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Radioactive Materials Released from Nuclear Power Plants

Annual Report 1990

Prepared by
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Brookhaven National Laboratory

Prepared for
U.S. Nuclear Regulatory Commission

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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.

ABSTRACT

Releases of radioactive materials in airborne and liquid effluents from commercial light water reactors during 1990 have been compiled and reported. The summary data for the years 1971 through 1989 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 1990 release data are summarized in tabular form. Data covering specific radionuclides are summarized.

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ACKNOWLEDGMENT

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.

1.0 Introduction

1.1 Purpose

This report, prepared annually for the staff of the U.S. Nuclear Regulatory Commission, presents measured d.ta on radioactive materials in effluents released from licensed commercial reactor power plants. These data were reported by licensees for plant operations during 1990. 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, 1990. Data are included for several licensed facilities which are permanently or indefinitely shut down (Browns Ferry 1,2,3, Dresden 1, Fort St. Vrain Humboldt Bay, Indian Point 1, LaCrosse, Three Mile Island 2) 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 nineteen 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 1971 through 1990. 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.

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[1] Previous reports in this series are listed on page ii.

2.2 Solid Waste

The total volumes, activity and the number of shipments of solid waste for each plant during 1990 are summarized in Tables 9 and 10. A comparison for the years 1977 through 1990 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 1978-1990. Tables 15 and 16 present a summary of the thermal energy generated by each plant during 1990 and previous years from 1972. 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 report[2] can be made available since all the data for 1978-1990 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 becasue 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 Information Resources Management of the Nuclear Regulatory Commission.

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[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:

1.86E+06 = 1.86×10^{6}

1.86E-03 = 1.86×10^{-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	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Big Rock Point 1	2.84E+05	2.58E+05	2.30E+05	1.88E+05	5.06E+04	1.52E+04	1.34E+04	1.89E+04	6.67E+03	2.15E+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
Brunswick 1&2					1.90E+02	1.90E+04	2.46E+05	9.14E+04	1.16E+05	6.93E+04
Clinton 1										
Cooper				2.00E+03	1.98E+04	3.80E+04	1.27E+03	4.09E+03	3.04E+04	5.03E+03
Dresden 1	7.53E+05	8.77E+05	8.40E+05	9.60E+04	5.20E+05	4.52E+05	5.20E+05	8.50E+05	1.83E+02	7.03E+01
Dresden 2-3	5.80E+05	4.29E+05	8.80E+05	6.27E+05	3.69E+05	3.23E+04	3.13E+05	4.06E+04	6.91E+04	4.30E+04
Duane Arnold					1.58E+03	5.26E+03	3.87E+03	1.58E+03	8.71E+03	2.70E+03
Fermi 2										
James A. Fitzpatrick					4.08E+03	4.41E+04	2.33E+04	5.88E+03	3.38E+03	7.68E+04
Grand Gulf 1										
Edwin I. Hatch 1					2.70E+02	2.80E+03	1.90E+03	1.62E+03	1.71E+03	3.82E+04
Edwin I. Hatch 2										2.95E+02
Hope Creek 1										
Humboldt Bay 3	5.14E+05	4.30E+05	3.50E+05	5.72E+05	2.97E+05	9.30E+04	4.40E-05	4.40E-05	< 4.40E-05	< 4.40E-05
LaCrosse	1.00E+03	3.10E+04	9.10E+04	4.90E+04	5.71E+04	1.24E+05	4.25E+04	8.45E+03	1.04E+04	4.71E+03
LaSalle 1&2										
Limerick 1&2										
Millstone 1	2.76E+05	7.26E+05	7.90E+04	9.12E+05	2.97E+06	5.07E+05	6.20E+05	5.66E+05	2.06E+04	1.19E+04
Monticello	7.60E+04	7.51E+05	8.70E+05	1.57E+06	1.55E+05	1.14E+04	6.87E+03	6.42E+03	4.03E+03	3.83E+03
Nine Mile Point 1	2.53E+05	5.17E+05	8.72E+05	5.58E+05	1.30E+06	1.76E+05	3.53E+03	3.02E+03	1.04E+03	5.87E+02
Nine Mile Point 2										
Oyster Creek 1	5.16E+05	8.66E+05	8.10E+05	2.79E+05	2.06E+05	1.67E+05	1.77E+05	9.98E+05	1.01E+06	3.12E+04
Peach Bottom 2&3			< 1.00E+03	< 1.00E+00	1.30E+04	2.09E+05	7.11E+04	3.85E+04	1.90E+05	1.53E+04
Perry 1										
Pilgrim 1		1.80E+04	2.30E+05	5.46E+05	4.60E+04	1.83E+05	4.13E+05	3.27E+04	1.39E+04	2.62E+04
Quad-Cities 1&2		1.32E+05	9.00E+05	9.50E+05	1.10E+05	3.36E+04	2.56E+04	3.24E+04	3.48E+04	2.15E+04
River Bend 1										
Shoreham 1										
Susquehanna 1&2										
Vermont Yankee 1		5.50E+04	1.80E+05	8.40E+04	4.08E+03	3.03E+03	3.35E+03	4.94E+03	< 8.08E+03	1.63E+03
WNP-2										
Total	3.25E+06	5.09E+06	< 6.33E+06	< 6.48E+06	6.22E+06	< 2.20E+06	< 2.65E+06	2.86E+06	< 1.80E+06	< 5.40E+05
* Fort St. Vrain									9.30E+01	9.13E+01

* High temperature gas cooled reactor

Table 1

Airborne Effluents Comparison By Year

Fission and Activation Gases (Total Curies)

Boiling Water Reactors

Facility	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Big Rock Point 1	1.97E+04	1.29E+04	1.10E+04	1.41E+05	6.26E+04	6.79E+04	8.35E+03	7.77E+03	7.08E+03	5.55E+03
Browns Ferry 1,2,& 3	4.52E+04	2.76E+05	4.79E+05	< 6.64E+05	< 2.64E+04	< 2.26E+03	3.22E-01	N/D	N/D	N/D
Brunswick 1&2	5.22E+05	4.65E+05	4.87E+05	1.67E+05	1.75E+04	4.51E+04	2.64E+04	1.58E+03	1.36E+03	1.12E+03
Clinton 1							6.83E+00	4.34E+00	1.29E+01	1.09E+01
Cooper	2.48E+03	1.42E+04	1.54E+03	< 1.44E+03	< 1.39E+03	1.72E+03	1.20E+03	1.81E+03	3.44E+02	1.87E+02
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	3.74E+04	1.04E+04	8.43E+03	1.81E+03	2.94E+03	4.38E+02	2.77E+02	1.68E+02	3.67E+01	2.04E+01
Duane Arnold	< 4.87E+02	9.99E+01	4.81E+02	4.16E+02	2.51E+02	3.10E+02	2.19E+02	7.06E+02	4.38E+01	4.57E+01
Fermi 2						N/D	N/D	1.11E+00	1.64E+02	1.61E+02
James A. Fitzpatrick	2.00E+05	2.11E+05	8.57E+04	3.41E+04	1.46E+04	2.65E+03	4.72E+03	3.89E+03	5.60E+02	1.35E+03
Grand Gulf 1			4.51E+01	1.14E+02	1.51E+02	1.34E+02	2.08E+02	9.44E+01	1.44E+02	1.36E+02
Edwin I. Hatch 1	2.77E+04	4.23E+03	1.96E+04	1.02E+04	9.86E+03	8.95E+03	7.40E+03	**	**	**
Edwin I. Hatch 2	2.06E+02	1.04E+03	1.28E+04	2.36E+03	2.76E+03	1.09E+04	1.37E+04	3.46E+03	5.02E+02	1.10E+03
Hope Creek 1						3.80E+01	1.19E+03	1.75E+02	3.34E+02	8.30E+02
Humboldt Bay 3	< 4.40E-05	N/D	N/D	N/D	N/D	N/D	N/D	< 6.48E+01	< 6.40E+01	N/D
LaCrosse	5.03E+03	4.26E+03	7.08E+03	1.09E+04	8.58E+03	3.53E+03	2.33E+03	N/D	N/D	N/D
LaSalle 1&2		3.46E+00	1.17E+01	5.66E+02	1.95E+02	2.98E+03	6.51E+03	3.79E+03	1.08E+03	6.87E+02
Limerick 1&2				N/D	N/D	3.70E-01	2.41E+01	1.69E+02	2.58E+02	3.44E+01
Millstone 1	1.43E+04	8.33E+03	6.34E+03	2.80E+03	1.11E+03	3.31E+03	5.84E+03	8.76E+02	1.81E+02	1.17E+02
Monticello	3.74E+03	7.22E+03	3.21E+03	5.15E+02	2.72E+03	2.53E+03	3.95E+03	5.88E+03	3.98E+03	2.96E+03
Nine Mile Point 1	6.10E+02	5.11E+01	2.68E+02	1.02E+03	9.84E+02	4.92E+02	1.97E+02	1.80E+01	1.52E-04	N/D
Nine Mile Point 2							6.00E+00	4.03E+01	8.42E+01	1.63E+02
Oyster Creek 1	5.28E+04	2.29E+04	2.14E+03	3.93E+03	4.15E+04	7.67E+04	3.39E+03	5.05E+03	3.24E+02	7.35E+02
Peach Bottom 2&3	1.58E+04	1.31E+04	3.48E+04	8.09E+04	1.29E+05	2.78E+04	1.15E+04	1.19E+03	2.64E+03	1.12E+04
Perry 1						1.23E+00	1.06E+01	1.25E+03	1.92E+02	8.37E+01
Pilgrim 1	< 5.30E+03	< 1.94E+04	2.01E+04	< 1.84E+01	3.26E+03	1.26E+02	N/D	N/D	6.78E+02	9.07E+02
Quad-Cities 1&2	3.20E+04	1.17E+04	1.20E+04	6.02E+03	2.95E+03	1.48E+03	3.73E+02	3.77E+00	2.87E+02	7.96E+01
River Bend 1						1.70E+03	1.39E+00	2.05E+00	8.31E-01	1.03E+03
Shoreham 1						N/D	N/D	N/D	N/D	N/D
Susquehanna 1&2		< 5.61E+02	1.03E+02	1.18E+02	5.15E+02	2.35E+02	1.23E+02	7.25E+01	1.19E+02	7.21E+01
Vermont Yankee 1	< 3.17E+03	< 3.07E+03	< 3.13E+03	< 3.18E+03	< 3.44E+03	< 1.56E+03	N/D	N/D	1.03E+03	5.07E+03
WNP-2				2.28E+02	2.12E+02	1.66E+02	5.35E+02	9.03E+02	5.46E+03	8.90E+02
Total	< 9.88E+05	< 1.09E+06	< 1.19E+06	< 1.13E+06	< 3.33E+05	< 2.63E+05	9.85E+04	< 3.90E+04	< 2.70E+04	3.45E+04
* Fort St. Vrain	4.34E+01	2.96E+02	1.51E+02	1.17E+02	2.03E+00	5.57E+01	2.03E+02	2.60E+02	1.96E+02	N/D

* High temperature gas cooled reactor

** Included with Edwin I. Hatch 2 total

N/D = Not Detectable

Table 2

Airborne Effluents Comparison By Year

Fission and Activation Gases (Total Curies)

Pressurized Water Reactors

Facility	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Arkansas One 1				1.96E+02	1.03E+03	5.69E+03	1.39E+04	7.50E+03	8.51E+03	3.80E+04
Arkansas One 2									4.53E+03	9.37E+03
Beaver Valley 1&2						1.07E+00	4.73E+01	3.90E+02	1.75E+03	8.64E+01
Braidwood 1										
Braidwood 2										
Byron 1&2										
Callaway 1										
Calvert Cliffs 1&2					7.72E+03	9.40E+03	2.23E+04	2.76E+04	1.02E+04	2.96E+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
Crystal River 3							3.35E+03	6.86E+03	7.26E+04	3.65E+04
Davis-Besse 1							1.27E+03	2.10E+03	< 1.68E+03	< 3.35E+03
Diablo Canyon 1&2										
Joseph M. Farley 1								3.53E+03	3.18E+03	1.92E+04
Joseph M. Farley 2										
Fort Calhoun 1			6.70E+01	3.03E+02	4.29E+02	1.94E+03	3.81E+03	1.36E+03	7.06E+02	2.97E+02
R. E. Ginna	3.20E+01	1.20E+01	5.76E+02	7.57E+02	1.04E+04	5.52E+03	3.20E+03	9.72E+02	7.62E+02	8.61E+02
Haddam Neck	3.00E+00	1.00E+00	3.20E+01	7.00E+00	4.80E+02	4.52E+02	3.12E+03	2.14E+03	5.53E+03	2.68E+03
Harris 1										
Indian Point 1&2			1.50E+01	5.58E+03	8.20E+03	1.16E+04	1.60E+04	1.41E+04	9.03E+03	9.38E+03
Indian Point 3						Shown with	Other Unit	8.09E+02	2.47E+02	1.11E+03
Kewaunee				3.35E+03	2.45E+03	1.40E+03	2.43E+03	4.44E+02	1.52E+02	1.22E+02
** Maine Yankee		< 1.00E+00	1.61E+02	6.36E+03	4.09E+03	1.30E+03	3.57E+03	1.55E+03	2.09E+03	4.07E+03
McGuire 1										
McGuire 2										
Millstone 2						1.57E+03	2.28E+03	7.64E+02	3.59E+02	1.33E+03
Millstone 3										
North Anna 1&2								1.51E+04	6.28E+03	3.50E+03
Oconee 1,2,& 3			9.30E+03	1.94E+04	1.51E+04	4.39E+04	3.56E+04	4.33E+04	4.79E+04	1.92E+04
Palisades		1.00E+00	4.54E+02	< 1.00E+00	2.61E+03	2.99E+01	5.99E+01	3.23E+02	6.84E+01	1.40E+02
Palo Verde 1										
Palo Verde 2										
Palo Verde 3										
Point Beach 1&2	< 1.00E+00	3.00E+00	5.75E+03	9.74E+03	4.45E+04	1.91E+03	1.13E+03	5.16E+02	9.68E+02	6.41E+02
Prairie Island 1&2			8.72E+00	3.62E+02	2.17E+03	1.74E+03	6.73E+02	1.26E+03	6.97E+02	2.60E+02
Rancho Seco 1					1.18E+02	1.27E+02	2.90E+03	7.10E+03	8.81E+03	1.58E+03
H. B. Robinson 2	1.00E+00	< 1.00E+00	3.10E+03	2.31E+03	1.17E+03	6.40E+02	4.76E+02	8.84E+02	1.52E+03	5.82E+02
Salem 1						< 1.00E-02	1.96E+01	1.02E+01	2.49E+02	7.82E+01
Salem 2										7.74E+00
San Onofre 1	8.00E+00	1.90E+01	1.10E+04	1.78E+03	1.11E+03	4.16E+02	1.54E+02	1.81E+03	6.37E+02	1.05E+03
San Onofre 2-3										
Seabrook 1										
Sequoyah 1&2										3.01E+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
St. Lucie 2										
Summer 1										
Surry 1&2		< 1.00E+00	8.66E+02	6.86E+03	8.04E+03	1.91E+04	1.90E+04	4.36E+03	1.78E+03	6.17E+03
Three Mile Island 1				9.16E+02	3.63E+03	2.76E+03	1.66E+04	1.57E+04	2.24E+03	4.64E-03
Three Mile Island 2								8.73E+00	9.97E+06	4.72E+04
TMI 2/Epicor										2.16E+00
* Trojan						7.66E+02	4.45E+03	3.26E+02	9.47E+02	4.10E+02

* Changes to the entries for Trojan for 1976 - 1987 represent 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 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	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Turkey Point 3&4			5.30E+02	4.66E+03	1.34E+04	1.56E+04	2.33E+04	2.35E+04	1.06E+04	4.24E+03
Turkey Point 3										
Turkey Point 4										
Vogtle 1&2										
Waterford 3										
Wolf Creek 1										
Yankee Rowe 1	< 1.00E+00	< 1.00E+00	3.50E+01	4.00E+01	2.24E+01	9.57E+01	1.25E+02	6.56E+02	1.82E+02	7.07E+01
Zion 1&2			4.00E+00	2.99E+03	4.88E+04	1.14E+05	3.22E+04	6.77E+04	3.41E+04	5.78E+03
Total	< 4.60E+01	< 4.00E+01	3.19E+04	< 6.56E+04	1.75E+05	< 2.43E+05	2.40E+05	3.30E+05	< 1.02E+07	< 2.36E+05

Table 2

Airborne Effluents Comparison By Year

Fission and Activation Gases (Total Curies)

Pressurized Water Reactors

Facility	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Arkansas One 1	3.73E+03	2.10E+03	9.83E+02	2.90E+03	8.10E+03	1.71E+03	3.26E+02	1.24E+03	2.33E+03	7.00E+02
Arkansas One 2	4.35E+03	9.78E+03	1.34E+03	3.26E+03	8.91E+03	3.46E+03	2.06E+02	2.16E+03	2.76E+03	1.89E+02
Beaver Valley 1&2	8.06E+02	1.31E+02	1.98E+02	1.16E+03	3.92E+01	7.57E+01	2.25E+02	9.41E+01	1.57E+02	8.17E+01
Braidwood 1							2.81E-01	4.19E+01	1.17E+03	1.42E+03
Braidwood 2								3.82E+01	5.07E+02	1.02E+03
Byron 1&2					2.79E+02	6.36E+02	1.30E+03	1.78E+03	8.16E+02	1.24E+03
Callaway 1				2.00E+02	1.67E+03	5.19E+03	2.90E+03	6.89E+02	7.22E+02	9.02E+02
Calvert Cliffs 1&2	2.18E+03	8.00E+03	9.75E+03	3.83E+03	3.98E+03	7.65E+03	4.55E+03	5.70E+03	3.28E+03	6.72E+02
Catawba 1					2.77E+02	1.36E+03	2.41E+03	1.56E+03	3.15E+02	5.33E+02
Catawba 2						1.36E+03	2.41E+03	1.56E+03	3.15E+02	5.33E+02
Comanche Peak 1										9.06E+02
Donald C. Cook 1&2	5.42E+03	3.88E+03	3.28E+02	3.50E+03	4.94E+03	3.29E+02	8.75E+02	2.58E+02	1.15E+02	1.88E+02
Crystal River 3	3.96E+04	6.85E+03	3.38E+03	1.96E+03	1.05E+03	2.76E+03	1.10E+03	3.41E+03	4.54E+03	7.31E+03
Davis-Besse 1	1.01E+03	5.35E+02	9.15E+02	5.02E+02	1.18E+02	5.09E-04	3.80E+02	1.09E+02	3.78E+02	1.09E+03
Diablo Canyon 1&2				5.86E-02	5.72E+02	2.32E+03	7.14E+02	3.27E+02	3.35E+02	5.63E+01
Joseph M. Farley 1	2.21E+02	3.81E+04	2.20E+04	3.73E+03	1.70E+03	1.28E+03	1.30E+03	9.60E+02	9.92E+01	8.72E+01
Joseph M. Farley 2	2.60E+00	3.54E+03	8.47E+02	3.99E+03	6.63E+02	1.84E+03	7.22E+02	5.92E+02	1.60E+02	3.38E+01
Fort Calhoun 1	1.22E+03	3.46E+02	8.79E+02	1.52E+03	1.48E+03	5.68E+02	4.23E+02	7.85E+02	1.64E+02	4.59E+02
R. E. Ginna	5.46E+02	1.95E+03	7.12E+02	2.96E+02	4.06E+02	2.09E+02	1.77E+02	5.17E+01	5.11E+02	5.95E+02
Haddam Neck	1.83E+03	7.54E+02	2.76E+03	7.52E+03	2.76E+03	2.33E+03	3.58E+03	2.55E+03	1.71E+04	1.48E+03
Harris 1							1.71E+03	2.25E+03	1.15E+03	5.96E+02
Indian Point 1&2	9.13E+03	7.27E+03	9.58E+03	3.78E+03	1.88E+03	2.05E+03	4.68E+03	2.27E+02	8.77E+01	2.23E+03
Indian Point 3	6.57E+03	2.58E+03	5.60E+02	1.88E+03	1.54E+03	1.93E+03	1.82E+03	3.10E+02	3.14E+02	6.26E+02
Kewaunee	1.18E+02	1.66E+02 <	2.25E+02 <	4.04E+01 <	4.97E+01 <	6.55E+01 <	3.19E+01 <	2.91E+01	6.52E+01	2.31E+00
** Maine Yankee	3.28E+02	1.53E+03	5.07E+01	1.54E+02	4.41E+02	1.07E+03	8.34E+02	9.19E+01	2.02E+01	9.46E+02
McGuire 1	1.58E-01	1.65E-03	1.60E+03	2.28E+03	1.93E+03	1.05E+03	2.04E+03	1.95E+03	7.19E+02	5.18E+02
McGuire 2			1.60E+03	2.28E+03	1.93E+03	1.05E+03	2.04E+03	1.95E+03	7.19E+02	5.18E+02
Millstone 2	2.24E+03	9.09E+03	9.06E+03	4.19E+03	4.00E+02	1.02E+02	3.97E+02	6.34E+02	2.46E+02	2.89E+03
Millstone 3						2.39E+01	1.05E+02	8.44E+01	2.96E+02	2.11E+02
North Anna 1&2	5.30E+03	4.34E+03	2.22E+04	1.76E+04	8.05E+03	5.71E+03	1.05E+03	4.83E+02	1.44E+03	9.52E+02
Oconee 1,2,& 3	1.63E+04	2.41E+04	2.40E+04	2.28E+04	2.35E+04	2.43E+04	1.05E+04	2.59E+04	8.97E+03	8.84E+03
Palisades	3.00E+03	7.38E+03	3.00E+03	2.84E+01	3.68E+03	1.73E+02	1.75E+03	2.43E+03	1.52E+02	1.21E+02
Palo Verde 1					2.53E+02	2.67E+03	1.27E+03	1.84E+03	6.41E+02	7.08E+02
Palo Verde 2						1.97E+03	5.47E+03	2.97E+03	4.29E+02	6.76E+02
Palo Verde 3							2.52E-02	1.36E+02	8.34E+02	1.20E+03
Point Beach 1&2	6.11E+02	9.93E+02	7.68E+02	9.30E+01	1.16E+02	2.78E+01	4.82E+01	8.08E+01	1.50E+01	8.03E+00
Prairie Island 1&2	4.65E+01	5.47E+02	2.76E+02	7.58E+01	4.59E+01	3.03E+01	8.77E-01	1.42E-01	1.73E+02	8.28E+01
Rancho Seco 1	1.37E+03	1.48E+03	6.89E+02	3.83E+03	4.67E+03	9.30E+01	2.16E-02	1.52E+03	2.00E+03	2.20E-01
H. B. Robinson 2	5.13E+02	1.75E+02	2.93E+02	4.90E+01	2.14E+03	6.59E+02	7.70E+02	1.04E+03	2.79E+01	7.20E+00
Salem 1	1.06E+03	2.34E+02	1.25E+02	1.95E+02	1.68E+03	1.39E+03	3.64E+03	5.29E+02	1.39E+03	3.13E+02
Salem 2	6.09E+02	1.11E+03	7.44E+02	1.81E+03	1.15E+03	8.56E+02	1.06E+03	1.18E+03	7.30E+01	1.49E+02
San Onofre 1	4.17E+02	8.61E+01	1.06E+01	8.62E+01	3.83E+03	4.11E+02	9.81E+02	2.99E+03	9.05E+02	1.80E+03
San Onofre 2-3		6.40E+00	7.43E+03	4.00E+04	2.53E+04	8.25E+03	2.18E+04	5.12E+03	2.46E+03	1.16E+03
Seabrook 1									N/D	1.07E+02
Sequoyah 1&2	9.03E+03	5.74E+03	3.92E+03	6.68E+03	4.57E+03	1.21E+00	N/D	2.25E+02	3.85E+03	6.07E+03
South Texas 1								8.64E+02	4.45E+02	1.72E+02
South Texas 2									1.16E+02	1.09E+02
St. Lucie 1	2.30E+04	2.33E+04	2.16E+04	3.53E+04	5.08E+04	3.33E+04	6.21E+03	1.42E+03	4.53E+03	6.19E+02
St. Lucie 2			1.25E+03	7.68E+03	9.55E+03	9.98E+03	8.60E+03	9.16E+03	2.22E+03	5.34E+02
Summer 1		1.40E+02	3.88E+02	1.64E+01	1.40E+02	1.39E+01	6.34E+02	3.32E+02	1.82E+03	7.51E+02
Surry 1&2	1.41E+04	2.11E+04	5.49E+03	6.95E+03	2.07E+03	1.99E+03	3.08E+02	3.86E+02	1.37E+02	4.51E+02
Three Mile Island 1	5.81E-02	7.56E-03	2.01E+01	3.62E-01	1.08E+02	3.80E+03	7.89E+02	1.87E+03	2.10E+03	6.66E+02
Three Mile Island 2	2.88E+02	4.89E+02	1.73E+02	2.07E+02	N/D	2.80E-01	N/D	4.40E-01	N/D	N/D
TMI 2/Epicor	1.84E+02	4.26E+02	3.61E+01	3.99E+01	*+	*+	*+	*+	*+	*+
* Trojan	1.24E+03	9.02E+02	2.29E+02	8.98E+02	1.10E+03	9.42E+02	2.55E+02	4.25E+02	5.94E+02	2.06E+02

* 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 Main Yankee report "Revised Semiannual Effluent and Release Reports for 770131 - 901231" 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	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Turkey Point 3&4	4.33E+03	2.00E+04	1.61E+04	1.16E+04						
Turkey Point 3					1.32E+03	3.64E+03	9.38E+02	1.25E+03	1.70E+03	6.88E+02
Turkey Point 4					1.80E+03	1.01E+03	7.86E+02	1.31E+03	1.71E+03	5.92E+02
Vogtle 1&2							1.07E+02	1.15E+02	5.46E+02	1.88E+02
Waterford 3					8.21E+03	1.12E+04	5.63E+03	5.30E+03	5.59E+02	5.73E+03
Wolf Creek 1					1.72E+02	3.15E+01	1.73E+02	7.92E+02	6.40E+02	9.99E+02
Yankee Rowe 1	1.72E+02	1.55E+02	7.51E+02	1.74E+03	1.47E+03	5.11E+02	3.64E+02	2.06E+02	1.21E+02	1.13E+02
Zion 1&2	6.91E+03	1.61E+04	6.34E+03	3.61E+03	3.88E+03	3.18E+03	1.18E+02	1.39E+03	1.12E+03	1.10E+02
Total	1.68E+05	2.25E+05	< 1.83E+05	< 2.10E+05	< 2.05E+05	< 1.57E+05	< 1.11E+05	< 1.03E+05	8.11E+04	6.21E+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	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Big Rock Point 1	6.10E-01	1.50E-01	4.60E+00	1.60E-01	1.20E-01	5.00E-02	1.00E-02	8.91E-03	1.90E-03	2.94E-02
Browns Ferry 1,2,& 3				1.20E-01	2.70E-01	< 7.00E-02	1.04E-01	2.27E-01	5.03E-02	1.05E-01
Brunswick 1&2					< 1.00E-02	4.60E-01	9.32E-01	4.07E-01	9.52E-01	2.12E+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
Dresden 1	6.70E-01	2.75E+00	4.00E-02	6.80E-01	9.60E-01	8.40E-01	4.93E+00	2.28E+00	2.38E-02	1.46E-02
Dresden 2-3	8.68E+00	5.89E+00	6.70E+00	6.50E+00	4.31E+00	5.49E+00	6.86E+00	3.13E+00	6.97E+00	1.10E+01
Duane Arnold					1.10E-03	8.18E-02	2.29E-02	3.65E-02	3.35E-02	8.50E-02
Fermi 2										
James A. Fitzpatrick					< 4.00E-02	6.80E-01	1.73E-01	2.79E-01	1.42E-02	1.25E-01
Grand Gulf 1										
Edwin I. Hatch 1					< 1.00E-02	< 1.00E-02	5.67E-03	4.13E-03	2.59E-02	4.29E-01
Edwin I. Hatch 2										1.33E-02
Hope Creek 1										
Humboldt Bay 3	3.00E-01	4.80E-01	2.90E-01	8.40E-01	1.06E+00	8.36E-02	4.04E-03	7.26E-04	1.07E-04	5.11E-04
LaCrosse	< 1.00E-02	7.10E-01	2.00E-01	4.00E-02	1.00E-01	< 7.06E-02	1.67E-01	2.79E-02	2.53E-02	1.32E-02
LaSalle 1&2										
Limerick 1&2										
Millstone 1	4.00E+00	1.32E+00	2.00E-01	3.26E+00	9.98E+00	2.33E+00	4.86E+00	4.55E+00	5.90E-01	3.32E-01
Monticello	3.60E-02	5.78E-01	1.20E+00	5.70E+00	3.71E+00	1.71E-01	8.51E-02	5.49E-02	3.39E-02	2.83E-02
Nine Mile Point 1	6.00E-02	9.70E-01	1.98E+00	8.90E-01	2.78E+00	2.20E+00	1.99E-01	1.35E-01	4.71E-02	2.55E-02
Nine Mile Point 2										
Oyster Creek 1	2.14E+00	6.46E+00	7.02E+00	3.51E+00	5.64E+00	6.39E+00	9.05E+00	1.81E+01	9.32E+00	1.25E+00
Peach Bottom 2&3			< 1.00E-02	1.00E-02	4.00E-02	9.75E-01	2.73E-01	9.62E-02	2.58E-01	2.94E-02
Perry 1										
Pilgrim 1		3.00E-02	4.70E-01	1.45E+00	2.58E+00	6.74E-01	6.90E-01	1.81E-01	1.45E-01	1.04E-01
Quad-Cities 1&2		7.50E-01	5.50E+00	8.88E+00	1.31E+00	1.33E+00	1.69E+00	2.15E+00	1.57E+00	5.90E-01
River Bend 1										
Shoreham 1										
Susquehanna 1&2										
Vermont Yankee 1		1.70E-01	7.00E-02	3.60E-01	1.00E-02	< 1.00E-02	1.44E-02	2.18E-01	4.43E-01	1.70E-02
WNP-2										
Total	< 1.65E+01	2.03E+01	< 2.83E+01	3.26E+01	< 3.30E+01	< 2.20E+01	< 3.01E+01	3.19E+01	< 2.07E+01	< 1.65E+01
* Fort St. Vrain									6.89E-07	1.25E-06

