RE-188	1.73E-04

Total Airborne Tritium Released	4.06E+01 Ci
Total Liquid Tritium Released	5.16E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.39E+07 liters
Volume of Dilution Water Used During Period	1.52E+12 liters

Installation: Millstone
Unit No.: 3

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR
Docket Number: 50-423
Thermal Power(MWH): 2.01E+07
Commercial Operation: 04/23/86
Cooling Water Source: Niantic Bay

Licensee: Northeast Nuclear Energy
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.48E+06
Initial Criticality: 01/23/86

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
4	Truck	CHSI, Barnwell, SC
5	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

C-14	1.10E-01
CO-57	2.00E-01
CO-58	3.18E+00
CO-60	3.30E+01
CS-134	4.33E+00
CS-137	9.38E+00
FE-55	1.54E+01
H-3	1.80E-01
MN-54	1.51E+00
NI-63	3.26E+01
PU-241	1.00E-02
SB-125	1.50E-01
SR-90	4.00E-02

B

CO-58	3.83E+00
CO-60	1.43E+01
CR-51	4.91E-03
CS-134	8.48E+00
CS-137	1.82E+01
FE-55	4.06E+01
H-3	1.91E-01
MN-54	1.79E+00
NI-63	1.05E+01
SB-125	2.02E+00
ZN-65	6.93E-03

Installation: Millstone
Unit No.: 3

Location: 3.2 MI WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.14E+01 Ci 3.31E+01	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 4.30E+01 Ci 3.90E+00	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Monticello
Unit No.: 1

Location: 23 Mi SE St. Cloud, MN

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-263
Thermal Power(MWH): 1.19E+07
Commercial Operation: 06/30/71
Cooling Water Source: Mississippi River

Licensee: Northern States Power
Licensed Power(MWT): 1.67E+03
Net Electrical Power(MWH): 3.86E+06
Initial Criticality: 12/10/70

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	5.64E-03
CR-51	3.62E-03
MN-54	1.66E-04
FE-55	6.12E-06
CO-58	9.42E-06
FE-59	3.00E-07
CO-60	2.23E-03
ZN-65	1.49E-02
KR-85M	2.31E-02
KR-87	5.44E+00
KR-88	3.38E+00
KR-89	3.14E+00
SR-89	5.86E-04
SR-90	2.78E-06
RU-103	3.88E-06
I-131	9.45E-03
I-133	5.93E-02
XE-133	1.31E+02
XE-133M	1.90E+00
I-135	9.01E-02
XE-135	5.07E+01
XE-135M	7.60E+01
CS-137	4.77E-04
XE-137	2.23E+02
XE-138	1.03E+02
BA-140	1.52E-03

Total Airborne Tritium Released	5.58E+01 Ci
Total Liquid Tritium Released	1.88E-05 Ci
Volume of Waste Released (Prior to Dilution)	3.63E+03 liters
Volume of Dilution Water Used During Period	2.45E+07 liters

Installation: Monticello
Unit No.: 1

Location: 23 Mi SE St. Cloud, MN

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-253
Thermal Power(MWH): 1.19E+07
Commercial Operation: 06/30/71
Cooling Water Source: Mississippi River

Licensee: Northern States Power
Licensed Power(MWT): 1.67E+03
Net Electrical Power(MWH): 3.86E+06
Initial Criticality: 12/10/70

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
0	Truck	CNSI, Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

AM-241	4.11E-04
C-14	1.03E-02
CE-141	1.93E-02
CE-144	3.46E-05
CM-242	1.38E-03
CM-243	3.67E-04
CO-58	1.34E-01
CO-60	5.38E+00
CS-134	1.60E-02
CS-137	9.17E-01
FE-55	8.15E+00
FE-59	6.64E-02
H-3	2.35E-02
I-129	3.54E-04
I-131	9.17E-03
MN-54	9.81E-01
NI-63	8.27E-02
PU-238	2.86E-04
PU-239	1.33E-04
PU-241	1.52E-02
SR-89	9.02E-02
SR-90	1.01E-02
TC-99	5.92E-05
ZN-65	8.18E+01

B

AM-241	3.06E-03
C-14	4.83E-02
CE-141	3.33E-05
CM-242	3.95E-03
CM-243	2.96E-03
CO-58	2.68E-01
CO-60	1.75E+01
CS-134	2.71E-02
CS-137	5.35E-01
FE-55	4.91E+01
FE-59	6.89E-01
H-3	3.46E-05
I-129	1.46E-04

Installation: Monticello
Unit No.: 1

Location: 23 Mi SE St. Cloud, MN

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

B

I-131	3.32E-02
MG-54	8.03E+00
NI-63	1.44E+00
FU-238	8.44E-06
FU-239	4.61E-06
FU-241	6.70E-04
SR-89	3.37E-02
SR-90	5.75E-02
TC-99	9.39E-05
ZH-65	2.22E+01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 3.10E+01 Ci 8.16E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 9.71E+00 Ci 8.95E+00	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Nine Mile Point
Unit No.: 1

Location: 8 Mi NE Oswego, NY

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-220
Thermal Power(MWTH): 1.34E+07
Commercial Operation: 12/01/69
Cooling Water Source: Lake Ontario

Licensee: Niagara Mohawk Power
Licensed Power(MWPT): 1.85E+03
Net Electrical Power(MWNE): 4.35E+06
Initial Criticality: 09/05/69

Airborne Effluents

Nuclide Released	Activity (Ci)
FE-55	1.35E-04
CO-60	1.03E-03
KR-85	2.55E-04
KR-85M	6.52E+00
KR-87	9.96E-01
KR-88	2.71E+00
SR-89	1.57E-04
I-131	4.27E-03
I-133	4.10E-03
XE-133	2.38E+02
XE-133M	3.46E-01
I-135	3.18E-02
XE-135	1.62E+01
XE-135M	1.49E-01

Total Airborne Tritium Released

2.42E+01 Ci

Installation: Nine Mile Point
Unit No.: 2

Location: 8 Mi NE Oswego, NY

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-410
Thermal Power(MWH): 2.33E+07
Commercial Operation: 04/05/88
Cooling Water Source: Lake Ontario

Licensee: Niagara Mohawk Power
Licensed Power(MWT): 3.32E+03
Net Electrical Power(MWH): 7.19E+06
Initial Criticality: 05/23/87

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	7.91E-01
CR-51	1.62E-04
MN-54	2.27E-05
FE-55	1.61E-05
CO-60	1.73E-04
ZN-65	2.55E-03
KR-85	4.47E-04
KR-85M	5.18E-01
KR-87	1.73E+01
KR-88	2.06E+01
SR-89	5.74E-03
SR-90	3.61E-06
MO-99	8.49E-06
I-131	2.08E-04
I-133	3.76E-03
XE-133	9.79E-06
XE-135	6.55E+00
XE-135M	2.41E+01
CS-137	1.91E-05
XE-137	9.02E+01
XE-138	1.15E+02

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	8.81E-03
MN-54	2.14E-02
FE-55	9.90E-04
CO-58	1.05E-03
FE-59	4.92E-03
CO-60	3.39E-02
ZN-65	4.49E-02
SR-89	4.70E-09
AG-110M	1.38E-03

Total Airborne Tritium Released	7.23E+01 Ci
Total Liquid Tritium Released	2.37E+01 Ci
Volume of Waste Released (Prior to Dilution)	3.42E+06 liters
Volume of Dilution Water Used During Period	5.47E+10 liters

Installation: Nine Mile Point
Unit No.: 1

Location: 8 MI NE Oswego, NY

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-220
Thermal Power(MWH): 1.34E+07
Commercial Operation: 12/01/69
Cooling Water Source: Lake Ontario

Licensee: Niagara Mohawk Power
Licensed Power(MWT): 1.95E+03
Net Electrical Power(MWH): 4.35E+06
Initial Criticality: 09/05/69

Solid Waste Disposition

Number of Shipments 80
Mode of Transportation Truck

Destination
Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

CO-58	1.08E+00	
CO-60	6.22E+01	3.55E+01
CS-134		2.89E+00
CS-137	8.24E+00	3.07E+01
FE-55	1.41E+01	2.27E+01
MN-54	1.17E+01	6.54E+00
Unidentified	2.68E+00	1.67E+00

B

CO-58	6.10E+00	
CO-60	5.31E+01	
CS-137	2.47E+01	
FE-55	1.12E+00	
FE-59	1.76E+00	
MN-54	1.14E+01	
Unidentified	1.82E+00	

D

CO-58	5.10E+00	4.20E+00
CO-60	5.98E+01	6.17E+01
CS-137	2.27E+01	2.09E+01
FE-55		1.83E+00
FE-59	1.88E+00	1.58E+00
MN-54	9.54E+00	8.09E+00
Unidentified	9.34E-01	1.65E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 8.67E+01 Ci 6.28E+02	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.14E+01 Ci 4.06E+00	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe) Commingled Trash	m3 4.25E+01 Ci 8.65E-01	Non-Compacted

Installation: Nine Mile Point
Unit No.: 2

Location: 8 Mi NE Oswego, NY

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-410
Thermal Power(MWH): 2.33E+07
Commercial Operation: 04/05/88
Cooling Water Source: Lake Ontario

Licensee: Niagara Mohawk Power
Licensed Power(MWT): 3.32E+03
Net Electrical Power(MWH): 7.19E+06
Initial Criticality: 05/23/87

Solid Waste Disposition

Number of Shipments	Mode of Transportation
95	Truck

Destination
Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June	Jul-Dec
----------	---------

A

CO-60	1.26E+01	6.76E+00
CR-51	7.67E+00	1.40E+01
FE-55	2.51E+00	1.27E+00
MN-54	2.25E+00	2.00E+00
Unidentified	2.77E+00	2.04E+00
ZN-65	7.22E+01	7.40E+01

D

CO-58	1.13E+00	
CO-60	3.84E+01	2.67E+01
CR-51		7.93E+00
CS-137	6.46E+00	
FE-55	2.72E+00	3.40E+00
FE-59		1.75E+00
MN-54	1.17E+01	9.74E+00
NB-95		1.30E+00
Unidentified	2.29E+00	3.08E+00
ZN-65	3.73E+01	4.61E+01

Type of Waste

Unit

Description

A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.61E+02 Ci 3.68E+03	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 Ci	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe) Commingled Trash	m3 2.54E+01 Ci 1.19E+00	Non-Compacted

Installation: North Anna
Unit No.: 1&2

Location: 40 Mi NW Richmond, VA

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: PWR
Docket Number: 50-338
Thermal Power(MWH): 1.83E+07
Commercial Operation: 06/06/78
Cooling Water Source: Lake Anna
Unit Number: 2 Type: PWR
Docket Number: 50-339
Thermal Power(MWH): 2.01E+07
Commercial Operation: 12/14/80
Cooling Water Source: Lake Anna

Licensee: Virginia Electric & Power
Licensed Power(MWT): 2.89E+03
Net Electrical Power(MWH): 5.69E+06
Initial Criticality: 04/05/78

Licensee: Virginia Electric & Power
Licensed Power(MWT): 2.89E+03
Net Electrical Power(MWH): 6.23E+06
Initial Criticality: 06/12/80

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	7.94E+00
MN-54	1.00E-05
FE-55	2.43E-05
CO-58	1.98E-04
CO-60	1.36E-04
BR-84	4.53E-09
KR-85	8.62E+00
KR-85M	8.06E-02
SR-85	8.17E-09
KR-87	2.09E-02
KR-88	3.12E-02
NR-95	3.55E-06
ZR-95	3.04E-06
SB-122	2.58E-07
I-131	2.44E-03
XE-131M	9.15E-01
I-132	1.15E-06
I-133	7.02E-04
XE-133	2.22E+02
XE-133M	8.82E+00
CS-134	3.44E-06
I-134	1.03E-08
I-135	4.42E-06
XE-135	2.44E+00
XE-135M	1.26E-01
CS-136	4.63E-07
CS-137	8.18E-05
XE-138	8.26E-03
CE-143	3.66E-08

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	7.22E-05
AR-41	4.08E-04
CR-51	3.32E-02
MN-54	4.43E-03
CO-57	9.60E-05
CO-58	1.36E-01
FE-59	6.97E-03

Installation: North Anna
Unit No.: 1A2

Location: 40 Mi NW Richmond, VA

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
CO-60	9.86E-02
NI-65	1.80E-04
ZN-65	5.47E-07
NE-95	1.56E-02
ZR-95	2.52E-03
TC-99M	9.85E-05
RU-103	2.72E-04
RH-106	1.20E-03
RU-106	1.20E-03
AG-110M	7.41E-02
IN-113M	3.72E-05
SM-113	3.72E-05
SB-122	2.64E-04
SB-124	9.15E-04
SB-125	7.48E-02
TE-129	3.17E-04
TE-129M	3.17E-04
I-131	9.67E-03
I-133	6.28E-03
XE-133	5.79E-02
CS-134	6.20E-03
XE-135	3.25E-04
XE-135M	5.37E-05
CS-136	6.39E-05
CS-137	9.19E-03

Total Airborne Tritium Released	4.66E+01 Ci
Total Liquid Tritium Released	6.93E+02 Ci
Volume of Waste Released (Prior to Dilution)	2.57E+08 liters
Volume of Dilution Water Used During Period	2.41E+12 liters

Installation: North Anna
Unit No.: 1&2

Location: 40 Mi NW Richmond, VA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-338
Thermal Power(MWH): 1.83E+07
Commercial Operation: 06/06/78
Cooling Water Source: Lake Anna

Licensee: Virginia Electric & Power
Licensed Power(MWT): 2.89E+03
Net Electrical Power(MWH): 5.69E+06
Initial Criticality: 04/05/78

Unit Number: 2 Type: PWR
Docket Number: 50-339
Thermal Power(MWH): 2.01E+07
Commercial Operation: 12/14/80
Cooling Water Source: Lake Anna

Licensee: Virginia Electric & Power
Licensed Power(MWT): 2.89E+03
Net Electrical Power(MWH): 6.23E+06
Initial Criticality: 06/12/80

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
21	Truck	Barnwell, SC
33	Truck	Quadrax, Oak Ridge, TN
14	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

CD-109	1.80E+00	
CO-58	2.85E+00	2.84E+01
CO-60	3.02E+01	1.55E+01
CS-134	2.47E+00	
CS-137	5.27E+00	1.75E+00
FE-55	1.56E+01	3.61E+01
MN-54		1.06E+00
NI-59	3.05E+00	
NI-63	3.71E+01	1.70E+01

B

CE-144		1.85E+00
CO-58	1.96E+01	1.33E+01
CO-60	1.54E+01	1.15E+01
CR-51	4.29E+00	
CS-137	1.45E+01	1.35E+00
FE-55	2.26E+01	1.86E+01
NB-95	5.70E+00	3.37E+01
NI-63	9.92E+00	2.67E+00
ZR-95	4.10E+00	1.71E+01

D

AG-110M	1.84E+01	
CE-144		4.10E+01
CO-58	4.92E+00	1.02E+00
CO-60	5.57E+00	1.43E+01
CS-134		3.25E+00
CS-137		2.59E+01
FE-55	4.59E+01	1.22E+00
NI-63	2.19E+01	1.20E+00
SR-90		8.83E+00

Installation: North Anna
Unit No.: 1a2

Location: 40 Mi NW Richmond, VA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.43E+02	Before Volume Reduction
	m3 8.46E+01	Actual Burial Volume
	Ci 5.95E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 2.06E+03	Before Offsite Processing
	m3 1.85E+02	Actual Burial Volume
	Ci 1.22E+01	
C. Irradiated Components, Control Rods, etc.	m3	
	Ci	
D. Other (describe) Waste Oil	m3 1.97E+01	Before Incineration
	m3 6.98E+00	Actual Burial Volume
	Ci 1.39E-02	

Installation: Oconee
Unit No.: 1&2&3

Location: 30 Mi W Greenville, SC

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: PWR
Docket Number: 50-269
Thermal Power(MWH): 1.98E+07
Commercial Operation: 07/15/73
Cooling Water Source: Lake Keowee
Unit Number: 2 Type: PWR
Docket Number: 50-270
Thermal Power(MWH): 1.88E+07
Commercial Operation: 09/09/74
Cooling Water Source: Lake Keowee
Unit Number: 3 Type: PWR
Docket Number: 50-287
Thermal Power(MWH): 2.21E+07
Commercial Operation: 12/16/74
Cooling Water Source: Lake Keowee

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 6.52E+06
Initial Criticality: 04/19/73

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 6.23E+06
Initial Criticality: 11/11/73

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 7.39E+06
Initial Criticality: 09/05/74

Airborne Effluents

Nuclide Released	Activity (Ci)
HA-24	1.12E-06
AR-41	3.45E+00
CO-58	2.49E-05
CO-60	3.19E-07
KR-85	3.79E+00
KR-85M	1.34E+00
KR-87	4.62E-04
KR-88	1.62E-03
RE-88	7.00E-02
MO-99	5.69E-07
TC-99M	5.52E-07
AG-110M	1.07E-04
I-131	2.49E-03
XE-131M	3.80E-01
I-132	8.00E-03
I-133	6.77E-03
XE-133	5.56E+02
XE-133M	2.27E-01
CS-134	3.10E-04
I-134	4.19E-04
I-135	4.33E-03
XE-135	9.28E+01
XE-135M	1.36E-03
CS-137	3.89E-04
CS-138	3.56E-02

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	1.42E-02
MM-54	3.57E-04
FE-55	5.32E-02
CO-57	3.54E-05
CO-58	1.59E-01
FE-59	2.15E-04

Installation: Oconee
Unit No.: 1&2&3

Location: 30 Mi W Greenville, SC

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
CO-60	2.78E-02
KR-85	3.45E-02
NB-95	4.07E-03
ZR-95	2.33E-03
MO-99	3.28E-04
TC-99M	3.18E-04
RU-103	2.48E-04
RU-106	1.72E-03
AG-110M	6.40E-02
SN-113	3.07E-05
SB-124	7.71E-04
SB-125	4.28E-02
TE-125M	5.60E-02
I-131	9.67E-03
XE-131M	5.82E-04
I-132	3.44E-04
TE-132	4.40E-04
I-133	8.27E-03
XE-133	4.36E-01
XE-133M	5.51E-03
CS-134	2.69E-03
I-135	3.75E-04
XE-135	5.00E-02
XE-135M	1.36E-06
CS-137	1.01E-02
BA-140	1.44E-04
LA-140	5.94E-03
CE-141	1.94E-05
CE-144	4.27E-03

Total Airborne Tritium Released	4.42E+01 Ci
Total Liquid Tritium Released	1.10E+03 Ci
Volume of Waste Released (Prior to Dilution)	4.68E+09 liters
Volume of Dilution Water Used During Period	1.02E+12 liters

Installation: Oconee
Unit No.: 1&2&3

Location: 30 MI W Greenville, SC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-269
Thermal Power(MWH): 1.98E+07
Commercial Operation: 07/15/73
Cooling Water Source: Lake Keowee

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 6.52E+06
Initial Criticality: 04/19/73

Unit Number: 2 Type: PWR
Docket Number: 50-270
Thermal Power(MWH): 1.88E+07
Commercial Operation: 09/09/74
Cooling Water Source: Lake Keowee

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 6.23E+06
Initial Criticality: 11/11/73

Unit Number: 3 Type: PWR
Docket Number: 50-287
Thermal Power(MWH): 2.21E+07
Commercial Operation: 12/16/74
Cooling Water Source: Lake Keowee

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 7.39E+06
Initial Criticality: 09/05/74

Solid Waste Disposition

Number of Shipments Mode of Transportation
45

Destination
Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

AG-110M	6.78E-01	7.10E-01
C-14	5.68E-01	3.39E-01
CE-144	8.16E-02	9.71E-02
CO-57	8.25E-02	
CO-58	1.59E+01	1.23E+00
CO-60	3.26E+00	1.75E+00
CR-51	8.22E-04	
CS-134	2.30E+01	6.89E+00
CS-137	2.96E+01	1.32E+01
FE-55	4.18E+00	2.51E+00
FE-59	3.19E-05	
H-3	3.71E-05	1.03E-04
MO-54	8.07E-01	2.99E-02
NB-95	1.62E-01	2.24E-02
NI-63	2.06E+01	1.10E+01
PU-241	8.82E-02	3.05E-02
RU-103	7.88E-05	
RU-106	1.42E-03	
SB-124	7.36E-05	
SB-125	6.87E-01	1.06E-01
SR-90	2.06E-01	9.15E-02
ZR-95	2.31E-02	

B

AG-110M	1.29E+01	1.29E+01
C-14	1.60E-01	1.60E-01

Installation: Oconee
Unit No.: 1&2&3

Location: 30 Mi W Greenville, SC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued)	Jan-June	July-Dec
(by type of waste)		
B		
CE-144	1.10E-01	1.10E-01
CM-242	1.00E-02	1.00E-02
CO-57	1.90E-01	1.90E-01
CO-58	3.63E+01	3.63E+01
CO-60	3.40E+00	3.40E+00
CR-51	1.22E+00	1.22E+00
CS-134	7.72E+00	7.72E+00
CS-137	1.46E+01	1.46E+01
FE-55	1.18E+01	1.18E+01
MN-54	5.00E-01	5.00E-01
NB-95	1.65E+00	1.65E+00
NI-63	7.21E+00	7.21E+00
PU-238	1.00E-02	1.00E-02
PU-241	2.90E-01	2.90E-01
RU-106	6.00E-01	6.00E-01
SN-113	2.60E-01	2.60E-01
SR-89	2.00E-02	2.00E-02
SR-90	2.00E-02	2.00E-02
ZR-95	7.90E-01	7.90E-01
C		
AG-110M		5.54E+00
C-14		2.11E-01
CO-58		1.15E+01
CO-60		1.24E+01
CS-134		3.76E+00
CS-137		5.51E+00
FE-55		3.13E+01
H-3		1.10E-02
NB-95		2.60E+00
NI-63		2.44E+01
PU-241		6.22E-01
RU-106		2.13E+00
D		
AG-110M	6.30E+00	2.05E+00
C-14	2.01E-01	
CO-58	1.13E+01	3.10E+00
CO-60	1.39E+01	4.80E+01
CR-51		5.00E-01
CS-137	5.00E-02	
FE-55	3.49E+01	1.83E+01
H-3		3.00E-01
MN-54		4.50E-01
NB-95	2.92E+00	
NI-59		1.50E-01
NI-63	2.72E+01	2.59E+01
PU-241	7.00E-01	
RU-106	2.40E+00	
SB-125		1.30E+00

Installation: Oconee
Unit No.: 1A2&3

Location: 30 Mi W Greenville, SC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 9.61E+01 Ci 8.35E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 9.01E+01 m3 4.95E+00 Ci 5.96E+00	compacted non-compacted
C. Irradiated Components, Control Rods, etc.	m3 3.25E+00 Ci 1.94E+04	
D. Other (describe) Dewatered Mechanical Filters	m3 1.88E+01 Ci 4.08E+01	

Installation: Oyster Creek
Unit No.: 1

Location: 9 Mi S Toms River, NJ

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-219
Thermal Power(MWE): 1.46E+07
Commercial Operation: 12/01/69
Cooling Water Source: Barnegat Bay

Licensee: GPU Nuclear Corporation
Licensed Power(MWT): 1.93E+03
Net Electrical Power(MWE): 4.66E+06
Initial Criticality: 05/03/69

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	1.70E-04
MN-54	1.28E-05
CO-60	4.24E-04
KR-85M	3.56E+01
KR-87	4.09E+01
KR-88	2.69E+01
SR-89	1.17E-03
SR-90	1.45E-05
I-131	9.92E-03
I-132	3.10E-02
I-133	7.58E-02
XE-133	1.70E+01
I-135	1.11E-01
XE-135	9.83E+01
CS-137	6.50E-05
BA-140	4.56E-04
CE-144	2.15E-05

Total Airborne Tritium Released

3.68E+00 Ci

Installation: Oyster Creek
Unit No.: 1

Location: 9 Mi S Toms River, NJ

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-219
Thermal Power(MWH): 1.46E+07
Commercial Operation: 12/01/69
Cooling Water Source: Barnegat Bay

Licensee: GPU Nuclear Corporation
Licensed Power(MWT): 1.93E+03
Net Electrical Power(MWH): 4.66E+06
Initial Criticality: 05/03/69

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
36	Truck	Barnwell, SC
13	Truck	Oak Ridge, TN
3	Truck	Waukegan, PA

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

C-14		1.63E-01
CO-60		3.50E+01
CR-51		1.14E+00
CS-134		1.08E+00
CS-137		1.33E+01
FE-55		4.08E+01
H-3		2.30E-02
MO-54		4.55E+00
NI-59		1.50E-02
NI-63		1.06E+00
PU-241		2.32E-01
SR-90		6.70E-02
ZN-65		1.11E+00

B

CO-60	3.22E-01	3.37E+01
CR-51	2.20E-02	1.29E+00
CS-134	1.03E-02	
CS-137	7.19E-02	7.46E+00
FE-55	5.21E-01	4.90E+01
MO-54	3.59E-02	4.33E+00
NI-59	9.57E-05	1.00E-02
NI-63	1.72E-03	6.80E-01
PU-241	2.88E-04	4.00E-02
SR-90	2.88E-04	6.00E-02
ZN-65	1.48E-02	1.24E+00

C

CO-60	3.23E+01	
CR-51	2.45E+01	
FE-55	3.89E+01	
NI-63	4.30E+00	

D

C-14	7.44E-02	
CM-242	1.65E-04	
CO-58	2.23E+00	
CO-60	4.85E+01	
CR-51	3.14E+00	

Installation: Oyster Creek
Unit No.: 1

Location: 9 Mi S Toms River, NJ

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

D

CS-134	1.34E+00
CS-137	4.68E+00
FE-55	3.05E+01
H-3	7.11E-04
MN-54	7.62E+00
NI-59	1.22E-02
NI-63	3.94E-01
PU-241	3.11E-02
SR-90	7.90E-02
ZN-65	1.40E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 6.10E+01 Ci 1.87E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 5.79E+02 Ci 1.66E+01	
C. Irradiated Components, Control Rods, etc.	m3 3.35E+00 Ci 8.34E+00	
D. Other (describe)		
Filters, Filters Sludge & Contam.Metal	m3 1.61E+02 Ci 7.23E+02	

Installation: Palisades
Unit No.: 1

Location: 5 Mi S South Haven, MI

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-255
Thermal Power(MWH): 1.14E+07
Commercial Operation: 12/31/71
Cooling Water Source: Lake Michigan

Licenses: Consumers Power
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 3.55E+06
Initial Criticality: 05/24/71

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.09E-06
CO-58	1.82E-05
CO-60	1.45E-05
KR-85	5.74E+00
KR-87	2.87E-04
RB-88	1.68E-07
SR-89	1.09E-05
SR-90	4.21E-06
I-131	9.12E-04
XE-131M	2.19E-01
I-132	4.42E-04
I-133	3.40E-04
XE-133	8.60E+01
XE-133M	2.78E-01
XE-135	5.85E-01
XE-135M	1.95E-03
CS-137	1.08E-05
CS-138	5.17E-09
CE-141	7.98E-09
Unidentified	1.45E-04

Liquid Effluents

Nuclide Released	Activity (Ci)
CO-58	7.68E-03
CO-60	1.36E-03
SR-89	2.83E-06
SR-90	1.15E-05
SB-125	7.89E-05
XE-133	4.39E-04
CS-134	2.38E-04
CS-137	4.26E-03
Unidentified	4.14E-04

Total Airborne Tritium Released	8.49E+00 Ci
Total Liquid Tritium Released	2.10E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.29E+06 liters
Volume of Dilution Water Used During Period	8.00E+10 liters

Installation: Palo Verde
Unit No.: 1

Location: 36 Mi W Phoenix, AZ

Effluent and Waste Disposal Annual Report for 1993

Type: FWR
Docket Number: 50-528
Thermal Power(MWH): 2.33E+07
Commercial Operation: 01/28/86
Cooling Water Source: Sewage Treatment

Licenses: Arizona Public Service Co.
Licensed Power(MWT): 3.80E+03
Net Electrical Power(MWH): 7.51E+06
Initial Criticality: 05/25/85

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	6.49E-01
MX-54	1.17E-05
CO-58	7.78E-05
CO-60	5.00E-06
SE-75	2.43E-05
BR-82	5.42E-04
KR-85	1.87E+01
KR-85M	1.04E+00
KR-87	3.51E-01
KR-88	1.72E-01
RB-88	4.55E-03
SR-89	1.72E-04
SK-90	5.67E-07
NB-95	8.93E-06
ZR-95	2.85E-06
MO-99	1.17E-05
RU-103	4.97E-04
RU-106	2.99E-04
AG-110M	1.06E-06
SB-122	7.69E-06
TE-123M	2.11E-05
SB-124	1.72E-05
I-131	8.47E-03
XE-131M	4.19E-01
I-132	1.04E-02
I-133	1.08E-03
XE-133	3.18E+02
XE-133M	9.53E-02
CS-134	1.35E-04
I-134	1.38E-06
I-135	1.69E-05
XE-135	3.93E+01
CS-137	1.78E-04
CS-138	5.15E-03
CE-141	6.63E-05
OS-191	2.65E-05

Total Airborne Tritium Released

5.07E+02 Ci

Installation: Palo Verde
Unit No.: 2

Location: 36 Mi W Phoenix, AZ

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-529
Thermal Power(MWH): 1.58E+07
Commercial Operation: 09/19/86
Cooling Water Source: Sewage Treatment

Licensee: Arizona Public Service Co.
Licensed Power(MWT): 3.80E+03
Net Electrical Power(MWH): 5.13E+06
Initial Criticality: 04/18/86

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.91E+00
CR-51	2.81E-04
MO-54	5.35E-05
CO-57	1.11E-07
CO-58	8.77E-04
CO-60	2.26E-04
BR-82	3.86E-05
KR-85	2.26E+01
KR-85M	2.66E+00
KR-87	2.32E+00
KR-88	5.33E+00
RB-88	5.35E-02
SR-89	2.87E-06
SR-90	8.93E-08
NP-95	1.27E-04
ZR-95	1.43E-04
RU-103	2.00E-04
AG-110M	2.26E-06
SH-113M	2.87E-07
SB-122	7.66E-05
TE-123M	1.00E-05
SB-124	7.85E-04
SB-125	3.94E-06
I-131	1.24E-03
XE-131M	1.59E-01
I-132	2.76E-05
I-133	1.59E-04
XE-133	1.98E+02
XE-133M	1.38E+00
CS-134	1.91E-03
I-135	7.04E-05
XE-135	2.49E+01
XE-135M	2.93E+00
CS-137	1.48E-03
CS-138	5.94E-02
XE-138	3.12E-01
BA-139	6.57E-05

Total Airborne Tritium Released

3.17E+02 Ci

Installation: Palo Verde
Unit No.: 3

Location: 36 Mi W Phoenix, AZ

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-530
Thermal Power(MWE): 2.87E+07
Commercial Operation: 01/08/88
Cooling Water Source: Sewage Treatment

Licenses: Arizona Public Service Co.
Licensed Power(MWT): 3.80E+03
Net Electrical Power(MWE): 9.39E+06
Initial Criticality: 10/25/87

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.73E+00
CR-51	3.55E-05
KN-54	5.96E-07
CO-58	9.61E-05
CO-60	2.58E-05
SB-75	1.40E-06
BR-82	2.33E-04
KR-85	4.41E+00
KR-85M	2.60E-03
RB-88	6.53E-04
SR-89	1.88E-05
SR-90	2.32E-07
MO-99	3.92E-06
TC-99M	3.80E-06
SB-122	1.53E-05
TE-123M	1.40E-08
SB-124	8.32E-06
I-131	1.53E-03
XE-131M	1.15E+00
I-132	2.69E-03
I-133	6.75E-05
XE-133	1.84E+02
XE-133M	2.75E-01
CS-134	1.40E-08
I-135	3.42E-06
XE-135	5.70E+00
CS-137	1.11E-08
CS-138	3.68E-05

Total Airborne Tritium Released

4.50E+02 Ci

Installation: Palo Verde
Unit No.: 1&2&3

Location: 36 Mi W Phoenix, AZ

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-528
Thermal Power(MWH): 2.33E+07
Commercial Operation: 01/28/86
Cooling Water Source: Sewage Treatment

Licensee: Arizona Public Service Co.
Licensed Power(MWT): 3.80E+03
Net Electrical Power(MWH): 7.51E+06
Initial Criticality: 05/25/85

Unit Number: 2 Type: PWR
Docket Number: 50-529
Thermal Power(MWH): 1.58E+07
Commercial Operation: 09/19/86
Cooling Water Source: Sewage Treatment

Licensee: Arizona Public Service Co.
Licensed Power(MWT): 3.80E+03
Net Electrical Power(MWH): 5.13E+06
Initial Criticality: 04/18/86

Unit Number: 3 Type: PWR
Docket Number: 50-530
Thermal Power(MWH): 2.87E+07
Commercial Operation: 01/08/88
Cooling Water Source: Sewage Treatment

Licensee: Arizona Public Service Co.
Licensed Power(MWT): 3.80E+03
Net Electrical Power(MWH): 9.39E+06
Initial Criticality: 10/25/87

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
106	Truck	Barnwell, SC
39	Truck	SEG, Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

A

	Jan-June	Jul-Dec
AG-110M	1.70E+00	
C-14	1.92E+00	9.01E-01
CE-144	2.86E+00	
CM-242	1.00E-01	1.98E-03
CO-58	8.04E+00	2.42E+00
CO-60	1.09E+01	7.35E+00
CR-51	7.40E-01	
CS-134	6.29E+00	2.64E+01
CS-137	1.72E+01	3.47E+01
FE-55	2.03E+01	2.18E+01
H-3	7.50E+00	1.39E-01
HE-54	6.50E-01	
NE-95	3.00E+00	
NI-63	6.65E+00	5.79E+00
PU-241	1.90E-01	1.30E-01
RU-106	1.38E+00	
SB-124	9.65E+00	9.84E-02
SB-125	1.63E+00	
SR-90	8.00E-02	2.58E-01
ZR-95	1.26E+00	

B

AG-110M	1.05E+00	4.20E+00
C-14	8.80E-01	2.22E+00
CE-144	1.25E+00	1.55E+00

Installation: Palo Verde
Unit No.: 1&2&3

Location: 36 Mi W Phoenix, AZ

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued)	Jan-June	July-Dec
(by type of waste)		
B		
CO-58	9.95E+00	9.60E+00
CO-60	1.49E+01	1.24E+01
CR-51	5.50E-01	
CS-134	3.28E+00	2.60E+00
CS-137	1.22E+01	7.04E+00
FE-55	3.75E+01	4.19E+01
FE-59	3.80E-01	
H-3	2.34E+00	1.13E+00
MO-54	1.14E+00	1.70E+00
NB-95	2.36E+00	1.30E+00
NI-63	5.32E+00	6.14E+00
PU-241		2.27E+00
RU-103	1.90E-01	
RU-106		1.55E+00
SB-124	4.62E+00	1.60E+00
SB-125	1.22E+00	1.00E+00
ZR-95	1.09E+00	7.00E-01
D		
AG-110M	4.20E-01	2.10E+00
C-14	4.50E-01	1.51E+01
CE-144	1.27E+00	2.80E+00
CO-58	7.72E+00	6.00E+00
CO-60	2.94E+01	9.70E+00
CR-51	1.53E+00	
CS-134	4.56E+00	1.80E+00
CS-137	1.29E+01	5.50E+00
FE-55	2.56E+01	2.74E+01
FE-59	1.63E+00	
H-3	1.52E+00	1.50E+01
MO-54	4.56E+00	1.10E+00
NB-95	8.40E-01	1.40E+00
NI-63	3.76E+00	4.30E+00
PU-241		7.00E-01
RU-103	8.50E-01	
RU-106		1.40E+00
SB-124	5.41E+00	2.10E+00
SB-125	5.00E-01	6.00E-01
ZR-95	3.40E-01	2.10E+00

Installation: Palo Verde
Unit No.: 1A2A3

Location: 35 Mi W Phoenix, AZ

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.29E+02 Ci 6.40E+02	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 9.57E+01 Ci 3.36E+00	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe) Incinerator Ash	m3 3.82E+00 Ci 4.23E-01	Burial Volume

Installation: Peach Bottom
Unit No.: 2&3

Location: 17.9 Mi S Lancaster, PA

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 2 Type: BWR
Docket Number: 50-277
Thermal Power(MWH): 2.41E+07
Commercial Operation: 07/05/74
Cooling Water Source: Susquehanna River
Unit Number: 3 Type: BWR
Docket Number: 50-278
Thermal Power(MWH): 2.02E+07
Commercial Operation: 12/23/74
Cooling Water Source: Susquehanna River

Licensee: PECO Energy Co.
Licensed Power(MWT): 3.44E+03
Net Electrical Power(MWH): 7.70E+06
Initial Criticality: 09/16/73

Licensee: PECO Energy Co.
Licensed Power(MWT): 3.44E+03
Net Electrical Power(MWH): 6.31E+06
Initial Criticality: 08/07/74

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	7.42E+00
CO-58	3.41E-06
CO-60	6.54E-05
ZN-65	4.30E-06
KR-85M	3.55E+02
KR-87	4.81E+02
KR-88	3.35E+02
SR-89	4.90E-03
SR-90	2.12E-05
SR-91	3.76E-03
Y-91M	1.98E-02
MO-99	3.96E-05
TC-99M	6.67E-05
CD-109	1.02E-04
I-131	4.80E-02
TE-132	4.27E-06
I-133	1.81E-01
XE-133	3.40E+03
XE-133M	9.61E+00
CS-134	6.08E-05
I-135	1.95E-01
XE-135	1.70E+03
XE-135M	1.06E+03
CS-137	3.04E-04
CS-138	2.15E-01
XE-138	1.47E+03
BA-139	4.01E-02
BA-140	2.44E-03
LA-140	2.09E-03
CE-144	5.38E-05
Unidentified	2.26E+03

Liquid Effluents

Nuclide Released	Activity (Ci)
P-32	1.04E-03
CR-51	1.35E-03
MN-54	6.98E-03
FE-55	2.66E-03
CO-58	1.90E-03

Installation: Peach Bottom
Unit No.: 2&3

Location: 17.9 Mi S Lancaster, PA

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
CO-60	2.18E-02
ZN-65	1.87E-02
SR-89	1.94E-04
SR-90	5.55E-05
Y-91M	6.50E-06
AG-110M	1.12E-05
I-131	3.82E-06
XE-133	7.81E-03
XE-133M	2.57E-05
CS-134	5.24E-04
XE-135	1.57E-02
XE-135M	1.25E-04
CS-137	1.36E-03