* High temperature gas cooled reactor

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	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Big Rock Point 1	6.10E-03	4.71E-03	3.35E-03	1.32E-01	8.25E-02	7.56E-02	2.94E-02	5.07E-02	4.87E-03	5.71E-03
Browns Ferry 1,2,& 3	N/D	1.89E-01	2.83E-01 <	1.72E-01 <	2.49E-02 <	2.73E-03	1.78E-03	1.76E-03	1.86E-04	1.88E-04
Brunswick 1&2	8.89E-01	1.99E+00	6.25E+00	3.49E-01	6.32E-02	4.69E-02	1.82E-01	1.77E-01	4.84E-02	4.83E-02
Clinton 1							2.58E-04	5.94E-02	9.52E-03	8.71E-03
Cooper	< 1.09E-02 <	1.55E-01 <	2.30E-02 <	1.15E-02 <	2.29E-02 <	1.16E-02	2.67E-02	2.04E-02	5.26E-03	3.53E-04
Dresden 1	9.94E-03	3.36E-04	7.56E-04	1.69E-03	9.23E-05	+	+	+	1.07E-04	2.59E-04
Dresden 2-3	9.87E+00	9.50E-01	6.32E-01	1.30E-01	1.56E-01	7.11E-02	1.45E-01	2.35E-01	1.15E+00	1.51E-01
Duane Arnold	3.25E-02	1.03E-02	1.50E-02	1.53E-02	8.89E-03	7.32E-02	1.37E-01	1.55E-02	3.16E-03	4.45E-03
Fermi 2						2.68E-07	8.56E-03	2.78E-03	1.67E-02	1.54E-02
James A. Fitzpatrick	2.80E-01	7.71E-01	3.80E-01	2.10E-01	1.67E-01	8.66E-02	1.36E-01	7.00E-02	7.12E-02	1.91E-02
Grand Gulf 1			4.50E-05	1.86E-04	7.53E-04	4.85E-04	4.28E-03	4.90E-04	1.08E-03	9.98E-04
Edwin I. Hatch 1	2.12E-01	1.84E-01	6.96E-02	6.57E-02	3.98E-02	1.50E-02	2.54E-01	**	**	**
Edwin I. Hatch 2	9.42E-03	6.83E-02	1.95E-02	1.15E-02	3.47E-02	1.79E-02	1.16E-01	4.29E-02	5.73E-03	7.64E-03
Hope Creek 1						N/D	N/D	N/D	N/D	5.47E-03
Humboldt Bay 3	< 3.82E-04	1.09E-04	2.68E-04	2.68E-04	7.62E-05	1.64E-04	6.78E-05	1.49E-04	3.67E-05	3.85E-05
LaCrosse	1.69E-02	8.35E-03	1.08E-02	6.90E-03	9.62E-03	5.91E-03	2.31E-03	1.11E-05	1.29E-05	1.80E-04
LaSalle 1&2		4.16E-03	1.80E-02	1.06E-02	2.32E-02	7.09E-02	4.97E-02	1.34E-02	8.23E-03	3.44E-03
Limerick 1&2				N/D	N/D	7.45E-03	1.17E-03	6.67E-03	7.60E-03	7.64E-04
Millstone 1	1.48E-01	2.09E-01	6.25E-02	6.24E-02	5.20E-02	4.71E-02	2.50E-02	7.60E-03	9.35E-03	2.60E-03
Monticello	3.45E-02	8.85E-02	4.10E-02	2.93E-02	9.95E-02	6.86E-02	1.73E-01	7.90E-02	1.14E-01	4.34E-02
Nine Mile Point 1	1.49E-02	2.71E-02	1.07E-02	1.75E-02	3.46E-02	1.75E-02	1.61E-02	1.89E-03	3.02E-03	2.72E-03
Nine Mile Point 2							5.17E+00	6.90E-04	5.04E-03	4.95E-03
Oyster Creek 1	2.24E+00	1.04E+00	1.90E-02	4.37E-01	3.04E+00	7.00E-01	1.04E-01	6.35E-02	5.08E-02	3.14E-02
Peach Bottom 2&3	< 4.19E-02	3.90E-02	4.60E-02	1.02E-01	6.88E-02	5.20E-02	2.00E-02	1.50E-03	3.45E-03	1.82E-02
Perry 1						1.13E-06	4.87E-05	4.62E-02	8.54E-03	1.11E-02
Pilgrim 1	< 6.87E-02 <	4.44E-02 <	4.69E-02 <	5.17E-03 <	5.68E-02 <	1.24E-02 <	8.43E-04	3.82E-04	5.62E-03	1.02E-02
Quad-Cities 1&2	1.27E+00	4.12E-01	4.36E-01	8.86E-02	6.06E-01	1.11E-01	9.40E-02	4.46E-02	4.06E-02	3.34E-02
River Bend 1						4.62E-05	4.03E-04	9.66E-04	4.13E-04	5.17E-02
Shoreham 1						N/D	N/D	N/D	N/D	N/D
Susquehanna 1&2		< 8.70E-04	9.43E-04	1.48E-02	2.66E-02	3.39E-03	6.08E-03	1.82E-03	1.11E-03	8.63E-04
Vermont Yankee 1	4.53E-03	1.45E-03	4.14E-03	6.87E-03 <	5.67E-03 <	1.29E-02	1.27E-02	6.58E-03	8.92E-03	7.24E-02
WNP-2				3.77E-01	2.43E-01	7.00E-02	7.71E-02	4.96E-01	1.17E-01	1.50E-01
Total	< 1.52E+01 <	6.20E+00 <	8.37E+00 <	2.26E+00 <	4.87E+00 <	1.58E+00 <	6.79E+00	1.43E+00	1.70E+00	7.05E-01
* Fort St. Vrain	1.40E-06	2.61E-01	7.40E-07	2.78E-06	6.31E-07	N/D	N/D	< 1.79E-05	N/D	N/D

\+ Included with Dresden 2-3 total

* High temperature gas cooled reactor

** Included with Edwin I. Hatch 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	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Arkansas One 1				5.00E-02	7.40E-01	5.73E-02	9.04E-03	3.19E-03	4.47E-03	1.66E-01
Arkansas One 2									4.65E-03	6.90E-03
Beaver Valley 1&2						#< 1.00E-02	1.52E-04	7.21E-02	4.07E-04	1.91E-03
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	2.05E+00	7.44E-02
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	6.88E-02
Crystal River 3							2.53E-03	1.05E-03	1.88E-02	6.77E-03
Davis-Besse 1							2.57E-04	4.30E-04	5.69E-03	2.01E-03
Diablo Canyon 1&2										
Joseph M. Farley 1								4.11E-02	2.20E-02	2.37E-03
Joseph M. Farley 2										
Fort Calhoun 1			< 1.00E-02	< 1.00E-02	< 1.00E-02	< 2.04E-02	1.34E-02	8.30E-03	1.58E-03	2.42E-03
R. E. Ginna	1.70E-01	4.00E-02	< 1.00E-02	< 1.00E-02	2.00E-02	3.17E-02	2.55E-02	1.04E-02	1.88E-02	9.00E-03
Haddam Neck		2.00E-02	5.00E-02	< 1.00E-02	< 1.00E-02	< 1.00E-02	1.74E-03	5.21E-03	4.77E-02	8.01E-03
Harris 1										
Indian Point 1&2			< 1.00E-02	4.30E-01	1.62E+00	2.42E-01	5.59E-02	2.05E-01	4.50E-01	6.42E-02
Indian Point 3						Shown With	Other Unit	1.29E-02	3.89E-03	2.53E-02
Kewaunee				2.00E-02	6.60E-01	< 1.00E-02	2.40E-02	5.48E-03	6.18E-04	2.61E-04
** Maine Yankee		< 1.00E-02	9.40E-01	5.00E-02	< 1.00E-02	< 1.00E-02	1.07E-02	4.39E-03	1.16E-01	3.67E-03
McGuire 1										
McGuire 2										
Millstone 2					1.00E-02	1.25E-02	4.47E-03	2.97E-03	9.79E-03	1.94E-02
Millstone 3										
North Anna 1&2								3.19E-02	5.71E-02	1.26E-02
Oconee 1,2,& 3			1.00E-02	3.00E-02	1.00E-02	2.72E-01	5.35E-01	2.22E-01	2.28E-01	1.33E-01
Palisades		< 1.00E-02	3.10E-01	1.00E-02	3.80E-01	4.16E-02	1.63E-02	2.07E-02	2.46E-02	2.76E-02
Palo Verde 1										
Palo Verde 2										
Palo Verde 3										
Point Beach 1&2	< 1.00E-02	3.00E-02	5.50E-01	1.60E-01	7.00E-02	1.85E-02	5.02E-03	2.88E-02	1.35E-02	1.28E-03
Prairie Island 1&2			< 1.00E-02	< 1.00E-02	2.12E-02	1.14E-02	7.56E-03	8.96E-04	3.86E-03	1.83E-03
Rancho Seco 1					< 1.00E-02	< 1.00E-02	5.02E-03	3.21E-02	5.75E-03	9.96E-03
H. B. Robinson 2		3.00E-02	3.00E-01	5.00E-02	2.00E-02	9.96E-02	3.88E-03	9.26E-04	4.10E-06	1.13E-03
Salem 1						N/D	2.34E-07	4.01E-02	7.68E-03	2.17E-01
Salem 2										5.44E-05
San Onofre 1	< 1.00E-02	< 1.00E-02	1.61E+00	< 1.00E-02	4.00E-02	< 1.00E-02	1.86E-04	2.71E-03	1.43E-04	8.41E-01
San Onofre 2-3										
Seabrook 1										
Sequoyah 1&2										2.57E-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
St. Lucie 2										
Summer 1										
Surry 1&2		< 1.00E-02	4.00E-02	1.40E-01	5.00E-02	2.46E-01	1.20E-01	6.49E-02	7.61E-03	1.85E-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
Three Mile Island 2								2.30E-03	1.42E+01	5.67E-04
TMI 2/Epicor										6.83E-06
* Trojan						2.84E-02	3.56E-02	8.28E-03	2.48E-02	1.84E-02

* 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.

\# I-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 - 901231" Docket Date 92/01/08.

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	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Turkey Point 3&4			6.00E-02	3.63E+00	4.30E-01	4.22E-01	1.04E+00	4.59E-01	7.91E-02	7.05E-02
Turkey Point 3										
Turkey Point 4										
Vogtle 1&2										
Waterford 3										
Wolf Creek 1										
Yankee Rowe 1	< 1.00E-02	< 1.00E-02	1.90E-01	5.30E-01	1.00E-02	< 1.00E-02	8.70E-05	2.25E-04	2.49E-04	9.56E-05
Zion 1&2			< 1.00E-02	1.00E-02	1.40E-01	9.00E-02	5.38E-02	8.91E-02	6.74E-02	3.00E-03
Total	< 2.00E-01	< 1.90E-01	< 4.11E+00	< 5.17E+00	< 4.35E+00	< 1.93E+00	2.53E+00	2.27E+00	1.78E+01	1.88E+00

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	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Arkansas One 1	5.58E-03	9.07E-04	1.15E-03	1.14E-03	3.50E-03	4.01E-03	3.05E-04	1.03E-03	8.17E-04	8.94E-04
Arkansas One 2	1.41E-02	4.92E-03	5.78E-03	2.54E-04	3.27E-03	2.36E-04	5.72E-05	4.21E-04	5.87E-04	2.03E-04
Beaver Valley 1&2	6.85E-03	4.56E-03	5.25E-02	6.21E-03	1.58E-03	7.83E-03	1.36E-02	3.54E-03	1.11E-02	3.20E-04
Braidwood 1							1.34E-05	2.44E-02	2.54E-04	1.56E-03
Braidwood 2								9.52E-05	2.86E-04	5.61E-04
Byron 1&2					2.18E-03	5.45E-02	9.45E-03	1.28E-02	7.93E-04	4.08E-03
Callaway 1				9.41E-07	3.23E-04	1.18E-03	4.46E-04	3.36E-04	1.66E-04	1.46E-04
Calvert Cliffs 1&2	4.69E-02	1.84E-01	1.02E-01	6.02E-02	5.36E-02	8.73E-02	9.18E-02	1.36E-01	4.81E-02	1.69E-03
Catawba 1					5.71E-04	6.69E-03	7.42E-03	4.05E-03	7.46E-04	8.60E-04
Catawba 2						6.69E-03	7.42E-03	4.05E-03	7.46E-04	8.60E-04
Comanche Peak 1										N/D
Donald C. Cook 1&2	3.55E-01	1.28E-01	5.75E-02	2.09E-02	1.78E-01	2.29E-02	6.44E-02	8.92E-03	3.44E-02	7.35E-02
Crystal River 3	1.78E-02	3.22E-03	1.58E-03	2.07E-04	7.31E-04	1.02E-03	3.49E-03	1.25E-03	2.02E-03	7.68E-04
Davis-Besse 1	5.79E-02	5.28E-03	7.37E-03	1.66E-03	5.13E-04	N/D	1.24E-03	4.76E-04	3.06E-03	2.38E-03
Diablo Canyon 1&2				1.20E-05	2.40E-04	1.44E-03	2.36E-03	1.29E-03	9.75E-04	5.94E-05
Joseph M. Farley 1	6.24E-01	9.09E-02	4.60E-02	5.87E-03	5.60E-03	7.96E-04	3.81E-04	1.60E-03	3.64E-05	N/D
Joseph M. Farley 2	3.22E-03	6.51E-05	5.06E-05	1.54E-03	2.97E-04	1.35E-03	1.49E-04	2.51E-06	7.89E-07	3.15E-06
Fort Calhoun 1	3.63E-03	1.59E-03	9.32E-04	1.25E-02	7.29E-03	1.48E-03	5.11E-03	3.10E-04	1.27E-04	1.81E-03
R. E. Ginna	5.88E-03	1.36E-02	1.53E-02	1.62E-03	9.74E-04	4.04E-04	8.71E-03	5.69E-05	8.38E-04	5.14E-03
Haddam Neck	< 1.28E-02	< 5.41E-04	< 1.02E-02	5.72E-02	1.13E-03	9.36E-03	1.35E-03	3.69E-02	1.50E-02	4.71E-03
Harris 1							4.43E-06	4.59E-05	1.79E-06	7.72E-05
Indian Point 1&2	4.42E-02	4.17E-02	2.06E-02	< 1.51E-01	1.44E+00	4.59E-01	1.57E-02	9.18E-03	3.88E-03	5.36E-03
Indian Point 3	3.63E-03	< 4.28E-03	< 1.53E-04	2.04E-02	1.90E-03	4.01E-03	2.07E-03	3.42E-03	1.36E-03	1.81E-04
Kewaunee	1.21E-04	5.97E-05	< 2.16E-04	< 4.05E-03	2.77E-04	< 5.58E-03	< 1.23E-02	< 1.05E-02	1.75E-02	3.24E-03
** Maine Yankee	1.21E-03	2.55E-04	1.48E-04	7.14E-03	8.17E-04	4.60E-03	5.05E-03	5.10E-04	2.39E-04	1.81E-02
McGuire 1	1.21E-11	9.51E-04	1.89E-03	1.25E-02	1.29E-02	3.03E-02	6.08E-02	6.14E-03	3.76E-03	1.02E-03
McGuire 2			1.89E-03	1.25E-02	1.29E-02	3.03E-02	6.08E-02	6.14E-03	3.76E-03	1.02E-03
Millstone 2	1.06E-01	3.19E-01	5.73E-02	3.71E-02	6.48E-03	5.37E-03	6.51E-03	5.13E-02	3.78E-02	2.08E-02
Millstone 3						< 3.69E-04	5.09E-03	9.89E-03	1.28E-02	2.46E-03
North Anna 1&2	4.81E-01	3.49E-02	3.28E-01	8.65E-02	8.57E-02	2.27E-02	1.73E-02	2.30E-03	4.33E-03	7.05E-03
Oconee 1,2,& 3	3.24E-01	2.55E-01	1.13E-01	1.07E-01	4.92E-03	4.34E-02	1.46E-01	1.63E-01	3.56E-02	9.02E-03
Palisades	4.15E-02	2.30E-02	3.44E-02	9.92E-04	4.92E-02	3.03E-03	2.77E-02	2.65E-02	1.73E-02	2.13E-03
Palo Verde 1					1.43E-03	7.78E-03	5.81E-02	1.82E-03	7.58E-04	2.69E-03
Palo Verde 2						3.49E-03	1.34E-02	4.67E-02	3.03E-03	2.66E-03
Palo Verde 3							N/D	1.24E-04	6.45E-03	6.34E-04
Point Beach 1&2	2.03E-01	8.46E-03	1.82E-02	1.25E-03	9.05E-03	1.69E-03	3.08E-03	2.23E-03	3.27E-03	3.02E-04
Prairie Island 1&2	4.49E-04	3.74E-03	1.40E-02	1.44E-03	7.35E-03	2.22E-03	2.33E-04	7.74E-05	2.10E-05	1.50E-03
Rancho Seco 1	4.65E-03	2.62E-02	2.26E-03	2.37E-02	7.84E-03	1.49E-03	1.54E-06	4.74E-04	2.76E-04	N/D
H. B. Robinson 2	3.32E-04	5.70E-04	1.31E-02	2.47E-04	1.37E-02	9.92E-03	2.08E-02	1.10E-03	1.41E-04	1.34E-04
Salem 1	4.84E-01	7.85E-03	6.25E-02	5.16E-04	4.45E-02	1.17E-03	1.66E-03	2.13E-03	3.62E-03	1.20E-03
Salem 2	6.31E-03	4.54E-03	3.53E-02	5.41E-03	8.95E-02	3.23E-03	1.52E-03	9.91E-04	8.70E-04	2.06E-04
San Onofre 1	1.18E-02	4.66E-07	5.44E-06	9.49E-06	1.17E-03	2.09E-04	4.17E-04	1.08E-02	2.22E-03	7.25E-03
San Onofre 2-3		3.35E-05	1.56E-01	4.12E-01	4.47E-01	1.62E-01	4.20E-01	7.75E-02	4.73E-01	7.05E-03
Seabrook 1									N/D	N/D
Sequoyah 1&2	1.30E-02	1.23E-01	2.22E-03	2.12E-02	3.17E-03	1.56E-03	5.04E-04	1.90E-04	4.22E-04	2.65E-04
South Texas 1								8.26E-04	4.02E-03	1.15E-03
South Texas 2									1.42E-03	5.75E-04
St. Lucie 1	7.69E-02	4.15E-01	2.13E-01	2.60E-01	7.91E-01	2.69E-01	3.95E-02	6.40E-03	5.75E-03	8.36E-03
St. Lucie 2			1.27E-02	2.84E-01	1.92E-01	4.20E-02	5.51E-02	2.86E-02	8.27E-03	5.79E-03
Summer 1		N/D	4.74E-05	9.00E-06	2.55E-05	2.99E-05	7.04E-04	2.33E-03	1.61E-03	5.57E-04
Surry 1&2	6.53E-02	5.96E-02	8.34E-02	5.87E-02	2.67E-02	2.09E-02	2.09E-02	2.02E-02	2.37E-03	2.93E-03
Three Mile Island 1	5.05E-04	1.65E-04	6.55E-05	1.27E-09	2.86E-05	3.97E-04	1.28E-04	1.26E-03	8.22E-03	1.53E-03
Three Mile Island 2	3.69E-05	6.46E-05	2.79E-05	1.61E-05	4.59E-05	1.67E-04	7.27E-05	6.78E-05	3.50E-06	3.74E-06
TMI 2/Epicor	2.63E-06	3.71E-06	1.80E-06	7.93E-07	*+	*+	*+	*+	*+	*+
* Trojan	4.97E-02	1.09E-02	5.57E-03	4.65E-03	5.75E-03	8.62E-03	2.61E-03	3.97E-03	4.30E-03	1.64E-03

* 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	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Turkey Point 3&4	2.94E-02	2.20E-01	1.44E-01	2.77E-02						
Turkey Point 3					7.98E-03	1.93E-02	1.24E-02	4.83E-03	3.10E-03	4.60E-03
Turkey Point 4					7.88E-03	2.45E-03	1.38E-02	4.78E-03	2.99E-04	1.87E-03
Vogtle 1&2							1.99E-05	1.75E-05	1.25E-03	8.49E-05
Waterford 3					3.48E-03	5.30E-03	1.02E-03	1.24E-03	7.62E-04	5.99E-04
Wolf Creek 1					1.67E-06	2.11E-04	2.14E-04	8.36E-05	2.31E-05	1.71E-04
Yankee Rowe 1	2.13E-04	< 5.75E-04	3.11E-03	< 6.49E-03	< 7.61E-04	2.02E-04	4.10E-05	5.89E-05	< 1.82E-04	1.61E-04
Zion 1&2	1.25E-02	8.57E-02	2.28E-02	4.27E-02	2.55E-02	4.48E-02	4.07E-03	1.40E-02	2.39E-03	1.38E-03
Total	< 3.11E+00	< 2.08E+00	< 1.65E+00	< 1.76E+00	< 3.56E+00	< 1.42E+00	< 1.25E+00	< 7.59E-01	< 7.96E-01	2.25E-01

Table 5

Liquid Effluents Comparison By Year

Tritium (Curies)

Boiling Water Reactors

Facility	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Big Rock Point 1	1.03E+01	1.04E+01	1.97E+01	5.10E+00	5.73E+00	2.41E+00	8.83E+00	4.05E+00	5.45E+00	6.18E+00
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
Brunswick 1&2					3.20E+00	5.90E+00	8.93E+00	1.41E+01	3.09E+01	1.28E+01
Clinton 1										
Cooper				1.70E+00	8.25E+00	8.43E+00	9.04E+00	7.51E+00	6.63E+00	8.77E+00
Dresden 1	8.70E+00	4.33E+01	1.65E+01	1.68E+01	2.70E-01	2.00E-02	8.90E-02	1.31E+01	1.50E+00	N/D
Dresden 2-3	3.85E+01	2.59E+01	2.58E+01	2.26E+01	5.40E+01	1.97E+01	5.00E+00	1.92E+01	1.93E+01	6.20E+01
Duane Arnold					3.30E-01	3.40E-01	2.13E-01	1.19E+02	2.90E-01	N/D
Fermi 2										
James A. Fitzpatrick					5.03E+00	4.20E+00	3.35E+00	1.90E+00	1.52E+00	2.81E+00
Grand Gulf 1										
Edwin I. Hatch 1					6.12E+00	8.98E+00	1.20E+01	9.00E+00	1.23E+01	1.42E+01
Edwin I. Hatch 2										1.07E+01
Hope Creek 1										
Humboldt Bay 3	7.50E+00	1.30E+01	5.13E+01	3.17E+01	2.01E+01	1.30E+01	5.26E-01	3.63E-02	3.91E-02	9.70E-02
LaCrosse	9.14E+01	1.20E+02	1.03E+02	1.15E+02	1.27E+02	4.10E+01	4.86E+01	4.72E+01	3.54E+01	7.20E+01
LaSalle 1&2										
Limerick 1&2										
Millstone 1	1.27E+01	2.09E+01	3.70E+00	2.41E+01	8.03E+01	2.01E+01	4.41E+00	3.20E+00	7.92E+00	2.73E+01
Monticello	5.92E-01 <	1.00E-01	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Nine Mile Point 1	1.24E+01	2.78E+01	4.65E+01	1.87E+01	2.81E+01	2.46E+00	2.49E+00	N/D	6.78E+00	N/D
Nine Mile Point 2										
Oyster Creek 1	2.15E+01	6.16E+01	3.59E+01	1.41E+01	1.79E+01	3.86E+01	1.88E+01	1.96E+01	1.40E+00	1.54E+02
Peach Bottom 2&3			< 1.00E-01	1.00E+01	3.08E+01	7.37E+01	7.09E+01	3.24E+01	4.28E+01	3.73E+01
Perry 1										
Pilgrim 1		4.20E+00	4.00E-01	1.05E+01	1.82E+01	4.67E+01	3.27E+01	2.98E+00	1.34E+01	4.00E+01
Quad-Cities 1&2		4.70E+00	2.45E+01	3.40E+01	5.37E+01	4.98E+01	2.64E+01	1.72E+01	1.76E+01	1.03E+01
River Bend 1										
Shoreham 1										
Susquehanna 1&2										
Vermont Yankee 1			1.00E-01	N/D	N/D	1.60E+00	8.44E-01	N/D	4.04E+00	N/D
WNP-2										
Total	2.04E+02	< 3.32E+02	< 3.30E+02	3.09E+02	4.69E+02	< 3.41E+02	2.77E+02	3.41E+02	2.20E+02	4.80E+02
* Fort St. Vrain									1.23E+02	2.06E+02

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

Table 5

Liquid Effluents Comparison By Year

Tritium (Curies)

Boiling Water Reactors

Facility	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Big Rock Point 1	3.13E+00	2.98E+00	2.22E+01	1.11E+00	1.27E+00	3.51E-01	5.85E-01	3.47E-01	6.39E-01	5.89E-01
Browns Ferry 1,2,&3	2.42E+01	2.39E+01	3.20E+01	3.18E+01	3.31E+01	7.93E+00	2.03E+00	1.46E+00	7.01E-01	2.07E-01
Brunswick 1&2	2.26E+01	4.88E+01	1.04E+02	3.37E+01	9.88E+00	5.78E+00	1.93E+01	3.10E+01	1.79E+01	4.95E+01
Clinton 1							1.87E+00	2.90E+00	1.49E+00	2.60E+00
Cooper	< 8.37E+00	< 9.08E+00	< 7.60E+00	< 7.20E+00	< 5.05E+00	< 5.56E+00	5.02E+00	4.17E+00	5.45E+00	5.07E+00
Dresden 1	N/D	N/D	N/D	N/D	N/D	N/D	N/D	**	**	**
Dresden 2-3	6.05E+00	1.36E+00	1.45E-03	3.93E+01	7.45E+00	1.27E+01	2.23E+01	1.72E+01	1.83E+01	2.04E+01
Duane Arnold	N/D	2.25E-05	N/D	1.41E-06	3.57E-02	N/D	N/D	N/D	N/D	N/D
Fermi 2						3.00E-01	1.05E+00	9.33E-01	1.30E+00	7.47E-01
James A. Fitzpatrick	4.11E+00	6.55E-01	2.72E+00	4.77E+00	4.20E+00	4.99E+00	2.48E+00	8.87E+00	7.32E-01	3.08E+00
Grand Gulf 1			3.89E-03	7.27E-01	5.17E+00	1.47E+01	1.83E+01	1.34E+01	1.32E+01	1.89E+01
Edwin I. Hatch 1	1.16E+01	1.03E+02	9.47E+01	8.02E+01	3.93E+01	1.85E+01	2.01E+01	+	+	+
Edwin I. Hatch 2	9.28E+00	3.68E+01	3.40E+01	2.13E+01	1.81E+01	1.01E+01	8.10E+00	4.40E+01	4.57E+01	2.26E+01
Hope Creek 1						6.91E-03	9.53E+00	9.36E+00	2.35E+01	1.18E+01
Humboldt Bay 3	< 1.62E-01	5.99E-02	5.38E-02	2.93E-02	1.08E+00	6.67E-02	6.98E-04	9.44E-04	1.14E-03	3.48E-03
LaCrosse	7.74E+01	5.92E+01	1.24E+02	1.25E+02	1.28E+02	5.75E+01	4.66E+01	4.60E+00	2.79E+00	7.74E-01
LaSalle 1&2		9.26E-01	4.25E+00	1.10E+00	3.89E-01	1.37E-01	1.10E+00	1.76E+00	1.07E+00	3.74E-01
Limerick 1&2				N/D	1.15E+00	2.06E+00	6.02E+00	N/D	2.70E+01	3.02E+01
Millstone 1	2.62E+00	6.21E+00	8.38E+00	8.58E+00	1.79E+01	5.33E+00	1.78E+01	3.78E+01	4.58E+01	2.02E+01
Monticello	4.17E-03	2.70E-05	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Nine Mile Point 1	5.05E+00	5.82E+00	7.89E+00	N/D	N/D	2.19E+00	N/D	N/D	N/D	1.41E+00
Nine Mile Point 2							4.63E-01	7.92E+00	8.10E+00	4.78E+00
Oyster Creek 1	2.67E+01	4.95E+00	8.76E+00	1.03E+01	N/D	1.07E+00	1.96E+00	1.62E+01	3.96E+00	N/D
Peach Bottom 2&3	3.68E+01	2.37E+01	2.02E+01	3.58E+01	5.04E+01	4.46E+01	4.64E+01	9.69E+00	2.00E+01	2.35E+01
Perry 1						2.67E-03	3.49E+00	7.34E+00	6.96E+00	8.79E+00
Pilgrim 1	3.41E+01	5.91E+00	1.56E+01	1.47E+01	7.81E+00	1.00E+01	3.21E+00	5.73E-01	2.37E+00	3.68E+00
Quad-Cities 1&2	1.19E+01	7.80E+00	3.88E+00	5.42E+00	3.41E+00	6.43E+00	6.92E+00	7.28E+00	2.91E+01	2.61E+01
River Bend 1						4.56E+00	6.92E+00	9.65E+00	1.60E+01	8.35E+01
Shoreham 1						3.80E-03	6.04E-03	N/D	N/D	N/D
Susquehanna 1&2		< 8.55E-01	8.98E+00	1.12E+01	9.14E+00	1.54E+01	1.87E+01	1.45E+01	2.74E+01	5.80E+01
Vermont Yankee 1	3.70E-01	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	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
Total	< 2.84E+02	< 3.42E+02	< 4.99E+02	< 4.33E+02	< 3.44E+02	< 2.34E+02	2.71E+02	2.52E+02	3.21E+02	3.98E+02
* Fort St. Vrain	2.19E+02	2.62E+02	3.69E+02	1.24E+02	1.53E+01	1.27E+02	5.61E+01	1.61E+02	1.12E+02	3.22E+00