Total Airborne Tritium Released	2.28E+01 Ci
Total Liquid Tritium Released	7.21E+00 Ci
Volume of Waste Released (Prior to Dilution)	4.38E+06 liters
Volume of Dilution Water Used During Period	8.46E+11 liters

Installation: Peach Bottom
Unit No.: 2a3

Location: 17.9 Mi S Lancaster, PA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 2 Type: BWR
Docket Number: 50-277
Thermal Power(MWH): 2.41E+07
Commercial Operation: 07/05/74
Cooling Water Source: Susquehanna River

Licensee: PECO Energy Co.
Licensed Power(MWT): 3.44E+03
Net Electrical Power(MWH): 7.70E+06
Initial Criticality: 09/16/73

Unit Number: 3 Type: BWR
Docket Number: 50-278
Thermal Power(MWH): 2.02E+07
Commercial Operation: 12/23/74
Cooling Water Source: Susquehanna River

Licensee: PECO Energy Co.
Licensed Power(MWT): 3.44E+03
Net Electrical Power(MWH): 6.31E+06
Initial Criticality: 08/07/74

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
70		
41		Quadrex to Burial
106		SEG to Burial

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 3.39E+02 Ci 2.09E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 9.72E+01 Ci 1.00E+01	
C. Irradiated Components, Control Rods, etc.	m3 8.50E+00 Ci 6.64E+04	
D. Other (describe)	m3 Ci	

Installation: Perry
Unit No.: 1

Location: 7 Mi NE Painesville, OH

Effluent and Waste Disposal Annual Report for 1993

Type: BWR

Licensee: Cleveland Electric
Illuminating Company

Docket Number: 50-440

Licensed Power(MWT): 3.58E+03

Thermal Power(MWH): 1.34E+07

Net Electrical Power(MWH): 3.97E+06

Commercial Operation: 11/19/87

Initial Criticality: 06/06/86

Cooling Water Source: Lake Erie

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	8.00E-03
KR-85	6.30E-02
KR-85M	1.37E+01
KR-87	4.84E+00
KR-88	5.01E+00
Y-88	8.94E-05
KR-89	2.21E+00
RB-89	5.08E-04
SR-99	1.80E-03
SR-90	9.91E-06
SR-91	4.87E-03
Y-91M	2.64E-04
SR-92	1.71E-04
TC-99M	2.35E-04
I-131	3.97E-02
XE-131M	1.51E+00
I-132	2.93E-03
I-133	1.09E-01
XE-133	2.63E+02
XE-133M	5.45E+00
I-134	1.51E-02
I-135	4.59E-02
XE-135	2.18E+02
XE-135M	1.00E+02
XE-137	2.40E+01
CS-138	2.44E-02
XE-139	4.63E+01
BA-139	4.81E-02
BA-140	4.55E-04
LA-140	2.00E-04

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	2.10E-02
MN-54	1.87E-03
FE-55	3.67E-03
CO-58	3.60E-04
CO-60	1.71E-02
ZN-65	9.58E-02
SR-89	2.17E-04
SR-90	7.59E-06
MO-99	1.54E-03
TC-99M	2.03E-03

Installation: Perry
Unit No.: 1

Location: 7 Mi NE Painesville, OH

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
AG-110M	2.26E-04
SB-125	5.43E-05
I-131	5.05E-04
I-133	3.66E-04
XE-133	3.38E-02
XE-133M	5.70E-04
CS-134	8.78E-05
XE-135	7.24E-03
CS-137	1.64E-04
BA-140	6.82E-05
LA-140	9.71E-03
CE-141	5.56E-04
NP-239	1.13E-04

Total Liquid Tritium Released	9.35E+00 Ci
Volume of Waste Released (Prior to Dilution)	1.83E+10 liters
Volume of Dilution Water Used During Period	7.97E+10 liters

Installation: Perry
Unit No.: 1

Location: 7 Mi NE Painesville, OH

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR

Licensee: Cleveland Electric
Illuminating Company
Licensed Power(MWT): 3.58E+03
Net Electrical Power(MWH): 3.97E+06
Initial Criticality: 06/06/86

Docket Number: 50-440
Thermal Power(MWH): 1.24E+07
Commercial Operation: 11/18/87
Cooling Water Source: Lake Erie

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
32	Truck	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

C-14	7.54E-02
CO-60	1.48E+01
CR-51	1.28E+00
CS-134	1.93E+00
CS-137	2.34E+00
FE-55	2.78E+01
H-3	5.95E-03
MN-54	2.65E+00
NI-63	2.15E-01
PU-241	1.40E-02
SR-90	1.31E-01
ZN-65	4.79E+01

B

CO-58	2.37E+00
CO-60	1.81E+01
CR-51	5.52E+00
CS-137	3.02E-01
FE-55	6.04E+01
H-3	4.30E-02
MN-54	6.04E+00
ZN-65	6.70E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 7.42E+01 Ci 2.89E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.19E+03 Ci 6.09E+00	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Pilgrim
Unit No.: 1

Location: 25 Mi SE Boston, MA

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-293
Thermal Power(MWH): 1.31E+07
Commercial Operation: 12/01/72
Cooling Water Source: Cape Cod Bay

Licensor: Boston Edison
Licensed Power(MWT): 2.00E+03
Net Electrical Power(MWH): 4.34E+06
Initial Criticality: 06/16/72

Airborne Effluents

Nuclide Released	Activity (Ci)
MN-54	8.40E-06
CO-60	1.58E-04
KR-85M	3.88E+01
KR-87	2.81E+01
KR-88	3.51E+01
SR-89	5.84E-03
SR-90	2.43E-05
I-131	3.07E-02
I-133	1.63E-01
XE-133	8.35E+01
CS-134	2.38E-05
XE-135	3.06E+02
XE-135M	1.00E+02
CS-137	7.33E-05
XE-138	3.49E+02
BA/LA-140	6.46E-03
CE-141	2.52E-05

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	5.72E-05
CR-51	1.70E-04
MN-54	3.16E-03
FE-55	1.14E-03
CO-58	7.07E-04
FE-59	1.84E-04
CO-60	1.15E-02
ZN-65	2.37E-06
AS-76	1.64E-04
SR-89	1.63E-03
SR-90	8.59E-05
Y-91M	6.32E-07
MO/TC-99M	2.48E-05
AG-110M	2.18E-05
I-131	3.04E-05
I-133	6.01E-05
XE-133	6.94E-05
XE-135	1.35E-04
CS-137	9.81E-04
BA/LA-140	2.66E-03
CE-141	2.17E-04

Installation: Pilgrim
Unit No.: 1

Location: 25 Mi SE Boston, MA

Effluent and Waste Disposal Annual Report for 1993

Total Airborne Tritium Released	1.81E+01 Ci
Total Liquid Tritium Released	3.75E+00 Ci
Volume of Waste Released (Prior to Dilution)	2.18E+06 liters
Volume of Dilution Water Used During Period	6.44E+09 liters

Installation: Pilgrim
Unit No.: 1

Location: 25 Mi SE Boston, MA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-293
Thermal Power(MWH): 1.31E+07
Commercial Operation: 12/01/72
Cooling Water Source: Cape Cod Bay

Licensee: Boston Edison
Licensed Power(MWT): 2.00E+03
Net Electrical Power(MWH): 4.34E+06
Initial Criticality: 06/16/72

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
10	Tractor-Trailer	Alaron, Wampum, PA
30	Tractor-Trailer	CNSI, Barnwell, SC
10	Tractor-Trailer	Quadrex, Oak Ridge, TN
22	Tractor-Trailer	SEQ, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

A

	Jan-June	Jul-Dec
AM-241	1.00E-03	
BA-140	2.19E-01	
C-14	2.34E-01	3.00E-02
CE-141		2.40E-02
CE-144	1.77E+00	5.30E-02
CO-58	2.55E+00	1.93E+00
CO-60	4.48E+01	4.50E+01
CR-51	2.02E-01	2.80E-02
CS-137	5.78E+00	7.06E-01
FE-55	2.89E+01	4.44E+01
FE-59	7.29E-01	1.10E-02
H-3	4.20E-02	2.00E-03
I-131		1.40E-02
LA-140	1.00E-01	
MN-54	1.33E+01	7.37E+00
NI-63	1.31E+00	3.72E-01
PO-239/240	1.00E-03	
PU-241		2.00E-02
SR-90	2.30E-02	6.80E-02

B

AM-241	1.00E-02	1.00E-02
CE-144	1.45E+00	1.78E+00
CM-242	1.00E-02	1.00E-02
CM-243/244	1.00E-02	1.00E-02
CO-58	1.42E+00	1.04E+00
CO-60	2.29E+01	2.32E+01
CR-51	1.48E+00	1.45E+00
CS-134	1.90E-01	1.90E-01
CS-137	4.73E+00	4.40E+00
FE-55	5.71E+01	5.82E+01
FE-59	1.90E+00	1.39E+00
MN-54	5.90E+00	5.78E+00
NB-95	4.70E-01	4.60E-01
NI-59	1.00E-02	1.00E-02
NI-63	1.57E+00	1.44E+00

Installation: Pilgrim
Unit No.: 1

Location: 25 Mi SE Boston, MA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

B

PU-238	1.00E-02	1.00E-02
PU-239/240	1.00E-02	1.00E-02
PU-241	1.70E-01	2.00E-01
KU-103	1.40E-01	1.40E-01
SR-89	3.50E-01	1.30E-01
SR-90	1.00E-01	8.00E-02

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.02E+02 Ci 5.74E+02	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 6.45E+01 Ci 1.51E+00	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Point Beach
Unit No.: 1&2

Location: 15 Mi N Manitowoc, WI

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: PWR
Docket Number: 50-266
Thermal Power(MWH): 1.17E+07
Commercial Operation: 12/21/70
Cooling Water Source: Lake Michigan
Unit Number: 2 Type: PWR
Docket Number: 50-301
Thermal Power(MWH): 1.17E+07
Commercial Operation: 10/01/72
Cooling Water Source: Lake Michigan

Licensee: Wisconsin Electric Power Company
Licensed Power(MWT): 1.52E+03
Net Electrical Power(MWH): 3.90E+06
Initial Criticality: 11/02/70

Licensee: Wisconsin Electric Power Company
Licensed Power(MWT): 1.52E+03
Net Electrical Power(MWH): 3.84E+06
Initial Criticality: 05/30/72

Airborne Effluents

Nuclide Released	Activity (Ci)
F-18	6.50E-05
NA-24	3.23E-06
AR-41	2.82E+00
MN-56	1.03E-06
CO-57	2.47E-07
CO-58	3.76E-04
CO-60	5.93E-04
KR-85	5.53E-01
KR-85M	1.54E-01
KR-87	2.62E-01
KR-88	3.44E-01
RB-88	2.44E-05
SR-90	1.33E-07
I-131	1.21E-04
XE-131M	6.34E-03
I-132	9.95E-06
TE-132	4.20E-09
I-133	4.94E-05
XE-133	3.49E+00
XE-133M	1.96E-02
CS-134	6.87E-03
I-134	6.13E-07
I-135	2.79E-05
XE-135	1.04E+00
XE-135M	4.22E-01
CS-137	6.89E-03
CS-138	9.82E-06
XE-138	1.02E+00

Liquid Effluents

Nuclide Released	Activity (Ci)
F-18	8.12E-02
NA-24	6.69E-04
CR-51	2.26E-03
MN-56	4.98E-04
CO-57	3.84E-05
CO-58	4.07E-04

Installation: Point Beach
Unit No.: 1A2

Location: 15 Mi N Manitowoc, WI

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
CO-60	1.32E-03
ZN-69M	4.82E-06
SR-89	1.17E-05
SR-90	1.10E-04
SR-92	5.17E-06
NB-97	3.43E-05
ZR-97	1.28E-04
TC-99M	1.88E-04
KU-103	3.47E-06
AG-110M	5.92E-03
SB-125	5.29E-02
I-131	3.39E-03
TE-131M	2.80E-04
I-132	5.41E-03
TE-132	1.25E-04
I-133	2.95E-02
CS-134	1.88E-02
I-134	9.49E-04
I-135	4.30E-03
CS-137	2.26E-02
CS-138	4.94E-05
BA-139	7.65E-04
CE-141	3.51E-05
CE-144	2.00E-04

Total Airborne Tritium Released	1.43E+02 Ci
Total Liquid Tritium Released	4.64E+02 Ci
Volume of Waste Released (Prior to Dilution)	4.25E+08 liters
Volume of Dilution Water Used During Period	5.83E+11 liters

Installation: Point Beach
Unit No.: 1a2

Location: 15 Mi N Manitowoc, WI

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-266
Thermal Power(MWH): 1.17E+07
Commercial Operation: 12/21/70
Cooling Water Source: Lake Michigan

Licensee: Wisconsin Electric Power Company
Licensed Power(MWT): 1.52E+03
Net Electrical Power(MWH): 3.80E+06
Initial Criticality: 11/02/70

Unit Number: 2 Type: PWR
Docket Number: 50-301
Thermal Power(MWH): 1.17E+07
Commercial Operation: 10/01/72
Cooling Water Source: Lake Michigan

Licensee: Wisconsin Electric Power Company
Licensed Power(MWT): 1.52E+03
Net Electrical Power(MWH): 3.84E+06
Initial Criticality: 05/30/72

Solid Waste Disposition

Number of Shipments Mode of Transportation
42

Destination
Barnwell, SC

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 7.25E+00 Ci 2.41E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 5.90E+00 Ci 1.16E-01	Compacted, Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe) Dry Active Waste & Scrap Metal	m3 4.01E+01 Ci 7.16E-01	Compacted, Burial Volume

Installation: Prairie Island
Unit No.: 1&2

Location: 26 Mi SE Minneapolis, MN

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: PWR
Docket Number: 50-292
Thermal Power(MWH): 1.38E+07
Commercial Operation: 12/16/73
Cooling Water Source: Mississippi River
Unit Number: 2 Type: PWR
Docket Number: 50-306
Thermal Power(MWH): 1.18E+07
Commercial Operation: 12/21/74
Cooling Water Source: Mississippi River

Licenses: Northern States Power
Licensed Power(MWT): 1.65E+03
Net Electrical Power(MWH): 4.38E+06
Initial Criticality: 12/01/73

Licenses: Northern States Power
Licensed Power(MWT): 1.65E+03
Net Electrical Power(MWH): 3.75E+06
Initial Criticality: 12/17/74

Airborne Effluents

Nuclide Released	Activity (Ci)
NH-54	4.70E-06
CO-58	1.40E-05
CO-60	1.25E-05
BR-82	1.02E-06
KR-85	1.79E+00
SR-89	6.22E-07
SR-90	3.09E-07
NB-95	4.40E-06
I-131	6.71E-04
XE-131M	2.48E-01
I-133	8.78E-05
XE-133	3.45E+01
XE-133M	1.23E-01
CS-134	1.47E-05
XE-135	1.91E-01
CS-137	1.78E-05

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	1.05E-03
HA-24	9.06E-06
SC-47	1.56E-04
CR-51	5.39E-03
NH-54	1.10E-03
FE-58	4.28E-02
CO-57	6.23E-05
CO-58	5.40E-02
FE-59	1.84E-03
CO-60	2.20E-02
ZN-65	1.14E-04
KR-85	3.00E-03
KR-85M	2.56E-06
SR-92	2.89E-05
NB-95	1.28E-03
ZR-95	9.10E-04
NB-97	4.06E-05
ZR-97	1.47E-06
RU-103	1.57E-06
RU-105	1.21E-05

Installation: Prairie Island
Unit No.: 1&2

Location: 26 Mi SE Minneapolis, MN

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
AG-108M	5.43E-05
AG-110M	2.65E-02
SM-113	1.51E-03
SB-122	9.04E-04
SB-124	1.82E-02
SB-125	1.04E-02
SB-126	1.32E-05
I-131	3.88E-04
XE-131M	7.46E-04
I-133	1.59E-05
XE-133	2.56E-02
XE-133M	7.57E-05
CS-134	2.75E-03
XE-135	4.44E-05
CS-136	6.99E-06
CS-137	3.79E-03
LA-140	4.43E-05
W-187	3.44E-05

Total Airborne Tritium Released	6.30E+01 Ci
Total Liquid Tritium Released	4.80E+02 Ci
Volume of Waste Released (Prior to Dilution)	5.65E+10 liters
Volume of Dilution Water Used During Period	6.30E+11 liters

Installation: Prairie Island
Unit No.: 1&2

Location: 26 Mi SE Minneapolis, MN

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-282
Thermal Power(MWH): 1.38E+07
Commercial Operation: 12/16/73
Cooling Water Source: Mississippi River

Licensee: Northern States Power
Licensed Power(MWT): 1.65E+03
Net Electrical Power(MWH): 4.38E+06
Initial Criticality: 12/01/73

Unit Number: 2 Type: PWR
Docket Number: 50-306
Thermal Power(MWH): 1.18E+07
Commercial Operation: 12/21/74
Cooling Water Source: Mississippi River

Licensee: Northern States Power
Licensed Power(MWT): 1.65E+03
Net Electrical Power(MWH): 3.75E+06
Initial Criticality: 12/17/74

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
2	Truck	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A		
CO-58	2.90E+00	
CO-60	3.65E+01	
CS-134	3.90E+00	
CS-137	9.50E+00	
FE-55	9.00E+00	
MG-54	2.50E+00	
NI-63	3.51E+01	

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 7.70E+00 Ci 2.83E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 Ci	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Quad-Cities
Unit No.: 1&2

Location: 20 Mi NE Moline, IL

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: BWR
Docket Number: 50-254
Thermal Power(MWH): 1.61E+07
Commercial Operation: 02/18/73
Cooling Water Source: Mississippi River
Unit Number: 2 Type: BWR
Docket Number: 50-265
Thermal Power(MWH): 1.01E+07
Commercial Operation: 03/10/73
Cooling Water Source: Mississippi River

Licensee: Commonwealth Edison Co.
Licensed Power(MWT): 2.51E+03
Net Electrical Power(MWH): 5.04E+06
Initial Criticality: 10/18/71

Licensee: Commonwealth Edison Co.
Licensed Power(MWT): 2.51E+03
Net Electrical Power(MWH): 3.11E+06
Initial Criticality: 04/26/72

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.91E+00
CR-51	4.55E-03
MN-54	2.58E-03
CO-58	6.71E-04
CO-60	1.02E-02
ZN-65	7.37E-05
KR-85M	2.13E+00
KR-87	1.05E+00
KR-88	1.72E+00
SR-89	6.14E-04
SR-90	1.39E-06
ZR-95	6.16E-05
MO-99	3.50E-03
AG-110M	5.21E-05
SB-124	2.23E-05
I-131	1.27E-03
I-133	7.14E-03
XE-133	3.04E+00
I-135	2.34E-03
XE-135	1.43E+00
XE-135M	5.05E+00
CS-137	1.78E-04
XE-138	2.07E+01
BA-140	3.71E-04
LA-140	5.96E-04

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	6.08E-03
MN-54	6.64E-03
FE-55	4.60E-03
CO-58	2.06E-03
FE-59	3.39E-04
CO-60	3.63E-02
ZN-65	1.10E-04
AS-76	6.56E-05
SR-89	5.00E-05
SR-90	1.80E-05
SR-92	1.20E-04

Installation: Quad-Cities
Unit No.: 1&2

Location: 20 Mi NE Moline, IL

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
NB-95	6.74E-06
MO-99	4.70E-06
TC-99M	5.40E-06
AG-110M	1.19E-03
SB-124	4.62E-05
SB-125	1.53E-04
XE-133	2.75E-04
XE-135	3.94E-04
CS-137	3.62E-03
LA-140	2.16E-05

Total Airborne Tritium Released	4.56E+01 Ci
Total Liquid Tritium Released	3.67E+01 Ci
Volume of Waste Released (Prior to Dilution)	1.02E+07 liters
Volume of Dilution Water Used During Period	1.96E+12 liters

Installation: Quad-Cities
Unit No.: 1a2

Location: 20 Mi NE Moline, IL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: BWR
Docket Number: 50-254
Thermal Power(MWH): 1.61E+07
Commercial Operation: 02/18/73
Cooling Water Source: Mississippi River

Licensee: Commonwealth Edison Co.
Licensed Power(MWT): 2.51E+03
Net Electrical Power(MWH): 5.04E+06
Initial Criticality: 10/18/71

Unit Number: 2 Type: BWR
Docket Number: 50-265
Thermal Power(MWH): 1.01E+07
Commercial Operation: 03/10/73
Cooling Water Source: Mississippi River

Licensee: Commonwealth Edison Co.
Licensed Power(MWT): 2.51E+03
Net Electrical Power(MWH): 3.11E+06
Initial Criticality: 04/26/72

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
50	CNSI	Barnwell, SC
5	Raytech	Channahan
10	Kindrick	Quadrex
5	Hittman	SEG

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 3.05E+04 Ci 2.40E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 Ci	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Rancho Seco
Unit No.: 1

Location: 25 Mi SE Sacramento, CA

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-312
Thermal Power(MWH): 0.00E+00
Commercial Operation: 04/17/75
Cooling Water Source: Folsom Canal

Licensee: Sacramento Municipal Utility
Licensed Power(MWT): 0.00E+00
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 09/16/74

Airborne Effluents

Nuclide Released	Activity (Ci)
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Liquid Effluents

Nuclide Released	Activity (Ci)
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CO-60	9.41E-06
SR-90	1.32E-06
CS-134	1.94E-05
CS-137	3.62E-04

Total Airborne Tritium Released	7.53E+00 Ci
Total Liquid Tritium Released	7.44E+00 Ci
Volume of Waste Released (Prior to Dilution)	1.41E+07 liters
Volume of Dilution Water Used During Period	1.68E+10 liters

Installation: River Bend
Unit No.: 1

Location: 24 Mi NNW Baton Rouge, LA

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-458
Thermal Power(MWH): 1.66E+07
Commercial Operation: 06/16/86
Cooling Water Source: Mississippi River

Licensee: Gulf States Utilities Co
Licensed Power(MWT): 2.89E+03
Net Electrical Power(MWH): 5.26E+06
Initial Criticality: 10/31/85

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	9.22E-03
CR-51	1.74E-04
MM-54	2.92E-06
CO-60	3.50E-04
KR-85M	1.21E+01
KR-87	1.73E+01
KR-88	1.96E+00
SR-89	3.03E-04
SR-90	9.50E-06
KU-106	7.04E-05
I-131	2.19E-02
I-133	9.85E-02
XE-133	2.53E+02
XE-133M	4.14E+00
XE-135	1.95E+02
XE-135M	9.12E+01
XE-137	4.70E+01
XE-138	7.55E+01
BA-140	4.62E-04

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	4.99E-04
CR-51	2.48E-01
MM-54	4.29E-02
FE-55	1.53E-01
CO-57	5.80E-06
CO-58	1.05E-02
FE-59	1.35E-02
CO-60	1.52E-01
CU-64	1.38E-03
ZN-65	1.02E-02
ZN-69M	2.27E-13
AS-76	2.13E-04
KR-88	4.37E-06
SR-89	5.33E-03
SR-90	3.12E-04
Y-91M	8.27E-06
SR-92	3.76E-05
Y-92	1.78E-03
NB-95	2.69E-03
ZR-95	1.24E-03
NB-97	2.03E-04
MO-99	2.61E-03

Installation: River Bend
Unit No.: 1

Location: 24 Mi NNW Baton Rouge, LA

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
TC-99M	1.86E-03
TC-101	4.76E-03
RU-103	3.09E-03
RH-105	2.20E-03
RU-105	4.69E-02
RU-106	2.41E-04
CD-109	1.86E-05
AG-110M	2.07E-04
SN-113	1.43E-04
SB-122	3.53E-05
SB-124	1.77E-03
I-131	1.25E-02
XE-131M	7.33E-03
TE-132	1.39E-04
I-133	3.39E-03
XE-133	6.14E-01
XE-133M	2.35E-02
CS-134	2.64E-04
I-135	6.23E-05
XE-135	5.41E-01
XE-135M	4.90E-06
CS-137	2.17E-03
XE-137	3.74E-04
BA-140	1.03E-02
LA-140	1.85E-01
CE-141	1.04E-02
CE-144	1.26E-03
WP-239	3.99E-02

Total Airborne Tritium Released	5.40E+00 Ci
Total Liquid Tritium Released	3.02E+01 Ci
Volume of Waste Released (Prior to Dilution)	3.86E+07 liters
Volume of Dilution Water Used During Period	4.43E+09 liters

Installation: River Bend
Unit No.: 1

Location: 24 Mi NNE Baton Rouge, LA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-458
Thermal Power(MWH): 1.66E+07
Commercial Operation: 06/16/86
Cooling Water Source: Mississippi River

Licensee: Gulf States Utilities Co
Licensed Power(MWT): 2.89E+03
Net Electrical Power(MWH): 5.26E+06
Initial Criticality: 10/31/85

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
75	Truck	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

BA/LA-140	5.10E-02
C-14	1.29E-01
CE-141	1.00E-03
CE-144	1.92E-01
CO-58	2.60E+00
CO-60	5.45E+01
CR-51	2.33E-01
CS-134	3.51E+00
CS-137	4.74E+00
FE-55	9.08E+00
FE-59	6.10E-02
H-3	2.40E-02
I-131	5.60E-02
MO-99	1.11E+01
NI-63	5.51E-01
PU-238	4.00E-03
SR-89	9.19E+00
SR-90	9.20E-01
ZN-65	3.04E+00

B

CO-58	1.65E+00
CO-60	2.67E+01
CR-51	8.78E+00
CS-134	1.49E-01
CS-137	2.27E+00
FE-55	4.77E+01
FE-59	5.15E-01
MO-99	5.25E+00
SR-89	3.51E+00
SR-90	1.74E-01
ZN-65	3.31E+00

Installation: River Bend
Unit No.: 1

Location: 24 Mi NEW Baton Rouge, LA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.08E+02 Ci 1.50E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 5.44E+01 Ci 1.62E+00	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: H. B. Robinson
Unit No.: 2

Location: 4.5 Mi WNW Hartsville, SC

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-261
Thermal Power(MWH): 1.35E+07
Commercial Operation: 03/07/71
Cooling Water Source: Robinson Impoundment

Licensee: Carolina Power & Light
Licensed Power(MWT): 2.30E+03
Net Electrical Power(MWE): 4.19E+06
Initial Criticality: 09/20/70

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.30E+00
CR-51	1.45E-05
MM-54	7.06E-07
CO-57	3.74E-08
CO-58	1.74E-05
CO-60	3.29E-05
KR-85	2.45E+01
KR-85M	2.72E-01
KR-87	5.05E-03
KR-88	3.92E-02
NB-95	3.51E-06
ZR-95	1.24E-07
RU-103	6.74E-08
I-131	1.47E-03
XE-131M	1.90E+00
I-133	6.58E-05
XE-133	3.51E+02
XE-133M	2.17E+00
CS-134	5.81E-06
XE-135	1.56E+01
CS-137	1.80E-05

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.15E-07
CR-51	3.10E-04
MM-54	2.85E-04
FE-55	9.76E-03
CO-57	4.48E-05
CO-58	2.91E-02
FE-59	8.81E-06
CO-60	1.11E-02
KR-85	4.50E-01
KR-85M	7.35E-08
NB-95	7.07E-05
ZR-95	1.14E-05
RU-103	1.54E-06
AG-110M	3.95E-04
SN-113	6.52E-07
SB-124	2.55E-04
SB-125	2.37E-03
I-131	8.92E-05
XE-131M	3.20E-01
I-133	3.46E-08

Installation: H. B. Robinson
Unit No.: 2

Location: 4.5 Mi WNW Hartsville, SC

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
XE-133	2.36E+01
IE-133M	1.70E-01
CS-134	3.61E-04
XE-135	3.14E-03
CS-137	4.09E-04
BA-139	2.84E-06
CE-139	1.17E-05
CE-141	4.50E-05
CE-144	9.92E-05

Total Airborne Tritium Released	7.95E+00 Ci
Total Liquid Tritium Released	8.45E+02 Ci
Volume of Waste Released (Prior to Dilution)	5.66E+06 liters
Volume of Dilution Water Used During Period	9.09E+11 liters

Installation: H. B. Robinson
Unit No.: 2

Location: 4.5 Mi WNW Hartsville, SC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR	Licensee: Carolina Power & Light
Docket Number: 50-261	Licensed Power(MWT): 2.30E+03
Thermal Power(MWH): 1.35E+07	Net Electrical Power(MWH): 4.19E+06
Commercial Operation: 03/07/71	Initial Criticality: 09/20/70
Cooling Water Source: Robinson Impoundment	

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
73	Sole use vehicle	Barnwell, SC

Irradiated Fuel Shipments (Disposition)

Number of Shipments	Mode of Transportation	Destination
2	Sole use rail	C.P. &L.

Estimate of Major Nuclide Composition (%)
(by type of waste)

A

	Jan-June	Jul-Dec
AG-110M	4.79E+00	
CO-58	2.67E+00	
CO-60	5.65E+01	
FE-55	2.50E+01	
MX-54	1.10E+00	
NI-63	8.32E+00	
SB-125	5.79E-01	
Unidentified	1.04E+00	
ZN-65	2.50E-01	

B

CO-60	7.22E+01	7.20E+01
CS-137		5.93E-01
FE-55	2.35E+01	2.33E+01
H-3	1.40E-01	1.39E-01
NI-63	4.11E+00	4.06E+00

C

CO-58		1.08E+01
CO-60		1.29E+01
CR-51		1.30E+01
FE-55		5.05E+01
FE-59		1.12E+00
MX-54		8.82E+00
NB-95		9.71E-01
NI-63		6.94E-01
Unidentified		1.21E+00

Installation: H. B. Robinson
Unit No.: 2

Location: 4.5 Mi WNW Hartsville, SC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 7.00E+00 Ci 2.40E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 3.60E+01 Ci 7.14E-01	
C. Irradiated Components, Control Rods, etc.	m3 2.12E-01 Ci 1.03E+00	
D. Other (describe)	m3 Ci	

Installation: Salem
Unit No.: 1

Location: 20 Mi S Wilmington, DE

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-272
Thermal Power(MWH): 1.86E+07
Commercial Operation: 06/30/77
Cooling Water Source: Delaware River

Licensee: PSEG
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 5.87E+06
Initial Criticality: 12/11/76

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-58	4.07E-06
CO-60	3.30E-06
KR-85	4.02E+00
KR-85M	8.17E-02
KR-88	1.99E-02
NB-95	1.67E-06
I-131	5.10E-03
XE-131M	3.19E+00
XE-133	1.10E+03
XE-133M	5.12E+00
XE-135	1.06E+01
CS-137	7.04E-07
XE-138	1.03E-02

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	8.88E-04
NA-24	6.68E-04
CR-51	5.38E-03
MN-54	3.52E-02
FE-55	6.40E-02
CO-57	1.03E-02
CO-58	1.71E+00
FE-59	4.76E-04
CO-60	3.04E-01
ZN-65	6.72E-04
SR-89	1.79E-03
SR-90	3.88E-04
NB-95	5.78E-03
ZR-95	3.29E-03
NB-97	1.27E-03
MO-99	1.76E-04
TC-99M	2.66E-04
RU-105	2.21E-04
AG-110M	1.19E-02
SN-113	7.88E-05
SB-122	1.21E-03
SB-124	2.08E-02
SB-125	9.04E-02
SB-126	1.38E-04
I-131	1.27E-01
XE-131M	6.30E-03
I-133	2.16E-03
XE-133	1.03E+00

Installation: Salem
Unit No.: 1

Location: 20 Mi S Wilmington, DE

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
KE-133M	4.47E-03
CS-134	3.54E-01
KE-135	4.56E-03
CS-136	3.61E-03
CS-137	4.53E-01
CS-138	4.15E-06
LA-140	2.12E-04
CE-143	2.71E-05

Total Airborne Tritium Released	6.70E+01 Ci
Total Liquid Tritium Released	3.93E+02 Ci
Volume of Waste Released (Prior to Dilution)	7.14E+06 liters
Volume of Dilution Water Used During Period	1.54E+12 liters

Installation: Salem
Unit No.: 2

Location: 20 Mi S Wilmington, DE

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-311
Thermal Power(MWH): 1.74E+07
Commercial Operation: 10/13/81
Cooling Water Source: Delaware River

Licensee: PSEG
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 5.54E+06
Initial Criticality: 08/08/80

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.53E-03
CO-58	8.09E-06
KR-85	1.20E+00
KR-85M	3.13E-01
KR-88	7.57E-02
I-131	1.12E-03
XE-131M	3.54E+00
XE-133	3.29E+02
XE-133M	1.62E+00
XE-135	6.40E+00

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	1.59E-03
NA-24	1.05E-03
CR-51	4.39E-03
MN-54	3.73E-02
FE-55	6.61E-02
CO-57	1.17E-02
CO-58	1.75E+00
FE-59	4.83E-04
CO-60	3.47E-01
ZN-65	1.59E-04
SR-89	1.95E-03
SR-90	5.88E-04
NB-95	3.97E-03
ZR-95	2.34E-03
NB-97	1.46E-03
TC-99M	3.77E-04
RU-105	4.07E-05
AG-110M	1.03E-02
SN-113	7.45E-05
SB-122	1.20E-03
SB-124	3.77E-02
SB-125	1.35E-01
SB-126	3.51E-04
I-131	1.87E-01
XE-131M	6.19E-03
I-132	8.72E-05
I-133	2.39E-03
XE-133	1.26E+00
XE-133M	3.39E-03
CS-134	4.57E-01
XE-135	9.04E-03

Installation: Salem
Unit No.: 2

Location: 20 Mi S Wilmington, DE

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
CS-136	4.82E-03
CS-137	5.70E-01
CS-138	1.65E-02
BA-140	1.68E-04
LA-140	2.03E-03

Total Airborne Tritium Released	1.02E+02 Ci
Total Liquid Tritium Released	5.08E+02 Ci
Volume of Waste Released (Prior to Dilution)	7.93E+06 liters
Volume of Dilution Water Used During Period	1.14E+12 liters

Installation: Salem
Unit No.: 1&2

Location: 20 Mi S Wilmington, DE

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-272
Thermal Power(MWH): 1.86E+07
Commercial Operation: 06/30/77
Cooling Water Source: Delaware River

Licensee: PSEG
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 5.87E+06
Initial Criticality: 12/11/76

Unit Number: 2 Type: PWR
Docket Number: 50-311
Thermal Power(MWH): 1.74E+07
Commercial Operation: 10/13/81
Cooling Water Source: Delaware River

Licensee: PSEG
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 5.54E+06
Initial Criticality: 08/08/80

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
4	Truck	Barnwell, SC
14	Truck	Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

C-14		1.40E+00
CD-109		3.10E+00
CO-58		1.50E+00
CO-60		1.49E+01
CS-134		2.27E+01
CS-137		2.34E+01
FE-55		1.62E+01
MO-54		2.70E+00
NI-63		1.36E+01

B

CO-58	2.41E+01	3.44E+01
CO-60	1.16E+01	1.55E+01
CS-134	2.30E+00	
CS-137	3.40E+00	
FE-55	4.16E+01	4.51E+01
MO-54	1.00E+00	1.00E+00
NR-95		1.10E+00
NI-63	1.15E+01	2.30E+00
SB-125	1.40E+00	

Installation: Salem
Unit No.: 162

Location: 20 Mi S Wilmington, DE

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.41E+01 Ci 4.60E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 4.21E+01 Ci 4.42E+00	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: San Onofre
Unit No.: 1

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-206
Thermal Power(MWH): 0.00E+00
Commercial Operation: 01/01/68
Cooling Water Source: Pacific Ocean

Licensee: Southern California Edison Co.
Licensed Power(MWT): 1.35E+03
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 06/14/67

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-57	1.76E-08
CO-58	1.93E-07
CO-60	1.37E-07
KR-85	2.83E+02
NB-95M	6.73E-07
I-131	2.94E-04
XE-131M	2.63E+00
XE-133	1.34E+02
CS-134	2.36E-07
CS-137	6.28E-06

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	6.93E-04
MN-54	1.99E-03
FE-55	4.88E-02
CO-57	9.68E-05
CO-58	2.27E-02
FE-59	8.10E-04
CO-60	5.07E-02
ZN-65	7.19E-05
KR-85	3.66E-05
SR-89	1.36E-04
SR-90	1.91E-04
SR-92	3.88E-04
NB-95	5.97E-04
NB-95M	5.02E-07
ZR-95	2.84E-04
NB-97	1.42E-05
RU-103	3.86E-04
RU-106	3.21E-03
AG-110M	2.87E-03
SN-117M	1.57E-04
SB-124	4.84E-04
SB-125	2.32E-04
I-131	9.55E-05
XE-131M	7.75E-02
CS-134	4.69E-01
CS-137	5.32E-01
CE-141	9.22E-05
CE-144	4.10E-03

Installation: San Onofre
Unit No.: 1

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1993

Total Airborne Tritium Released	1.19E+01 Ci
Total Liquid Tritium Released	4.45E+02 Ci
Volume of Waste Released (Prior to Dilution)	3.09E+06 liters
Volume of Dilution Water Used During Period	1.42E+11 liters

Installation: San Onofre
Unit No.: 1

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR
Docket Number: 50-206
Thermal Power(MWH): 0.00E+00
Commercial Operation: 01/01/68
Cooling Water Source: Pacific Ocean

Licensee: Southern California Edison Co.
Licensed Power(MWT): 1.35E+03
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 06/14/67

Estimate of Major Nuclide Composition (%) % (by type of waste)	Annual
A	
C-14	5.47E-03
CO-58	5.24E+00
CO-60	5.16E+00
CS-134	4.13E+01
CS-137	4.39E+01
FE-55	2.43E+00
H-3	1.83E-03
I-129	1.24E-05
MN-54	7.61E-02
NI-63	1.87E+00
PU-241	1.96E-02
SR-90	4.74E-02
TC-99	1.20E-05

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.85E+01 Ci 6.39E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 Ci	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: San Onofre
Unit No.: 2&3

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 2 Type: PWR
Docket Number: 50-361
Thermal Power(MWH): 2.38E+07
Commercial Operation: 08/08/83
Cooling Water Source: Pacific Ocean
Unit Number: 3 Type: PWR
Docket Number: 50-362
Thermal Power(MWH): 2.20E+07
Commercial Operation: 04/01/84
Cooling Water Source: Pacific Ocean