* High temperature gas cooled reactor

** Included with Dresden 2-3 total

\+ Included with Edwin I. Hatch 2 total

N/D = Not Detectable

Table 6

Liquid Effluents Comparison By Year

Tritium (Curies)

Pressurized Water Reactors

Facility	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Arkansas One 1				2.56E+01	4.60E+02	2.12E+02	2.45E+02	2.94E+02	1.68E+02	2.12E+02
Arkansas One 2									5.27E+01	2.89E+02
Beaver Valley 1&2						8.60E+00	1.08E+02	3.49E+02	9.59E+01	3.98E+01
Braidwood 1										
Braidwood 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
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
Crystal River 3							1.66E+02	1.54E+02	1.66E+02	1.95E+02
Davis-Besse 1							9.01E+00	2.15E+02	2.45E+02	1.08E+02
Diablo Canyon 1&2										
Joseph M. Farley 1								5.91E+01	9.40E+01	5.70E+02
Joseph M. Farley 2										
Fort Calhoun 1			1.58E+01	1.24E+02	1.11E+02	1.22E+02	1.57E+02	1.50E+02	2.58E+02	5.44E+01
R. E. Ginna	1.54E+02	1.19E+02	2.86E+02	1.95E+02	2.60E+02	2.42E+02	1.19E+02	2.42E+02	2.40E+02	1.60E+02
Haddam Neck	5.83E+03	5.89E+03	3.90E+03	2.24E+03	5.67E+03	4.85E+03	6.67E+03	3.94E+03	3.55E+03	3.29E+03
Harris 1										
Indian Point 1&2			2.75E+01	4.79E+01	7.94E+01	3.32E+02	3.71E+02	5.12E+02	3.75E+02	2.76E+02
Indian Point 3						Shown With	Other Unit	2.56E+02	1.15E+02	4.27E+02
Kewaunee				9.24E+01	2.77E+02	1.80E+02	2.95E+02	2.96E+02	2.49E+02	2.33E+02
Maine Yankee		9.20E+00	1.54E+02	2.19E+02	1.77E+02	3.67E+02	1.53E+02	3.15E+02	2.02E+02	2.18E+02
McGuire 1										
McGuire 2										
Millstone 2					7.60E+00	2.77E+02	2.11E+02	2.01E+02	2.54E+02	2.68E+02
Millstone 3										
North Anna 1&2								2.82E+02	3.13E+02	4.03E+02
Oconee 1,2,& 3			7.07E+01	3.50E+02	3.55E+03	2.19E+03	1.92E+03	1.17E+03	8.94E+02	7.12E+02
Palisades		2.08E+02	1.85E+02	8.10E+00	4.16E+01	9.63E+00	5.58E+01	1.01E+02	1.26E+02	7.47E+01
Palo Verde 1										
Palo Verde 2										
Palo Verde 3										
Point Beach 1&2	2.66E+02	5.63E+02	5.56E+02	8.33E+02	8.85E+02	6.94E+02	9.99E+02	1.29E+03	8.92E+02	7.61E+02
Prairie Island 1&2			< 1.00E-01	1.42E+02	4.54E-01	1.00E-01	1.35E+03	5.51E+02	6.25E+02	5.43E+02
Rancho Seco 1					1.32E+02	N/D	8.55E-02	N/D	N/D	1.47E-02
H. B. Robinson 2	1.18E+02	4.05E+02	4.32E+02	4.49E+02	6.24E+02	9.80E+02	6.85E+02	4.73E+02	4.29E+02	1.89E+02
Salem 1						4.00E-02	2.96E+02	4.46E+02	7.26E+02	N/D
Salem 2										N/R
San Onofre 1	4.57E+03	3.48E+03	4.07E+03	3.81E+03	4.00E+03	3.39E+03	1.79E+03	2.50E+03	2.32E+03	1.03E+03
San Onofre 2-3										
Seabrook 1										
Sequoyah 1&2										3.23E-01
South Texas 1										
South Texas 2										
St. Lucie 1						1.33E+01	2.42E+02	1.28E+02	1.26E+02	2.72E+02
St. Lucie 2										
Summer 1										
Surry 1&2		5.00E+00	4.88E+02	2.45E+02	4.42E+02	7.82E+02	4.08E+02	7.47E+02	3.57E+02	3.85E+02
Three Mile Island 1				1.30E+02	4.63E+02	1.89E+02	1.92E+02	1.55E+02	5.59E+01	3.26E+01
Three Mile Island 2								3.83E+01	7.81E+01	6.10E-04
TMI 2/Epicor										N/D
Trojan						3.60E+01	3.11E+02	1.59E+02	6.80E+01	1.24E+02

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

Table 6

Liquid Effluents Comparison By Year

Tritium (Curies)

Pressurized Water Reactors

Facility	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Turkey Point 3&4			5.29E+02	5.80E+02	7.97E+02	7.71E+02	9.24E+02	1.17E+03	9.40E+02	7.49E+02
Turkey Point 3										
Turkey Point 4										
Vogtle 1&2										
Waterford 3										
Wolf Creek 1										
Yankee Rowe 1	1.68E+03	6.03E+02	6.94E+02	3.14E+02	2.47E+02	1.56E+02	1.39E+02	1.96E+02	1.75E+02	5.84E+01
Zion 1			1.00E-01	2.74E+02	1.03E+03	7.47E+02	7.24E+02	7.25E+02	6.01E+02	7.45E+02
Zion 2										
Total	1.26E+04	1.15E+04	< 1.12E+04	1.01E+04	1.96E+04	1.70E+04	1.94E+04	1.82E+04	1.65E+04	1.37E+04

Table 6

Liquid Effluents Comparison By Year

Tritium (Curies)

Pressurized Water Reactors

Facility	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Arkansas One 1	4.42E+02	2.06E+02	1.09E+02	3.05E+02	3.27E+02	2.12E+02	1.50E+02	2.50E+02	3.81E+02	2.67E+02
Arkansas One 2	2.44E+02	1.39E+02	2.38E+02	3.09E+02	2.41E+02	2.30E+02	3.52E+02	2.44E+02	4.40E+02	5.33E+02
Beaver Valley 1&2	1.40E+02	1.84E+02	4.60E+02	4.12E+02	1.50E+02	2.06E+02	5.72E+02	4.09E+02	6.21E+02	4.91E+02
Braidwood 1							4.12E+01	2.74E+02	5.58E+02	6.50E+02
Braidwood 2								2.44E+02	5.58E+02	6.50E+02
Byron 1&2					2.61E+02	6.70E+01	4.10E+02	1.01E+03	1.29E+03	9.98E+02
Callaway 1				2.90E+01	5.88E+02	4.35E+02	4.48E+02	8.93E+02	6.09E+02	1.02E+03
Calvert Cliffs 1&2	1.00E+03	4.35E+02	7.56E+02	7.87E+02	4.83E+02	7.35E+02	7.38E+02	6.24E+02	2.36E+02	7.29E+01
Catawba 1					1.75E+02	1.18E+02	3.64E+02	3.53E+02	4.45E+02	2.97E+02
Catawba 2						1.18E+02	3.64E+02	3.53E+02	4.45E+02	2.97E+02
Comanche Peak 1										1.87E+02
Donald C. Cook 1&2	9.15E+02	1.27E+03	8.85E+02	1.37E+03	1.14E+03	6.95E+02	1.97E+03	1.10E+03	8.74E+02	1.56E+03
Crystal River 3	2.71E+02	1.82E+02	1.99E+02	4.20E+02	1.76E+02	1.73E+02	3.56E+02	5.11E+02	3.44E+02	5.10E+02
Davis-Besse 1	1.57E+02	5.68E+01	1.14E+02	1.22E+02	6.74E+01	2.09E+01	2.46E+02	3.50E+01	2.39E+02	1.27E+02
Diablo Canyon 1&2				1.07E+00	4.28E+02	6.98E+02	6.91E+02	4.29E+02	9.35E+02	9.68E+02
Joseph M. Farley 1	1.65E+02	3.37E+02	4.12E+02	4.23E+02	6.03E+02	7.14E+02	6.37E+02	5.16E+02	6.99E+02	7.35E+02
Joseph M. Farley 2	6.34E+02	3.59E+02	3.17E+02	3.56E+02	5.02E+02	6.22E+02	5.05E+02	7.53E+02	6.08E+02	6.72E+02
Fort Calhoun 1	2.42E+02	3.08E+02	1.53E+02	2.35E+02	1.67E+02	1.84E+02	2.28E+02	2.32E+02	2.28E+02	1.74E+02
R. E. Ginna	2.40E+02	3.08E+02	3.50E+02	4.59E+02	5.01E+02	3.57E+02	5.64E+02	3.47E+02	5.92E+02	3.21E+02
Haddam Neck	5.29E+03	4.05E+03	3.90E+03	3.66E+03	5.76E+03	2.58E+03	3.17E+03	1.18E+03	4.81E+03	9.89E+02
Harris 1							2.48E+02	4.01E+02	4.58E+02	7.26E+02
Indian Point 1&2	2.41E+02	1.72E+02	3.43E+02	2.22E+02	3.51E+02	3.36E+02	5.63E+02	4.39E+02	5.60E+02	6.44E+02
Indian Point 3	6.42E+02	1.94E+02	3.19E+01	5.87E+02	3.40E+02	5.67E+02	3.40E+02	5.73E+02	3.51E+02	3.33E+02
Kewaunee	2.51E+02	3.18E+02	2.92E+02	4.40E+02	3.79E+02	2.94E+02	3.51E+02	3.32E+02	3.41E+02	3.79E+02
Maine Yankee	2.16E+02	1.85E+02	2.87E+02	1.72E+02	1.84E+02	3.50E+02	1.18E+02	2.91E+02	4.22E+02	2.43E+02
McGuire 1	6.25E+00	1.60E+02	1.49E+02	3.23E+02	4.02E+02	4.58E+02	4.92E+02	5.29E+02	4.23E+02	4.58E+02
McGuire 2			1.49E+02	3.23E+02	4.02E+02	4.58E+02	4.92E+02	5.29E+02	4.23E+02	4.58E+02
Millstone 2	3.71E+02	2.91E+02	1.21E+02	3.97E+02	1.66E+02	2.80E+02	2.86E+02	2.59E+02	3.66E+02	5.28E+02
Millstone 3						5.41E+02	5.90E+02	5.47E+02	6.97E+02	7.74E+02
North Anna 1&2	1.28E+03	5.71E+02	1.61E+03	6.20E+02	1.47E+03	1.56E+03	8.36E+02	1.94E+03	1.40E+03	1.67E+03
Oconee 1,2,& 3	5.07E+02	3.54E+02	1.28E+03	1.28E+03	1.24E+03	1.34E+03	9.49E+02	7.10E+02	1.02E+03	9.92E+02
Palisades	2.78E+02	1.79E+02	2.35E+02	6.95E+01	4.29E+02	6.32E+01	1.19E+02	2.83E+02	8.06E+01	1.49E+02
Palo Verde 1					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
Palo Verde 3							N/D	N/D	N/D	N/D
Point Beach 1&2	6.52E+02	5.03E+02	5.39E+02	2.10E+03	1.05E+02	8.11E+02	7.09E+02	3.57E+02	5.59E+02	8.72E+02
Prairie Island 1&2	5.62E+02	6.00E+02	5.20E+02	6.41E+02	6.96E+02	6.70E+02	4.49E+02	4.05E+02	4.64E+02	3.98E+02
Rancho Seco 1	8.35E+01	6.46E+01	7.43E+01	2.57E+02	9.00E+01	6.50E+01	1.83E+01	1.01E+02	7.29E+01	1.37E+01
H. B. Robinson 2	1.86E+02	9.51E+01	2.40E+02	1.34E+01	3.09E+02	3.42E+02	2.74E+02	5.36E+02	1.64E+02	3.53E+02
Salem 1	4.93E+02	7.22E+02	2.08E+02	3.30E+02	9.23E+02	4.10E+02	3.79E+02	6.35E+02	6.09E+02	3.53E+02
Salem 2	8.42E+02	5.25E+02	2.23E+02	3.08E+02	5.77E+02	4.38E+02	6.61E+02	3.68E+02	5.11E+02	3.03E+02
San Onofre 1	2.97E+02	5.45E+02	1.57E+01	3.39E+01	2.38E+03	4.53E+02	2.27E+03	1.53E+03	9.62E+02	1.42E+03
San Onofre 2-3		8.92E+00	2.38E+02	4.55E+02	4.75E+02	7.41E+02	8.20E+02	6.43E+02	1.30E+03	9.27E+02
Seabrook 1									1.33E-03	1.13E+02
Sequoyah 1&2	7.65E+01	9.34E+02	7.35E+02	1.82E+03	6.33E+02	2.46E+02	1.19E+02	2.01E+02	1.15E+03	8.53E+02
South Texas 1								1.99E+02	3.17E+02	3.45E+02
South Texas 2									2.72E+02	4.70E+02
St. Lucie 1	3.25E+02	3.21E+02	3.46E+02	2.21E+02	2.86E+02	2.78E+02	3.38E+02	2.75E+02	4.05E+02	2.84E+02
St. Lucie 2			3.77E+01	2.21E+02	3.64E+02	2.78E+02	3.38E+02	2.75E+02	4.05E+02	2.84E+02
Summer 1		3.19E-01	2.27E+02	2.25E+02	3.11E+02	3.75E+02	7.36E+02	7.55E+02	6.85E+02	4.22E+02
Surry 1&2	5.31E+02	9.10E+02	7.17E+02	8.12E+02	7.50E+02	8.73E+02	8.15E+02	4.94E+02	4.29E+02	1.11E+03
Three Mile Island 1	7.11E+00	3.91E+00	3.09E+00	1.72E+00	9.06E+00	1.69E+02	1.97E+02	3.02E+02	3.73E+02	2.10E+02
Three Mile Island 2	5.06E-02	7.20E-02	3.75E-04	1.56E-04	2.22E-03	1.60E-03	1.48E-03	5.49E-03	9.76E-04	8.80E-04
TMI 2/Epicor	N/D	N/D	N/D	N/D	**	**	**	**	**	**
Trojan	1.03E+02	2.00E+02	2.34E+02	1.87E+02	2.65E+02	2.43E+02	1.75E+02	3.75E+02	3.18E+02	2.19E+02

** Included with Three Mile Island 2 total

N/D = Not Detectable

Table 6

Liquid Effluents Comparison By Year

Tritium (Curies)

Pressurized Water Reactors

Facility	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Turkey Point 3&4	1.95E+02	6.27E+02	7.12E+02	8.91E+02						
Turkey Point 3					4.33E+02	3.64E+02	2.69E+02	2.99E+02	2.29E+02	3.22E+02
Turkey Point 4					4.33E+02	3.64E+02	2.69E+02	2.99E+02	2.29E+02	3.22E+02
Vogtle 1&2							3.21E+02	3.90E+02	9.18E+02	1.17E+03
Waterford 3					2.54E+01	4.31E+02	5.25E+02	5.03E+02	3.58E+02	7.12E+02
Wolf Creek 1					1.83E+02	3.77E+02	3.17E+02	4.06E+02	5.88E+02	5.90E+02
Yankee Rowe 1	1.03E+02	1.86E+02	1.68E+02	1.64E+02	2.28E+02	1.76E+02	2.19E+02	1.96E+02	1.68E+02	1.92E+02
Zion 1	6.04E+02	6.76E+02	1.74E+02	1.74E+02	1.35E+02	2.67E+02	2.16E+02	4.11E+02	1.81E+02	2.90E+02
Zion 2	2.66E+02	3.77E+02	2.56E+02	5.11E+02	5.21E+02	4.46E+02	4.40E+02	5.58E+02	6.66E+02	3.91E+02
Total	1.89E+04	1.75E+04	1.81E+04	2.27E+04	2.78E+04	2.32E+04	2.81E+04	2.71E+04	3.40E+04	3.18E+04

Table 7

Liquid Effluents Comparison By Year

Mixed Fission and Activation Products (Curies)

Boiling Water Reactors

Facility	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Big Rock Point 1	3.50E+00	1.10E+00	2.70E+00	1.10E+00	2.02E+00	7.70E-01	3.92E-01	2.74E-01	9.03E-01	7.82E-01
Browns Ferry 1,2,& 3				8.00E-01	2.70E+00	3.95E+00	1.19E+00	1.32E+01	1.02E+01	9.38E+00
Brunswick 1&2					1.89E+00	3.29E+00	6.22E+00	3.48E+00	5.10E+00	1.26E+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
Dresden 1	6.20E+00	6.80E+00	9.20E+00	6.90E+00	8.40E-01	3.60E-01	6.00E-01	3.26E-01	2.65E-02	N/D
Dresden 2-3	2.30E+01	2.20E+01	2.59E+01	3.31E+01	8.10E-01	1.21E+00	4.40E-01	3.99E-01	2.65E-01	7.16E-01
Duane Arnold					< 1.00E-02	< 1.00E-02	2.32E-03	2.73E-01	5.10E-04	N/D
Fermi 2										
James A. Fitzpatrick					5.32E+00	6.01E+00	8.85E-01	1.58E+00	6.46E-01	1.51E+00
Grand Gulf 1										
Edwin I. Hatch 1					6.00E-02	4.00E-02	2.50E+01	4.03E-02	4.82E-02	6.83E-02
Edwin I. Hatch 2										4.57E-02
Hope Creek 1										
Humboldt Bay 3	1.80E+00	1.40E+00	2.40E+00	4.40E+00	3.79E+00	9.90E-01	9.17E-01	1.95E-01	9.55E-02	1.39E-01
LaCrosse	1.71E+01	4.85E+01	3.59E+01	1.31E+01	1.42E+01	< 5.78E+00	2.13E+01	8.86E+00	1.67E+00	2.13E+00
LaSalle 1&2										
Limerick 1&2										
Millstone 1	1.97E+01	5.15E+01	3.34E+01	1.98E+02	1.99E+02	9.65E+00	5.27E-01	1.75E-01	2.10E-01	7.24E-01
Monticello	< 1.00E-01	< 1.00E-01	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Nine Mile Point 1	3.22E+01	3.46E+01	4.08E+01	2.56E+01	2.10E+01	2.14E+00	3.03E-01	N/D	1.89E+00	N/D
Nine Mile Point 2										
Oyster Creek 1	1.20E+01	1.00E+01	4.20E+00	7.00E-01	4.10E-01	2.20E-01	9.81E-02	1.53E-02	6.59E-03	5.06E-01
Peach Bottom 2&3			< 1.00E-01	9.00E-01	9.30E-01	3.38E+00	2.23E+00	5.11E+00	1.95E+01	1.90E+00
Perry 1										
Pilgrim 1		1.50E+00	9.00E-01	4.20E+00	8.01E+00	2.33E+00	3.41E+00	1.77E+00	5.12E-01	2.73E+00
Quad-Cities 1&2		2.40E+00	2.14E+01	3.88E+01	1.71E+01	6.99E+00	1.34E+00	2.24E+00	1.31E+00	1.31E+01
River Bend 1										
Shoreham 1										
Susquehanna 1&2										
Vermont Yankee 1			< 1.00E-01	N/D	< 1.00E-02	< 1.00E-02	1.55E-01	N/D	2.40E-04	N/D
WNP-2										
Total	< 1.16E+02	< 1.80E+02	< 1.77E+02	3.29E+02	< 2.80E+02	< 4.72E+01	6.58E+01	4.10E+01	< 4.49E+01	< 4.60E+01
* Fort St. Vrain									1.89E-04	6.37E-05

* High temperature gas cooled reactor

N/D = Not Detectable

Table 7

Liquid Effluents Comparison By Year

Mixed Fission and Activation Products (Curies)

Boiling Water Reactors

Facility	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Big Rock Point 1	3.91E-01	2.60E-01	7.82E-02	1.48E-01	1.53E-01	7.09E-02	2.73E-01	2.18E-01	2.32E-01	3.64E-02
Browns Ferry 1,2,& 3	2.24E+00	5.36E+01	1.28E+01	6.30E+00	1.34E+00	5.39E-01	3.25E-01	2.42E-01	1.71E-01	3.02E-01
Brunswick 1&2	2.20E+00	2.32E+00	1.08E+00	5.65E-01	1.15E-01	1.26E-01	7.15E-01	8.32E-01	1.56E+00	4.57E-01
Clinton 1							1.54E-02	1.10E-01	1.74E-02	2.53E-02
Cooper	< 3.61E+00	< 5.44E+00	< 1.23E+01	< 6.30E+00	< 1.30E+01	< 7.40E+00	2.25E+00	2.33E+00	2.19E+00	2.04E+00
Dresden 1	N/D	N/D	N/D	N/D	N/D	N/D	N/D	+	+	+
Dresden 2-3	6.12E-02	1.91E-02	1.24E-02	1.15E-01	2.03E+00	2.14E-01	3.78E-01	1.16E-01	6.53E-01	7.12E-01
Duane Arnold	N/D	4.16E-06	N/D	1.90E-09	8.24E-04	N/D	N/D	N/D	N/D	N/D
Fermi 2						3.67E-03	2.10E-02	7.41E-02	1.68E-01	2.18E-01
James A. Fitzpatrick	2.51E+00	6.50E-01	7.71E-01	9.79E-02	1.80E-01	1.92E-02	7.84E-02	4.86E-02	5.46E-02	2.74E-02
Grand Gulf 1			4.42E-03	3.16E-02	2.13E-01	3.01E-01	3.64E-01	3.96E-01	3.20E-01	6.45E-01
Edwin I. Hatch 1	3.73E-01	7.00E-01	9.09E-01	1.05E+00	4.80E-01	4.88E-01	6.85E-01	**	**	**
Edwin I. Hatch 2	1.63E-01	1.83E-01	3.29E-01	2.67E-01	2.63E-01	3.02E-01	1.30E-01	9.83E-01	2.48E-01	3.01E-01
Hope Creek 1						7.56E-01	1.62E+00	7.24E-01	1.05E+00	1.49E+00
Humboldt Bay 3	1.55E-01	3.46E-01	9.89E-02	1.64E-01	1.25E-01	4.69E-02	1.19E-02	7.60E-03	8.42E-03	5.77E-03
LaCrosse	2.26E-01	5.83E+00	3.75E+00	3.26E+00	1.83E+00	5.00E+00	1.16E+00	4.47E-01	1.69E-01	6.86E-02
LaSalle 1&2		9.82E-01	8.60E+00	8.48E-02	3.84E+00	1.78E-02	8.89E-01	1.10E+01	4.01E-01	2.46E-02
Limerick 1&2				6.45E-04	2.18E-02	5.74E-03	7.45E-02	N/D	1.12E-01	3.43E-01
Millstone 1	3.94E-01	1.15E+00	8.08E-01	3.78E-02	4.66E-01	7.73E-01	1.14E+00	1.08E+00	9.06E-01	1.39E-01
Monticello	3.11E-06	5.80E-07	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Nine Mile Point 1	5.35E+00	2.51E-03	1.11E-02	N/D	N/D	< 6.70E-04	N/D	N/D	N/D	1.95E-03
Nine Mile Point 2							1.30E+00	3.08E+00	2.20E-01	6.34E-02
Oyster Creek 1	2.48E-01	8.10E-02	3.63E-03	6.84E-03	N/D	N/D	6.63E-03	2.68E-02	5.01E-02	6.70E-05
Peach Bottom 2&3	1.97E+00	9.33E+00	2.24E+00	6.15E+00	2.16E+00	4.59E-01	3.31E-01	2.02E-01	1.13E-01	1.36E-02
Perry 1						3.67E-03	1.47E-02	2.50E-01	1.16E+00	6.10E-01
Pilgrim 1	1.94E+00	8.72E-01	9.35E-01	4.75E+00	1.06E+00	< 2.11E-01	< 1.47E+00	3.56E-02	2.49E-02	1.56E-02
Quad-Cities 1&2	3.27E+00	4.03E-01	1.37E-01	7.23E-02	1.46E+00	2.36E-01	7.10E-02	5.60E-02	4.84E-01	1.13E-01
River Bend 1						1.06E-01	7.96E-02	5.58E-01	1.11E+00	7.37E-01
Shoreham 1						7.17E-03	3.41E-03	1.98E-05	1.78E-05	N/D
Susquehanna 1&2		< 1.99E-01	2.49E+00	1.45E-01	6.35E-01	7.92E-01	3.12E-01	9.48E-02	1.02E-01	1.34E-01
Vermont Yankee 1	1.02E-02	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	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
Total	< 2.51E+01	< 8.24E+01	< 4.74E+01	< 2.96E+01	< 2.94E+01	< 1.79E+01	< 1.37E+01	2.29E+01	1.16E+01	8.54E+00
* Fort St. Vrain	3.64E-04	4.34E-04	1.73E-02	1.27E-03	1.84E-03	2.30E-05	1.18E-06	1.69E-04	1.22E-05	8.22E-05

* High temperature gas cooled reactor

** Included with Edwin I. Hatch 2 total

\+ Included with Dresden 2-3 total

N/D = Not Detectable

Table 8

Liquid Effluents Comparison By Year

Mixed Fission and Activation Products (Curies)