Licensee: Southern California Edison Co.
Licensed Power(MWT): 3.39E+03
Net Electrical Power(MWH): 7.65E+06
Initial Criticality: 07/26/82

Licensee: Southern California Edison Co.
Licensed Power(MWT): 3.39E+03
Net Electrical Power(MWH): 7.12E+06
Initial Criticality: 08/29/83

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.10E+01
CR-51	9.45E-05
MN-54	1.20E-05
CO-57	2.16E-06
CO-58	1.56E-03
FE-59	4.71E-07
CO-60	7.93E-05
ZN-65	4.93E-07
BR-82	1.75E-04
KR-85	1.19E+01
KR-85M	6.29E+00
KR-87	3.73E+00
KR-88	9.47E+00
RB-88	7.46E-01
RB-89	3.75E-02
SR-89	7.45E-06
SR-90	3.80E-09
SR-92	6.92E-07
Y-92	9.12E-05
NB-95	3.57E-05
NB-95M	2.11E-07
ZR-95	6.26E-06
NB-97	1.95E-07
MO-99	6.27E-08
TC-99M	6.40E-08
SN-113	2.24E-07
SB-125	6.36E-06
I-131	4.80E-02
XE-131M	3.43E+00
I-132	6.87E-03
TE-132	2.76E-06
I-133	1.06E-03
XE-133	1.42E+03
XE-133M	4.87E+00
CS-134	2.44E-05
I-134	1.59E-03

Installation: San Onofre
Unit No.: 2&3

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1993

Airborne Effluents (continued)

Nuclide Released	Activity (Ci)
I-135	4.97E-03
XE-135	4.20E+01
XE-135M	1.70E+01
CS-137	3.35E-05
CS-138	2.68E-01
XE-138	4.29E+00
BA-139	3.25E-03
BA-140	1.36E-07
LA-140	8.12E-10
CE-141	1.77E-08
CE-143	1.31E-07
CE-144	5.34E-06

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	2.59E-02
MN-54	4.42E-03
FE-55	2.70E-02
CO-57	3.22E-04
CO-58	7.67E-02
FE-59	1.61E-03
CO-60	2.91E-02
ZN-65	5.82E-05
KR-85	1.05E-01
KR-85M	1.38E-05
KR-88	2.59E-05
SR-89	4.12E-03
SR-90	1.68E-04
SR-92	9.29E-05
NB-95	1.25E-02
ZR-95	6.75E-03
NB-97	3.46E-03
ZR-97	1.63E-04
MO-99	1.05E-04
TC-99M	1.07E-04
RU-103	4.15E-04
RU-106	2.05E-04
AG-110M	4.98E-03
SN-113	8.59E-04
SN-117M	1.80E-05
SB-124	9.22E-04
SB-125	2.02E-02
I-131	8.01E-03
XE-131M	4.05E-02
I-133	2.51E-03
XE-133	1.11E+00
XE-133M	6.11E-03
CS-134	2.17E-02
I-135	6.46E-04
XE-135	5.91E-03
CS-136	4.06E-04

Installation: San Onofre
Unit No.: 2A3

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
CS-137	3.86E-02
BA-140	1.94E-04
LA-140	2.47E-04
CE-141	1.34E-04
CE-144	6.69E-04
W-187	3.93E-04

Total Airborne Tritium Released	5.01E+01 Ci
Total Liquid Tritium Released	9.79E+02 Ci
Volume of Waste Released (Prior to Dilution)	7.28E+07 liters
Volume of Dilution Water Used During Period	2.66E+12 liters

Installation: San Onofre
Unit No.: 1&2&3

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-206
Thermal Power(MWH): 0.00E+00
Commercial Operation: 01/01/68
Cooling Water Source: Pacific Ocean

Licensee: Southern California Edison Co.
Licensed Power(MWT): 1.35E+03
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 06/14/67

Unit Number: 2 Type: PWR
Docket Number: 50-361
Thermal Power(MWH): 2.38E+07
Commercial Operation: 08/08/83
Cooling Water Source: Pacific Ocean

Licensee: Southern California Edison Co.
Licensed Power(MWT): 3.39E+03
Net Electrical Power(MWH): 7.65E+06
Initial Criticality: 07/26/82

Unit Number: 3 Type: PWR
Docket Number: 50-362
Thermal Power(MWH): 2.20E+07
Commercial Operation: 04/01/84
Cooling Water Source: Pacific Ocean

Licensee: Southern California Edison Co.
Licensed Power(MWT): 3.39E+03
Net Electrical Power(MWH): 7.12E+06
Initial Criticality: 08/29/83

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
6	Truck/Cask	Barnwell, SC
93	Truck/Trailer	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

	Annual
B	
C-14	2.01E+00
CO-58	2.58E+00
CO-60	7.06E+00
CS-134	7.70E+00
CS-137	3.01E+01
FE-55	3.90E+01
H-3	1.86E+00
I-129	5.96E-03
MM-54	1.89E-01
NI-63	7.86E+00
PU-241	1.31E+00
SB-125	1.63E-01
SR-90	2.89E-02
TC-99	8.55E-04
D	
C-14	4.39E+00
CO-58	2.16E+01
CO-60	9.79E+00
CR-51	2.46E+00
CS-137	3.82E-01
FE-55	4.81E+01
H-3	1.08E-01
I-129	6.65E-04
MM-54	1.81E+00

Installation: San Onofre
Unit No.: 1&2&3

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

D

NB-95	1.22E+00
NI-63	7.10E+00
PU-241	1.74E-01
SB-125	1.14E+00
SR-90	2.57E-02
TC-99	5.16E-04
ZR-95	1.83E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 Ci	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 7.14E+01 Ci 8.74E+00	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe) Filters	m3 2.12E+00 Ci 3.87E+01	

Installation: Seabrook
Unit No.: 1

Location: 13 Mi S Portsmouth, NH

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-443
Thermal Power(MWH): 2.69E+07
Commercial Operation: 06/19/90
Cooling Water Source: Atlantic Ocean

Licensee: North Atlantic
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 9.05E+06
Initial Criticality: 06/13/89

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.23E-02
NN-54	6.03E-08
CO-58	6.00E-07
KR-85M	2.23E-03
KR-87	6.32E-03
KR-88	5.77E-03
XE-133	2.02E-02
XE-133M	1.83E-04
XE-135	1.81E-02
XE-135M	1.55E-02
XE-138	1.87E-02

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	1.17E-04
NA-24	2.05E-05
CR-51	1.65E-04
NN-54	1.03E-03
FE-55	6.77E-02
CO-58	9.93E-03
FE-59	7.27E-04
CO-60	2.01E-03
BR-82	1.10E-04
ZR/NB-95	3.75E-05
NB-97	2.23E-05
TC-99M	3.44E-05
SB-124	7.14E-04
SB-125	8.83E-03
I-131	1.41E-04
I-133	1.18E-04
XE-135	1.17E-05
CS-137	3.30E-05

Total Airborne Tritium Released	6.33E-01 Ci
Total Liquid Tritium Released	5.63E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.68E+08 liters
Volume of Dilution Water Used During Period	7.90E+11 liters

Installation: Sequoyah
Unit No.: 1&2

Location: Daisy, TN

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: PWR
Docket Number: 50-327
Thermal Power(MWH): 3.92E+06
Commercial Operation: 07/01/81
Cooling Water Source: Chickamauga Lake
Unit Number: 2 Type: PWR
Docket Number: 50-328
Thermal Power(MWH): 6.58E+06
Commercial Operation: 06/01/82
Cooling Water Source: Chickamauga Lake

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 1.24E+06
Initial Criticality: 07/05/80

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 2.06E+06
Initial Criticality: 11/05/81

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.78E+00
BN-54	5.98E-08
CO-58	4.40E-06
CO-60	7.76E-06
KR-85	2.02E-01
KR-85M	4.23E-02
KR-87	2.94E-03
KR-88	2.46E-02
I-131	1.93E-06
XE-131M	1.61E-01
I-133	1.15E-06
XE-133	7.26E+01
XE-133M	2.36E-01
XE-135	1.98E+00
XE-135M	1.66E-02

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	2.46E-04
CR-51	1.58E-02
BN-54	1.38E-02
FE-55	1.67E-01
CO-57	3.73E-03
CO-58	4.73E-01
FE-59	2.04E-03
CO-60	1.76E-01
NI-65	1.51E-05
ZN-65	6.01E-02
ZN-69M	3.94E-06
KR-85	3.70E-03
KR-88	1.45E-05
SR-89	3.53E-04
SR-90	2.86E-04
SR-91	2.34E-05
Y-91	7.58E-03
Y-91M	2.07E-05
SR-92	5.39E-04
NB-95	5.65E-03
ZR-95	2.10E-03

Installation: Sequoyah
Unit No.: 1&2

Location: Daisy, TN

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
NB-97	1.26E-03
MO-99	1.74E-05
TC-99M	1.74E-05
RU-103	2.12E-04
AG-110M	3.23E-03
SB-124	3.70E-02
SB-125	3.14E-01
TE-129M	2.03E-03
I-131	9.68E-04
XE-131M	5.62E-05
TE-132	1.46E-04
I-133	1.45E-05
XE-133	8.37E-02
XE-133M	1.16E-03
CS-134	8.61E-02
XE-135	2.94E-03
CS-136	1.16E-04
CS-137	1.44E-01
CS-138	3.23E-04
BA-140	9.60E-05
LA-140	1.32E-04
CE-144	1.64E-03

Total Airborne Tritium Released	3.96E+01 Ci
Total Liquid Tritium Released	5.60E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.08E+07 liters
Volume of Dilution Water Used During Period	1.88E+09 liters

Installation: Sequoyah
Unit No.: 1&2

Location: Daisy, TN

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-327
Thermal Power(MWH): 3.92E+06
Commercial Operation: 07/01/81
Cooling Water Source: Chickamauga Lake

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 1.24E+06
Initial Criticality: 07/05/80

Unit Number: 2 Type: PWR
Docket Number: 50-328
Thermal Power(MWH): 6.58E+06
Commercial Operation: 06/01/82
Cooling Water Source: Chickamauga Lake

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 2.06E+06
Initial Criticality: 11/05/81

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
68	Motor Freight	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

CO-58	4.12E+00
CO-60	3.74E+01
CS-134	2.82E+00
CS-137	5.11E+00
FE-55	2.00E+01
HM-54	1.79E+00
NI-63	2.57E+01
SR-125	1.36E+00

B

BA/LA-140	1.46E+00
BE-7	2.07E+00
CO-58	3.06E+01
CO-60	1.31E+01
CR-51	9.71E+00
CS-134	2.86E+00
CS-137	3.74E+00
FE-55	2.25E+01
HM-54	1.91E+00
HB-95	4.66E+00
NI-63	3.71E+00
ZR-95	2.83E+00

D

CO-58	9.74E+00
CO-60	1.22E+01
CR-51	1.03E+00
FE-55	5.86E+01
HM-54	4.49E+00
NI-63	1.08E+01

Installation: Sequoyah
Unit No.: 142

Location: Daisy, TN

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.08E+01 Ci 1.70E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 3.80E+01 Ci 6.68E+00	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe) Mechanical Filters Floor Drain Media	m3 5.86E+00 Ci 6.26E+01	

Installation: Shoreham
Unit No.: 1

Location: Brookhaven, NY

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-322
Thermal Power(MWH): 0.00E+00
Commercial Operation:
Cooling Water Source: Long Island Sound

Licensee: Long Island Power Authority
Licensed Power(MWT): 2.44E+02
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 02/15/85

Liquid Effluents

Nuclide Released	Activity (Ci)	
FE-55	1.13E-08	
CO-60	1.33E-06	
SR-89	2.46E-05	
Volume of Waste Released (Prior to Dilution)		6.66E+06 liters
Volume of Dilution Water Used During Period		4.92E+08 liters

Installation: Shoreham
Unit No.: 1

Location: Brookhaven, NY

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-322
Thermal Power(MWH): 0.00E+00
Commercial Operation:
Cooling Water Source: Long Island Sound

Licensee: Long Island Power Authority
Licensed Power(MWT): 2.44E+02
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 02/15/85

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
1	Truck	Barnwell, SC
6	Truck	SEG, Oak Ridge, TN

Irradiated Fuel Shipments (Disposition)

Number of Shipments	Mode of Transportation	Destination
18	Barge/Train	Limerick Generat. Station/PA

Estimate of Major Nuclide Composition (%)
(by type of waste)

	Annual
A	
CO-60	5.80E+00
FE-55	5.96E+01
NI-63	3.31E+01
ZN-65	1.50E+00
B	
CO-60	1.87E+01
FE-55	1.40E+01
NI-63	6.51E+01
ZN-65	2.20E+00
C	
CO-60	4.76E+01
FE-55	4.91E+01
NI-63	2.70E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 3.16E+01 Ci 7.68E-01	Non-compacted
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.20E+02 Ci 8.51E-02	Non-compacted
C. Irradiated Components, Control Rods, etc.	m3 4.10E-01 Ci 1.90E+02	Burial Volume
D. Other (describe)	m3 Ci	

Installation: South Texas
Unit No.: 1

Location: 12 Mi SSW Bay City, TX

Effluent and Waste Disposal Annual Report for 1993

Type: PWR	Licensee: Houston Lighting & Power
Docket Number: 50-498	Licensed Power(MWT): 3.80E+03
Thermal Power(MWH): 2.08E+06	Net Electrical Power(MWH): 6.66E+05
Commercial Operation: 08/24/88	Initial Criticality: 03/08/88
Cooling Water Source: Main Cooling Reservoir	

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	5.77E-02
CO-60	4.84E-05
XE-133	2.41E+01

Liquid Effluents

Nuclide Released	Activity (Ci)
HA-24	4.94E-06
CR-51	1.20E-02
MN-54	2.01E-02
FE-55	1.45E-01
CO-57	2.49E-03
CO-58	2.10E-01
FE-59	2.08E-03
CO-60	1.07E-01
ZN-65	3.89E-04
NB-95	1.02E-02
ZR-95	4.50E-03
NE-97	6.92E-05
ZR-97	4.59E-05
MO-99	9.59E-07
TC-99M	9.76E-07
AG-110M	6.67E-03
SN-113	4.24E-04
SB-124	5.03E-03
SB-125	3.16E-02
TE-125M	8.88E-03
TE-129	2.44E-05
I-131	6.21E-06
XE-133	6.57E-03
XE-133M	9.88E-05
CS-134	2.72E-03
XE-135	2.56E-04
CS-137	4.12E-03
Unidentified	1.11E-04

Total Airborne Tritium Released	8.15E+00 Ci
Total Liquid Tritium Released	1.13E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.76E+07 liters
Volume of Dilution Water Used During Period	2.14E+10 liters

Installation: South Texas
Unit No.: 2

Location: 12 Mi SSW Bay City, TX

Effluent and Waste Disposal Annual Report for 1993

Type: PWR

Docket Number: 50-499

Thermal Power(MWH): 2.23E+06

Commercial Operation: 06/19/89

Cooling Water Source: Main Cooling Reservoir

Licenses: Houston Lighting & Power

Licensed Power(MWT): 3.80E+03

Net Electrical Power(MWH): 6.90E+05

Initial Criticality: 03/12/89

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	4.25E-02
CR-51	8.70E-05
MO-54	1.59E-05
CO-57	1.07E-06
CO-58	1.57E-04
FE-59	1.00E-05
CO-60	1.89E-04
NB-95	1.23E-05
ZR-95	8.66E-06
I-131	5.15E-06
I-133	7.89E-07
XE-133	1.78E+01
XE-133M	1.26E-03
XE-135	4.81E-04

Liquid Effluents

Nuclide Released	Activity (Ci)
AR-41	3.06E-05
CR-51	2.43E-03
MO-54	1.33E-02
FE-55	1.55E-01
CO-57	6.32E-04
CO-58	3.62E-02
FE-59	7.76E-04
CO-60	7.47E-02
ZM-65	1.54E-04
KR-85	8.73E-04
KR-85M	2.19E-04
KR-88	1.22E-05
NB-95	3.28E-04
ZR-95	6.75E-05
NB-97	5.05E-05
AG-110M	3.27E-03
SN-113	2.61E-05
SB-124	6.13E-04
SB-125	4.96E-03
XE-131M	6.57E-03
XE-133	1.07E+00
XE-133M	1.81E-02
CS-134	7.02E-04
XE-135	3.02E-02
CS-137	1.32E-03
Unidentified	1.16E-05

Installation: South Texas
Unit No.: 2

Location: 12 Mi SSW Bay City, TX

Effluent and Waste Disposal Annual Report for 1993

Total Airborne Tritium Released	6.46E+00 Ci
Total Liquid Tritium Released	1.13E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.62E+07 liters
Volume of Dilution Water Used During Period	1.56E+10 liters

Installation: South Texas
Unit No.: 1a2

Location: 12 Mi SSW Bay City, TX

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR Licensee: Houston Lighting & Power
Docket Number: 50-498 Licensed Power(MWT): 3.90E+03
Thermal Power(MWH): 2.08E+06 Net Electrical Power(MWH): 6.66E+05
Commercial Operation: 06/24/88 Initial Criticality: 03/08/88
Cooling Water Source: Main Cooling Reservoir

Unit Number: 2 Type: PWR Licensee: Houston Lighting & Power
Docket Number: 50-499 Licensed Power(MWT): 3.90E+03
Thermal Power(MWH): 2.23E+06 Net Electrical Power(MWH): 6.90E+05
Commercial Operation: 06/19/89 Initial Criticality: 03/12/89
Cooling Water Source: Main Cooling Reservoir

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
7	Truck	CNSI, Barnwell, SC
1	Truck	Quadrex, Oak Ridge, TN
13	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

	Annual
A	
CO-58	2.06E+00
CO-60	8.30E+00
FE-55	6.87E+01
NI-63	2.01E+01
B	
CO-58	6.80E+00
CO-60	1.15E+01
CA-51	5.17E+00
FE-55	6.45E+01
NI-63	6.24E+00
C	
CO-60	2.08E+01
FE-55	7.13E+01
MN-54	5.17E+00
NI-63	2.77E+00

Installation: South Texas
Unit No.: 1&2

Location: 12 Mi SSW Bay City, TX

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 2.77E+01 Ci 4.23E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 2.79E+01 Ci 1.53E+00	
C. Irradiated Components, Control Rods, etc.	m3 6.20E-01 Ci 5.88E+03	
D. Other (describe)	m3 Ci	

Installation: St. Lucie
Unit No.: 1

Location: 8 Mi S Ft. Pierce, FL

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-335
Thermal Power(MWH): 2.26E+07
Commercial Operation: 12/21/76
Cooling Water Source: Atlantic Ocean

Licensee: Florida Power & Light
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 7.14E+06
Initial Criticality: 04/22/76

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	7.61E-01
CO-60	6.49E-05
KR-85	1.98E+01
KR-85M	5.91E-01
KR-87	1.07E-02
KR-88	2.41E-01
SR-90	1.13E-06
Y-90	1.13E-06
MO-99	5.40E-05
I-131	1.99E-03
XE-131M	5.50E-01
I-132	1.33E-02
I-133	2.84E-03
XE-133	2.07E+02
XE-133M	3.44E+00
CS-134	9.15E-06
XE-135	2.83E+01
XE-135M	1.50E-03
CS-137	1.07E-05

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	8.49E-04
AR-41	4.85E-05
CR-51	7.29E-02
MN-54	6.06E-03
FE-55	2.80E-01
CO-57	1.24E-04
CO-58	8.02E-02
FE-59	3.33E-03
CO-60	5.43E-02
KR-85	7.32E-03
KR-85M	2.72E-05
RB-88	1.94E-04
SR-89	6.36E-04
SR-90	9.16E-04
Y-90	9.16E-04
SR-91	7.27E-05
NB-95	3.04E-02
ZR-95	1.75E-02
NB-97	6.21E-03
TC-99M	3.78E-05
RU-103	3.40E-04
AG-110	5.47E-03

Installation: St. Lucia
Unit No.: 1

Location: 8 Mi S Ft. Pierce, FL

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
SN-113	1.69E-03
SB-122	2.25E-03
SB-124	3.45E-02
SB-125	7.62E-02
TE-129	1.44E-03
TE-129M	3.07E-04
I-131	1.56E-03
KE-131M	2.00E-03
I-132	1.28E-04
TE-132	9.07E-05
I-133	6.28E-04
KE-133	5.02E-01
KE-133M	7.21E-03
CS-134	2.89E-02
I-135	1.34E-04
KE-135	6.47E-03
KE-135M	5.63E-05
CS-136	1.02E-04
CS-137	4.39E-02
CS-138	2.17E-04
BA-140	3.68E-05
LA-140	1.08E-03
CE-144	4.78E-04
W-187	1.13E-03
NP-239	5.49E-05

Total Airborne Tritium Released	1.60E+01 Ci
Total Liquid Tritium Released	2.58E+02 Ci
Volume of Waste Released (Prior to Dilution)	5.71E+06 liters
Volume of Dilution Water Used During Period	1.73E+12 liters

Installation: St. Lucie
Unit No.: 2

Location: 8 Mi S Ft. Pierce, FL

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-389
Thermal Power(MWH): 1.73E+07
Commercial Operation: 08/08/83
Cooling Water Source: Atlantic Ocean

Licenses: Florida Power & Light
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 5.43E+06
Initial Criticality: 06/02/83

Airborne Effluents:

Nuclide Released	Activity (Ci)
AR-41	1.56E+00
CO-60	2.19E-05
KR-85	8.83E-02
KR-85M	2.41E-01
KR-87	8.66E-03
KR-88	9.23E-02
SR-90	4.96E-08
Y-90	4.96E-08
I-131	4.71E-04
XE-131M	1.12E-01
I-132	6.34E-04
I-133	4.09E-03
XE-133	6.38E+01
XE-133M	5.13E-01
I-135	1.40E-03
XE-135	1.96E+01
CS-136	2.57E-06
CS-137	1.01E-05

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	8.49E-04
AR-41	4.85E-05
CR-51	6.37E-02
MS-54	5.71E-03
FE-55	2.42E-01
CO-57	1.24E-04
CO-58	7.43E-02
FE-59	2.82E-03
CO-60	4.99E-02
KR-85	7.32E-03
KR-85M	2.72E-05
RB-88	1.94E-04
SR-89	5.77E-04
SR-90	9.13E-04
Y-90	9.13E-04
SR-91	7.27E-05
ZR-95	1.32E-02
NB-95	2.66E-02
ZR-95	2.31E-03
NB-97	6.21E-03
TC-99M	3.79E-05
RU-103	3.17E-04
AG-110	5.37E-03

Installation: St. Lucie
Unit No.: 2

Location: 8 Mi S Ft. Pierce, FL

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
SN-113	1.47E-03
SB-122	2.25E-03
SB-124	3.31E-02
SB-125	7.38E-02
TE-129	1.44E-03
TE-129M	3.07E-04
I-131	1.56E-03
KE-131M	2.00E-03
I-132	1.28E-04
TE-132	9.07E-05
I-133	5.28E-04
KE-133	5.82E-01
KE-133M	7.21E-03
CS-134	2.55E-02
I-135	1.34E-04
KE-135	6.47E-03
KE-135M	5.63E-05
CS-136	1.82E-04
CS-137	3.89E-02
CS-138	2.17E-04
BA-140	3.68E-05
LA-140	1.08E-03
CE-144	4.78E-04
W-187	1.13E-03
NP-239	5.49E-05

Total Airborne Tritium Released	8.96E+00 Ci
Total Liquid Tritium Released	2.51E+02 Ci
Volume of Waste Released (Prior to Dilution)	5.50E+06 liters
Volume of Dilution Water Used During Period	1.73E+12 liters

Installation: St. Lucie
Unit No.: 1&2

Location: 8 Mi S Ft. Pierce, FL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-335
Thermal Power(MWH): 2.26E+07
Commercial Operation: 12/21/76
Cooling Water Source: Atlantic Ocean

Licensee: Florida Power & Light
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 7.14E+06
Initial Criticality: 04/22/76

Unit Number: 2 Type: PWR
Docket Number: 50-389
Thermal Power(MWH): 1.73E+07
Commercial Operation: 08/09/83
Cooling Water Source: Atlantic Ocean

Licensee: Florida Power & Light
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 5.43E+06
Initial Criticality: 06/02/83

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
12	Truck	Barnwell, SC
5	Truck	Quadrex, Oak Ridge, TN
9	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

BE-7		1.81E+00
CO-58	4.48E+01	4.89E+00
CO-60	3.85E+00	1.75E+01
CR-51		9.90E-01
CS-134	9.43E+00	1.19E+01
CS-137	1.76E+01	1.31E+01
FE-55	1.42E+01	3.49E+01
I-131	1.18E+00	1.42E+00
MY-54	2.58E+00	2.28E+00
NB-95		1.08E+00
NI-63	5.08E+00	7.45E+00
SB-125		7.70E-01
ZR-95		7.70E-01

B

AQ-110M		1.66E+00
C-14		1.14E+00
CO-58	1.52E+01	4.39E+00
CO-60	2.52E+01	2.93E+01
CR-51	8.10E-01	
CS-134	3.10E+00	5.74E+00
CS-137	1.20E+01	1.58E+01
FE-55	2.40E+01	2.56E+01
MY-54	1.20E+00	1.66E+00
NB-95	2.47E+00	
NI-63	1.03E+01	1.17E+01
SB-125	1.94E+00	2.14E+00
ZR-95	2.05E+00	

Installation: St. Lucie
Unit No.: 1a2

Location: 8 Mi S Ft. Pierce, FL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

C

CO-58	1.18E+00
CO-60	3.53E+01
FE-55	5.52E+01
MN-54	5.72E+00
NI-63	2.50E+00

D

C-14		1.13E+00
CE-144	9.70E-01	
CO-58	4.85E+00	7.09E+00
CO-60	6.57E+01	2.96E+01
CS-134		3.01E+00
CS-137	7.50E-01	6.72E+00
FE-55	2.21E+01	4.16E+01
MN-54	6.70E-01	
NB-95		1.84E+00
NI-63	2.81E+00	1.18E+01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 4.32E+01 C1 4.77E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 4.11E+01 C1 1.81E+01	
C. Irradiated Components, Control Rods, etc.	m3 1.64E+00 C1 1.19E+04	
D. Other (describe)		
Non-Compressible Metal	m3 2.11E+00 C1 2.45E-01	

Installation: Sumner
Unit No.: 1

Location: 26 Mi NW Columbia, SC

Effluent and Waste Disposal Annual Report for 1993

Type: FWR

Licensee: South Carolina Electric & Gas
Co.

Docket Number: 50-395

Licensed Power(MWT): 2.77E+03

Thermal Power(MWH): 1.92E+07

Net Electrical Power(MWH): 6.10E+06

Commercial Operation: 01/01/84

Initial Criticality: 10/22/82

Cooling Water Source: Monticello Reservoir

Airborne Effluents

Nuclide Released	Activity (Ci)
NA-24	3.02E-06
AR-41	5.97E-01
CR-51	1.60E-05
MN-54	1.82E-06
CO-58	2.12E-05
CO-60	1.04E-05
BR-82	2.13E-06
KR-85	2.05E+00
KR-85M	1.40E-01
KR-87	2.34E-03
KR-88	9.03E-02
RB-88	5.16E-04
NB-95	4.33E-06
ZR-95	1.43E-05
MO-99	7.10E-06
TC-99M	1.25E-06
I-131	4.26E-03
XE-131M	8.58E-01
I-132	2.87E-04
I-133	1.40E-03
XE-133	2.29E+02
XE-133M	2.62E+00
CS-134	2.19E-05
I-135	1.73E-04
XE-135	7.95E+00
XE-135M	1.81E-03
CS-136	9.07E-06
CS-137	2.87E-05
XE-138	4.14E-03
BA/LA-140	4.16E-06

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	7.83E-03
AR-41	2.14E-06
CR-51	1.98E-02
MN-54	7.83E-03
FE-55	9.59E-03
CO-57	2.05E-04
CO-58	3.28E-02
FE-59	3.09E-03
CO-60	4.07E-02
ZM-65	2.63E-04

Installation: Summer
Unit No.: 1

Location: 26 Mi NW Columbia, SC

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
KR-85	1.76E-03
KR-85M	6.49E-04
KR-89	4.66E-05
RB-89	1.71E-04
SR-89	7.65E-06
SR-90	2.13E-05
ZR/NB-95	7.75E-03
TC-99M	6.76E-03
RU-103	1.31E-04
RU-106	3.16E-04
AG-110M	6.99E-04
SN-113	2.00E-04
SN-117M	1.16E-05
SB-122	5.69E-06
SB-124	1.25E-03
SB-125	1.51E-02
SB-126	4.27E-06
I-131	7.11E-03
XE-131M	3.01E-02
I-132	9.94E-04
TE-132	2.35E-05
I-133	1.35E-02
XE-133	2.73E+00
XE-133M	2.51E-02
CS-134	1.55E-03
I-134	7.33E-04
I-135	1.01E-02
XE-135	1.89E-02
CS-136	5.64E-05
CS-137	3.33E-03
CS-138	1.01E-03
BA/LA-140	1.07E-04
CE-144	5.87E-05

Total Airborne Tritium Released	2.24E+00 Ci
Total Liquid Tritium Released	4.79E+02 Ci
Volume of Waste Released (Prior to Dilution)	1.14E+08 liters
Volume of Dilution Water Used During Period	1.41E+12 liters

Installation: Sumner
Unit No.: 1

Location: 26 Mi NW Columbia, SC

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR

Licensee: South Carolina Electric & Gas
Co.

Docket Number: 50-395

Licensed Power(MWT): 2.77E+03

Thermal Power(MWH): 1.92E+07

Net Electrical Power(MWH): 6.10E+06

Commercial Operation: 01/01/84

Initial Criticality: 10/22/83

Cooling Water Source: Monticello Reservoir

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
62	Truck	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

CO-58	4.80E+00	1.46E+01
CO-60	2.34E+01	1.20E+01
CS-134	7.47E+00	1.42E+01
CS-137	7.69E+00	2.27E+01
FE-55	2.68E+01	1.19E+01
MN-54		6.70E+00
NI-63	2.68E+01	1.42E+01
SB-125		1.39E+00

B

CO-58	2.44E+00	2.30E+00
CO-60	1.53E+01	1.54E+01
CS-134	4.61E+00	4.60E+00
CS-137	1.05E+01	1.06E+01
FE-55	4.99E+01	5.00E+01
MN-54	2.69E+00	2.70E+00
NI-63	1.18E+01	1.19E+01

Type of Waste

Unit

Description

A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 8.24E+01	Non-compacted Burial Volume
	ci 1.21E+02	

B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 2.56E+01	Compacted Burial Volume
	ci 3.39E+00	

C. Irradiated Components, Control Rods, etc.	m3	
	ci	

D. Other (describe)	m3	
	ci	

Installation: Surry
Unit No.: 1&2

Location: 19 Mi NW Newport News, VA

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: PWR
Docket Number: 50-280
Thermal Power(MWH): 1.95E+07
Commercial Operation: 12/22/73
Cooling Water Source: James River
Unit Number: 2 Type: PWR
Docket Number: 50-281
Thermal Power(MWH): 1.43E+07
Commercial Operation: 05/01/73
Cooling Water Source: James River

Licensee: Virginia Electric & Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 6.23E+06
Initial Criticality: 07/01/73

Licensee: Virginia Electric & Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 4.54E+06
Initial Criticality: 03/07/73

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	9.49E-02
CO-57	2.91E-07
CO-58	2.04E-05
CO-60	5.10E-05
SE-75	3.07E-05
KR-85	8.87E-01
KR-85M	3.14E-03
KR-87	6.68E-04
KR-88	4.49E-04
RB-88	1.67E-03
SB-125	2.25E-08
I-131	6.11E-04
XE-131M	7.09E-02
I-132	5.87E-04
TE-132	7.52E-06
I-133	3.80E-04
XE-133	3.66E+01
XE-133M	1.57E-01
XE-135	3.68E+00
XE-135M	1.30E-02
CS-137	7.25E-03
CS-138	7.00E-04
XE-138	1.02E-03
CE-144	4.84E-09

Liquid Effluents

Nuclide Released	Activity (Ci)
CO-58	5.18E-05
CO-60	9.29E-03
NB-95	1.53E-07
ZR-95	1.08E-07
SB-125	4.40E-05
CS-134	7.65E-05
CS-137	1.13E-02

Total Airborne Tritium Released	2.31E+01 Ci
Total Liquid Tritium Released	1.32E+03 Ci
Volume of Waste Released (Prior to Dilution)	1.11E+08 liters
Volume of Dilution Water Used During Period	2.47E+12 liters

Installation: Surry
Unit No.: 1&2

Location: 19 Mi NW Newport News, VA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-280
Thermal Power(MWH): 1.95E+07
Commercial Operation: 12/22/72
Cooling Water Source: James River

Licenses: Virginia Electric & Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 6.23E+06
Initial Criticality: 07/01/72

Unit Number: 2 Type: PWR
Docket Number: 50-281
Thermal Power(MWH): 1.43E+07
Commercial Operation: 05/01/73
Cooling Water Source: James River

Licenses: Virginia Electric & Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 4.54E+06
Initial Criticality: 03/07/73

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
24	Truck	Barnwell, SC
13	Truck	Oak Ridge, TN
4	Truck	Wampum, PA

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

CD-109		1.85E+00
CO-58	7.60E+00	2.20E+01
CO-60	5.07E+01	2.80E+01
CS-137		3.26E+00
FE-55	7.33E+00	9.12E+00
MN-54	2.15E+00	
NB-95		3.75E+00
NI-63	3.00E+01	2.24E+01
SB-125		1.36E+00
ZR-95		3.20E+00

B

CO-58	9.22E+00	5.42E+00
CO-60	3.55E+01	4.38E+01
CR-51		3.79E+00
CS-137	8.89E+00	6.55E+00
FE-55	2.22E+01	1.95E+01
FE-59		1.58E+00
H-3	3.22E+00	2.41E+00
NB-95	4.23E+00	2.06E+00
NI-63	1.42E+01	1.22E+01
ZR-95	2.20E+00	1.91E+00

Installation: Surry
Unit No.: 1&2

Location: 19 Mi NW Newport News, VA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 4.64E+01	Actual Burial Volume
	m3 7.68E+01	Before Volume Reduction
	m3 7.55E+01	Actual Burial Volume
	ci 5.58E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 8.47E+02	Before Offsite Processing
	m3 9.08E+01	Actual Burial Volume
	ci 3.92E+00	
C. Irradiated Components, Control Rods, etc.	m3	
	ci	
D. Other (describe)	m3	
	ci	

Installation: Susquehanna
Unit No.: 1&2

Location: 7 Mi NE Berwick, PA

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: BWR
Docket Number: 50-387
Thermal Power(MWT): 1.67E+07
Commercial Operation: 06/08/83
Cooling Water Source: Susquehanna River
Unit Number: 2 Type: BWR
Docket Number: 50-388
Thermal Power(MWT): 2.63E+07
Commercial Operation: 02/12/85
Cooling Water Source: Susquehanna River

Licensee: Pennsylvania Power & Light
Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWE): 5.20E+06
Initial Criticality: 09/10/82
Licensee: Pennsylvania Power & Light
Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWE): 8.34E+06
Initial Criticality: 05/08/84

Airborne Effluents

Nuclide Released	Activity (Ci)
MM-54	5.03E-04
CO-58	6.11E-05
CO-60	4.90E-04
ZN-65	2.32E-04
SR-90	2.60E-07
I-131	6.74E-09
XE-133	1.69E+01

Liquid Effluents

Nuclide Released	Activity (Ci)
F-18	5.65E-07
NA-24	7.44E-07
CR-51	2.70E-03
MM-54	1.24E-02
FE-55	1.38E-02
CO-58	1.00E-03
FE-59	1.27E-03
CO-60	1.62E-02
ZN-65	1.41E-03
AS-76	3.28E-05
KR-88	1.19E-06
SR-89	8.82E-06
SR-92	1.05E-06
MO-99	1.30E-06
TC-99M	4.30E-06
AG-110M	3.30E-04
I-131	5.08E-07
TE-131	4.01E-12
XE-131M	8.19E-05
XE-133	3.52E-04
XE-133M	3.36E-06
CS-134	6.86E-07
XE-135	1.93E-04
CS-137	2.91E-05
CS-141	5.58E-07
ND-147	1.07E-06

Installation: Susquehanna
Unit No.: 1&2

Location: 7 Mi NE Berwick, PA

Effluent and Waste Disposal Annual Report for 1993

Total Airborne Tritium Released	4.36E+01 Ci
Total Liquid Tritium Released	6.79E+01 Ci
Volume of Waste Released (Prior to Dilution)	1.06E+07 liters
Volume of Dilution Water Used During Period	1.42E+10 liters

Installation: Susquehanna
Unit No.: 1&2

Location: 7 Mi NE Berwick, PA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: BWR
Docket Number: 50-387
Thermal Power(MWH): 1.67E+07
Commercial Operation: 06/08/83
Cooling Water Source: Susquehanna River

Licensee: Pennsylvania Power & Light
Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 5.20E+06
Initial Criticality: 09/10/82

Unit Number: 2 Type: BWR
Docket Number: 50-388
Thermal Power(MWH): 2.63E+07
Commercial Operation: 02/12/85
Cooling Water Source: Susquehanna River

Licensee: Pennsylvania Power & Light
Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 8.34E+06
Initial Criticality: 05/08/84

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
41	Truck	Barnwell, SC
20	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

AG-110M	6.52E-02
AM-241	2.79E-05
C-14	8.83E-02
CE-144	5.19E-04
CM-242	3.25E-06
CM-244	2.05E-05
CO-57	6.40E-04
CO-58	1.44E+00
CO-60	2.94E+01
CR-51	2.66E+00
CS-134	2.08E-04
CS-137	7.31E-03
FE-55	2.43E+01
FE-59	1.77E+00
H-3	9.76E-02
HF-181	7.16E-03
I-131	2.20E-03
LA-140	2.00E-03
MO-54	3.40E+01
NA-24	5.74E-05
NB-95	5.73E-03
NI-63	4.24E-01
NI-65	1.71E-06
PU-238	5.45E-05
PU-239	4.07E-05
PU-241	4.58E-03
SB-124	2.75E-02
SR-89	3.12E-06

Installation: Susquehanna
Unit No.: 1&2

Location: 7 Mi NE Berwick, PA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