Pressurized Water Reactors

Facility	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Arkansas One 1				6.50E+00	3.11E+00	1.31E+01	4.50E+00	6.05E+00	3.09E+00	3.42E+00
Arkansas One 2									1.30E+00	4.13E+00
Beaver Valley 1&2						1.70E-01	6.52E-01	2.63E-01	1.21E-01	1.04E-01
Braidwood 1										
Braidwood 2										
Byron 1&2										
Callaway 1										
Calvert Cliffs 1&2					1.44E+00	1.18E+00	3.46E+00	6.13E+00	7.80E+00	4.53E+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
Crystal River 3							1.54E-02	2.96E-02	4.16E-01	1.46E-01
Davis-Besse 1							2.60E-02	9.01E-02	4.28E-02	2.07E-01
Diablo Canyon 1&2										
Joseph M. Farley 1								1.03E-01	5.86E-02	6.18E-02
Joseph M. Farley 2										
Fort Calhoun 1			< 1.00E-01	2.30E+00	3.60E-01	5.50E-01	3.63E-01	5.95E-01	2.45E-01	5.33E-01
R. E. Ginna	9.00E-01	3.00E-01	1.00E-01	1.00E-01	4.20E-01	6.90E-01	6.47E-02	6.07E-02	8.63E-02	1.96E-02
Haddam Neck	5.90E+00	4.80E+00	3.00E+00	2.20E+00	1.20E+00	1.30E-01	1.71E+00	9.50E-01	8.67E-01	2.76E-01
Harris 1										
Indian Point 1&2			2.20E+00	4.20E+00	4.93E+00	< 4.98E+00	3.02E+00	1.99E+00	1.94E+00	1.26E+00
Indian Point 3						Shown With	Other Unit	1.03E+00	4.02E-01	2.90E+00
Kewaunee				4.00E-01	7.20E-01	2.83E+00	1.26E+00	6.99E-01	8.94E-01	6.17E-01
Maine Yankee		< 1.00E-01	< 1.00E-01	4.00E+00	3.21E+00	< 2.84E+00	4.42E-01	1.04E-01	4.63E-01	2.97E-01
McGuire 1										
McGuire 2										
Millstone 2					2.00E-02	2.60E-01	1.56E+00	2.79E+00	4.87E+00	2.81E+00
Millstone 3										
North Anna 1&2								2.68E-01	5.89E-01	1.05E+00
Oconee 1,2,& 3			2.80E+00	1.90E+00	5.05E+00	7.93E+00	3.62E+01	6.51E+00	9.24E-01	1.54E+00
Palisades		6.80E+00	2.78E+01	5.90E+00	3.45E+00	4.40E-01	9.29E-02	9.65E-02	1.28E-01	8.73E-03
Palo Verde 1										
Palo Verde 2										
Palo Verde 3										
Point Beach 1&2	1.00E-01	1.50E+00	8.00E-01	2.00E-01	2.34E+00	3.24E+00	1.50E+00	6.86E-01	7.25E-01	6.29E-01
Prairie Island 1&2			< 1.00E-01	< 1.00E-01	4.50E-01	1.00E-01	1.33E-02	4.94E-03	9.00E-03	1.32E-02
Rancho Seco 1					< 1.00E-02	N/D	N/D	N/D	N/D	3.78E-03
H. B. Robinson 2	7.00E-01	8.00E-01	6.00E-01	2.50E+00	4.50E-01	3.80E-01	3.29E-01	1.78E-01	2.99E-01	3.58E-01
Salem 1						< 1.00E-02	2.88E+00	4.02E+00	3.98E+00	2.65E+00
Salem 2										3.89E-01
San Onofre 1	1.50E+00	3.03E+01	1.60E+01	5.00E+00	1.22E+00	7.43E+00	9.84E+00	1.18E+01	1.10E+01	1.12E+01
San Onofre 2-3										
Seabrook 1										
Sequoyah 1&2										N/R
South Texas 1										
South Texas 2										
St. Lucie 1						8.00E-02	5.80E+00	2.80E+00	2.67E+00	2.36E+00
St. Lucie 2										
Summer 1										
Surry 1&2		2.00E-01	1.00E-01	3.80E+00	9.27E+00	3.37E+01	6.55E+01	2.41E+00	2.53E+00	3.85E+00
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
Three Mile Island 2								3.92E-01	3.31E-01	1.45E-05
TMI 2/Epicor										N/D
Trojan						2.77E+00	4.19E+00	7.07E-01	5.55E-01	7.87E-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	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Turkey Point 3&4			< 1.00E-01	1.60E+00	3.07E+00	< 8.65E+00	8.90E+00	3.32E+00	4.10E-01	6.78E-01
Turkey Point 3										
Turkey Point 4										
Yankee Rowe 1	< 1.00E-01	< 1.00E-01	< 1.00E-01	< 1.00E-01	2.00E-02	< 1.00E-02	1.80E-02	8.14E-02	1.17E-02	1.75E-02
Zion 1			< 1.00E-01	< 1.00E-01	< 1.00E-02	1.60E-01	9.50E-01	9.51E-01	7.00E-01	4.74E-01
Zion 2										
Total	< 9.20E+00	< 4.49E+01	< 5.40E+01	< 4.22E+01	< 4.11E+01	< 9.36E+01	1.55E+02	5.72E+01	5.05E+01	4.89E+01

Table 8

Liquid Effluents Comparison By Year

Mixed Fission and Activation Products (Curies)

Pressurized Water Reactors

Facility	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Arkansas One 1	7.50E+00	5.80E+00	4.30E+00	4.10E+00	3.53E+00	5.09E+00	2.45E+00	3.73E+00	2.04E+00	2.36E+00
Arkansas One 2	2.95E+00	5.90E+00	3.70E+00	2.48E+00	4.36E+00	3.43E+00	1.85E+00	4.46E+00	2.65E+00	2.52E-01
Beaver Valley 1&2	1.44E-01	1.47E-01	6.09E-02	2.03E-01	1.13E-01	1.19E-01	6.69E-01	1.02E-01	5.45E-01	2.55E+00
Braidwood 1							5.00E-02	8.57E+00	2.50E+00	2.13E+00
Braidwood 2								3.04E+00	2.52E+00	2.13E+00
Byron 1&2					1.63E+01	4.05E+00	2.48E+00	1.40E+00	6.35E-01	1.18E+00
Callaway 1				1.07E-03	4.97E-03	3.83E-02	4.92E-01	7.74E-02	1.01E-02	3.86E-02
Calvert Cliffs 1&2	2.68E+00	5.26E+00	2.24E+00	1.64E+00	2.38E+00	1.79E+00	5.19E+00	2.64E+00	2.07E+00	1.42E+00
Catawba 1					1.26E+00	3.82E-01	6.53E-01	5.42E-01	3.42E-01	9.78E-01
Catawba 2						3.82E-01	6.53E-01	5.42E-01	3.42E-01	9.78E-01
Comanche Peak 1										1.19E-02
Donald C. Cook 1&2	1.86E+00	1.90E+00	6.83E-01	1.19E+00	2.26E+00	3.34E-01	2.00E+00	4.44E-01	8.06E-01	1.61E+00
Crystal River 3	1.29E-01	1.07E-01	1.50E-01	2.34E-01	1.51E+00	8.12E-01	9.55E-01	2.31E-01	2.36E-01	6.19E-01
Davis-Besse 1	7.92E-01	2.19E-01	5.39E-01	1.89E-01	1.85E-01	6.15E-02	6.51E-02	1.68E-01	1.84E-01	1.41E-01
Diablo Canyon 1&2				1.16E-02	3.20E+00	1.11E+01	2.86E+00	2.00E+00	1.61E+00	2.80E+00
Joseph M. Farley 1	1.31E-01	5.94E-02	5.75E-02	6.34E-02	6.72E-02	1.02E-01	5.09E-02	7.97E-02	7.31E-02	7.47E-02
Joseph M. Farley 2	2.69E-02	2.90E-02	2.04E-02	8.63E-02	3.77E-02	8.28E-02	4.63E-02	8.53E-02	7.34E-02	8.29E-02
Fort Calhoun 1	1.75E-01	2.03E-01	1.44E-01	2.91E+00	2.88E-01	8.37E-02	2.03E-01	3.08E-01	5.62E-01	8.05E+01
R. E. Ginna	3.85E-02	6.17E-01	1.93E-01	1.69E-01	5.22E-01	6.47E-02	5.88E-02	3.43E-02	8.12E-02	1.50E-01
Haddam Neck	7.12E-01	6.93E-02	4.80E-01	2.63E-01	8.44E-02	3.10E-01	4.26E-01	6.87E-01	3.90E-01	2.69E+00
Harris 1							9.08E-01	8.04E-02	2.42E-01	7.31E-01
Indian Point 1&2	5.67E+00	2.41E+00	4.02E+00	2.67E+00	1.85E+00	3.61E+00	6.02E+00	2.84E+00	6.38E-01	1.06E+00
Indian Point 3	2.62E+00	5.46E-01	5.44E-01	1.26E+00	4.18E-01	1.95E-01	3.47E-01	3.22E-01	5.92E-01	3.09E-01
Kewaunee	8.15E-01	1.52E+00	5.43E-01	1.01E+00	1.35E+00	5.33E-01	1.29E+00	5.01E-01	1.22E+00	2.06E-01
Maine Yankee	4.36E-01	7.03E-01	1.99E-01	8.62E-02	3.11E-02	2.99E-01	8.81E-01	3.49E-01	1.83E-01	1.87E-01
McGuire 1	3.94E-01	1.75E+00	1.87E+00	1.51E+00	6.21E-01	7.73E-01	1.57E+00	2.57E+00	1.54E+00	2.00E+00
McGuire 2			1.87E+00	1.51E+00	6.21E-01	7.73E-01	1.57E+00	2.57E+00	1.54E+00	2.00E+00
Millstone 2	4.18E+00	1.39E+01	7.81E+00	5.55E+00	4.60E+00	4.49E+00	4.07E+00	8.89E+00	1.06E+01	8.76E+00
Millstone 3						3.01E+00	5.40E+00	3.15E+00	5.94E+00	2.47E+00
North Anna 1&2	6.76E-01	1.32E+00	5.88E+00	4.51E+00	5.07E+00	9.41E-01	1.33E+00	4.32E-01	1.16E+00	6.75E-01
Oconee 1,2,& 3	1.75E+00	1.04E+00	1.43E+00	1.58E+00	4.16E+00	3.02E+00	2.90E+00	3.10E+00	3.82E+00	3.11E+00
Palisades	3.31E-02	1.27E-01	7.48E-02	3.68E-02	5.83E-02	1.40E-01	9.23E-02	3.43E-02	3.75E-03	7.75E-03
Palo Verde 1					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
Palo Verde 3							N/D	N/D	N/D	N/D
Point Beach 1&2	1.01E+00	2.95E+00	1.27E+00	1.22E+01	1.90E+00	1.60E+01	7.55E-01	9.58E-02	5.58E-02	1.16E-02
Prairie Island 1&2	9.12E-03	2.23E-03	3.16E-02	1.91E-02	2.75E-02	6.01E-01	6.04E-02	2.55E-01	1.73E-01	1.30E-01
Rancho Seco 1	5.92E-01	2.16E-01	2.81E-01	6.33E-01	7.39E-03	1.45E-03	5.78E-04	5.79E-03	2.15E-03	2.08E-04
H. B. Robinson 2	1.84E+00	1.20E+00	8.23E-01	3.90E-01	9.41E-02	2.61E-01	7.36E-01	9.64E-01	2.82E-01	3.60E-01
Salem 1	2.80E+00	3.22E+00	2.97E+00	3.31E+00	2.88E+00	4.35E+00	3.53E+00	3.21E+00	3.11E+00	3.00E+00
Salem 2	1.51E+00	3.21E+00	2.85E+00	2.75E+00	2.80E+00	6.11E+00	4.07E+00	3.23E+00	3.56E+00	3.14E+00
San Onofre 1	3.64E+00	2.15E+00	1.22E+00	2.74E+00	7.79E+00	8.51E-01	8.42E-01	7.11E-01	6.87E-01	4.03E-01
San Onofre 2-3		6.32E-01	2.79E+00	1.30E+01	1.12E+01	8.20E-01	5.37E-01	1.16E+00	9.19E-01	2.02E-01
Seabrook 1									1.09E-04	2.21E-03
Sequoyah 1&2	2.76E+00	9.82E+00	4.61E+00	3.23E+00	1.45E+00	1.65E-01	4.66E-01	4.48E-01	3.54E-01	1.22E+00
South Texas 1								2.24E-01	3.02E+00	7.09E+00
South Texas 2									1.17E-02	5.72E+00
St. Lucie 1	2.46E+00	3.07E+00	2.99E+00	1.93E+00	2.72E+00	2.53E+00	5.95E-01	2.64E-01	2.56E-01	8.27E-01
St. Lucie 2			4.37E-01	1.93E+00	2.75E+00	2.43E+00	5.42E-01	2.59E-01	2.53E-01	7.68E-01
Summer 1		1.24E-04	1.47E+00	4.54E+00	7.09E-01	3.26E-01	4.88E-01	7.55E-01	1.37E+00	3.56E-01
Surry 1&2	6.11E+00	6.68E+00	1.45E+01	9.73E+00	8.55E+00	8.77E+00	5.17E+00	2.41E+00	3.87E+00	4.60E+00
Three Mile Island 1	8.69E-02	5.29E-02	8.12E-02	3.41E-02	6.30E-03	1.41E-02	4.41E-02	4.68E-02	1.61E-02	2.36E-02
Three Mile Island 2	2.22E-05	4.25E-05	9.03E-05	6.46E-04	1.77E-04	1.87E-04	1.16E-04	1.12E-03	3.15E-04	1.77E-04
TMI 2/Epicor	N/D	N/D	N/D	N/D	**	**	**	**	**	**
Trojan	9.94E-01	8.56E-01	3.10E-01	3.49E-01	4.65E-01	2.64E-01	2.09E-01	2.01E-01	1.61E-01	1.44E-01

** included with Three Mile Island 2 total

N/D = Not Detectable

Table 8

Liquid Effluents Comparison By Year

Mixed Fission and Activation Products (Curies)

Pressurized Water Reactors

Facility	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Turkey Point 3&4	3.03E-01	1.68E+00	1.13E+00	2.27E-01						
Turkey Point 3					4.48E-01	2.53E-01	3.74E-01	3.27E-01	1.58E-01	1.41E-01
Turkey Point 4					4.48E-01	2.53E-01	3.74E-01	3.26E-01	1.58E-01	1.40E-01
Vogtle 1&2							5.77E-01	1.66E+00	4.03E-01	1.01E+00
Waterford 3					2.88E-01	4.02E+00	1.28E+00	1.41E+00	1.28E+00	7.30E-01
Wolf Creek 1					6.35E-01	2.26E+00	2.90E-01	3.79E-01	7.23E-01	3.15E-01
Yankee Rowe 1	1.43E-02	9.53E-03	1.30E-02	3.06E-02	1.69E-02	1.36E-02	1.56E-02	7.10E-02	4.88E-03	4.17E-03
Zion 1	1.61E+00	7.22E-01	1.50E+00	6.82E+00	3.24E-01	5.57E-01	7.53E-01	1.61E+00	9.07E-01	2.65E+00
Zion 2	1.05E+00	1.65E+00	1.15E+00	7.06E+00	2.05E+00	1.04E+00	8.20E-01	1.97E+00	2.57E+00	9.26E-01
Total	6.05E+01	8.17E+01	7.72E+01	1.02E+02	1.02E+02	9.79E+01	6.99E+01	7.60E+01	6.95E+01	1.58E+02

Table 9

Solid Waste Summary 1990

Boiling Water Reactors

Facility	Volume (Cubic Meters)	Activity (Curies)	No. Of Shipments
Big Rock Point 1	8.30E+01	1.26E+02	0
Browns Ferry 1,2,&3	2.12E+02	1.04E+02	121
Brunswick 1&2	4.83E+02	1.26E+03	82
Clinton 1	2.72E+02	5.44E+02	43
Cooper	3.08E+02	3.69E+02	34
Dresden 1,2,&3	2.41E+03	5.09E+02	136
Duane Arnold	3.34E+02	3.79E+04	25
Fermi 2	1.23E+03	2.09E+04	55
James A. Fitzpatrick	2.83E+02	2.05E+03	37
Grand Gulf 1	1.62E+02	1.35E+03	41
Edwin I. Hatch 1&2	1.38E+03	2.85E+04	101
Hope Creek 1	3.06E+02	2.30E+03	64
Humboldt Bay 3	2.93E+01	9.06E-02	1
LaCrosse	4.59E+00	7.44E-01	7
LaSalle 1&2	9.04E+02	2.95E+03	92
Limerick 1&2	6.86E+02	1.24E+03	180
Millstone 1	2.94E+02	3.41E+04	41
Monticello	9.40E+01	1.17E+03	14
Nine Mile Point 1	2.45E+02	4.34E+02	89
Nine Mile Point 2	3.40E+02	6.73E+02	72
Oyster Creek 1	3.23E+02	1.13E+03	58
Peach Bottom 2&3	8.08E+02	3.02E+04	216
Perry 1	1.36E+03	1.94E+03	37
Pilgrim 1	3.71E+02	6.62E+02	63
Quad-Cities 1&2	1.21E+03	1.24E+03	83
River Bend 1	2.44E+02	4.02E+02	38
Shoreham 1	5.04E+01	9.17E-01	3
Susquehanna 1&2	4.07E+02	2.95E+03	54
Vermont Yankee 1	0.00E+00	0.00E+00	0
WNP-2	3.34E+02	1.29E+03	40
Total	1.52E+04	1.76E+05	1827
* Fort St. Vrain	1.01E+02	2.30E+00	18

* High temperature gas cooled reactor

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 1990

Pressurized Water Reactors

Facility	Volume (Cubic Meters)	Activity (Curies)	No. Of Shipments
Arkansas One 1&2	1.69E+02	1.43E+01	25
Beaver Valley 1&2	1.57E+02	5.44E+02	26
Braidwood 1&2	1.48E+02	8.55E+01	16
Byron 1&2	2.43E+02	4.99E+02	32
Callaway 1	8.70E+01	3.12E+02	17
Calvert Cliffs 1&2	1.35E+02	4.12E+03	17
Catawba 1&2	1.19E+02	2.09E+01	5
Comanche Peak 1	0.00E+00	0.00E+00	0
Donald C. Cook 1&2	1.95E+02	1.44E+02	89
Crystal River 3	9.22E+02	2.20E+02	28
Davis-Besse 1	3.99E+02	2.26E+03	5
Diablo Canyon 1&2	8.32E+01	2.81E+02	28
Joseph M. Farley 1&2	1.51E+02	2.88E+02	52
Fort Calhoun 1	1.22E+02	7.48E+00	55
R.E.Ginna	1.98E+02	2.32E+02	44
Haddam Neck	1.66E+02	2.21E+05	1
Harris 1	7.73E+01	6.25E+01	49
Indian Point 1&2	2.60E+02	2.08E+03	36
Indian Point 3	6.66E+02	1.50E+02	30
Kewaunee	1.11E+02	3.54E+02	9
Maine Yankee	1.70E+02	1.85E+02	22
McGuire 1&2	2.63E+02	9.80E+02	46
Millstone 2	1.59E+02	9.34E+00	27
Millstone 3	7.60E+01	1.76E+02	6
North Anna 1&2	2.13E+02	7.24E+02	35
Oconee 1,2,&3	4.39E+02	1.79E+03	163
Palisades	2.85E+02	8.74E+01	15
Palo Verde 1,2,&3	7.66E+02	2.40E+02	78
Point Beach 1&2	1.30E+02	2.07E+02	26
Prairie Island 1&2	5.54E+01	3.23E+02	9
Rancho Seco 1	2.16E+01	3.69E+02	5
H.B.Robinson 2	6.99E+01	1.44E+01	61
Salem 1&2	8.92E+01	1.45E+02	20
* San Onofre	2.12E-01	1.04E+00	22
San Onofre 1	5.81E+01	1.27E+01	0
San Onofre 2-3	1.75E+02	3.34E+01	0
Seabrook 1	0.00E+00	0.00E+00	0
Sequoyah 1&2	2.59E+02	9.06E+02	209
South Texas 1&2	5.76E+01	1.38E+01	11
St. Lucie 1&2	2.26E+02	5.89E+03	59
Summer 1	1.10E+02	2.22E+02	65
Surry 1&2	1.48E+02	1.13E+03	27
Three Mile Island 1	5.83E+02	6.53E+02	29
Three Mile Island 2	3.40E+02	7.74E+03	17
TMI 2/Epicor	**	**	**
Trojan	1.80E+02	5.84E+02	8
Turkey Point 3&4	2.15E+02	6.94E+02	29
Vogtle 1&2	9.29E+01	1.64E+02	18
Waterford 3	5.50E+01	5.91E+02	10
Wolf Creek 1	8.31E+01	3.17E+01	6
Yankee Rowe 1	1.82E+02	1.89E+02	11
Zion 1&2	1.44E+02	2.02E+03	29
Total	1.01E+04	2.59E+05	1657

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

** Included with Three Mile Island 2 totals

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 Comparison By Year

Boiling Water Reactors — Volume (Cubic Meters) - Activity (Curies)

Facility	1977		1978		1979		1980	
Big Rock Point 1	7.22E+01	9.68E+02	3.10E+01	2.56E+01	8.99E+01	2.77E+02	4.20E+01	3.09E+01
Browns Ferry 1,2,&3	1.82E+03	1.10E+04	2.90E+03	1.33E+03	2.29E+03	4.17E+03	2.49E+03	6.46E+03
Brunswick 1&2	2.47E+03	3.24E+03	2.02E+03	2.14E+03	3.09E+03	4.29E+03	6.73E+03	7.55E+03
Clinton 1								
Cooper	2.83E+02	2.85E+02	3.29E+02	3.84E+02	5.65E+02	9.69E+01	4.35E+02	7.05E+02
Dresden 1,2,& 3	2.25E+03	1.13E+04	1.77E+03	1.88E+03	1.04E+03	8.45E+02	1.16E+03	4.46E+03
Duane Arnold	5.45E+02	4.98E+02	1.10E+03	1.86E+03	7.99E+02	8.01E+02	7.35E+02	7.00E+02
Fermi 2								
James A. Fitzpatrick	1.23E+03	6.17E+03	8.70E+02	3.19E+02	8.04E+02	1.06E+03	7.50E+02	8.86E+02
Grand Gulf 1								
Edwin I. Hatch 1	5.39E+02	3.81E+02	7.50E+02	1.09E+04	9.78E+02	2.70E+02	4.64E+02	9.62E+02
Edwin I. Hatch 2							2.59E+02	8.27E+01
Hope Creek 1								
Humboldt Bay 3	3.77E+02	2.00E+01	1.78E+02	7.91E-01	9.06E+01	3.35E+03	8.20E+01	6.95E+01
LaCrosse	4.65E+00	5.88E+02	3.80E+01	6.18E+01	5.09E+00	1.25E+02	4.32E+01	2.02E+01
LaSalle 1&2								
Limerick 1&2								
Millstone 1	1.77E+03	3.03E+03	2.00E+03	8.15E+04	2.11E+03	1.16E+03	2.30E+03	2.36E+03
Monticello	5.73E+02	2.91E+04	4.99E+02	6.35E+04	4.74E+02	1.31E+04	7.42E+02	7.57E+02
Nine Mile Point 1	6.65E+02	2.51E+04	3.85E+02	2.24E+04	4.97E+02	1.52E+03	8.14E+02	2.32E+04
Nine Mile Point 2								
Oyster Creek 1	1.74E+03	2.73E+02	1.54E+03	1.15E+03	1.13E+03	1.34E+03	2.03E+03	1.32E+03
Peach Bottom 2&3	2.52E+03	1.82E+03	1.96E+03	4.97E+03	2.40E+03	8.03E+03	2.64E+03	6.69E+03
Perry 1								
Pilgrim 1	5.84E+02	5.70E+03	1.97E+03	4.92E+04	3.03E+03	2.22E+04	2.94E+03	1.60E+03
Quad-Cities 1&2	1.20E+03	7.53E+03	1.34E+03	3.27E+03	7.82E+02	4.26E+03	1.67E+03	4.07E+03
River Bend 1								
Shoreham 1								
Susquehanna 1&2								
Vermont Yankee 1	1.08E+02	1.76E+02	3.99E+02	5.39E+04	2.71E+02	9.99E+02	4.84E+02	9.20E+02
WNP-2								
Total	1.88E+04	1.07E+05	2.01E+04	2.99E+05	2.04E+04	6.79E+04	2.68E+04	6.28E+04
* Fort St. Vrain					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	1981		1982		1983		1984	
Big Rock Point 1	1.44E+02	3.17E+02	1.09E+02	4.33E+00	1.01E+02	2.74E+02	3.67E+01	2.13E+00
Browns Ferry 1,2,& 3	2.23E+03	4.78E+03	5.91E+03	5.51E+03	3.72E+03	6.90E+03	1.92E+03	2.15E+03
Brunswick 1&2	4.30E+03	7.47E+03	3.53E+03	5.50E+03	3.51E+03	8.36E+03	1.37E+03	3.45E+03
Clinton 1								
Cooper	4.99E+02	4.43E+02	4.45E+02	4.27E+02	5.03E+02	8.53E+02	4.37E+02	4.91E+02
Dresden 1,2,& 3	1.14E+03	4.59E+03	8.99E+02	1.66E+05+	1.42E+03	2.91E+03	1.26E+03	4.37E+03
Duane Arnold	6.97E+02	1.07E+03	4.57E+02	1.27E+03	6.81E+02	1.44E+03	2.68E+02	9.13E+02
Fermi 2								
James A. Fitzpatrick	8.61E+02	1.63E+03	1.64E+03	7.89E+02	7.11E+02	7.03E+02	4.31E+02	1.26E+03
Grand Gulf 1					3.12E+02	7.21E+00	4.31E+02	9.09E+00
Edwin I. Hatch 1	1.29E+03	4.46E+03	9.13E+02	3.10E+03	1.87E+03	2.27E+03	2.50E+03	2.58E+03
Edwin I. Hatch 2	1.40E+03	3.05E+02	7.79E+02	9.40E+02	**	**	**	**
Hope Creek 1								
Humboldt Bay 3	8.43E+01	5.46E-01	7.71E+01	1.34E+00	2.78E+01	1.75E+04	6.56E+01	7.29E+00
LaCrosse	4.82E+00	6.11E+01	3.53E+01	5.26E+01	1.20E+01	1.88E+02	4.22E+01	1.93E+02
LaSalle 1&2			0.00E+00	0.00E+00	6.83E+02	3.01E+01	8.40E+02	1.80E+02
Limerick 1&2							0.00E+00	0.00E+00
Millstone 1	1.96E+03	1.82E+03	9.77E+02	1.08E+03	6.93E+02	6.81E+02	9.40E+02	1.97E+03
Monticello	5.54E+02	4.42E+02	7.50E+02	3.89E+03	3.57E+02	4.43E+04	1.24E+03	5.73E+02
Nine Mile Point 1	5.31E+02	1.72E+03	5.76E+02	7.07E+03	7.21E+02	5.42E+04	6.29E+02	1.34E+04
Nine Mile Point 2								
Oyster Creek 1	1.78E+03	4.21E+02	9.96E+02	4.67E+03	1.00E+03	5.61E+02	1.39E+03	4.39E+04
Peach Bottom 2&3	2.34E+03	5.33E+03	3.23E+03	4.51E+03	2.68E+03	2.24E+04	2.26E+03	9.22E+04
Perry 1								
Pilgrim 1	1.06E+03	9.38E+02	2.28E+03	9.59E+02	6.65E+02	1.48E+03	3.12E+03	1.54E+03
Quad-Cities 1&2	1.72E+03	5.16E+03	1.46E+03	3.98E+03	1.58E+03	5.85E+03	1.35E+03	4.06E+04
River Bend 1								
Shoreham 1								
Susquehanna 1&2			4.51E+01	6.52E-02	1.26E+03	2.84E+02	1.30E+03	9.27E+02
Vermont Yankee 1	4.39E+02	1.11E+03	4.51E+02	2.09E+02	4.15E+02	5.75E+04	3.48E+02	2.85E+02
WNP-2							3.87E+02	3.58E+01
Total	2.30E+04	4.21E+04	2.56E+04	2.10E+05	2.29E+04	2.29E+05	2.26E+04	2.11E+05
* Fort St. Vrain	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.39E+01	1.84E+01	0.00E+00	0.00E+00

* 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 Comparison By Year

Boiling Water Reactors — Volume (Cubic Meters) - Activity (Curies)