A		
SR-90		7.08E-05
TC-99		1.64E-03
XE-131M		1.57E-05
ZN-65		5.99E+00
B		
C-14		1.70E-01
CO-58		9.40E-01
CO-60		1.39E+01
CR-51		7.90E-01
FE-55		1.53E+01
FE-59		6.57E+00
H-3		6.98E+00
I-129		1.40E-01
MN-54		5.22E+01
NI-63		3.20E-01
PU-241		5.00E-02
TC-99		5.00E-02
ZN-65		2.62E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 2.40E+02 Ci 6.11E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 3.25E+01 Ci 6.79E-01	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Three Mile Island
Unit No.: 1

Location: 10 Mi SE Harrisburg, PA

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-289
Thermal Power(MWH): 1.18E+07
Commercial Operation: 09/02/74
Cooling Water Source: Susquehanna River

Licensee: GPU Nuclear Group
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 5.96E+06
Initial Criticality: 06/05/74

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.95E+00
CO-58	1.89E-07
KR-85	1.13E+02
KR-85M	1.17E+01
KR-87	1.07E+01
KR-88	2.27E+01
I-131	7.37E-03
XE-131M	2.68E+01
I-133	3.84E-03
XE-133	2.08E+03
XE-133M	1.30E+01
CS-134	1.33E-06
XE-135	1.01E+02
XE-135M	8.01E+00
CS-137	2.62E-06
XE-138	6.93E+00

Liquid Effluents

Nuclide Released	Activity (Ci)
FE-55	8.69E-04
CO-58	1.04E-03
CO-60	2.16E-05
KR-85M	4.98E-06
SR-89	3.40E-05
SR-90	1.38E-04
AG-110M	6.96E-05
SB-125	5.81E-05
I-131	2.68E-02
XE-131M	6.76E-03
I-133	2.05E-03
XE-133	4.25E-01
XE-133M	2.66E-03
CS-134	2.55E-02
XE-135	6.49E-02
XE-135M	3.21E-06
CS-136	1.95E-03
CS-137	2.96E-02
LA-140	4.63E-05

Total Airborne Tritium Released	1.52E+01 Ci
Total Liquid Tritium Released	3.76E+02 Ci
Volume of Waste Released (Prior to Dilution)	5.00E+07 liters
Volume of Dilution Water Used During Period	4.47E+10 liters

Installation: Three Mile Island
Unit No.: 1

Location: 10 Mi SE Harrisburg, PA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR
Docket Number: 50-289
Thermal Power(MWH): 1.18E+07
Commercial Operation: 09/02/74
Cooling Water Source: Susquehanna River

Licenses: GPU Nuclear Group
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 5.96E+06
Initial Criticality: 06/05/74

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
4	Tractor	CNSI, Barnwell, SC
1	Tractor	Quadrex, Oak Ridge, TN
19	Tractor	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A		
	CO-58	4.63E+00
	CS-137	7.99E+00
	H-3	7.76E+01
	NI-63	4.80E+00
B		
	CO-58	3.21E+01
	CO-60	2.89E+00
	CS-137	2.75E+01
	FE-55	2.49E+01
	NI-63	8.83E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 7.04E+01 Ci 5.19E+00	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 5.44E+02 Ci 2.40E+00	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Three Mile Island
Unit No.: 2

Location: 10 Mi SE Harrisburg, PA

Effluent and Waste Disposal Annual Report for 1993

Type: PWR

Licensee: Metropolitan Edison & Jersey
Central Power & Light

Docket Number: 50-320

Licensed Power (MW): 2.77E+03

Thermal Power (MW): 0.00E+00

Net Electrical Power (MW): 0.00E+00

Commercial Operation: 12/30/78

Initial Criticality: 03/28/78

Cooling Water Source: Susquehanna River

Airborne Effluents

Nuclide Released	Activity (Ci)
C-14	5.91E-02
CO-58	3.44E-08
KR-85	4.41E-02
SR-90	2.93E-07
CS-134	1.19E-07
CS-137	2.06E-06

Liquid Effluents

Nuclide Released	Activity (Ci)
SR-90	6.90E-04
CS-137	7.77E-05

Total Airborne Tritium Released	1.68E+02 Ci
Total Liquid Tritium Released	1.59E-02 Ci
Volume of Waste Released (Prior to Dilution)	8.76E+05 liters
Volume of Dilution Water Used During Period	6.96E+10 liters

Installation: Three Mile Island
Unit No.: 2

Location: 10 Mi SE Harrisburg, PA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR

Licenses: Metropolitan Edison & Jersey
Central Power & Light

Docket Number: 50-320

Licensed Power (MWT): 2.77E+03

Thermal Power (MWH): 0.00E+00

Net Electrical Power (MWH): 0.00E+00

Commercial Operation: 12/30/78

Initial Criticality: 03/28/78

Cooling Water Source: Susquehanna River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
5	Tractor	CNSI, Barnwell, SC
2	Tractor	Quadrex, Oak Ridge, TN
10	Tractor	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

CS-137	8.50E+01
PM-147	1.04E+00
RU-106	4.70E-01
SR-90	1.21E+01

B

CS-137	1.61E+01
H-3	2.45E+01
NI-63	5.40E+00
PU-241	5.02E+00
SR-90	4.16E+01

m3
Ci

Type of Waste

Unit

Description

A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc. m3 7.66E+00
Ci 3.24E+02

B. Dry Compressible Waste, Contaminated Equipment, etc. m3 5.28E+02
Ci 7.46E+00

C. Irradiated Components, Control Rods, etc. m3
Ci

D. Other (describe) m3
Ci

Installation: Trojan
Unit No.: 1

Location: 43 Mi NW Portland, OR

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-344
Thermal Power(MWH): 0.00E+00
Commercial Operation: 05/20/76
Cooling Water Source: Columbia River

Licenses: Portland General Electric
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWE): 0.00E+00
Initial Criticality: 12/15/75

Airborne Effluents

Nuclide Released	Activity (Ci)
KR-85	1.72E+01
XE-131M	1.21E-03
XE-133	3.62E+01
XE-133M	4.29E-03

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-22	4.98E-06
CR-51	2.60E-03
MN-54	2.06E-03
FE-55	2.83E-02
CO-57	1.55E-04
CO-58	9.23E-03
FE-59	6.41E-05
CO-60	3.01E-02
SR-89	2.42E-04
SR-90	2.90E-05
NB-95	1.58E-03
ZR-95	4.97E-04
RU-103	3.91E-04
RU-106	9.64E-03
AG-110M	2.13E-03
SN-113	1.76E-04
SB-124	1.76E-05
SB-125	1.11E-02
CS-134	9.96E-04
CS-137	3.96E-03
CE-144	2.77E-03
Unidentified	1.35E-04

Total Airborne Tritium Released	4.33E+01 Ci
Total Liquid Tritium Released	1.22E+03 Ci
Volume of Waste Released (Prior to Dilution)	1.81E+07 liters
Volume of Dilution Water Used During Period	7.02E+10 liters

Installation: Trojan
Unit No.: 1

Location: 43 MI NW Portland, OR

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: FWR
Docket Number: 50-344
Thermal Power(MWH): 0.00E+00
Commercial Operation: 05/20/76
Cooling Water Source: Columbia River

Licensee: Portland General Electric
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 12/15/75

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
5	Exclusive Use Truck	SBG, Oak Ridge, TN
17	Exclusive Use Truck	U.S. Ecology, Richland, WA

Estimate of Major Nuclide Composition (%)
(by type of waste)

	Jan-June	Jul-Dec
A		
AG-110M	1.00E-01	
C-14	5.00E-01	1.00E-01
CE-144	3.00E-01	
CO-58	5.50E+00	1.30E+01
CO-60	1.48E+01	2.84E+01
CR-51	9.00E-01	
CS-134	2.00E-01	3.30E+00
CS-137	1.30E+00	7.10E+00
FE-55	4.41E+01	8.40E+00
H-3	4.30E+00	6.00E-01
MN-54	2.50E+00	1.90E+00
NB-95	3.00E-01	
NI-63	2.23E+01	3.65E+01
PU-241	1.00E+00	5.00E-01
RU-106	1.20E+00	
SB-125	5.00E-01	
SR-90	1.00E-01	2.00E-01
ZR-95	3.00E-01	
B		
C-14	5.00E-01	1.10E+00
CE-144	1.10E+00	5.00E-01
CO-58	1.37E+01	1.40E+00
CO-60	9.80E+00	7.50E+00
CR-51	5.00E+00	
CS-137	1.00E-01	3.00E-01
FE-55	4.81E+01	2.74E+01
H-3	9.00E-01	4.89E+01
MN-54	3.20E+00	1.50E+00
NB-95	1.80E+00	
NI-63	1.11E+01	8.30E+00
PU-241	4.00E-01	4.00E-01
RU-106	1.50E+00	7.00E-01
SB-125	4.00E-01	5.00E-01
SR-89		1.20E+00
SR-90		2.00E-01
ZR-95	2.50E+00	

Installation: Trojan
Unit No.: 1

Location: 43 Mi NW Portland, OR

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 2.99E+01 Ci 3.89E+02	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.03E+02 Ci 1.04E+00	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Turkey Point
Unit No.: 3

Location: 10 Mi E Florida City, FL

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-250
Thermal Power(MWH): 1.18E+07
Commercial Operation: 12/14/72
Cooling Water Source: Closed Cycle Canal

Licensee: Florida Power & Light
Licensed Power(MWT): 2.20E+03
Net Electrical Power(MWH): 3.59E+06
Initial Criticality: 10/20/72

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-58	8.50E-07
BR-82	1.48E-05
KR-85M	1.11E-03
I-131	1.13E-03
XE-131M	2.88E+00
I-133	2.66E-04
XE-133	2.21E+02
XE-133M	1.60E-01
XE-135	6.63E+00
CS-137	9.35E-07

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	4.13E-04
MN-54	1.72E-02
FE-55	1.09E-01
CO-57	6.70E-05
CO-58	4.98E-02
FE-59	3.57E-05
CO-60	2.56E-02
KR-85	3.14E-03
SR-89	1.27E-02
SR-90	3.55E-03
NB-95	6.00E-04
ZR-97	1.08E-04
MO-99	3.11E-05
AG-110	6.53E-03
SB-124	3.08E-04
SB-125	4.27E-03
I-131	1.69E-03
I-133	5.63E-05
XE-133	1.90E-02
CS-134	9.36E-04
CS-137	5.49E-03
LA-140	1.55E-04
CE-141	3.60E-07
W-187	4.21E-04

Total Airborne Tritium Released	5.28E+00 Ci
Total Liquid Tritium Released	2.57E+02 Ci
Volume of Waste Released (Prior to Dilution)	4.57E+06 liters
Volume of Dilution Water Used During Period	1.12E+11 liters

Installation: Turkey Point
Unit No.: 4

Location: 10 Mi E Florida City, FL

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-251
Thermal Power(MWH): 7.14E+06
Commercial Operation: 09/07/73
Cooling Water Source: Closed Cycle Canal

Licensee: Florida Power & Light
Licensed Power(MWT): 2.20E+03
Net Electrical Power(MWH): 2.09E+06
Initial Criticality: 06/11/73

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-58	8.50E-07
BR-82	1.48E-05
KR-85M	5.11E-03
I-131	1.13E-03
XE-131M	2.99E+00
I-133	2.66E-04
XE-133	2.12E+02
XE-133M	2.02E-01
XE-135	6.61E+00
CS-137	9.34E-07

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	4.13E-04
MN-54	1.72E-02
FE-55	1.09E-01
CO-57	6.70E-05
CO-58	4.98E-02
FE-59	3.57E-05
CO-60	2.56E-02
KR-85	3.14E-03
SR-89	1.27E-02
SR-90	3.55E-03
NR-95	6.00E-04
ZR-97	1.08E-04
MO-99	3.11E-05
RU-103	3.11E-05
AG-110	6.53E-03
SB-124	3.08E-04
SB-125	4.27E-03
I-131	1.69E-03
I-133	5.63E-05
XE-133	1.90E-02
CS-134	9.36E-04
CS-137	5.49E-03
LA-140	1.55E-04
CE-141	3.60E-07
W-187	4.21E-04

Total Airborne Tritium Released	2.99E+00 Ci
Total Liquid Tritium Released	2.57E+02 Ci
Volume of Waste Released (Prior to Dilution)	4.57E+06 liters
Volume of Dilution Water Used During Period	1.12E+11 liters

Installation: Turkey Point
Unit No.: 3&4

Location: 10 Mi E Florida City, FL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 3 Type: PWR
Docket Number: 50-250
Thermal Power(MWH): 1.18E+07
Commercial Operation: 12/14/72
Cooling Water Source: Closed Cycle Canal

Licensee: Florida Power & Light
Licensed Power(MWT): 2.20E+03
Net Electrical Power(MWH): 3.59E+06
Initial Criticality: 10/20/72

Unit Number: 4 Type: PWR
Docket Number: 50-251
Thermal Power(MWH): 7.14E+06
Commercial Operation: 09/07/73
Cooling Water Source: Closed Cycle Canal

Licensee: Florida Power & Light
Licensed Power(MWT): 2.20E+03
Net Electrical Power(MWH): 2.09E+06
Initial Criticality: 06/11/73

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
11	Sole Use Truck	Barnwell, SC
17	Sole Use Truck	Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

CO-55	8.00E+00
CO-60	3.00E+01
CR-134	4.00E+00
CS-137	8.00E+00
FE-54	2.00E+00
FE-59	2.90E+01
H-3	1.00E+00
NI-63	1.60E+01

B

CO-58	2.00E+00
CO-60	3.30E+01
CS-137	2.00E+00
FE-55	4.50E+01
NI-63	1.60E+01
SB-125	1.00E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 3.76E+01 Ci 1.40E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 5.29E+01 Ci 5.18E-01	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Vermont Yankee
Unit No.: 1

Location: 5 Mi S Brattleboro, VT

Effluent and Waste Disposal Annual Report for 1993

Type: BWR
Docket Number: 50-271
Thermal Power(MWH): 1.06E+07
Commercial Operation: 11/30/72
Cooling Water Source: Connecticut River

Licensee: Vermont Yankee Nuclear Power
Licensed Power(MWT): 1.59E+03
Net Electrical Power(MWE): 3.37E+06
Initial Criticality: 03/24/72

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	1.90E-06
MO-54	1.16E-04
CO-58	2.39E-06
CO-60	5.18E-04
ZN-65	1.03E-05
KR-85	1.06E-03
KR-85M	1.43E+00
KR-87	1.05E+01
KR-88	5.30E+00
SR-89	2.83E-03
SR-90	5.44E-05
I-131	1.14E-02
I-133	4.08E-02
XE-133	6.42E-01
XE-135	8.89E+00
XE-135M	6.42E+01
CS-137	9.89E-03
XE-138	2.68E+02
BA/LA-140	4.88E-03
CE-141	1.06E-03

Total Airborne Tritium Released

2.37E+01 Ci

Installation: Vermont Yankee
Unit No.: 1

Location: 5 MI S Brattleboro, VT

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR
Docket Number: 50-271
Thermal Power(MWH): 1.06E+07
Commercial Operation: 11/30/72
Cooling Water Source: Connecticut River

Licensee: Vermont Yankee Nuclear Power
Licensed Power(MWT): 1.59E+03
Net Electrical Power(MWH): 3.37E+06
Initial Criticality: 03/24/72

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
93	Truck	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

A

	Jan-June	Jul-Dec
BA-140	3.47E+00	
CO-60	1.19E+01	2.06E+01
CS-134	3.89E+00	8.44E+00
CS-137	1.27E+01	2.42E+01
I-131	3.49E+00	
MN-54	2.07E+00	8.70E+00
NI-63	2.44E+00	
ZN-65	5.54E+01	3.34E+01

B

	Jan-June	Jul-Dec
CO-60	1.02E+01	1.02E+01
CS-137		1.85E+00
FE-55	6.52E+01	6.54E+01
MN-54	5.67E+00	5.67E+00
ZN-65	1.09E+01	1.09E+01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 8.08E+01 Ci 7.37E+02	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 4.87E+01 Ci 3.96E-01	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Vogtle
Unit No.: 1&2

Location: 25 Mi SSE Augusta, GA

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: PWR
Docket Number: 50-424
Thermal Power(MWH): 2.64E+07
Commercial Operation: 05/31/87
Cooling Water Source: Savannah River
Unit Number: 2 Type: PWR
Docket Number: 50-425
Thermal Power(MWH): 2.66E+07
Commercial Operation: 05/20/89
Cooling Water Source: Savannah River

Licensee: Georgia Power
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 8.60E+06
Initial Criticality: 03/09/87

Licensee: Georgia Power
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 8.68E+06
Initial Criticality: 03/28/89

Airborne Effluents

Nuclide Released	Activity (Ci)
NA-24	2.92E-06
AR-41	2.54E+00
CR-51	1.31E-05
MN-54	1.86E-06
CO-58	2.78E-05
CO-60	6.42E-06
KR-85	1.67E+00
KR-85M	3.84E-03
KR-87	1.53E-04
SR-89	2.49E-06
SR-90	2.52E-07
NB-95	1.08E-06
ZR-95	7.02E-07
I-131	4.67E-04
XE-131M	5.68E-01
I-133	4.90E-05
XE-133	2.28E+02
XE-133M	8.27E-01
XE-135	4.83E-01

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	2.61E-05
NA-24	4.58E-06
CR-51	3.15E-02
MN-54	1.70E-02
FE-55	1.23E+00
CO-57	8.98E-04
CO-58	9.38E-02
FE-59	2.48E-03
CO-60	5.57E-02
ZN-65	1.87E-03
BR-82	1.54E-05
SR-89	1.64E-03
SR-90	1.89E-04
NB-95	9.85E-03
ZR-95	5.25E-03
NB-97	1.19E-03
AG-110M	6.81E-04

Installation: Vogtle
Unit No.: 1&2

Location: 25 Mi SSE Augusta, GA

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
SN-113	3.24E-04
SB-122	2.26E-04
SB-124	1.42E-04
SB-125	4.78E-02
TE-129M	9.67E-05
I-131	4.20E-03
I-132	1.08E-04
TE-132	1.02E-04
I-133	8.02E-05
XE-133	3.19E-03
XE-133M	1.39E-04
CS-134	5.58E-03
XE-135	7.29E-05
CS-137	7.31E-03
LA-140	5.25E-08
CE-144	2.33E-04
HF-181	2.86E-05
W-187	3.04E-05

Total Airborne Tritium Released	2.23E+02 Ci
Total Liquid Tritium Released	7.61E+02 Ci
Volume of Waste Released (Prior to Dilution)	5.12E+07 liters
Volume of Dilution Water Used During Period	4.66E+09 liters

Installation: Vogtle
Unit No.: 1&2

Location: 25 Mi SSE Augusta, GA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-424
Thermal Power(MWH): 2.64E+07
Commercial Operation: 05/31/87
Cooling Water Source: Savannah River

Licensee: Georgia Power
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 8.60E+06
Initial Criticality: 03/09/87

Unit Number: 2 Type: PWR
Docket Number: 50-425
Thermal Power(MWH): 2.66E+07
Commercial Operation: 05/20/89
Cooling Water Source: Savannah River

Licensee: Georgia Power
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 8.68E+06
Initial Criticality: 03/28/89