Facility	1985		1986		1987		1988	
Big Rock Point 1	5.22E+01	1.14E+02	8.46E+00	2.52E+02	7.40E+01	2.30E+03	4.44E+01	7.28E+02
Browns Ferry 1,2,& 3	2.30E+03	3.08E+03	1.36E+03	1.49E+03	1.32E+03	6.44E+02	7.81E+02	5.72E+02
Brunswick 1&2	1.32E+03	2.50E+03	9.35E+02	9.83E+03	8.43E+02	4.48E+04	6.89E+02	3.07E+03
Clinton 1					5.10E+01	1.41E-01	2.87E+02	6.14E+01
Cooper	6.35E+02	2.98E+04	4.49E+02	5.83E+02	3.41E+02	3.60E+02	3.09E+02	1.47E+02
Dresden 1,2,& 3	1.05E+04	6.63E+04	2.14E+03	3.74E+04	1.80E+03	8.26E+02	2.35E+03	1.54E+03
Duane Arnold	7.93E+02	5.24E+02	2.17E+02	2.15E+04	4.94E+02	2.62E+02	2.12E+02	4.06E+02
Fermi 2			1.48E+02	2.12E+01	2.36E+02	9.37E+01	2.38E+02	2.81E+02
James A. Fitzpatrick	7.77E+02	7.79E+02	4.62E+02	7.21E+0"	5.13E+02	6.44E+02	3.81E+02	1.32E+04
Grand Gulf 1	6.02E+02	2.60E+02	4.39E+02	1.36E+03	3.92E+02	1.65E+03	4.99E+02	7.15E+02
Edwin I. Hatch 1	2.04E+03	3.83E+04	1.36E+03	8.82E+02	7.78E+02	1.82E+03	8.36E+02	2.02E+03
Edwin I. Hatch 2	**	**	**	**	**	**	**	**
Hope Creek 1			8.45E+01	5.14E+00	4.21E+02	3.63E+02	2.91E+02	3.23E+03
Humboldt Bay 3	8.31E+02	2.60E+02	5.99E+02	3.50E+02	0.00E+00	0.00E+00	3.99E+01	9.91E-02
LaCrosse	6.30E+01	2.35E+02	4.81E+00	7.78E+01	2.93E+01	2.86E-03	6.52E+00	7.03E+01
LaSalle 1&2	1.21E+03	4.87E+02	8.02E+02	1.20E+03	7.66E+02	2.30E+03	9.25E+02	3.38E+03
Limerick 1&2	3.06E+02	2.06E+01	5.76E+02	7.53E+02	3.81E+02	2.15E+03	8.95E+02	9.70E+02
Millstone 1	1.17E+03	9.36E+04	7.00E+02	7.85E+02	6.66E+02	5.05E+02	2.79E+02	9.54E+04
Monticello	5.44E+02	4.87E+03	2.94E+02	2.81E+04	2.19E+02	5.66E+02	1.48E+02	2.93E+02
Nine Mile Point 1	5.75E+02	6.80E+03	1.08E+03	7.27E+02	5.07E+02	2.30E+02	2.72E+02	3.07E+02
Nine Mile Point 2					9.89E+01	1.14E+01	3.78E+02	3.88E+02
Oyster Creek 1	4.62E+02	6.30E+02	5.92E+02	7.96E+02	2.36E+02	3.48E+04	1.81E+02	6.29E+03
Peach Bottom 2&3	2.33E+03	1.21E+05	1.49E+03	1.88E+04	1.58E+03	3.89E+03	8.38E+02	1.19E+03
Perry 1			0.00E+00	0.00E+00	4.89E+02	4.52E+01	4.95E+02	5.59E+02
Pilgrim 1	1.41E+03	7.48E+04	6.01E+02	4.38E+02	5.27E+02	3.15E+02	2.72E+02	2.19E+02
Quad-Cities 1&2	1.33E+03	5.53E+04	1.32E+03	2.14E+03	9.19E+02	2.90E+04	9.25E+02	6.26E+02
River Bend 1			4.63E+02	7.99E+01	4.07E+02	3.45E+02	3.06E+02	3.50E+02
Shoreham 1			4.47E+01	1.47E-01	6.26E+01	9.57E-02	6.26E+01	1.86E-02
Susquehanna 1&2	1.13E+03	2.07E+03	8.68E+02	2.53E+03	7.18E+02	2.11E+03	1.33E+03	2.65E+03
Vermont Yankee 1	5.43E+02	1.73E+04	3.10E+02	3.33E+02	2.23E+02	1.19E+04	1.73E+02	4.25E+02
WNP-2	4.02E+02	2.96E+02	5.02E+02	5.07E+02	3.75E+02	1.09E+03	4.70E+02	1.01E+03
Total	3.13E+04	5.19E+05	1.77E+04	1.32E+05	1.55E+04	1.43E+05	1.49E+04	1.40E+05
* Fort St. Vrain	1.10E+02	4.19E+02	0.00E+00	0.00E+00	3.02E+01	1.03E+02	7.00E+00	3.10E-01

* 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	1989		+ 1990	
Big Rock Point 1	7.35E+01	3.71E+02	8.30E+01	1.26E+02
Browns Ferry 1,2,& 3	5.84E+02	2.95E+02	2.12E+02	1.04E+02
Brunswick 1&2	6.20E+02	6.06E+03	4.89E+02	1.26E+03
Clinton 1	3.99E+02	1.89E+03	2.72E+02	5.44E+02
Cooper	2.92E+02	3.06E+02	3.08E+02	3.69E+02
Dresden 1,2,& 3	2.24E+03	2.54E+03	2.41E+03	5.09E+02
Duane Arnold	1.46E+02	1.69E+04	3.34E+02	3.79E+04
Fermi 2	3.66E+02	7.01E+02	1.23E+03	2.09E+04
James A. Fitzpatrick	2.50E+02	9.39E+04	2.83E+02	2.05E+03
Grand Gulf 1	2.72E+02	2.06E+02	1.62E+02	1.35E+03
Edwin I. Hatch 1	8.53E+02	1.91E+03	1.38E+03	2.85E+04
Edwin I. Hatch 2	**	**	**	**
Hope Creek 1	1.67E+02	5.27E+02	3.06E+02	2.30E+03
Humboldt Bay 3	0.00E+00	0.00E+00	2.93E+01	9.06E-02
LaCrosse	6.74E+00	3.21E+01	4.59E+00	7.44E-01
LaSalle 1&2	8.80E+02	4.36E+03	9.04E+02	2.95E+03
Limerick 1&2	5.76E+02	3.40E+04	6.86E+02	1.24E+03
Millstone 1	4.28E+02	1.99E+04	2.94E+02	3.41E+04
Monticello	2.48E+02	5.97E+04	9.40E+01	1.17E+03
Nine Mile Point 1	2.37E+02	2.48E+02	2.45E+02	4.34E+02
Nine Mile Point 2	4.22E+02	4.89E+02	3.40E+02	6.73E+02
Oyster Creek 1	4.20E+02	2.33E+05	3.23E+02	1.13E+03
Peach Bottom 2&3	8.92E+02	1.73E+03	8.08E+02	3.02E+04
Perry 1	9.68E+02	9.18E+02	1.36E+03	1.94E+03
Pilgrim 1	2.02E+02	2.76E+02	3.71E+02	6.62E+02
Quad-Cities 1&2	9.79E+02	1.33E+05	1.21E+03	1.24E+03
River Bend 1	5.16E+02	8.41E+02	2.44E+02	4.02E+02
Shoreham 1	1.79E+01	3.51E-02	5.04E+01	9.17E-01
Susquehanna 1&2	4.28E+02	1.34E+03	4.07E+02	2.95E+03
Vermont Yankee 1	4.84E+00	2.15E+00	0.00E+00	0.00E+00
WNP-2	3.64E+02	1.10E+03	3.34E+02	1.29E+03
Total	1.39E+04	6.17E+05	1.52E+04	1.76E+05
* Fort St. Vrain	4.57E+00	1.08E+03	1.01E+02	2.30E+00

* High temperature gas cooled reactor

** Included with Edwin I. Hatch 1 totals

+ 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 Comparisen By Year

Pressurized Water Reactors — Volume (Cubic Meters) - Activity (Curies)

Facility	1977		1978		1979		1980	
Arkansas One 1&2	3.17E+02	1.26E+02	N/R	N/R	N/R	N/R	N/R	N/R
Beaver Valley 1&2	2.67E+02	8.18E+00	4.39E+02	2.25E+02	2.44E+02	2.95E+02	2.84E+02	5.34E+02
Braidwood 1&2								
Byron 1&2								
Callaway 1								
Calvert Cliffs 1&2	3.09E+02	9.83E+02	6.03E+02	1.12E+03	4.32E+02	9.71E+02	2.51E+02	1.48E+04
Catawba 1&2								
Comanche Peak 1								
Donald C. Cook 1&2	6.84E+02	8.28E+01	1.28E+03	2.25E+02	1.09E+03	3.37E+02	2.10E+03	1.04E+03
Crystal River 3	4.48E+02	3.48E+00	6.87E+02	2.72E+04	1.24E+03	1.20E+03	9.27E+02	2.05E+03
Davis-Besse 1	0.00E+00	0.00E+00	3.40E+02	3.30E+00	2.60E+02	2.86E+00	3.30E+02	3.00E+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
Fort Calhoun 1	5.97E+02	6.46E+02	5.84E+02	1.06E+02	2.44E+02	2.99E+01	4.06E+02	1.32E+03
R. E. Ginna	3.49E+02	6.90E+02	5.96E+01	6.27E+02	3.08E+02	1.53E+02	4.00E+02	4.60E+02
Haddam Neck	1.68E+03	8.41E+02	2.29E+02	1.44E+02	1.29E+03	3.05E+02	1.26E+03	4.89E+02
Harris 1								
Indian Point 1&2	1.06E+03	1.45E+03	8.43E+03	2.37E+03	1.17E+03	2.16E+03	1.03E+03	3.32E+02
Indian Point 3	Shown With Other Unit		5.94E+02	6.49E+01	2.25E+02	1.63E+02	3.47E+02	2.02E+02
Kewaunee	3.37E+01	3.66E+02	7.98E+01	1.50E+03	1.70E+02	3.54E+02	1.03E+02	1.37E+03
Maine Yankee	1.84E+02	1.53E+04	5.81E+02	4.14E+03	3.63E+02	2.77E+03	4.57E+02	4.79E+03
McGuire 1&2								
Millstone 2	9.35E+01	5.80E+01	1.55E+02	1.70E+01	2.46E+02	1.78E+03	7.51E+00	2.28E+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
Oconee 1,2,& 3	1.07E+03	7.3 E+03	1.58E+03	5.93E+03	1.63E+03	2.59E+03	1.32E+03	2.91E+03
Palisades	4.43E+02	8.71E+01	7.17E+02	3.40E+03	6.84E+02	3.92E+02	7.31E+02	1.18E+02
Palo Verde 1,2,&3								
Point Beach 1&2	6.84E+03	5.68E+02	1.61E+02	1.51E+03	2.69E+02	1.22E+03	4.49E+02	9.35E+02
Prairie Island 1&2	6.43E+02	2.46E+02	1.95E+02	1.53E+02	1.99E+01	8.83E+01	5.25E+02	1.98E+02
Rancho Seco 1	5.06E+01	1.21E+03	1.29E+02	1.27E+03	1.01E+02	4.03E+00	4.60E+02	1.12E+02
H. B. Robinson 2	2.59E+02	1.24E+03	8.22E+02	2.40E+02	8.34E+02	8.72E+01	3.99E+03	3.08E+02
Salem 1&2	4.25E+02	2.20E+00	2.27E+02	1.94E+02	6.86E+02	1.28E+02	1.01E+03	4.59E+02
San Onofre								
San Onofre 1	3.68E+02	6.02E+01	1.31E+02	7.17E+00	8.35E+01	9.24E+01	7.12E+02	4.35E+02
San Onofre 2-3								
Seabrook 1								
Sequoyah 1&2							N/R	N/R
South Texas 1&2								
St. Lucie 1&2	3.85E+02	3.27E+03	3.58E+02	1.26E+04	3.08E+02	1.79E+02	3.12E+02	7.46E+02
Summer 1								
Surry 1&2	7.93E+02	6.10E+02	6.03E+02	5.66E+02	2.74E+03	3.45E+02	2.01E+03	7.06E+02
Three Mile Island 1	2.18E+02	4.73E+01	3.89E+02	2.34E+02	7.51E+02	3.12E+01	4.62E+02	2.30E+02
Three Mile Island 2			Shown With	Other Unit	Shown With	Other Unit	7.67E+02	1.26E+02
TMI 2/Epicor							0.00E+00	0.00E+00
Trojan	1.01E+02	8.31E+01	2.26E+02	4.48E+02	6.37E+02	3.30E+02	5.14E+02	4.59E+01
Turkey Point 3&4	1.07E+03	4.26E+02	1.75E+03	1.72E+03	9.20E+02	2.48E+02	7.24E+02	1.61E+02
Vogtle 1&2								
Waterford 3								
Wolf Creek 1								
Yankee Rowe 1	2.81E+02	3.54E+00	2.60E+02	9.75E+00	2.36E+02	1.63E+02	2.07E+02	9.57E+01
Zion 1&2	1.97E+03	2.25E+02	1.63E+03	1.86E+03	5.97E+02	2.69E+03	1.64E+03	2.55E+03
Total	2.09E+04	3.60E+04	2.35E+04	6.79E+04	1.92E+04	1.94E+04	2.44E+04	3.82E+04

N/R = Not Reported

Table 12

Solid Waste Comparison By Year

Pressurized Water Reactors — Volume (Cubic Meters) - Activity (Curies)

Facility	1981		1982		1983		1984	
Arkansas One 1&2	N/R	N/R	N/R	N/R	7.06E+02	2.09E+03	8.10E+02	1.46E+03
Beaver Valley 1&2	2.13E+02	9.30E+01	2.94E+02	3.83E+02	2.19E+02	4.75E+02	1.56E+02	7.11E+02
Braidwood 1&2								
Byron 1&2								
Callaway 1							0.00E+00	0.00E+00
Calvert Cliffs 1&2	5.00E+02	9.86E+01	1.57E+02	9.16E+02	5.06E+02	1.07E+02	5.28E+02	3.77E+04
Catawba 1&2								
Comanche Peak 1								
Donald C. Cook 1&2	5.63E+02	1.43E+03	7.14E+02	8.45E+02	6.68E+02	2.01E+03	4.94E+02	6.69E+02
Crystal River 3	1.27E+03	1.38E+03	6.62E+02	6.28E+02	5.40E+02	1.55E+03	4.11E+02	1.15E+03
Davis-Besse 1	3.25E+02	3.95E+01	0.00E+00	0.00E+00	1.13E+02	6.37E+02	1.51E+02	4.73E+02
Diablo Canyon 1&2							0.00E+00	0.00E+00
Joseph M. Farley 1&2	5.64E+02	7.20E+02	3.46E+02	1.03E+02	4.41E+02	1.05E+03	5.62E+02	2.98E+02
Fort Calhoun 1	2.53E+02	1.01E+02	3.42E+02	3.54E+01	4.65E+02	7.00E+02	3.93E+02	7.17E+01
R. E. Ginna	3.76E+02	6.35E+02	4.89E+02	2.02E+02	3.36E+02	5.21E+02	2.52E+02	3.23E+02
Haddam Neck	4.38E+02	6.61E+02	3.12E+02	2.57E+02	6.52E+02	1.52E+03	4.28E+02	5.75E+02
Harris 1								
Indian Point 1&2	1.58E+03	1.71E+03	1.17E+03	6.46E+03	1.29E+03	2.12E+03	9.81E+02	2.03E+03
Indian Point 3	3.17E+02	6.40E+01	3.79E+02	6.14E+01	3.16E+02	7.32E+02	1.53E+02	4.12E+02
Kewaunee	7.38E+01	1.98E+02	6.73E+01	2.74E+02	5.52E+01	6.85E+02	6.32E+01	1.60E+03
Maine Yankee	4.14E+02	1.67E+03	2.20E+02	3.09E+01	3.37E+02	1.03E+02	3.49E+02	3.59E+02
McGuire 1&2	1.98E+01	1.31E-01	9.91E+01	6.43E+00	2.44E+02	2.82E+01	4.14E+02	1.89E+03
Millstone 2	1.63E+01	3.21E+02	6.85E+00	4.84E+02	4.48E+01	2.58E+02	6.08E+01	1.10E+05
Millstone 3								
North Anna 1&2	3.02E+02	2.62E+03	4.21E+02	3.05E+02	5.39E+02	1.87E+03	9.00E+02	9.53E+02
Oconee 1,2,& 3	2.48E+03	1.12E+04	3.06E+03	1.09E+04	1.16E+03	2.64E+03	9.36E+02	6.17E+03
Palisades	8.54E-02	1.57E+04	7.08E+02	7.98E+01	5.75E+02	2.56E+04	4.48E+02	2.58E+02
Palo Verde 1,2,&3								
Point Beach 1&2	1.77E+02	4.87E+02	2.52E+02	9.46E+02	7.11E+02	1.12E+03	7.15E+02	1.64E+03
Prairie Island 1&2	2.97E+02	5.64E+01	9.91E+01	3.64E+02	2.39E+02	1.92E+02	4.19E+01	1.19E+01
Rancho Seco 1	2.31E+02	1.44E+02	2.40E+02	4.66E+02	2.72E+02	2.25E+02	4.25E+02	4.60E+01
H. B. Robinson 2	9.02E+02	1.88E+01	1.38E+03	6.38E+01	1.09E+03	4.62E+01	3.05E+03	1.95E+02
Salem 1&2	9.36E+02	1.14E+03	1.91E+03	3.19E+02	2.07E+03	2.99E+02	1.52E+03	6.23E+02
San Onofre								
San Onofre 1	1.62E+03	1.26E+03	9.27E+02	7.52E+01	3.33E+02	2.27E+02	2.91E+02	1.54E+01
San Onofre 2-3			0.00E+00	0.00E+00	1.89E+02	7.98E+00	2.02E+02	5.49E+02
Seabrook 1								
Sequoyah 1&2	1.61E+02	2.92E+01	3.58E+02	2.28E+02	6.93E+02	2.30E+03	9.67E+02	2.43E+03
South Texas 1&2								
St. Lucie 1&2	2.50E+02	2.96E+02	3.07E+02	7.95E+02	6.20E+02	9.39E+04	1.22E+03	6.36E+04
Summer 1			0.00E+00	0.00E+00	9.25E+01	1.37E+01	4.80E+02	1.55E+02
Surry 1&2	2.80E+03	1.36E+03	2.17E+03	9.89E+02	3.08E+03	3.55E+03	9.45E+02	1.16E+03
Three Mile Island 1	7.98E+02	2.34E+02	5.32E+02	8.91E+00	6.05E+02	6.84E+02	4.34E+02	4.18E+02
Three Mile Island 2	2.74E+02	5.11E+01	1.80E+02	1.22E+01	3.16E+02	5.17E+05	2.56E+02	9.89E+03
TMI 2/Epicor	1.51E+02	3.50E+02	0.00E+00	0.00E+00	2.23E+02	4.62E+04	4.53E+00	2.35E-01
Trojan	3.75E+02	1.04E+03	2.17E+01	2.87E+02	2.28E+02	1.67E+03	2.30E+02	5.85E+01
Turkey Point 3&4	1.25E+03	1.17E+02	1.01E+03	1.13E+03	1.21E+03	9.26E+02	8.50E+02	1.91E+03
Vogtle 1&2								
Waterford 3								
Wolf Creek 1								
Yankee Rowe 1	3.08E+02	6.79E+01	2.09E+02	2.81E+01	1.58E+02	5.12E+00	2.00E+02	1.63E+02
Zion 1&2	1.53E+03	3.44E+03	8.82E+02	2.17E+03	9.21E+02	2.97E+03	6.43E+02	2.62E+03
Total	2.30E+04	4.87E+04	1.99E+04	2.99E+04	2.23E+04	7.16E+05	2.10E+04	2.52E+05

N/R = Not Reported

Table 12

Solid Waste Comparison By Year

Pressurized Water Reactors — Volume (Cubic Meters) - Activity (Curies)

Facility	1985		1986		1987		1988	
Arkansas One 1&2	6.88E+02	1.75E+03	1.21E+02	2.18E+02	5.23E+02	1.63E+03	1.97E+02	8.22E+02
Beaver Valley 1&2	1.56E+02	9.71E+01	9.49E+01	4.45E+02	7.65E+01	3.22E+01	2.33E+02	4.29E+02
Braidwood 1&2					0.00E+00	0.00E+00	8.32E+01	3.51E+00
Byron 1&2	1.78E+02	1.39E+01	3.18E+02	9.90E+01	3.06E+02	8.65E+02	3.09E+02	5.09E+02
Callaway 1	1.39E+02	6.29E+00	1.68E+02	1.91E+01	1.98E+02	3.13E+02	9.58E+01	9.46E+02
Calvert Cliffs 1&2	3.89E+02	1.51E+04	2.12E+02	4.51E+02	2.44E+02	6.41E+02	5.25E+01	1.12E+03
Catawba 1&2	3.48E+01	6.90E-02	1.93E+02	1.33E+01	2.73E+02	2.79E+02	2.56E+02	7.05E+02
Comanche Peak 1								
Donald C. Cook 1&2	8.28E+02	2.00E+03	5.28E+02	1.59E+03	4.63E+02	2.30E+03	2.46E+02	5.58E+02
Crystal River 3	4.98E+02	4.60E+03	3.64E+02	1.35E+03	2.90E+02	6.75E+02	2.26E+02	1.07E+03
Davis-Besse 1	1.97E+02	9.58E+01	1.40E+02	2.19E+00	8.48E+01	3.20E+00	1.72E+02	1.76E+02
Diablo Canyon 1&2	3.11E+01	4.40E+01	9.06E+01	6.97E+00	1.65E+02	1.21E+02	2.10E+02	3.92E+02
Joseph M. Farley 1&2	4.95E+02	8.20E+02	2.45E+02	1.80E+03	5.32E+02	3.34E+02	4.96E+02	1.47E+03
Fort Calhoun 1	3.43E+02	2.24E+02	1.16E+02	2.82E+01	1.26E+02	5.47E+02	4.87E+01	1.75E+01
R. E. Ginna	2.23E+02	1.19E+02	1.12E+02	1.39E+02	1.65E+02	2.16E+02	1.67E+02	3.80E+02
Haddam Neck	1.73E+02	5.33E+01	4.14E+02	5.86E+02	3.20E+02	5.45E+02	1.31E+02	3.37E+02
Harris 1					1.05E+02	2.61E+00	1.50E+02	1.05E+01
Indian Point 1&2	6.89E+02	5.75E+02	5.30E+02	2.52E+02	2.30E+02	8.34E+02	2.41E+02	4.67E+02
Indian Point 3	2.39E+02	5.49E+02	8.29E+01	2.58E+01	3.17E+02	3.33E+02	1.82E+02	3.57E+02
Kewaunee	7.77E+01	9.56E+02	5.31E+01	1.33E+02	8.25E+01	4.58E+02	7.49E+01	4.83E+02
Maine Yankee	3.59E+02	1.11E+02	1.96E+02	1.64E+02	7.50E+01	1.90E+02	1.37E+02	4.36E+02
McGuire 1&2	6.60E+02	1.97E+02	7.83E+02	6.73E+02	6.92E+02	3.23E+02	5.16E+02	6.49E+02
Millstone 2	2.87E+01	6.16E+03	8.85E+01	6.17E+03	1.38E+02	2.13E+04	1.59E+02	5.06E+01
Millstone 3			5.47E+00	5.17E-01	9.95E+01	5.91E+01	1.63E+02	5.34E+02
North Anna 1&2	6.50E+02	2.90E+02	5.30E+02	7.97E+02	4.89E+02	1.64E+03	2.95E+02	7.71E+02
Oconee 1,2,& 3	4.33E+02	1.41E+03	7.60E+02	8.51E+02	8.53E+02	2.01E+03	7.23E+02	1.42E+04
Palisades	4.76E+02	1.83E+02	2.39E+02	2.65E+02	2.23E+02	1.06E+02	1.87E+02	1.38E+03
Palo Verde 1,2,&3	8.42E+01	6.80E+01	1.16E+02	4.22E+01	4.63E+02	9.76E+02	7.78E+02	7.78E+02
Point Beach 1&2	2.81E+02	1.25E+03	1.08E+02	1.35E+03	1.55E+02	1.43E+03	1.95E+02	6.61E+02
Prairie Island 1&2	1.73E+02	4.02E+02	1.28E+02	1.55E+02	1.42E+02	4.30E+02	5.68E+01	1.38E+02
Rancho Seco 1	9.76E+02	1.57E+03	1.56E+02	1.00E+03	1.59E+02	3.51E+00	3.46E+02	6.25E+01
H. B. Robinson 2	6.42E+02	3.35E+03	4.53E+02	1.58E+02	1.01E+02	2.59E+02	8.42E+01	3.76E+02
Salem 1&2	4.55E+02	2.02E+03	4.71E+02	4.53E+02	3.29E+02	9.69E+02	3.59E+02	3.80E+02
* San Onofre	1.56E+01	8.96E-01	2.33E+00	4.65E-01	4.04E+00	4.32E-01	4.24E-01	1.63E-01
San Onofre 1	1.80E+02	6.04E+00	2.51E+02	3.82E+02	3.69E+01	4.98E+01	3.08E+01	4.06E+00
San Onofre 2-3	5.45E+02	1.72E+03	2.94E+02	1.93E+02	2.45E+02	2.71E+02	2.60E+02	2.55E+03
Seabrook 1								
Sequoyah 1&2	7.52E+02	2.45E+03	4.27E+02	1.33E+04	4.12E+02	9.78E+02	6.07E+02	2.92E+02
South Texas 1&2							0.00E+00	0.00E+00
St. Lucie 1&2	5.45E+02	1.59E+03	4.60E+02	2.13E+03	3.53E+02	1.05E+03	4.67E+02	1.29E+04
Summer 1	4.46E+02	1.30E+02	1.12E+02	1.50E+01	3.80E+02	6.76E+02	1.61E+02	1.22E+02
Surry 1&2	2.02E+03	1.21E+03	6.39E+02	1.16E+03	5.15E+02	2.94E+04	7.30E+02	1.94E+02
Three Mile Island 1	4.69E+02	1.94E+01	2.13E+02	7.70E+00	2.49E+02	2.38E+02	2.37E+02	6.92E+02
Three Mile Island 2	4.83E+02	6.35E+03	3.29E+02	5.81E+01	6.59E+02	3.18E+02	9.17E+02	7.16E+03
TMI 2/Epicor	**	**	**	**	**	**	**	**
Trojan	3.09E+02	3.52E+03	2.49E+02	6.25E+02	3.31E+02	4.09E+02	2.48E+02	4.33E+02
Turkey Point 3&4	6.08E+02	1.50E+03	3.23E+02	8.87E+01	3.07E+02	9.32E+02	1.07E+02	7.05E+02
Vogtle 1&2					0.00E+00	0.00E+00	4.72E+01	2.55E+01
Waterford 3	2.82E+02	3.39E+01	1.74E+02	3.75E+01	3.83E+02	1.78E+02	2.81E+02	4.43E+03
Wolf Creek 1	0.00E+00	0.00E+00	1.73E+02	1.48E+02	1.28E+02	1.15E+01	1.24E+02	1.27E+03
Yankee Rowe 1	2.00E+02	2.68E+02	1.12E+02	5.21E+00	1.86E+02	8.83E+00	1.22E+02	8.85E+03
Zion 1&2	6.73E+02	2.69E+03	3.31E+02	6.74E+02	4.11E+02	7.13E+02	3.59E+02	2.50E+03
Total	1.81E+04	6.55E+04	1.19E+04	3.81E+04	1.30E+04	7.51E+04	1.23E+04	7.28E+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 Comparison By Year

Pressurized Water Reactors — Volume (Cubic Meters) - Activity (Curies)

Facility	1989		+ 1990	
Arkansas One 1&2	2.22E+02	2.96E+02	1.69E+02	1.43E+01
Beaver Valley 1&2	1.96E+03	1.35E+03	1.57E+02	5.44E+02
Braidwood 1&2	3.10E+02	3.89E+02	1.48E+02	8.55E+01
Byron 1&2	3.65E+02	1.28E+03	2.43E+02	4.99E+02
Callaway 1	2.09E+02	6.00E+02	8.70E+01	3.12E+02
Calvert Cliffs 1&2	2.07E+02	4.14E+02	1.35E+02	4.12E+03
Catawba 1&2	2.16E+02	3.17E+02	1.19E+02	2.09E+01
Comanche Peak 1			0.00E+00	0.00E+00
Donald C. Cook 1&2	3.88E+02	1.17E+03	1.95E+02	1.44E+02
Crystal River 3	3.47E+02	2.40E+03	9.22E+02	2.20E+02
Davis-Besse 1	1.18E+02	2.08E+02	3.99E+02	2.26E+03
Diablo Canyon 1&2	1.87E+02	4.29E+02	8.32E+01	2.91E+02
Joseph M. Farley 1&2	4.85E+02	4.00E+02	1.51E+02	2.88E+02
Fort Calhoun 1	1.75E+02	8.76E+00	1.22E+02	7.48E+00
R. E. Ginna	2.33E+02	7.99E+01	1.98E+02	2.32E+02
Haddam Neck	1.53E+02	6.55E+02	1.66E+02	2.21E+05
Harris 1	1.60E+02	2.54E+01	7.73E+01	6.25E+01
Indian Point 1&2	4.78E+02	3.60E+02	2.60E+02	2.08E+03
Indian Point 3	5.77E+02	3.50E+02	6.66E+02	1.50E+02
Kewaunee	7.00E+01	7.74E+02	1.11E+02	3.54E+02
Maine Yankee	1.95E+02	2.36E+02	1.70E+02	1.85E+02
McGuire 1&2	4.36E+02	6.32E+02	2.63E+02	9.80E+02
Millstone 2	2.47E+02	5.55E+02	1.59E+02	9.34E+00
Millstone 3	1.47E+02	7.37E+02	7.60E+01	1.76E+02
North Anna 1&2	6.77E+02	1.72E+03	2.13E+02	7.24E+02
Oconee 1,2,& 3	4.25E+02	1.46E+03	4.39E+02	1.79E+03
Palisades	2.19E+02	8.32E+03	2.85E+02	8.74E+01
Palo Verde 1,2,&3	8.74E+02	6.74E+02	7.66E+02	2.40E+02
Point Beach 1&2	1.06E+02	2.54E+02	1.30E+02	2.07E+02
Prairie Island 1&2	1.25E+02	1.03E+02	5.54E+01	3.23E+02
Rancho Seco 1	2.44E+02	3.27E+02	2.16E+01	3.69E+02
H. B. Robinson 2	9.69E+01	1.86E+02	6.99E+01	1.44E+01
Salem 1&2	1.22E+02	5.65E+04	8.92E+01	1.45E+02
* San Onofre	0.00E+00	0.00E+00	2.12E-01	1.04E+00
San Onofre 1	1.19E+02	1.72E+03	5.81E+01	1.27E+01
San Onofre 2-3	3.28E+02	2.72E+03	1.75E+02	3.34E+01
Seabrook 1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sequoyah 1&2	4.65E+02	2.64E+03	2.59E+02	9.06E+02
South Texas 1&2	5.03E+01	7.24E+00	5.76E+01	1.38E+01
St. Lucie 1&2	3.18E+02	1.69E+02	2.26E+02	5.89E+03
Summer 1	1.40E+02	3.76E+02	1.10E+02	2.22E+02
Surry 1&2	5.38E+02	1.31E+03	1.48E+02	1.13E+03
Three Mile Island 1	3.32E+02	5.05E+01	5.83E+02	6.53E+02
Three Mile Island 2	1.18E+03	1.39E+04	3.40E+02	7.74E+03
TMI 2/Epicor	**	**	**	**
Trojan	2.59E+02	4.47E+02	1.80E+02	5.84E+02
Turkey Point 3&4	3.46E+02	2.26E+00	2.15E+02	6.94E+02
Vogtle 1&2	1.00E+02	1.51E+01	9.29E+01	1.64E+02
Waterford 3	7.61E+02	4.07E+02	5.50E+01	5.91E+02
Wolf Creek 1	1.51E+02	1.26E+03	8.31E+01	3.17E+01
Yankee Rowe 1	2.98E+02	1.78E+01	1.82E+02	1.69E+02
Zion 1&2	2.14E+02	3.58E+03	1.44E+02	2.02E+03
Total	1.64E+04	1.12E+05	1.01E+04	2.59E+05

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

** Included with Three Mile Island 2 totals

\+ 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

Megawatt Hours

Boiling Water Reactors

Facility	Initial Criticality	Commercial Operation	1978	1979	1980	1981	1982	1983	1984
Big Rock Point 1	09/27/62	03/29/63	4.01E+05	1.14E+05	4.05E+05	4.70E+05	3.60E+05	3.49E+05	4.18E+05
Browns Ferry 1	08/17/73	08/01/74	1.69E+07	2.04E+07	6.06E+06	4.41E+06	7.88E+06	2.18E+06	7.85E+06
Browns Ferry 2	07/20/74	03/01/75			5.62E+06	7.47E+06	4.45E+06	6.39E+06	4.04E+06
Browns Ferry 3	08/08/76	03/01/77			6.94E+06	6.26E+06	4.89E+06	5.39E+06	2.91E+05
Brunswick 1	10/08/76	03/18/77	9.91E+06	6.82E+06	3.94E+06	2.56E+06	2.92E+06	1.39E+06	5.03E+06
Brunswick 2	03/20/75	11/03/75			1.86E+05	3.28E+06	1.91E+06	3.94E+06	1.39E+06
Clinton 1	02/27/87	11/24/87							
Cooper	02/21/74	07/01/74	4.89E+06	4.99E+06	3.79E+06	3.85E+06	5.28E+06	3.34E+06	3.47E+06
Dresden 1	10/15/59	07/04/60	7.59E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.46E+06
Dresden 2	01/07/70	06/09/70	9.53E+06	8.42E+06	4.58E+06	3.41E+06	5.12E+06	3.40E+06	2.11E+06
Dresden 3	01/31/71	11/16/71			4.33E+06	5.18E+06	3.89E+06	4.15E+06	2.11E+06
Duane Arnold	03/23/74	02/01/75	1.23E+06	2.90E+06	2.80E+06	2.22E+06	2.28E+06	2.32E+06	2.72E+06
Fermi 2	06/21/85	01/23/86							
James A. Fitzpatrick	11/17/74	07/28/75	4.20E+06	2.96E+06	4.33E+06	4.78E+06	4.96E+06	4.63E+06	4.90E+06
Grand Gulf 1	08/18/82	07/01/85						0.00E+00	1.65E+05
Edwin I. Hatch 1	09/12/74	12/31/75	4.77E+06	5.10E+06	4.79E+06	2.76E+06	2.88E+06	3.96E+06	3.60E+06
Edwin I. Hatch 2	07/04/78	09/05/79			3.64E+06	4.48E+06	3.73E+06	3.81E+06	1.88E+06
Hope Creek 1	06/28/86	12/20/86							
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
LaCrosse	07/11/67	11/01/69	1.74E+05	2.01E+05	2.15E+06	2.41E+05	1.38E+05	2.01E+05	3.19E+05
LaSalle 1	06/21/82	01/01/84					4.61E+05	1.64E+06	5.21E+06
LaSalle 2	03/10/84	10/19/84							1.39E+06
Limerick 1	12/22/84	02/01/86							0.00E+00
Limerick 2	08/12/89	01/08/90							
Millstone 1	10/26/70	03/01/71	4.65E+06	4.22E+06	3.40E+06	2.52E+06	4.08E+06	5.35E+06	4.32E+06
Monticello	12/10/70	06/30/71	3.86E+06	4.40E+06	3.45E+06	3.26E+06	2.42E+06	4.15E+06	2.63E+05
Nine Mile Point 1	09/05/69	12/01/69	4.47E+06	3.00E+06	4.54E+06	3.27E+06	1.13E+06	2.80E+06	3.64E+06
Nine Mile Point 2	05/23/87	04/05/88							
Oyster Creek 1	05/03/69	12/01/69	3.65E+06	4.56E+06	1.96E+06	2.63E+06	2.01E+06	2.05E+05	2.79E+05
Peach Bottom 2	09/16/73	07/05/74	1.38E+07	1.47E+07	4.34E+06	6.63E+06	4.79E+06	4.45E+06	2.63E+06
Peach Bottom 3	08/07/74	12/23/74			7.23E+06	3.33E+06	8.53E+06	2.42E+06	7.45E+06
Perry 1	06/06/86	11/18/87							
Pilgrim 1	06/16/72	12/01/72	4.38E+06	4.84E+06	3.04E+06	3.44E+06	3.29E+06	4.71E+06	3.52E+03
Quad-Cities 1	10/18/71	02/18/73	9.15E+06	8.76E+06	3.44E+06	5.73E+06	3.24E+06	5.78E+06	3.35E+06
Quad-Cities 2	04/26/72	03/10/73			3.61E+06	3.77E+06	5.06E+06	3.15E+06	4.98E+06
River Bend 1	10/31/85	06/16/86							
Shoreham 1	02/15/85								
Susquehanna 1	09/10/82	06/08/83					3.21E+05	3.54E+06	6.09E+06
Susquehanna 2	05/08/84	02/12/85							9.32E+05
Vermont Yankee 1	03/24/72	11/30/72	3.24E+06	3.45E+06	2.98E+06	3.57E+06	4.17E+06	2.87E+06	3.34E+06
WNP-2	01/19/84	12/13/84							4.10E+05
Total			1.00E+08	9.98E+07	9.16E+07	8.93E+07	9.02E+07	8.65E+07	8.88E+07
* Fort St. Vrain 1	01/31/74	07/01/79	6.09E+05	1.24E+05	6.76E+05	7.55E+05	5.69E+05	7.48E+05	5.67E+04

* High temperature gas cooled reactor

Table 13

Net Electrical Energy Generation Comparison By Year
Megawatt Hours

Boiling Water Reactors

Facility	Initial Criticality	Commercial Operation	1985	1986	1987	1988	1989	1990
Big Rock Point 1	09/27/62	03/29/63	3.62E+05	5.06E+05	3.75E+05	3.64E+05	4.17E+05	4.26E+05
Browns Ferry 1	08/17/73	08/01/74	1.54E+06	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	0.00E+00	0.00E+00
Browns Ferry 3	08/08/76	03/01/77	1.47E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Brunswick 1	10/08/76	03/18/77	1.91E+06	5.97E+06	4.05E+06	4.45E+06	4.18E+06	4.32E+06
Brunswick 2	03/20/75	11/03/75	5.02E+06	2.91E+06	5.69E+06	3.92E+06	4.19E+06	4.05E+06
Clinton 1	02/27/87	11/24/87			6.84E+05	5.86E+06	2.86E+06	3.60E+06
Cooper	02/21/74	07/01/74	1.07E+06	4.05E+06	5.52E+06	4.20E+06	4.79E+06	5.11E+06
Dresden 1	10/15/59	07/04/60	0.00E+00	0.00E+00	0.00E+00			
Dresden 2	01/07/70	06/09/70	3.09E+06	4.65E+06	3.34E+06	4.32E+06	4.75E+06	4.08E+06
Dresden 3	01/31/71	11/16/71	4.39E+06	1.46E+06	4.40E+06	4.16E+06	5.12E+06	5.14E+06
Duane Arnold	03/23/74	02/01/75	1.94E+06	3.01E+06	2.54E+06	3.14E+06	3.14E+06	3.01E+06
Fermi 2	06/21/85	01/23/86		0.00E+00	1.39E+06	4.06E+06	5.22E+06	7.10E+06
James A. Fitzpatrick	11/17/74	07/28/75	4.17E+06	6.02E+06	4.20E+06	4.36E+06	6.16E+06	4.60E+06
Grand Gulf 1	08/18/82	07/01/85	2.65E+06	4.10E+06	7.73E+06	9.59E+06	7.85E+06	7.40E+06
Edwin I. Hatch 1	09/12/74	12/31/75	4.76E+06	3.65E+06	5.08E+06	4.11E+06	6.48E+06	4.07E+06
Edwin I. Hatch 2	07/04/78	09/05/79	5.38E+06	3.62E+06	5.76E+06	4.25E+06	4.14E+06	6.53E+06
Hope Creek 1	06/28/86	12/20/86		1.03E+06	7.28E+06	6.99E+06	6.61E+06	4.07E+06
Humboldt Bay 3	02/16/63	08/ /63	0.00E+00	0.00E+00	0.00E+00			
LaCrosse	07/11/67	11/01/69	3.23E+05	1.57E+05				
LaSalle 1	06/21/82	01/01/84	4.81E+06	2.02E+06	4.08E+06	5.44E+06	6.16E+06	8.64E+06
LaSalle 2	03/10/84	10/19/84	3.43E+06	5.72E+06	4.54E+06	5.66E+06	6.50E+06	6.18E+06
Limerick 1	12/22/84	02/01/86	1.14E+06	6.85E+06	5.32E+06	6.67E+06	5.21E+06	5.62E+06
Limerick 2	08/12/89	01/08/90					1.06E+06	7.23E+06
Millstone 1	10/26/70	03/01/71	4.59E+06	5.25E+06	4.38E+06	5.54E+06	4.64E+06	5.09E+06
Monticello	12/10/70	06/30/71	4.29E+06	3.38E+06	3.53E+06	4.57E+06	2.65E+06	4.51E+06
Nine Mile Point 1	09/05/69	12/01/69	4.93E+06	3.15E+06	4.62E+06	0.00E+00	0.00E+00	1.28E+06
Nine Mile Point 2	05/23/87	04/05/88			2.61E+05	2.51E+06	4.25E+06	4.14E+06
Oyster Creek 1	05/03/69	12/01/69	3.75E+06	1.30E+06	3.11E+06	3.54E+06	2.40E+06	4.31E+06
Peach Bottom 2	09/16/73	07/05/74	2.33E+06	6.90E+06	1.55E+06	0.00E+00	3.86E+06	6.70E+06
Peach Bottom 3	08/07/74	12/23/74	3.28E+06	4.85E+06	1.46E+06	0.00E+00	1.89E+05	7.53E+06
Perry 1	06/06/86	11/18/87			8.28E+05	7.23E+06	5.32E+06	6.59E+06
Pilgrim 1	06/16/72	12/01/72	4.95E+06	1.03E+06	0.00E+00	0.00E+00	1.71E+06	4.24E+06
Quad-Cities 1	10/18/71	02/18/73	6.07E+06	4.42E+06	4.46E+06	5.66E+06	4.28E+06	5.33E+06
Quad-Cities 2	04/26/72	03/10/73	4.56E+06	4.72E+06	4.95E+06	4.18E+06	5.74E+06	4.35E+06
River Bend 1	10/31/85	06/16/86		3.00E+06	4.96E+06	7.25E+06	4.79E+06	5.59E+06
Shoreham 1	02/15/85							
Susquehanna 1	09/10/82	06/08/83	5.26E+06	5.83E+06	6.13E+06	8.41E+06	6.47E+06	6.44E+06
Susquehanna 2	05/08/84	02/12/85	6.95E+06	5.45E+06	8.60E+06	5.90E+06	6.77E+06	8.29E+06
Vermont Yankee 1	03/24/72	11/30/72	3.00E+06	2.06E+06	3.54E+06	4.11E+06	3.61E+06	3.62E+06
WNP-2	01/19/84	12/13/84	5.18E+06	5.18E+06	5.40E+06	6.00E+06	6.12E+06	5.74E+06
Total			1.07E+08	1.12E+08	1.30E+08	1.46E+08	1.48E+08	1.75E+08
* Fort St. Vrain 1	01/31/74	07/01/79	0.00E+00	5.20E+04	1.81E+05	6.60E+05		

* High temperature gas cooled reactor

Table 14

Net Electrical Energy Generation Comparison By Year

Megawatt Hours

Pressurized Water Reactors

Facility	Initial Criticality	Commercial Operation	1978	1979	1980	1981	1982	1983	1984
Arkansas One 1	08/06/74	12/19/74	5.25E+06	3.32E+06	3.78E+06	4.90E+06	3.72E+06	3.22E+06	4.60E+06
Arkansas One 2	12/05/78	03/26/80	3.98E+03	8.81E+05	3.65E+06	4.32E+06	3.81E+06	4.43E+06	6.20E+06
Beaver Valley 1	05/10/76	10/01/76	2.48E+06	1.79E+06	3.01E+05	4.66E+06	2.69E+06	4.68E+06	4.75E+06
Beaver Valley 2	08/04/87	11/17/87							
Braidwood 1	05/29/87	07/29/88							
Braidwood 2	03/08/88	10/17/88							
Byron 1	02/02/85	09/16/85							
Byron 2	01/09/87	08/21/87							
Callaway 1	10/02/84	12/19/84							3.23E+05
Calvert Cliffs 1	10/07/74	05/08/75	9.91E+06	9.68E+06	4.53E+06	6.11E+06	5.36E+06	5.57E+06	6.22E+06
Calvert Cliffs 2	11/30/76	04/01/77			6.41E+06	5.42E+06	5.60E+06	6.11E+06	5.34E+06
Catawba 1	01/07/85	06/29/85							
Catawba 2	05/08/86	08/19/86							
Comanche Peak 1	04/03/90	08/13/90							
Donald C. Cook 1	01/18/75	08/27/75	1.01E+07	1.16E+07	6.46E+06	6.78E+06	5.35E+06	5.29E+06	7.75E+06
Donald C. Cook 2	03/10/78	07/01/78			6.70E+06	6.58E+06	7.00E+06	7.01E+06	5.36E+06
Crystal River 3	01/14/77	03/13/77	2.59E+06	3.76E+06	3.35E+06	4.01E+06	4.92E+06	3.77E+06	6.48E+06
Davis-Besse 1	08/12/77	07/31/78	2.61E+06	3.13E+06	2.09E+06	4.36E+06	3.22E+06	4.88E+06	4.29E+06
Diablo Canyon 1	04/29/84	05/07/85							2.04E+05
Diablo Canyon 2	09/19/85	03/13/86							
Joseph M. Farley 1	08/09/77	12/01/77	5.92E+06	1.74E+06	4.60E+06	2.62E+06	5.22E+06	5.26E+06	5.43E+06
Joseph M. Farley 2	05/05/81	07/30/81				2.92E+06	5.30E+06	5.98E+06	6.62E+06
Fort Calhoun 1	08/06/73	06/20/74	2.85E+06	3.67E+06	2.01E+06	2.15E+06	3.48E+06	2.75E+06	2.33E+06
R. E. Ginna	11/08/69	07/01/70	3.22E+06	2.96E+06	3.09E+06	3.32E+06	2.41E+06	3.04E+06	3.16E+06
Haddam Neck	07/24/67	01/01/68	4.71E+06	4.12E+06	3.56E+06	4.06E+06	4.54E+06	3.78E+06	3.36E+06
Harris 1	01/03/87	05/02/87							
Indian Point 1	08/02/62	10/ /62	4.37E+06	4.80E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indian Point 2	05/22/73	08/01/74			4.26E+06	3.06E+06	4.45E+06	5.90E+06	2.89E+06
Indian Point 3	04/06/76	08/30/76	5.46E+06	4.79E+06	3.07E+06	3.03E+06	1.44E+06	6.07E+04	6.04E+06
Kewaunee	03/07/74	06/16/74	3.89E+06	3.44E+06	3.63E+06	3.77E+06	3.82E+06	3.71E+06	3.81E+06
Maine Yankee	10/23/72	12/28/72	5.35E+06	4.54E+06	4.40E+06	5.21E+06	4.52E+06	0.00E+00	5.13E+06
McGuire 1	08/08/81	12/01/81				1.91E+04	4.30E+06	4.63E+06	6.42E+06
McGuire 2	05/08/83	03/01/84						0.00E+00	6.56E+06
Millstone 2	10/17/75	12/26/75	4.50E+06	4.36E+06	4.88E+06	6.09E+06	5.01E+06	2.45E+06	6.61E+06
Millstone 3	01/23/86	04/23/86							
North Anna 1	04/05/78	06/06/78	3.66E+06	4.19E+06	5.63E+06	4.64E+06	2.40E+06	5.31E+06	3.78E+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
Oconee 1	04/19/73	07/15/73	1.59E+07	1.32E+07	5.12E+06	3.00E+06	5.15E+06	5.67E+06	6.17E+06
Oconee 2	11/11/73	09/09/74			3.88E+06	5.19E+06	3.44E+06	5.14E+06	7.30E+06
Oconee 3	09/05/74	12/16/74			5.22E+06	5.64E+06	2.12E+06	7.10E+06	5.35E+06
Palisades	05/24/71	12/31/71	2.62E+06	3.43E+06	2.38E+06	3.46E+06	3.35E+06	3.77E+06	8.12E+05
Palo Verde 1	05/25/85	02/13/86							
Palo Verde 2	04/18/86	09/19/86							
Palo Verde 3	10/25/87	01/08/88							
Point Beach 1	11/02/70	12/21/70	7.65E+06	6.77E+06	2.48E+06	2.61E+06	2.70E+06	2.38E+06	3.11E+06
Point Beach 2	05/30/72	10/01/71			3.59E+06	3.72E+06	3.61E+06	3.02E+06	3.51E+06
Prairie Island 1	12/01/73	12/16/73	7.73E+06	7.10E+06	3.11E+06	3.84E+06	3.92E+06	3.89E+06	4.16E+06
Prairie Island 2	12/17/74	12/21/74			3.47E+06	3.09E+06	3.86E+06	3.72E+06	3.91E+06
Rancho Seco 1	09/16/74	04/17/75	4.99E+06	5.71E+06	4.42E+06	2.63E+06	3.37E+06	2.85E+06	3.77E+06
H. B. Robinson 2	09/20/70	03/07/71	3.98E+06	4.00E+06	3.21E+06	3.50E+06	2.25E+06	3.35E+06	1.90E+05
Salem 1	12/11/76	06/30/77	4.53E+06	2.04E+06	5.68E+06	6.19E+06	4.09E+06	5.38E+06	2.13E+06
Salem 2	08/08/80	10/13/81			0.00E+00	1.63E+06	7.94E+06	7.44E+05	3.20E+06
San Onofre 1	06/14/67	01/01/68	2.68E+06	3.56E+06	8.17E+05	7.79E+05	5.10E+05	0.00E+00	2.62E+05
San Onofre 2	07/26/82	08/08/83					1.26E+05	3.76E+06	5.27E+06
San Onofre 3	08/29/83	04/01/84						9.97E+05	4.10E+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
Sequoyah 2	11/05/81	06/01/82						6.69E+06	6.40E+06
South Texas 1	03/08/88	08/25/88							
South Texas 2	03/12/89	06/19/89							

Table 14

Net Electrical Energy Generation Comparison By Year

Megawatt Hours

Pressurized Water Reactors

Facility	Initial Criticality	Commercial Operation	1978	1979	1980	1981	1982	1983	1984
St. Lucie 1	04/22/76	12/21/76	5.00E+06	4.88E+06	5.20E+06	4.95E+06	6.78E+06	1.07E+06	4.23E+06
St. Lucie 2	06/02/83	08/08/83						2.40E+06	5.56E+06
Summer 1	10/22/82	01/01/84					1.91E+05	4.33E+06	4.20E+06
Surry 1	07/01/72	12/22/72	1.01E+07	2.87E+06	2.47E+06	2.38E+06	5.48E+06	3.52E+06	3.33E+06
Surry 2	03/07/73	05/01/73			2.24E+06	5.15E+06	5.49E+06	4.09E+06	5.21E+06
Three Mile Island 1	06/05/74	09/02/74	5.67E+06	8.48E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Three Mile Island 2	03/28/78	12/30/78	5.77E+05	N/R	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Trojan	12/15/75	05/20/76	1.67E+06	5.27E+06	6.07E+06	6.42E+06	4.80E+06	4.08E+06	4.74E+06
Turkey Point 3	10/20/72	12/14/72	8.29E+06	6.71E+06	4.39E+06	9.12E+05	3.77E+06	4.33E+06	4.78E+06
Turkey Point 4	06/11/73	09/07/73			3.85E+06	4.50E+06	3.84E+06	2.97E+06	3.08E+06
Vogtle 1	03/09/87	05/31/87							
Vogtle 2	03/28/89	05/20/89							
Waterford 3	03/04/85	09/24/85							
Wolf Creek 1	05/22/85	09/03/85							
Yankee Rowe 1	08/19/60	07/01/61	1.19E+06	1.23E+06	2.92E+05	8.85E+05	8.82E+05	1.34E+06	1.03E+06
Zion 1	06/19/73	12/31/73	1.35E+07	1.03E+07	6.51E+06	6.19E+06	4.70E+06	4.02E+06	5.69E+06
Zion 2	12/24/73	09/17/74			5.28E+06	5.26E+06	5.16E+06	6.18E+06	5.99E+06
Total			1.73E+08	1.50E+08	1.57E+08	1.78E+08	1.84E+08	1.98E+08	2.32E+08

N/R = Not Reported

Table 14

Net Electrical Energy Generation Comparison By Year

Megawatt Hours

Pressurized Water Reactors

Facility	Initial Criticality	Commercial Operation	1985	1986	1987	1988	1989	1990
Arkansas One 1	08/06/74	12/19/74	5.19E+06	3.57E+06	4.76E+06	3.95E+06	3.37E+06	4.12E+06
Arkansas One 2	12/05/78	03/26/80	4.70E+06	5.31E+06	6.61E+06	4.95E+06	5.47E+06	7.13E+06
Beaver Valley 1	05/10/76	10/01/76	5.90E+06	4.78E+06	5.62E+06	4.98E+06	3.79E+06	6.17E+06
Beaver Valley 2	08/04/87	11/17/87			7.38E+05	6.48E+06	4.54E+06	4.29E+06
Braidwood 1	05/29/87	07/29/88			1.46E+06	3.42E+06	4.63E+06	8.26E+06
Braidwood 2	03/08/88	10/17/88				1.35E+06	7.14E+06	6.33E+06
Byron 1	02/02/85	09/16/85	1.01E+06	7.40E+06	5.33E+06	6.29E+06	8.95E+06	6.93E+06
Byron 2	01/09/87	08/21/87			1.97E+06	6.36E+06	6.06E+06	6.01E+06
Callaway 1	10/02/84	12/19/84	8.05E+06	7.20E+06	6.32E+06	8.94E+06	8.35E+06	8.01E+06
Calvert Cliffs 1	10/07/74	05/08/75	4.36E+06	5.83E+06	5.27E+06	5.16E+06	1.35E+06	1.34E+06
Calvert Cliffs 2	11/30/76	04/01/77	5.11E+06	7.01E+06	4.83E+06	6.60E+06	4.53E+06	0.00E+00
Catawba 1	01/07/85	06/29/85	3.44E+06	5.18E+06	6.38E+06	7.63E+06	7.76E+06	6.87E+06
Catawba 2	05/08/86	08/19/86		1.30E+06	7.17E+06	6.17E+06	6.51E+06	6.44E+06
Comanche Peak 1	04/03/90	08/13/90						2.51E+06
Donald C. Cook 1	01/18/75	08/27/75	2.12E+06	6.65E+06	5.03E+06	7.47E+06	5.43E+06	6.30E+06
Donald C. Cook 2	03/10/78	07/01/78	5.68E+06	4.34E+06	5.03E+06	2.32E+06	6.66E+06	4.81E+06
Crystal River 3	01/14/77	03/13/77	2.85E+06	2.65E+06	3.62E+06	5.77E+06	2.93E+06	4.14E+06
Davis-Besse 1	08/12/77	07/31/78	1.94E+06	3.49E+03	5.06E+06	1.16E+06	7.32E+06	4.16E+06
Diablo Canyon 1	04/29/84	05/07/85	5.23E+06	5.29E+06	8.28E+06	5.26E+06	7.20E+06	8.71E+06
Diablo Canyon 2	09/19/85	03/13/86	5.41E+06	6.55E+06	5.72E+06	6.23E+06	8.62E+06	7.56E+06
Joseph M. Farley 1	08/09/77	12/01/77	5.87E+06	5.73E+06	6.44E+06	5.91E+06	6.02E+06	6.91E+06
Joseph M. Farley 2	05/05/81	07/30/81	5.47E+06	5.96E+06	4.90E+06	7.17E+06	5.62E+06	5.25E+06
Fort Calhoun 1	08/06/73	06/20/74	3.07E+06	3.61E+06	3.06E+06	2.63E+06	3.30E+06	2.42E+06
R. E. Ginna	11/08/69	07/01/70	3.62E+06	3.61E+06	3.80E+06	3.53E+06	3.07E+06	3.45E+06
Haddam Neck	07/24/67	01/01/68	4.64E+06	2.13E+06	2.53E+06	3.31E+06	2.96E+06	1.15E+06
Harris 1	01/03/87	05/02/87			3.38E+06	5.33E+06	5.63E+06	6.34E+06
Indian Point 1	08/02/62	10/ /62	0.00E+00	0.00E+00	0.00E+00			
Indian Point 2	05/22/73	08/01/74	6.67E+06	3.81E+06	5.15E+06	6.06E+06	4.47E+06	5.21E+06
Indian Point 3	04/06/76	08/30/76	4.73E+06	5.53E+06	4.85E+06	6.71E+06	4.97E+06	5.03E+06
Kewaunee	03/07/74	06/16/74	3.70E+06	3.85E+06	4.01E+06	3.91E+06	3.74E+06	3.90E+06
Maine Yankee	10/23/72	12/28/72	5.35E+06	6.24E+06	4.04E+06	5.02E+06	6.94E+06	4.86E+06
McGuire 1	08/08/81	12/01/81	6.78E+06	5.16E+06	7.35E+06	7.39E+06	7.80E+06	4.73E+06
McGuire 2	05/08/83	03/01/84	5.60E+06	6.21E+06	7.57E+06	8.05E+06	7.41E+06	6.46E+06
Millstone 2	10/17/75	12/26/75	3.50E+06	5.16E+06	6.89E+06	5.73E+06	4.89E+06	5.30E+06
Millstone 3	01/23/86	04/23/86		5.86E+06	6.74E+06	7.67E+06	7.08E+06	8.22E+06
North Anna 1	04/05/78	06/06/78	5.80E+06	6.31E+06	3.57E+06	6.90E+06	4.30E+06	7.23E+06
North Anna 2	06/12/80	12/14/80	6.81E+06	6.02E+06	5.65E+06	7.88E+06	5.90E+06	5.98E+06
Oconee 1	04/19/73	07/15/73	7.07E+06	4.78E+06	5.03E+06	7.19E+06	5.94E+06	6.45E+06
Oconee 2	11/11/73	09/09/74	5.06E+06	5.80E+06	6.23E+06	5.54E+06	6.01E+06	6.27E+06
Oconee 3	09/05/74	12/16/74	4.86E+06	6.06E+06	5.08E+06	5.97E+06	6.34E+06	7.43E+06
Palisades	05/24/71	12/31/71	5.30E+06	8.41E+05	2.63E+06	3.44E+06	3.64E+06	3.01E+06
Palo Verde 1	05/25/85	02/13/86	1.13E+06	5.85E+06	5.27E+06	6.67E+06	1.80E+06	4.72E+06
Palo Verde 2	04/18/86	09/19/86		2.65E+06	8.19E+06	6.75E+06	4.70E+06	6.24E+06
Palo Verde 3	10/25/87	01/08/88			3.20E+05	3.55E+04	1.33E+06	9.64E+06
Point Beach 1	11/02/70	12/21/70	3.35E+06	3.77E+06	3.57E+06	3.83E+06	3.61E+06	3.53E+06
Point Beach 2	05/30/72	10/01/71	3.60E+06	3.42E+06	3.61E+06	3.72E+06	3.49E+06	3.79E+06
Prairie Island 1	12/01/73	12/16/73	3.68E+06	3.82E+06	3.59E+06	3.82E+06	4.39E+06	3.83E+06
Prairie Island 2	12/17/74	12/21/74	3.61E+06	3.86E+06	4.43E+06	3.89E+06	3.89E+06	3.80E+06
Rancho Seco 1	09/16/74	04/17/75	1.94E+06	0.00E+00	0.00E+00	2.81E+06	1.41E+06	0.00E+00
H. B. Robinson 2	09/20/70	03/07/71	5.24E+06	4.80E+06	4.23E+06	3.18E+06	2.78E+06	3.31E+06
Salem 1	12/11/76	06/30/77	9.01E+06	7.08E+06	6.21E+06	7.41E+06	6.21E+06	5.96E+06
Salem 2	08/08/80	10/13/81	5.02E+06	5.31E+06	6.17E+06	5.97E+06	7.82E+06	5.41E+06
San Onofre 1	06/14/67	01/01/68	2.46E+06	8.74E+05	2.71E+06	1.37E+06	1.17E+06	1.54E+06
San Onofre 2	07/26/82	08/08/83	5.15E+06	6.36E+06	6.23E+06	9.00E+06	5.22E+06	8.31E+06
San Onofre 3	08/29/83	04/01/84	3.71E+06	6.76E+06	7.52E+06	6.13E+06	8.84E+06	6.58E+06
Seabrook 1	06/13/89	08/19/90						4.09E+06
Sequoyah 1	07/05/80	07/01/81	4.06E+06	0.00E+00	0.00E+00	6.71E+04	9.55E+06	6.82E+06
Sequoyah 2	11/05/81	06/01/82	5.61E+06	0.00E+00	0.00E+00	3.88E+06	9.55E+06	7.18E+06
South Texas 1	03/08/88	08/25/88				2.79E+06	6.28E+06	6.00E+06
South Texas 2	03/12/89	06/19/89					3.02E+06	6.43E+06