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
9	Tractor/Trailer/Shielded Cask	CNSI, Barnwell, SC
1	Tractor/Trailer	Quadrex, Oak Ridge, TN
28	Tractor/Trailer	SEG, Oak Ridge, TN
2	Tractor/Trailer/Shielded Cask	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (%)
(by type of waste)

	Jan-June	Jul-Dec
A		
CO-60	8.88E+00	1.69E+01
FE-55	3.76E+01	1.89E+01
NI-63	1.26E+01	4.84E+01
Unidentified	4.09E+01	1.59E+01
B		
CO-58	2.06E+01	1.39E+01
FE-55	5.49E+01	5.95E+01
NI-63	6.62E+00	8.39E+00
Unidentified	1.79E+01	1.82E+01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 4.25E+01 Ci 2.13E+02	Burial Volume
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 2.60E+01 Ci 9.97E+00	Burial Volume
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Waterford
Unit No.: 3

Location: 20 Mi W New Orleans, LA

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-382
Thermal Power(MWH): 2.94E+07
Commercial Operation: 09/24/85
Cooling Water Source: Mississippi River

Licensee: Louisiana Power & Light
Licensed Power(MWT): 3.39E+03
Net Electrical Power(MWH): 9.14E+06
Initial Criticality: 03/04/85

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	5.63E+00
KR-85M	1.76E+00
I-131	1.08E-06
XE-131M	1.14E+00
XE-133	8.48E+02
XE-133M	6.05E-01
XE-135	5.68E+01

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.70E-05
AR-41	1.21E-03
CR-51	1.32E-03
MM-54	7.30E-03
FE-55	6.70E-02
CO-57	2.63E-04
CO-58	4.79E-02
FE-59	1.89E-04
CO-60	4.35E-02
BR-82	1.49E-04
KR-85	3.24E-02
KR-85M	1.51E-03
KR-87	3.33E-04
KR-88	1.69E-03
RB-88	1.10E-01
SR-92	2.33E-04
NB-95	1.19E-02
ZR-95	5.52E-03
NB-97	2.26E-03
ZR-97	1.64E-05
MO-99	2.00E-03
TC-99M	2.54E-03
RU-106	4.48E-04
AG-110M	3.90E-04
SW-113	1.82E-03
SB-122	7.87E-05
SB-124	3.03E-04
SB-125	2.23E-02
I-131	1.84E-01
XE-131M	3.26E-02
I-132	2.90E-04
I-133	5.03E-02
XE-133	1.47E+00
XE-133M	7.47E-03

Installation: Waterford
Unit No.: 3

Location: 20 Mi W New Orleans, LA

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
CS-134	1.30E-02
I-135	7.91E-03
XE-135	3.90E-02
XE-135M	1.64E-02
CS-137	1.59E-02
BA-140	2.11E-04
LA-140	8.17E-05
LA-142	2.12E-04
CE-144	1.16E-04
W-187	4.69E-03

Total Airborne Tritium Released	1.02E+02 Ci
Total Liquid Tritium Released	4.90E+02 Ci
Volume of Waste Released (Prior to Dilution)	2.81E+07 liters
Volume of Dilution Water Used During Period	1.73E+12 liters

Installation: Waterford
Unit No.: 3

Location: 20 MI N New Orleans, LA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR
Docket Number: 50-382
Thermal Power(MWH): 2.94E+07
Commercial Operation: 09/24/85
Cooling Water Source: Mississippi River

Licenses: Louisiana Power & Light
Licensed Power(MWT): 3.39E+03
Net Electrical Power(MWH): 9.14E+06
Initial Criticality: 03/04/85

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
3	Sole Use Cask	Barnwell, SC
1	Sole Use Flatbed	Hanford, WA
3	Sole Use Flatbed	Oak Ridge, TN
1	Sole Use Flatbed	Wampum, PA

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

AM-241	2.16E-05
C-14	2.19E-01
CE-144	9.19E-02
CM-242	5.50E-04
CM-243/244	5.93E-04
CO-58	3.70E+01
CO-60	8.32E+00
CS-134	4.19E+00
CS-137	6.14E+00
FE-55	1.01E+01
H-3	3.04E-01
MO-99	4.96E+00
NI-59	1.51E-02
NI-63	2.74E+01
PU-238	1.15E-04
PU-239/240	4.84E-05
PU-241	1.70E-02
SB-125	1.28E+00
SR-90	3.81E-03

B

AM-241	1.48E-04
C-14	2.17E-01
CE-141	1.33E-01
CE-144	8.99E-02
CM-242	2.66E-03
CM-243/244	6.94E-04
CO-57	6.92E-01
CO-58	3.44E+01
CO-60	2.04E+01
CR-51	9.99E+00
CS-134	4.03E+00
CS-137	8.18E+00
FE-55	1.16E+01
FE-59	1.03E+00
H-3	3.28E-02

Installation: Waterford
Unit No.: 3

Location: 20 Mi W New Orleans, LA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Estimate of Major Nuclide Composition (%) (continued) Jan-June July-Dec
(by type of waste)

B

MN-54	4.03E+00
NB-95	9.97E-01
NI-59	2.62E-02
NI-63	3.43E+00
PU-238	1.18E-04
PU-241	4.43E-04
SB-125	1.18E-01
SN-113	2.31E-01
SR-89	3.19E-03
SR-90	1.34E-03
ZR-95	5.12E-01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.53E+01 Ci 1.03E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 2.36E+02 Ci 3.07E-01	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: WNP-2
Unit No.: 2

Location: 12 Mi NW Richland, WA

Effluent and Waste Disposal Annual Report for 1993

Type: BWR

Licensee: Washington Public Power Supply
System

Docket Number: 50-397

Licensed Power(MWT): 3.32E+03

Thermal Power(MWH): 2.16E+07

Net Electrical Power(MWH): 7.13E+06

Commercial Operation: 12/13/84

Initial Criticality: 01/19/84

Cooling Water Source: Columbia River

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.30E+01
CO-60	1.20E-04
ZN-65	3.30E-05
BR-82	8.30E-06
KR-85M	3.50E+00
KR-87	4.00E+00
KR-88	3.00E+00
RB-89	1.71E-03
SR-89	3.50E-03
SR-90	1.67E-05
SR-91	1.61E-03
I-131	1.30E-02
I-132	1.29E-02
I-133	5.47E-02
XE-133	1.96E+01
XE-133M	8.50E-02
CS-134	6.70E-06
I-135	2.02E-02
XE-135	1.69E+01
XE-135M	1.69E+01
CS-137	7.20E-06
XE-137	1.50E+01
CS-138	7.80E+00
XE-138	4.89E+01
BA-139	1.98E+00
BA/LA-140	1.95E-02

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	2.00E-03
CR-51	1.70E-03
MN-54	1.20E-02
FE-55	4.70E-03
CO-58	5.20E-03
CO-60	7.20E-02
CU-64	1.50E-02
ZN-65	6.50E-02
SR-89	5.50E-04
SR-90	5.70E-05
TC-99M	4.20E-04
SB-124	1.60E-04
SB-125	8.60E-05
I-131	1.30E-03

Installation: WNP-2
Unit No.: 2

Location: 12 Mi NW Richland, WA

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
XE-133	1.40E-03
CS-134	6.30E-03
XE-135	3.50E-03
CS-137	1.90E-02
BA/IA-140	6.90E-04

Total Airborne Tritium Released	1.50E+02 Ci
Total Liquid Tritium Released	3.40E+01 Ci
Volume of Waste Released (Prior to Dilution)	1.10E+07 liters
Volume of Dilution Water Used During Period	3.80E+09 liters

Installation: WNP-2
Unit No.: 2

Location: 12 Mi NW Richland, WA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: BWR

Licensee: Washington Public Power Supply
System

Docket Number: 50-397

Licensed Power(MWT): 3.32E+03

Thermal Power(MWE): 2.16E+07

Net Electrical Power(MWE): 7.13E+06

Commercial Operation: 12/13/84

Initial Criticality: 01/19/84

Cooling Water Source: Columbia River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
46	Tractor-Trailer	US Ecology, Richland, WA

Estimate of Major Nuclide Composition (%)
(by type of waste)

Annual

A

BA/LA-140	3.43E-01
C-14	5.36E-01
CD-109	7.07E-01
CO-58	2.63E+00
CO-60	3.37E+01
CR-51	3.68E+00
CS-134	3.58E-01
CS-137	3.45E+00
FE-55	1.51E+01
MN-54	2.52E+00
NI-63	2.92E+00
ZN-65	3.29E+01

B

CO-60	2.27E+01
CS-137	4.61E-01
FE-55	7.10E+01
H-3	1.48E+00
MN-54	2.66E-01
SB-125	3.17E-01
ZN-65	3.70E+00

D

BA/LA-140	5.10E-01
CO-58	1.13E+00
CO-60	9.84E+00
CR-51	9.31E+00
FE-55	7.00E+01
I-131	6.78E-01
MN-54	4.16E-01
ZN-65	7.46E+00

Installation: WNP-2
Unit No.: 2

Location: 12 Mi NW Richland, WA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.74E+02 Ci 1.01E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 2.44E+02 Ci 2.55E+01	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe) Solidified Liquid	m3 7.65E+00 Ci 1.67E+00	

Installation: Wolf Creek
Unit No.: 1

Location: 3.5 Mi NE Burlington, KS

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-482
Thermal Power(MWH): 2.27E+07
Commercial Operation: 09/03/85
Cooling Water Source: Cooling Lake

Licensee: Wolf Creek Nuclear Oper.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.90E+06
Initial Criticality: 05/22/85

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.46E-01
KR-85	2.20E+01
KR-85M	5.85E-01
KR-88	4.54E-01
I-131	6.92E-04
XE-131M	1.14E+01
I-133	4.11E-04
XE-133	4.71E+03
XE-133M	3.03E+00
XE-135	1.15E+01

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	6.61E-04
NA-24	1.22E-05
CR-51	3.14E-02
MN-54	1.09E-02
FE-55	2.23E-01
CO-57	1.55E-03
CO-58	1.31E-01
FE-59	3.44E-03
CO-60	1.42E-01
KR-85	4.08E-01
KR-85M	4.97E-05
KR-87	1.32E-04
SR-90	9.20E-05
SR-92	8.68E-06
NB-95	9.50E-03
ZR-95	5.09E-03
TC-99M	2.10E-05
RU-103	1.07E-03
AG-110M	2.79E-03
SN-113	1.87E-03
SN-117M	3.11E-04
SB-124	3.27E-03
SB-125	7.82E-02
SB-126	1.49E-04
I-131	5.23E-03
XE-131M	2.48E-01
I-132	9.35E-05
I-133	7.11E-05
XE-133	1.58E+01
XE-133M	1.15E-01
CS-134	2.25E-02

Installation: Wolf Creek
Unit No.: 1

Location: 3.5 Mi NE Burlington, KS

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
XE-135	9.98E-03
CS-136	4.70E-05
CS-137	2.35E-02
LA-140	2.86E-04
CE-141	2.36E-04
CE-144	7.56E-03
HF-181	3.71E-04

Total Airborne Tritium Released	2.57E+01 Ci
Total Liquid Tritium Released	9.99E+02 Ci
Volume of Waste Released (Prior to Dilution)	4.02E+08 liters
Volume of Dilution Water Used During Period	1.06E+12 liters

Installation: Wolf Creek
Unit No.: 1

Location: 3.5 Mi NE Burlington, KS

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: FWR
Docket Number: 50-482
Thermal Power(MWE): 2.27E+07
Commercial Operation: 09/03/85
Cooling Water Source: Cooling Lake

Licensee: Wolf Creek Nuclear Oper.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWE): 7.90E+06
Initial Criticality: 05/22/85

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
6	Truck	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

	Annual
A	
C-14	3.48E-01
CO-60	5.47E+00
CS-134	3.78E+01
CS-137	3.37E+01
H-3	2.80E-02
NI-63	8.80E+00
PV-241	2.20E-02
SR-90	7.90E-02
B	
CO-58	7.00E+00
CO-60	6.00E+00
FE-55	8.20E+01
NI-63	5.00E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.58E+01 Ci 7.59E+02	Compacted
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 5.30E+01 Ci 2.61E+00	Compacted
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe)	m3 Ci	

Installation: Yankee Rowe
Unit No.: 1

Location: 20 Mi NW Greenfield, MA

Effluent and Waste Disposal Annual Report for 1993

Type: PWR
Docket Number: 50-029
Thermal Power(MWH): 0.00E+00
Commercial Operation: 07/01/61
Cooling Water Source: Deerfield River

Licensee: Yankee Atomic Electric
Licensed Power(MWT): 6.00E+02
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 08/19/60

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-60	6.97E-07
CS-137	1.00E-07

Liquid Effluents

Nuclide Released	Activity (Ci)
C-14	6.10E-04
HN-54	3.78E-08
CO-60	4.43E-05
CS-134	4.30E-06
CS-137	6.03E-05

Total Airborne Tritium Released	1.31E+00 Ci
Total Liquid Tritium Released	5.01E-01 Ci
Volume of Waste Released (Prior to Dilution)	9.77E+05 liters
Volume of Dilution Water Used During Period	1.76E+08 liters

Installation: Yankee Rowe
Unit No.: 1

Location: 20 Mi NW Greenfield, MA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type: PWR
Docket Number: 50-029
Thermal Power(MWH): 0.00E+00
Commercial Operation: 07/01/61
Cooling Water Source: Deerfield River

Licensee: Yankee Atomic Electric
Licensed Power(MWT): 6.00E+02
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 08/19/60

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
2	Railroad	Barnwell, SC
71	Truck	Barnwell, SC

Estimate of Major Nuclide Composition (%)
(by type of waste)

Jan-June Jul-Dec

A

CO-60	6.84E+00	
FE-55	8.47E+01	
NI-63	5.75E+00	
PU-241	5.57E-01	
SR-90	4.10E-01	

B

CE-144		6.70E-01
CO-60		1.16E+01
FE-55		7.33E+01
FE-59		2.28E+00
MN-54		2.24E+00
NI-63		8.60E+00
PU-241		7.90E-01
RU-106		5.90E-01

C

AG-110M	3.82E+01	
CD-109	6.10E+00	
CO-60	2.04E+01	4.61E+01
FE-55	2.84E+01	4.48E+01
MN-54	1.60E+00	
NB-95	4.00E-01	
NI-63	2.20E+00	8.34E+00
SB-125	2.20E+00	

D

CO-60		2.24E+01
FE-55		5.07E+01
FE-59		8.60E-04
MN-54		1.31E+00
NI-63		2.56E+01

Installation: Yankee Rowe
Unit No.: 1

Location: 20 Mi NW Greenfield, MA

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 3.41E+00	Non-compacted
	ci 2.21E+01	Burial
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 6.25E+01	Compacted,
	ci 4.51E-01	Burial
C. Irradiated Components, Control Rods, etc.	m3 1.68E-01	
	m3 1.43E+01	Uncompacted
	ci 1.58E+04	
D. Other (describe)		
Coolant Pump, Generator & Pressurizer	m3 2.18E+02	
	ci 1.30E+03	

Installation: Zion
Unit No.: 1&2

Location: 6 Mi N Waukegan, IL

Effluent and Waste Disposal Annual Report for 1993

Unit Number: 1 Type: PWR
Docket Number: 50-295
Thermal Power(MWH): 2.18E+07
Commercial Operation: 12/31/73
Cooling Water Source: Lake Michigan
Unit Number: 2 Type: PWR
Docket Number: 50-304
Thermal Power(MWH): 1.64E+07
Commercial Operation: 09/17/74
Cooling Water Source: Lake Michigan

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.25E+03
Net Electrical Power(MWH): 7.02E+06
Initial Criticality: 06/19/73

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.25E+03
Net Electrical Power(MWH): 5.29E+06
Initial Criticality: 12/24/73

Airborne Effluents

Nuclide Released	Activity (Ci)
NA-24	1.22E-04
CR-51	1.05E-03
CO-58	2.01E-02
FE-59	3.30E-05
CO-60	1.60E-03
BR-82	7.83E-05
KR-85	8.81E+00
KR-85M	1.61E-01
RB-88	1.94E-01
NB-95	2.05E-04
ZR-95	1.07E-04
TC-99M	2.10E-05
RU-103	1.60E-05
I-131	1.09E-02
XE-131M	1.55E+00
I-132	1.00E-03
I-133	4.32E-03
XE-133	2.55E+03
XE-133M	1.27E+01
CS-134	2.50E-04
I-134	7.60E-08
I-135	1.11E-03
XE-135	2.79E+01
CS-136	7.00E-05
CS-137	2.92E-04
CS-138	6.87E-06

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	5.76E-03
CR-51	1.03E-01
MN-54	3.07E-03
CO-57	8.10E-06
CO-58	3.62E-01
FE-59	1.11E-02
CO-60	2.13E-01
KR-85	1.25E-02
KR-85M	3.80E-05
SR-92	5.93E-03

Installation: Zion
Unit No.: 142

Location: 6 Mi N Waukegan, IL

Effluent and Waste Disposal Annual Report for 1993

Liquid Effluents (continued)

Nuclide Released	Activity (Ci)
NB-95	7.36E-03
ZR-95	5.94E-03
ZR-97	5.10E-06
MO-99	2.31E-04
TC-99M	2.39E-04
RU-103	1.60E-04
AG-110M	4.87E-02
SN-113	1.51E-03
SN-117M	8.84E-02
SB-122	8.20E-04
SB-124	4.63E-02
SB-125	1.58E-01
SB-126	2.90E-05
I-131	1.36E-02
XE-131M	4.38E-02
I-132	3.90E-03
TE-132	2.50E-03
TE-132M	1.80E-06
I-133	1.88E-03
YE-133	3.59E+00
XE-133M	4.33E-02
CS-134	1.35E-02
XE-135	3.77E-02
CS-137	2.88E-02
CS-138	1.50E-03
LA-140	1.44E-03

Total Airborne Tritium Released	2.67E+02 Ci
Total Liquid Tritium Released	1.24E+03 Ci
Volume of Waste Released (Prior to Dilution)	3.07E+07 liters
Volume of Dilution Water Used During Period	1.09E+11 liters

Installation: Zion
Unit No.: 1&2

Location: 6 Mi. N Waukegan, IL

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-295
Thermal Power(MWH): 2.18E+07
Commercial Operation: 12/31/73
Cooling Water Source: Lake Michigan

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.25E+03
Net Electrical Power(MWH): 7.02E+06
Initial Criticality: 06/19/73

Unit Number: 2 Type: PWR
Docket Number: 50-304
Thermal Power(MWH): 1.64E+07
Commercial Operation: 09/17/74
Cooling Water Source: Lake Michigan

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.25E+03
Net Electrical Power(MWH): 5.29E+06
Initial Criticality: 12/24/73

Solid Waste Disposition

Number of Shipments Mode of Transportation
24 Truck

Destination
Barnwell, SC

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 6.53E+01 Ci 7.56E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 5.36E+01 Ci 2.29E+02	
C. Irradiated Components, Control Rods, etc.	m3 Ci	
D. Other (describe) Filters	m3 3.41E+00 Ci 9.34E+00	

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(See instructions on the reverse)

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10. SUPPLEMENTARY NOTES

11. ABSTRACT (200 words or less)

Releases of radioactive materials in airborne and liquid effluents from commercial light water reactors during 1993 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 1993 release data are summarized in tabular form. Data covering specific radionuclides are summarized.

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