Table 14

Net Electrical Energy Generation Comparisons By Year

Megawatt Hours

Pressurized Water Reactors

Facility	Initial Criticality	Commercial Operation	1985	1986	1987	1988	1989	1990
St. Lucie 1	04/22/76	12/21/76	5.87E+06	7.05E+06	5.72E+06	6.25E+06	6.95E+06	4.49E+06
St. Lucie 2	06/02/83	08/08/83	6.11E+06	6.15E+06	5.95E+06	7.41E+06	5.44E+06	5.32E+06
Summer 1	10/22/82	01/01/84	5.23E+06	7.16E+06	5.15E+06	5.05E+06	5.41E+06	6.11E+06
Surry 1	07/01/72	12/22/72	5.62E+06	4.49E+06	4.63E+06	2.69E+06	3.17E+06	4.77E+06
Surry 2	03/07/73	05/01/73	4.07E+06	4.50E+06	4.79E+06	3.57E+06	8.94E+05	5.84E+06
Three Mile Island 1	06/05/74	09/02/74	8.12E+05	4.82E+06	5.03E+06	5.47E+06	7.22E+06	5.30E+06
Three Mile Island 2	03/28/78	12/30/78	0.00E+00	0.00E+00	0.00E+00			
Trojan	12/15/75	05/20/76	6.91E+06	7.09E+06	4.35E+06	6.34E+06	5.53E+06	6.07E+06
Turkey Point 3	10/20/72	12/14/72	3.41E+06	4.51E+06	8.56E+05	3.45E+06	3.59E+06	3.36E+06
Turkey Point 4	06/11/73	09/07/73	5.18E+06	1.72E+06	2.64E+06	3.26E+06	2.09E+06	4.38E+06
Vogtle 1	03/09/87	05/31/87			3.92E+06	6.79E+06	8.71E+06	7.34E+06
Vogtle 2	03/28/89	05/20/89					5.55E+06	6.85E+06
Waterford 3	03/04/85	09/24/85	1.81E+06	7.30E+06	7.43E+06	6.54E+06	7.61E+06	8.60E+06
Wolf Creek 1	05/22/85	09/03/85	2.94E+06	6.97E+06	6.50E+06	6.66E+06	9.71E+06	7.87E+06
Yankee Rowe 1	08/19/60	07/01/61	1.18E+06	1.39E+06	1.14E+06	1.12E+06	1.31E+06	8.26E+05
Zion 1	06/19/73	12/31/73	4.81E+06	4.90E+06	6.08E+06	6.34E+06	5.00E+06	4.45E+06
Zion 2	12/24/73	09/17/74	5.11E+06	7.33E+06	5.11E+06	6.65E+06	7.69E+06	2.65E+06
Total			2.72E+08	2.96E+08	3.19E+08	3.65E+08	3.88E+08	3.97E+08

Table 15

Thermal Energy Generation Comparison By Year

Megawatt Hours

Boiling Water Reactors

Facility	Initial Criticality	Commercial Operation	1972	1973	1974	1975	1976	1977	1978
Big Rock Point 1	09/27/62	03/29/63	1.20E+06	1.41E+06	1.13E+06	9.80E+05	8.30E+05	1.23E+06	1.37E+06
Browns Ferry 1	08/17/73	08/01/74		1.37E+06	1.64E+07	8.75E+06	1.34E+07	5.37E+07	5.32E+07
Browns Ferry 2	07/20/74	03/01/75							
Browns Ferry 3	08/08/76	03/01/77							
Brunswick 1	10/08/76	03/18/77				4.72E+06	7.81E+06	1.59E+07	3.07E+07
Brunswick 2	03/20/75	11/03/75							
Clinton 1	02/27/87	11/24/87							
Cooper	02/21/74	07/01/74			6.90E+06	1.24E+07	1.19E+07	1.45E+07	1.54E+07
Dresden 1	10/15/59	07/04/60	3.76E+06	2.43E+06	1.36E+06	2.56E+06	3.42E+06	2.21E+06	2.73E+06
Dresden 2	01/07/70	06/09/70	2.52E+07	2.83E+07	2.18E+07	1.70E+07	2.74E+07	2.80E+07	3.13E+07
Dresden 3	01/31/71	11/16/71							
Duane Arnold	03/23/74	02/01/75				7.42E+06	8.02E+06	9.32E+06	3.96E+06
Fermi 2	06/21/85	01/23/86							
James A. Fitzpatrick	11/17/74	07/28/75				6.81E+06	1.26E+07	1.18E+07	1.30E+07
Grand Gulf 1	08/18/82	07/01/85							
Edwin I. Hatch 1	09/12/74	12/31/75				9.75E+06	1.78E+07	1.22E+07	3.37E+07
Edwin I. Hatch 2	07/04/78	09/05/79							
Hope Creek 1	06/28/86	12/20/86							
Humboldt Bay 3	02/16/63	08/ /63	1.25E+06	1.47E+06	1.27E+06	1.32E+06	6.80E+05	0.00E+00	0.00E+00
LaCrosse	07/11/67	11/01/69	8.20E+05	6.90E+05	1.08E+06	9.20E+05	6.10E+05	3.43E+05	6.54E+05
LaSalle 1	06/21/82	01/01/84							
LaSalle 2	03/10/84	10/19/84							
Limerick 1	12/22/84	02/01/86							
Limerick 2	08/12/89	01/08/90							
Millstone 1	10/26/70	03/01/71	9.69E+06	5.96E+06	1.12E+07	1.21E+07	1.16E+07	1.48E+07	1.43E+07
Monticello	12/10/70	06/30/71	1.10E+07	9.90E+06	8.28E+06	8.88E+06	1.23E+07	1.10E+07	1.18E+07
Nine Mile Point 1	09/05/69	12/01/69	1.00E+07	1.10E+07	1.05E+07	9.68E+06	1.31E+07	9.15E+06	1.39E+07
Nine Mile Point 2	05/23/87	04/05/88							
Oyster Creek 1	05/03/69	12/01/69	1.30E+07	1.09E+07	1.13E+07	9.81E+06	1.18E+07	9.82E+06	1.10E+07
Peach Bottom 2	09/16/73	07/05/74			1.23E+07	3.34E+07	3.72E+07	2.86E+07	4.39E+07
Peach Bottom 3	08/07/74	12/23/74							
Perry 1	06/06/86	11/18/87							
Pilgrim 1	06/16/72	12/01/72	2.65E+06	1.25E+07	6.00E+06	8.10E+06	7.60E+06	8.26E+06	1.33E+07
Quad-Cities 1	10/18/71	02/18/73	1.25E+07	3.17E+07	2.61E+07	2.31E+07	2.59E+07	2.68E+07	3.14E+07
Quad-Cities 2	04/26/72	03/10/73							
River Bend 1	10/31/85	06/16/[illegible]							
Shoreham 1	02/15/85								
Susquehanna 1	09/10/82	06/08/83							
Susquehanna 2	05/08/84	02/12/85							
Vermont Yankee 1	03/24/72	11/30/72	1.48E+06	6.08E+06	8.20E+06	1.13E+07	1.02E+07	1.11E+07	1.00E+07
WNP-2	01/19/84	12/13/84							
Total			9.26E+07	1.24E+08	1.44E+08	1.89E+08	2.30E+08	2.70E+08	3.36E+08
* Fort St. Vrain 1	01/31/74	07/01/79							2.04E+06

* High temperature gas cooled reactor

Table 15

Thermal Energy Generation Comparison By Year

Megawatt Hours

Boiling Water Reactors

Facility	Initial Criticality	Commercial Operation	1979	1980	1981	1982	1983	1984	1985
Big Rock Point 1	09/27/62	03/29/63	3.96E+05	1.40E+06	1.63E+06	1.20E+06	1.14E+06	1.37E+06	1.19E+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
Browns Ferry 2	07/20/74	03/01/75		1.74E+07	2.31E+07	1.38E+07	1.97E+07	1.31E+07	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
Brunswick 1	10/08/76	03/18/77	2.12E+07	1.23E+07	9.29E+06	9.48E+06	4.53E+06	1.56E+07	6.06E+06
Brunswick 2	03/20/75	11/03/75		5.38E+06	1.04E+07	6.30E+06	1.23E+07	4.53E+06	1.57E+07
Clinton 1	02/27/87	11/24/87							
Cooper	02/21/74	07/01/74	1.58E+07	1.36E+07	1.39E+07	1.64E+07	1.05E+07	1.09E+07	3.42E+06
Dresden 1	10/15/59	07/04/60	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E+07	0.00E+00
Dresden 2	01/07/70	06/09/70	2.77E+07	1.57E+07	1.13E+07	1.69E+07	1.13E+07	7.10E+06	1.03E+07
Dresden 3	01/31/71	11/16/71		1.42E+07	1.71E+07	1.27E+07	1.37E+07	7.10E+06	1.47E+07
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
Fermi 2	06/21/85	01/23/86							
James A. Fitzpatrick	11/17/74	07/28/75	8.97E+06	1.30E+07	1.42E+07	1.51E+07	1.42E+07	1.52E+07	1.28E+07
Grand Gulf 1	08/18/82	07/01/85					0.00E+00	8.80E+05	9.80E+06
Edwin I. Hatch 1	09/12/74	12/31/75	1.62E+07	1.54E+07	8.97E+06	9.42E+06	1.29E+07	1.20E+07	1.53E+07
Edwin I. Hatch 2	07/04/78	09/05/79		1.16E+07	1.47E+07	1.18E+07	1.19E+07	5.99E+06	1.70E+07
Hope Creek 1	06/28/86	12/20/86							
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
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
LaSalle 1	06/21/82	01/01/84				2.09E+06	5.86E+06	2.30E+07	1.54E+07
LaSalle 2	03/10/84	10/19/84						4.51E+06	1.10E+07
Limerick 1	12/22/84	02/01/86						0.00E+00	4.42E+06
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	1.36E+07	1.64E+07	1.34E+07	1.42E+07
Monticello	12/10/70	06/30/71	1.35E+07	1.07E+07	1.01E+07	7.68E+06	1.30E+07	8.98E+05	1.31E+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
Nine Mile Point 2	05/23/87	04/05/88							
Oyster Creek 1	05/03/69	12/01/69	1.38E+07	6.27E+06	8.44E+06	6.79E+06	9.23E+05	1.04E+06	1.16E+07
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	7.85E+06
Peach Bottom 3	08/07/74	12/23/74		2.26E+07	9.85E+06	2.65E+07	7.82E+06	2.32E+07	1.08E+07
Perry 1	06/06/86	11/18/87							
Pilgrim 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
Quad-Cities 1	10/18/71	02/18/73	3.00E+07	1.17E+07	1.88E+07	1.12E+07	1.89E+07	1.06E+07	1.92E+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	1.46E+07
River Bend 1	10/31/85	06/16/86							
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
Susquehanna 2	05/08/84	02/12/85						3.23E+06	2.20E+07
Vermont Yankee 1	03/24/72	11/30/72	1.08E+07	9.38E+06	1.13E+07	1.31E+07	9.12E+06	1.04E+07	9.55E+06
WNP-2	01/19/84	12/13/84						1.21E+06	1.64E+07
Total			3.14E+08	2.90E+08	2.86E+08	2.89E+08	2.75E+08	2.90E+08	3.40E+08
* Fort St. Vrain 1	01/31/74	07/01/79	4.78E+05	2.23E+06	2.23E+06	1.96E+06	2.58E+06	3.40E+05	3.34E+04

* High temperature gas cooled reactor

Table 15

Thermal Energy Generation Comparison By Year

Megawatt Hours

Boiling Water Reactors

Facility	Initial Criticality	Commercial Operation	1986	1987	1988	1989	1990
Big Rock Point 1	09/27/62	03/29/63	1.66E+06	1.23E+06	1.2bE+06	1.14E+07	1.40E+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
Browns Ferry 2	07/20/74	03/01/75	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Browns Ferry 3	08/08/76	03/01/77	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Brunswick 1	10/08/76	03/18/77	1.89E+07	1.29E+07	1.43E+07	1.32E+07	1.37E+07
Brunswick 2	03/20/75	11/03/75	9.43E+06	1.83E+07	1.24E+07	1.34E+07	1.30E+07
Clinton 1	02/27/87	11/24/87		2.15E+06	1.86E+07	9.26E+06	1.15E+07
Cooper	02/21/74	07/01/74	1.26E+07	1.72E+07	1.31E+07	1.50E+07	1.59E+07
Dresden 1	10/15/59	07/04/60	0.00E+00	0.00E+00			
Dresden 2	01/07/70	06/09/70	1.5JE+07	1.11E+07	1.45E+07	1.56E+07	1.35E+07
Dresden 3	01/31/71	11/16/71	5.04E+06	1.46E+07	1.36E+07	1.67E+07	1.67E+07
Duane Arnold	03/23/74	02/01/75	9.48E+06	7.96E+06	9.97E+06	1.00E+07	9.64E+06
Fermi 2	06/21/85	01/23/86	2.23E+05	5.99E+06	1.30E+07	1.63E+07	2.25E+07
James A. Fitzpatrick	11/17/74	07/28/75	1.84E+07	1.31E+07	1.34E+07	1.88E+07	1.42E+07
Grand Gulf 1	08/18/82	07/01/85	1.47E+07	2.55E+07	3.05E+07	2.51E+07	2.43E+07
Edwin I. Hatch 1	09/12/74	12/31/75	1.18E+07	1.65E+07	1.35E+07	2.09E+07	1.35E+07
Edwin I. Hatch 2	07/04/78	09/05/79	1.19E+07	1.83E+07	1.36E+07	1.35E+07	2.08E+07
Hope Creek 1	06/28/86	12/20/86	3.62E+06	2.29E+07	2.22E+07	2.10E+07	1.35E+07
Humboldt Bay 3	02/16/63	08/ /63	0.00E+00	0.00E+00			
LaCrosse	07/11/67	11/01/69	5.58E+05				
LaSalle 1	06/21/82	01/01/84	6.54E+06	1.31E+07	1.69E+07	1.91E+07	2.64E+07
LaSalle 2	03/10/84	10/19/84	1.80E+07	1.43E+07	1.81E+07	2.04E+07	1.91E+07
Limerick 1	12/22/84	02/01/86	2.16E+07	1.73E+07	2.19E+07	1.71E+07	1.82E+07
Limerick 2	08/12/89	01/08/90				3.54E+06	2.29E+07
Millstone 1	10/26/70	03/01/71	1.61E+07	1.34E+07	1.70E+07	1.42E+07	1.56E+07
Monticello	12/10/70	06/30/71	1.04E+07	1.10E+07	1.43E+07	8.48E+06	1.40E+07
Nine Mile Point 1	09/05/69	12/01/69	9.76E+06	1.42E+07	0.00E+00	0.00E+00	4.07E+06
Nine Mile Point 2	05/23/87	04/05/88		1.53E+06	8.32E+06	1.41E+07	1.34E+07
Oyster Creek 1	05/03/69	12/01/69	4.12E+06	9.69E+06	1.09E+07	7.75E+06	1.36E+07
Peach Bottom 2	09/16/73	07/05/74	2.16E+07	4.98E+06	0.00E+00	1.25E+07	2.11E+07
Peach Bottom 3	08/07/74	12/23/74	1.55E+07	4.76E+06	0.00E+00	8.84E+05	2.37E+07
Perry 1	06/06/86	11/18/87		2.56E+06	2.23E+07	1.62E+07	2.00E+07
Pilgrim 1	06/16/72	12/01/72	3.09E+06	0.00E+00	0.00E+00	5.48E+06	1.29E+07
Quad-Cities 1	10/18/71	02/18/73	1.41E+07	1.42E+07	1.83E+07	1.40E+07	1.70E+07
Quad-Cities 2	04/26/72	03/10/73	1.52E+07	1.60E+07	1.36E+07	1.85E+07	1.38E+07
River Bend 1	10/31/85	06/16/86	9.85E+06	1.55E+07	2.25E+07	1.53E+07	1.78E+07
Shoreham 1	02/15/85						
Susquehanna 1	09/10/82	06/08/83	1.87E+07	1.98E+07	2.65E+07	2.05E+07	2.05E+07
Susquehanna 2	05/08/84	02/12/85	1.74E+07	2.72E+07	1.87E+07	2.14E+07	2.63E+07
Vermont Yankee 1	03/24/72	11/30/72	6.57E+06	1.11E+07	1.30E+07	1.13E+07	1.13E+07
WNP-2	01/19/84	12/13/84	1.61E+07	1.67E+07	1.87E+07	1.92E+07	1.80E+07
Total			3.58E+08	4.15E+08	4.65E+08	4.80E+08	5.54E+08
* Fort St. Vrain 1	01/31/74	07/01/79	3.70E+05	6.68E+05	1.95E+06		

* High temperature gas cooled reactor

Table 16

Thermal Energy Generation Comparison By Year

Megawatt Hours

Pressurized Water Reactors

Facility	Initial Criticality	Commercial Operation	1972	1973	1974	1975	1976	1977	1978
Arkansas One 1	08/06/74	12/19/74			1.99E+06	1.54E+07	1.21E+07	1.64E+07	1.64E+07
Arkansas One 2	12/05/78	03/26/80							4.45E+04
Beaver Valley 1	05/10/76	10/01/76					1.97E+06	1.01E+07	8.80E+06
Beaver Valley 2	08/04/87	11/17/87							
Braidwood 1	05/29/87	07/29/88							
Braidwood 2	03/08/88	10/17/88							
Byron 1	02/02/85	09/16/85							
Byron 2	01/09/87	08/21/87							
Callaway 1	10/02/84	12/19/84							
Calvert Cliffs 1	10/07/74	05/08/75				1.40E+07	1.98E+07	2.97E+07	3.1 E+07
Calvert Cliffs 2	11/30/76	04/01/77							
Catawba 1	01/07/85	06/29/85							
Catawba 2	05/08/86	08/19/86							
Comanche Peak 1	04/03/90	08/13/90							
Donald C. Cook 1	01/18/75	08/27/75				1.46E+07	2.15E+07	1.55E+07	3.29E+07
Donald C. Cook 2	03/10/78	07/01/78							
Crystal River 3	01/14/77	03/13/77						1.26E+07	7.97E+06
Davis-Besse 1	08/12/77	07/31/78						1.66E+06	8.52E+06
Diablo Canyon 1	04/29/84	05/07/85							
Diablo Canyon 2	08/19/85	03/13/86							
Joseph M. Farley 1	08/09/77	12/01/77							1.95E+07
Joseph M. Farley 2	05/05/81	07/30/81							
Fort Calhoun 1	08/06/73	06/20/74		2.03E+06	7.58E+06	6.71E+06	7.15E+06	9.40E+06	8.98E+06
R. E. Ginna	11/08/69	07/01/70	7.71E+06	1.08E+07	6.71E+06	9.71E+06	6.98E+06	1.11E+07	1.05E+07
Haddam Neck	07/24/67	01/01/68	1.38E+07	7.73E+06	1.42E+07	1.34E+07	1.30E+07	1.31E+07	1.51E+07
Harris 1	01/03/87	05/02/87							
Indian Point 1	08/02/62	10/ /62		1.47E+06	1.15E+07	1.64E+07	7.60E+06	3.50E+07	1.48E+07
Indian Point 2	05/22/73	08/01/74							
Indian Point 3	04/06/76	08/30/76							1.70E+07
Kewaunee	03/07/74	06/16/74			5.03E+06	1.08E+07	1.08E+07	1.11E+07	1.24E+07
Maine Yankee	10/23/72	12/28/72	1.44E+06	1.08E+07	1.14E+07	1.17E+07	1.94E+07	1.65E+07	1.69E+07
McGuire 1	08/08/81	12/01/81							
McGuire 2	05/08/83	03/01/84							
Millstone 2	10/17/75	12/26/75				6.40E+05	1.52E+07	1.42E+07	1.44E+07
Millstone 3	01/23/86	04/23/86							
North Anna 1	04/05/78	06/06/78							1.22E+07
North Anna 2	06/12/80	12/14/80							
Oconee 1	04/19/73	07/15/73		6.62E+06	1.70E+07	4.68E+07	3.97E+07	4.00E+07	4.84E+07
Oconee 2	11/11/73	09/09/74							
Oconee 3	09/05/74	12/16/74							
Palisades	05/24/71	12/31/71	5.91E+06	7.80E+06	4.00E+05	8.91E+06	9.66E+06	1.73E+07	9.44E+06
Palo Verde 1	05/25/85	02/13/86							
Palo Verde 2	04/18/86	09/19/86							
Palo Verde 3	10/25/87	01/08/88							
Point Beach 1	11/02/70	12/21/70	9.96E+06	1.84E+07	2.04E+07	2.09E+07	2.18E+07	2.23E+07	2.33E+07
Point Beach 2	05/30/72	10/01/71							
Prairie Island 1	12/01/73	12/16/73		1.28E+05	5.26E+06	2.25E+07	2.06E+07	2.46E+07	2.52E+07
Prairie Island 2	12/17/74	12/21/74							
Rancho Seco 1	09/16/74	04/17/75				4.11E+06	6.91E+06	1.81E+07	1.59E+07
H. B. Robinson 2	09/20/70	03/07/71	1.55E+07	1.25E+07	1.56E+07	1.36E+07	1.59E+07	1.43E+07	1.33E+07
Salem 1	12/11/76	06/30/77					5.00E+04	6.70E+06	1.43E+07
Salem 2	08/08/80	10/13/81							
San Onofre 1	06/14/67	01/01/68	8.53E+06	7.09E+06	9.73E+06	1.00E+07	7.75E+06	7.29E+06	8.54E+06
San Onofre 2	07/26/82	08/08/83							
San Onofre 3	08/29/83	04/01/84							
Seabrook 1	06/13/89	08/19/90							
Sequoyah 1	07/05/80	07/01/81							
Sequoyah 2	11/05/81	06/01/82							
South Texas 1	03/08/88	08/25/88							
South Texas 2	03/12/89	06/19/89							

Table 16

Thermal Energy Generation Comparison By Year

Megawatt Hours

Pressurized Water Reactors

Facility	Initial Criticality	Commercial Operation	1972	1973	1974	1975	1976	1977	1978
St. Lucie 1	04/22/76	12/21/76					3.53E+05	1.75E+07	1.64E+07
St. Lucie 2	06/02/83	08/08/83							
Summer 1	10/22/82	01/01/84							
Surry 1	07/01/72	12/22/72	1.29E+06	2.26E+07	1.92E+07	2.90E+07	2.51E+07	3.10E+07	3.27E+07
Surry 2	03/07/73	05/01/73							
Three Mile Island 1	06/05/74	09/02/74			6.20E+06	1.76E+07	1.39E+07	1.76E+07	1.83E+07
Three Mile Island 2	03/28/78	12/30/78							3.16E+06
Trojan	12/15/75	05/20/76					7.54E+06	2.12E+07	5.63E+06
Turkey Point 3	10/20/72	12/14/72	2.90E+05	1.53E+07	2.55E+07	2.78E+07	2.68E+07	2.70E+07	2.81E+07
Turkey Point 4	06/11/73	09/07/73							
Vogtle 1	03/09/87	05/31/87							
Vogtle 2	03/28/89	05/20/89							
Waterford 3	03/04/85	09/24/85							
Wolf Creek 1	05/22/85	09/03/85							
Yankee Rowe 1	08/19/60	07/01/61	2.40E+06	3.57E+06	3.07E+06	4.02E+06	4.25E+06	3.52E+06	4.16E+06
Zion 1	06/19/73	12/31/73		2.73E+06	1.69E+07	3.28E+07	3.11E+07	3.66E+07	4.30E+07
Zion 2	12/24/73	09/17/74							
Total			6.68E+07	1.30E+08	1.98E+08	3.54E+08	3.67E+08	5.01E+08	5.58E+08

Table 16

Thermal Energy Generation Comparison By Year

Megawatt Hours

Pressurized Water Reactors

Facility	Initial Criticality	Commercial Operation	1979	1980	1981	1982	1983	1984	1985
Arkansas One 1	08/06/74	12/19/74	1.05E+07	1.29E+07	1.54E+07	1.22E+07	1.02E+07	1.44E+07	1.62E+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
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
Beaver Valley 2	08/04/87	11/17/87							
Braidwood 1	05/29/87	07/29/88							
Braidwood 2	03/08/88	10/17/88							
Byron 1	02/02/85	09/16/85							3.34E+06
Byron 2	01/09/87	08/21/87							
Callaway 1	10/02/84	12/19/84						1.00E+06	2.49E+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
Calvert Cliffs 2	11/30/76	04/01/77		2.05E+07	1.71E+07	1.62E+07	1.96E+07	1.69E+07	1.78E+07
Catawba 1	01/07/85	06/29/85							1.07E+07
Catawba 2	05/08/86	08/19/86							
Comanche Peak 1	04/03/90	08/13/90							
Donald C. Cook 1	01/18/75	08/27/75	3.68E+07	2.02E+07	2.11E+07	1.69E+07	1.68E+07	2.41E+07	6.83E+06
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
Crystal River 3	01/14/77	03/13/77	1.17E+07	1.04E+07	1.27E+07	1.52E+07	1.14E+07	1.97E+07	1.17E+07
Davis-Besse 1	08/12/77	07/31/78	1.00E+07	6.71E+06	1.40E+07	1.03E+07	1.57E+07	1.39E+07	6.31E+06
Diablo Canyon 1	04/29/84	05/07/85						9.48E+05	1.66E+07
Diablo Canyon 2	08/19/85	03/13/86							2.12E+06
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
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
Fort Calhoun 1	08/06/73	06/20/74	1.16E+07	6.48E+06	6.98E+06	1.09E+07	9.14E+06	7.43E+06	9.56E+06
R. E. Ginna	11/08/69	07/01/70	9.35E+06	9.93E+06	1.07E+07	7.68E+06	9.67E+06	1.00E+07	1.14E+07
Haddam Neck	07/24/67	01/01/68	1.32E+07	1.14E+07	1.31E+07	1.45E+07	1.22E+07	1.08E+07	1.49E+07
Harris 1	01/03/87	05/02/87							
Indian Point 1	08/02/62	10/ /62	1.61E+07	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	1.96E+07	1.17E+07	2.21E+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
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
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	1.67E+07
McGuire 1	08/08/81	12/01/81			8.50E+04	1.34E+07	1.39E+07	1.94E+07	2.06E+07
McGuire 2	05/08/83	03/01/84					0.00E+00	1.94E+07	1.68E+07
Millstone 2	10/17/75	12/26/75	1.38E+07	1.55E+07	1.92E+07	1.60E+07	7.68E+06	2.14E+07	1.12E+07
Millstone 3	01/23/86	04/23/86							
North Anna 1	04/05/78	06/06/78	1.41E+07	1.89E+07	1.51E+07	7.95E+06	1.68E+07	1.18E+07	1.81E+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
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
Oconee 2	11/11/73	09/09/74		1.20E+07	1.59E+07	1.06E+07	1.58E+07	2.33E+07	1.58E+07
Oconee 3	09/05/74	12/16/74		1.59E+07	1.72E+07	6.53E+06	2.14E+07	1.63E+07	1.49E+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
Palo Verde 1	05/25/85	02/13/86							4.39E+06
Palo Verde 2	04/18/86	09/19/86							
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
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
Prairie Island 1	12/01/73	12/16/73	1.12E+08	1.06E+07	1.25E+07	1.27E+07	1.24E+07	1.33E+07	1.18E+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
Rancho Seco 1	09/16/74	04/17/75	1.79E+07	1.39E+07	8.92E+06	1.09E+07	9.16E+06	1.21E+07	6.26E+06
H. B. Robinson 2	09/20/70	03/07/71	1.30E+07	1.07E+07	1.19E+07	7.67E+06	1.13E+07	7.84E+05	1.66E+07
Salem 1	12/11/76	06/30/77	6.60E+06	1.84E+07	2.02E+07	1.31E+07	1.67E+07	6.95E+06	2.77E+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
San Onofre 1	06/14/67	01/01/68	1.05E+07	2.55E+06	2.59E+06	1.59E+06	0.00E+00	9.24E+05	8.12E+06
San Onofre 2	07/26/82	08/08/83				9.28E+05	1.23E+07	1.66E+07	1.65E+07
San Onofre 3	08/29/83	04/01/84					3.55E+06	1.29E+07	1.21E+07
Seabrook 1	06/13/89	08/19/90							
Sequoyah 1	07/05/80	07/01/81		1.67E+06	8.06E+06	1.52E+07	2.22E+07	1.92E+07	1.24E+07
Sequoyah 2	11/05/81	06/01/82					2.03E+07	1.96E+07	1.71E+07
South Texas 1	03/06/88	08/25/88							
South Texas 2	03/12/89	06/19/89							

Table 16

Thermal Energy Generation Comparison By Year

Megawatt Hours

Pressurized Water Reactors

Facility	Initial Criticality	Commercial Operation	1979	1980	1981	1982	1983	1984	1985
St. Lucie 1	04/22/76	12/21/76	1.60E+07	1.70E+07	1.61E+07	2.18E+07	3.53E+06	1.35E+07	1.88E+07
St. Lucie 2	06/02/83	08/08/83					7.66E+06	1.77E+07	1.93E+07
Summer 1	10/22/82	01/01/84				7.95E+05	1.38E+07	1.33E+07	1.65E+07
Surry 1	07/01/72	12/22/72	9.32E+06	8.67E+06	7.94E+06	1.83E+07	1.22E+07	1.11E+07	1.79E+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
Three Mile Island 1	06/05/74	09/02/74	2.83E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.82E+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
Trojan	12/15/75	05/20/76	1.70E+07	1.97E+07	2.10E+07	1.56E+07	1.34E+07	1.54E+07	2.25E+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
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
Vogtle 1	03/09/87	05/31/87							
Vogtle 2	03/28/89	05/20/89							
Waterford 3	03/04/85	09/24/85							5.64E+06
Wolf Creek 1	05/22/85	09/03/85							8.87E+06
Yankee Rowe 1	08/19/60	07/01/61	4.17E+06	1.13E+06	3.63E+06	3.69E+06	4.69E+06	3.61E+06	4.19E+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
Zion 2	12/24/73	09/17/74		1.75E+07	1.77E+07	1.71E+07	2.00E+07	1.92E+07	2.16E+07
Total			5.76E+08	5.12E+08	5.76E+08	5.96E+08	6.52E+08	7.37E+08	8.58E+08

N/R = Not Reported

Table 16

Thermal Energy Generation Comparison By Year

Megawatt Hours

Pressurized Water Reactors

Facility	Initial Criticality	Commercial Operation	1986	1987	1988	1989	1990
Arkansas One 1	08/06/74	12/19/74	1.11E+07	1.51E+07	1.24E+07	1.07E+07	1.30E+07
Arkansas One 2	12/05/78	03/26/80	1.68E+07	2.10E+07	1.58E+07	1.76E+07	2.26E+07
Beaver Valley 1	05/10/76	10/01/76	1.55E+07	1.84E+07	1.64E+07	1.27E+07	2.02E+07
Beaver Valley 2	08/04/87	11/17/87		2.39E+06	2.13E+07	1.51E+07	1.43E+07
Braidwood 1	05/29/87	07/29/88		5.02E+06	1.04E+07	1.44E+07	2.48E+07
Braidwood 2	03/08/88	10/17/88			4.08E+06	2.18E+07	1.95E+07
Byron 1	02/02/85	09/16/85	2.32E+07	1.71E+07	1.99E+07	2.77E+07	2.16E+07
Byron 2	01/09/87	08/21/87		6.47E+06	2.04E+07	1.87E+07	1.87E+07
Callaway 1	10/02/84	12/19/84	2.26E+07	1.98E+07	2.76E+07	3.15E+07	2.45E+07
Calvert Cliffs 1	10/07/74	05/08/75	1.82E+07	1.65E+07	1.62E+07	4.23E+06	4.34E+06
Calvert Cliffs 2	11/30/76	04/01/77	2.18E+07	1.50E+07	2.07E+07	1.45E+06	0.00E+00
Catawba 1	01/07/85	06/29/85	1.59E+07	1.95E+07	2.29E+07	2.36E+07	2.08E+07
Catawba 2	05/08/86	08/19/86	4.04E+06	2.17E+07	1.88E+07	1.95E+07	1.93E+07
Comanche Peak 1	04/03/90	08/13/90					8.16E+06
Donald C. Cook 1	01/18/75	08/27/75	2.16E+07	1.64E+07	2.42E+07	1.74E+07	2.05E+07
Donald C. Cook 2	03/10/78	07/01/78	1.44E+07	1.65E+07	7.41E+06	2.13E+07	1.53E+07
Crystal River 3	01/14/77	03/13/77	8.14E+06	1.11E+07	1.78E+07	9.14E+06	1.28E+07
Davis-Besse 1	08/12/77	07/31/78	1.29E+05	1.65E+07	3.91E+06	2.35E+07	1.32E+07
Diablo Canyon 1	04/29/84	05/07/85	1.70E+07	2.54E+07	1.66E+07	2.25E+07	2.72E+07
Diablo Canyon 2	08/19/85	03/13/86	2.11E+07	1.82E+07	1.98E+07	2.69E+07	2.39E+07
Joseph M. Farley 1	06/09/77	12/01/77	1.85E+07	2.11E+07	1.92E+07	1.96E+07	2.25E+07
Joseph M. Farley 2	05/05/81	07/30/81	1.91E+07	1.60E+07	2.29E+07	1.81E+07	1.69E+07
Fort Calhoun 1	08/06/73	06/20/74	1.13E+07	9.48E+06	8.34E+06	1.07E+07	7.67E+06
R. E. Ginna	11/06/69	07/01/70	1.13E+07	1.19E+07	1.10E+07	9.65E+06	1.07E+07
Haddam Neck	07/24/67	01/01/68	7.26E+06	8.39E+06	1.06E+07	9.47E+06	3.81E+06
Harris 1	01/03/87	05/02/87		1.12E+07	1.71E+07	1.83E+07	2.05E+07
Indian Point 1	08/02/62	10/ /62	0.00E+00	0.00E+00			
Indian Point 2	05/22/73	08/01/74	1.29E+07	1.71E+07	1.95E+07	1.45E+07	1.66E+07
Indian Point 3	04/06/76	08/30/76	1.77E+07	1.56E+07	2.14E+07	1.55E+07	1.57E+07
Kewaunee	03/07/74	06/16/74	1.21E+07	1.26E+07	1.22E+07	1.18E+07	1.24E+07
Maine Yankee	10/23/72	12/28/72	1.93E+07	1.31E+07	1.67E+07	2.11E+07	1.50E+07
McGuire 1	08/08/81	12/01/81	1.56E+07	2.21E+07	2.26E+07	2.38E+07	1.48E+07
McGuire 2	05/08/83	03/01/84	1.96E+07	2.25E+07	2.41E+07	2.19E+07	1.93E+07
Millstone 2	10/17/75	12/26/75	1.66E+07	2.18E+07	1.81E+07	1.55E+07	1.69E+07
Millstone 3	01/23/86	04/23/86	2.17E+07	2.05E+07	2.33E+07	2.17E+07	2.52E+07
North Anna 1	04/05/78	06/06/78	1.98E+07	1.14E+07	2.20E+07	1.37E+07	2.31E+07
North Anna 2	06/12/80	12/14/80	1.92E+07	1.80E+07	2.50E+07	1.88E+07	1.91E+07
Oconee 1	04/19/73	07/15/73	1.46E+07	1.56E+07	2.21E+07	1.82E+07	1.96E+07
Oconee 2	11/11/73	09/09/74	1.79E+07	1.93E+07	1.72E+07	1.84E+07	1.90E+07
Oconee 3	09/05/74	12/16/74	1.88E+07	1.55E+07	1.80E+07	1.94E+07	2.23E+07
Palisades	05/24/71	12/31/71	2.76E+06	8.83E+06	1.14E+07	1.21E+07	1.01E+07
Palo Verde 1	05/25/85	02/13/86	1.82E+07	1.61E+07	2.03E+07	5.57E+06	1.45E+07
Palo Verde 2	04/18/86	09/19/86	7.02E+06	2.49E+07	2.07E+07	1.47E+07	1.91E+07
Palo Verde 3	10/25/87	01/08/88		1.24E+06	3.03E+07	4.10E+06	2.92E+07
Point Beach 1	11/02/70	12/21/70	1.15E+07	1.09E+07	1.17E+07	1.11E+07	1.09E+07
Point Beach 2	05/30/72	10/01/71	1.06E+07	1.11E+07	1.14E+07	1.06E+07	1.16E+07
Prairie Island 1	12/01/73	12/16/73	1.22E+07	1.14E+07	1.23E+07	1.40E+07	1.23E+07
Prairie Island 2	12/17/74	12/21/74	1.23E+07	1.41E+07	1.26E+07	1.25E+07	1.22E+07
Rancho Seco 1	09/16/74	04/17/75	0.00E+00	0.00E+00	9.47E+06	4.62E+06	0.00E+00
H. B. Robinson 2	09/20/70	03/07/71	1.52E+07	1.35E+07	1.06E+07	8.86E+06	1.08E+07
Salem 1	12/11/76	06/30/77	2.24E+07	1.96E+07	2.32E+07	1.97E+07	1.90E+07
Salem 2	08/08/80	10/13/81	1.74E+07	1.96E+07	1.90E+07	2.44E+07	1.69E+07
San Onofre 1	06/14/67	01/01/68	3.00E+06	8.82E+06	4.52E+06	3.92E+06	5.04E+06
San Onofre 2	07/26/82	08/08/83	2.01E+07	1.93E+07	2.75E+07	1.63E+07	2.55E+07
San Onofre 3	08/29/83	04/01/84	2.13E+07	2.32E+07	1.89E+07	2.73E+07	2.04E+07
Seabrook 1	06/13/89	08/19/90					1.26E+07
Sequoyah 1	07/05/80	07/01/81	0.00E+00	0.00E+00	5.16E+05	2.68E+07	2.10E+07
Sequoyah 2	11/05/81	06/01/82	0.00E+00	0.00E+00	1.26E+07	2.68E+07	2.19E+07
South Texas 1	03/08/88	08/25/88			8.81E+06	1.99E+07	1.90E+07
South Texas 1	03/12/89	06/19/89				9.52E+06	2.02E+07

Table 16

Thermal Energy Generation Comparison By Year

Megawatt Hours

Pressurized Water Reactors

Facility	Initial Criticality	Commercial Operation	1986	1987	1988	1989	1990
St. Lucie 1	04/22/76	12/21/76	2.23E+07	1.81E+07	1.97E+07	2.19E+07	1.43E+07
St. Lucie 2	06/02/83	08/08/83	1.94E+07	1.90E+07	2.35E+07	1.73E+07	1.70E+07
Summer 1	10/22/82	01/01/84	2.26E+07	1.64E+07	1.61E+07	1.76E+07	1.93E+07
Surry 1	07/01/72	12/22/72	1.42E+07	1.47E+07	8.45E+06	9.95E+06	1.51E+07
Surry 2	03/07/73	05/01/73	1.45E+07	1.54E+07	1.16E+07	2.67E+06	1.85E+07
Three Mile Island 1	06/05/74	09/02/74	1.56E+07	1.56E+07	1.69E+07	2.22E+07	1.69E+07
Three Mile Island 2	03/28/78	12/30/78	0.00E+00	0.00E+00			
Trojan	12/15/75	05/20/76	2.29E+07	1.39E+07	1.98E+07	1.73E+07	1.90E+07
Turkey Point 3	10/20/72	12/14/72	1.46E+07	2.96E+06	1.14E+07	1.18E+07	1.12E+07
Turkey Point 4	06/11/73	09/07/73	5.73E+06	8.69E+06	1.06E+07	7.14E+06	1.44E+07
Vogtle 1	03/09/87	05/31/87		1.27E+07	2.18E+07	2.76E+07	2.32E+07
Vogtle 2	03/28/89	05/20/89				1.72E+07	2.17E+07
Waterford 3	03/04/85	09/24/85	2.27E+07	2.31E+07	2.06E+07	2.37E+07	2.69E+07
Wolf Creek 1	05/22/85	09/03/85	2.09E+07	1.97E+07	2.01E+07	2.88E+07	2.36E+07
Yankee Rowe 1	08/19/60	07/01/61	4.90E+06	4.03E+06	4.03E+06	4.66E+06	2.94E+06
Zion 1	06/19/73	12/31/73	1.58E+07	1.88E+07	1.97E+07	1.56E+07	1.41E+07
Zion 2	12/24/73	09/17/74	2.30E+07	1.61E+07	2.08E+07	2.40E+07	8.42E+06
Total			9.38E+08	1.01E+09	1.18E+09	1.21E+09	1.24E+09

APPENDIX A

Installation: Arkansas One
Unit No.(s): 1

Location: 6 Mi WNW Russellville, AR

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-313
Thermal Power(MWH): 1.30E+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): 4.12E+06
Initial Criticality: 08/06/74

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-58	2.19E-06
CO-60	6.09E-06
KR-85	2.78E+01
KR-85M	7.71E-02
RB-88	1.99E+01
SR-89	2.30E-06
SR-90	2.87E-06
NB-97	9.13E-07
SB-122	5.91E-07
I-131	1.57E-04
XE-131M	6.42E+00
I-132	1.58E-06
I-133	1.15E-05
XE-133	6.50E+02
XE-133M	4.69E+00
CS-134	2.67E-06
XE-135	1.10E+01
CS-137	7.21E-04

Total Airborne Tritium Released 9.09E+00 Ci

Installation: Arkansas One
Unit No.(s): 1

Location: 6 Mi WNW Russellville, AR

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-313
Thermal Power(MWH): 1.30E+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): 4.12E+06
Initial Criticality: 08/06/74

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	4.02E-03
K-40	9.32E-04
CR-51	1.42E-02
MN-54	1.75E-01
FE-55	1.42E-01
CO-57	1.46E-03
CO-58	1.25E+00
FE-59	4.90E-03
CO-60	7.88E-02
CU-64	2.25E-03
ZN-65	5.17E-04
SE-75	3.77E-05
KR-85	6.22E-02
RB-88	1.55E-04
SR-89	8.01E-03
SR-90	5.77E-04
SR-92	2.16E-03
Y-92	1.54E-04
NB-94	8.98E-05
NB-95	4.42E-03
ZR-95	2.58E-03
NB-97	3.28E-04
ZR-97	6.19E-05
MO-99	5.09E-04
TC-99M	8.18E-04
RU-103	7.82E-04
AG-110M	4.92E-02
SN-113	1.77E-04
SB-122	1.09E-04
SB-124	3.98E-03
SB-125	1.65E-01
SB-127	7.67E-05
I-131	1.74E-01
XE-131M	2.57E-01
I-133	3.30E-04
XE-133	1.02E+01
XE-133M	2.02E-02
CS-134	9.99E-02
I-135	4.83E-05
XE-135	3.00E-04
CS-136	6.04E-04
CS-137	1.59E-01
BA-140	3.82E-03
LA-140	9.71E-03

Total Liquid Tritium Released	2.67E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	4.31E+07 liters
Volume of Dilution Water Used During Period	8.15E+11 liters

Installation: Arkansas One
Unit No.(s): 2

Location: 6 Mi WNW Russellville, AR

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-368
Thermal Power(MWH): 2.26E+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): 7.13E+06
Initial Criticality: 12/05/78

Airborne Effluents

Nuclide Released	Activity (Ci)
K-40	8.53E-05
CO-58	3.81E-05
CO-60	6.41E-06
KR-85	9.15E-02
KR-85M	1.35E-01
SR-89	2.20E-06
NB-95	3.04E-06
NB-97	2.49E-06
AG-110M	1.22E-06
I-131	4.22E-05
XE-131M	3.38E-02
I-133	3.43E-06
XE-133	1.77E+02
XE-133M	5.03E-01
CS-134	6.99E-06
XE-135	1.19E+01
CS-137	2.03E-05
BI-214	1.12E-04
PB-214	1.22E-05

Total Airborne Tritium Released 3.82E+00 Ci

Installation: Arkansas One
Unit No.(s): 2

Location: 6 Mi WNW Russellville, AR

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-368
Thermal Power(MWH): 2.26E+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): 7.13E+06
Initial Criticality: 12/05/78

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	5.08E-05
K-40	3.04E-04
CR-51	3.37E-03
MN-54	3.30E-03
FE-55	3.36E-02
CO-57	2.60E-05
CO-58	3.76E-02
FE-59	4.70E-05
CO-60	1.52E-02
SR-89	7.27E-04
SR-90	1.86E-04
SR-92	1.57E-03
Y-92	8.95E-05
NB-95	1.22E-03
ZR-95	1.03E-03
NB-97	1.90E-04
ZR-97	1.48E-04
TC-99M	9.63E-05
RU-106	3.41E-05
AG-110M	1.77E-02
SB-122	2.21E-04
SB-124	2.61E-03
SB-125	4.49E-02
SB-127	2.96E-04
I-131	2.78E-03
XE-131M	4.63E-02
I-133	8.22E-04
XE-133	2.09E+00
XE-133M	6.37E-03
CS-134	2.10E-02
I-134	1.78E-05
XE-135	2.81E-03
CS-136	5.47E-06
CS-137	6.21E-02
CS-138	2.04E-04
LA-140	4.63E-04
RA-226	1.06E-05

Total Liquid Tritium Released	5.33E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	9.32E+06 liters
Volume of Dilution Water Used During Period	8.18E+11 liters

Installation: Arkansas One Location: 6 Mi WNW Russellville, AR
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR Licensee: Arkansas Power & Light
Docket Number: 50-313 Licensed Power(MWT): 2.57E+03
Thermal Power(MWH): 1.30E+07 Net Electrical Power(MWH): 4.12E+06
Commercial Operation: 12/19/74 Initial Criticality: 08/06/74
Cooling Water Source: Dardanelle Reservoir

Unit Number: 2 Type: PWR Licensee: Arkansas Power & Light
Docket Number: 50-368 Licensed Power(MWT): 2.82E+03
Thermal Power(MWH): 2.26E+07 Net Electrical Power(MWH): 7.13E+06
Commercial Operation: 03/26/80 Initial Criticality: 12/05/78
Cooling Water Source: Dardanelle Reservoir

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
22	Unshielded Van/Truck	Oak Ridge, TN
2	Unshielded Van/Truck	Wampum, PA

Irradiated Fuel Shipments (Disposition)

Number of Shipments	Mode of Transportation	Destination
1	Spent Fuel Cask	Chalk River, Canada

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-60		3.55E+00
CS-134		2.33E+01
CS-137		7.01E+01
I-131		1.42E+00
SB-124		9.20E-01
XE-131M		6.00E-02
B		
AG-110M	8.00E-01	1.10E-01
C-14	5.00E-01	1.00E+00
CO-58	2.55E+01	1.83E+01
CO-60	6.20E+00	6.62E+00
CR-51		8.00E-02
CS-134	5.10E+00	1.19E+01
CS-137	3.68E+01	3.96E+01
FE-55	1.19E+01	1.29E+01
NB-95	2.60E+00	
NI-63	8.60E+00	9.27E+00
TC-99		1.00E-01
ZR-95	2.00E+00	

Installation: Arkansas One Location: 6 Mi WNW Russellville, AR
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.13E+01	
	Ci	1.32E-02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.58E+02	
	Ci	1.42E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Beaver Valley
Unit No.(s): 1&2

Location: Shippingport, PA

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-334
Thermal Power(MWH): 2.02E+07
Commercial Operation: 10/01/76
Cooling Water Source: Ohio River

Licensee: Duquesne Light
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 6.17E+06
Initial Criticality: 05/10/76

Unit Number: 2 Type: PWR
Docket Number: 50-412
Thermal Power(MWH): 1.43E+07
Commercial Operation: 11/17/87
Cooling Water Source: Ohio River

Licensee: Duquesne Light
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 4.29E+06
Initial Criticality: 08/04/87

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.96E-04
CO-57	2.07E-07
CO-60	3.65E-06
KR-85	1.19E-01
KR-85M	3.31E-03
MO-99	6.65E-08
TC-99M	6.47E-08
I-131	4.62E-06
I-133	1.10E-06
XE-133	2.39E+00
XE- 35	1.39E-01
CS-137	3.08E-06

Total Airborne Tritium Released 8.77E+01 Ci

Installation: Beaver Valley
Unit No.(s): 1&2

Location: Shippingport, PA

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-334
Thermal Power(MWH): 2.02E+07
Commercial Operation: 10/01/76
Cooling Water Source: Ohio River

Licensee: Duquesne Light
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 6.17E+06
Initial Criticality: 05/10/76

Unit Number: 2 Type: PWR
Docket Number: 50-412
Thermal Power(MWH): 1.43E+07
Commercial Operation: 11/17/87
Cooling Water Source: Ohio River

Licensee: Duquesne Light
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 4.29E+06
Initial Criticality: 08/04/87

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	3.13E-04
AR-41	9.37E-05
CR-51	8.04E-03
MN-54	4.05E-02
FE-55	4.34E-01
CO-57	4.47E-03
CO-58	1.73E+00
FE-59	4.98E-03
CO-60	2.59E-01
ZN-65	2.07E-04
SR-89	1.74E-04
SR-90	2.86E-06
ZR/NB-95	1.50E-03
NB-97	2.84E-03
AG-110M	7.84E-03
SB-124	5.21E-03
SB-125	4.63E-02
I-131	1.43E-05
XE-133	1.34E-03
CS-134	2.20E-04
XE-135	5.01E-04
CS-137	3.03E-03
PA/LA-140	3.68E-05

Total Liquid Tritium Released	4.91E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	7.73E+06 liters
Volume of Dilution Water Used During Period	5.80E+09 liters

Installation: Beaver Valley
Unit No.(s): 1

Location: Shippingport, PA

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-334
Thermal Power(MWH): 2.02E+07
Commercial Operation: 10/01/76
Cooling Water Source: Ohio River

Licensee: Duquesne Light
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 6.17E+06
Initial Criticality: 05/10/76

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-57	1.13E-06
CO-58	4.88E-05
CO-60	2.34E-05
KR-85	3.54E+00
NB-95M	3.59E-06
MO-99	1.17E-06
TC-99M	1.14E-06
I-131	1.31E-04
I-133	1.89E-05
XE-133	1.15E+01
XE-133M	1.92E+01
XE-135	1.04E-01
CS-137	9.33E-06

Installation: Beaver Valley
Unit No.(s): 2

Location: Shippingport, PA

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-412
Thermal Power(MWH): 1.43E+07
Commercial Operation: 11/17/87
Cooling Water Source: Ohio River

Licensee: Duquesne Light
Licensed Power(MWT): 2.65E+03
Net Electrical Power(MWH): 4.29E+06
Initial Criticality: 08/04/87

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	4.08E+00
CO-58	9.08E-05
KR-85	3.58E+00
SR-89	1.22E-07
SR-90	1.21E-06
I-131	2.95E-06
XE-131M	2.78E+00
XE-133	3.29E+01
XE-135	1.29E+00
BA-139	3.24E-04

Installation: Beaver Valley Location: Shippingport, PA
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR Licensee: Duquesne Light
Docket Number: 50-334 Licensed Power(MWT): 2.65E+03
Thermal Power(MWH): 2.02E+07 Net Electrical Power(MWH): 6.17E+06
Commercial Operation: 10/01/76 Initial Criticality: 05/10/76
Cooling Water Source: Ohio River

Unit Number: 2 Type: PWR Licensee: Duquesne Light
Docket Number: 50-412 Licensed Power(MWT): 2.65E+03
Thermal Power(MWH): 1.43E+07 Net Electrical Power(MWH): 4.29E+06
Commercial Operation: 11/17/87 Initial Criticality: 08/04/87
Cooling Water Source: Ohio River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
6	Truck	Barnwell, SC
2	Truck	Beatty, NV
7	Truck	Oak Ridge, TN via Quadrex
8	Truck	Oak Ridge, TN via SEG
3	Truck	Richland, WA

Estimate of Major Nuclide Composition (by type of waste) %	Jan-June	Jul-Dec
A		
AG-110M		5.74E-03
AM-241	3.68E-05	2.34E-04
C-14	4.75E-01	3.56E-02
CE-141		1.22E-04
CE-144/PR-144		5.01E-01
CM-242	6.49E-06	5.81E-05
CM-243/244	3.59E-05	2.35E-04
CO-57	4.94E-01	2.22E-01
CO-58	1.43E+01	5.53E+01
CO-60	3.33E+01	1.73E+01
CR-51		1.03E-02
CS-134		1.07E-01
CS-137	1.30E-01	7.78E-01
FE-55	8.49E+00	1.17E+01
FE-59		1.71E-01
H-3	1.24E+01	3.34E+00
I-129	1.67E-03	1.95E-04
MN-54	1.92E+00	2.32E+00
NB-94		8.95E-04
NB-95		9.45E-03
NI-59	1.38E-01	1.93E-02
NI-63	2.58E+01	6.84E+00
P-32		5.45E-01
PU-238	6.33E-05	5.31E-04
PU-239/240	4.70E-05	3.10E-04

Installation: Beaver Valley Location: Shippingport, PA
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Estimate of Major Nuclide Composition (by type of waste) %	Jan-June	July-Dec
A		
PU-241		5.01E-02
RU-103		7.92E-05
SB-124		1.72E-01
SB-125	2.59E+00	4.55E-01
SN-113		7.49E-05
SR-89	5.11E-04	2.28E-02
SR-90	6.05E-03	1.79E-03
TC-99	1.36E-03	1.97E-04
ZN-65		1.29E-02
ZR-95		1.07E-02
B		
AG-110M	8.34E-01	1.27E-02
AM-241	6.67E-04	1.35E-03
BA-133		1.97E-03
C-14	1.29E+00	1.10E-01
CL-36		5.63E-06
CM-242	9.03E-04	7.76E-03
CM-243/244	3.89E-04	2.20E-03
CO-57	1.98E-01	2.46E-01
CO-58	3.98E+01	3.04E+01
CO-60	1.22E+01	3.34E+01
CR-51		4.38E+00
CS-134	2.54E+00	1.51E-01
CS-137	3.77E+00	6.46E-01
FE-55	9.26E+00	1.42E+00
FE-59	3.22E-02	1.01E+00
H-3	1.72E+01	9.31E-01
I-129	2.33E-01	7.73E-03
MN-54	8.79E-01	2.84E+00
NB-95	3.15E+00	3.20E+00
NI-59		7.36E+00
NI-63	3.71E+00	7.30E+00
P-32	7.89E-02	2.60E-02
PU-238		3.45E-03
PU-239/240	9.03E-04	2.27E-03
PU-241		3.66E-01
RU-103		7.71E-02
SB-124	2.92E+00	4.45E-02
SB-125	5.26E-02	4.33E-01
SN-113	4.44E-02	1.95E-01
SR-89	5.26E-03	1.69E-02
SR-90	2.92E-03	4.15E-04
TC-99	3.08E-01	5.17E-03
ZN-65		1.94E-01
ZR-95	1.57E+00	5.17E+00

Installation: Beaver Valley Location: Shippingport, PA
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	4.03E+01	
	Ci	5.38E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	7.46E+02	before volume reduction
	m3	1.17E+02	burial volume
	Ci	5.85E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Big Rock Point Location: 4 Mi NE Charlevoix, MI
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: BWR Licensee: Consumers Power
Docket Number: 50-155 Licensed Power(MWT): 2.40E+02
Thermal Power(MWH): 1.40E+06 Net Electrical Power(MWH): 4.26E+05
Commercial Operation: 03/29/63 Initial Criticality: 09/27/62
Cooling Water Source: Lake Michigan

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	1.09E-03
MN-54	1.61E-04
FE-59	7.03E-06
CO-60	1.92E-04
ZN-65	2.04E-05
KR-85M	7.66E+01
KR-87	3.99E+02
KR-88	2.44E+02
SR-89	2.85E-04
SR-90	3.39E-06
AG-110M	8.70E-05
I-131	2.08E-03
I-133	1.47E-02
XE-133	3.33E+01
CS-134	1.40E-05
I-135	5.11E-04
XE-135	3.66E+02
XE-135M	8.47E+02
CS-137	2.19E-04
XE-138	3.58E+03
BA-140	5.19E-04
Unidentified	1.03E-03

Total Airborne Tritium Released 4.84E+00 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	1.40E-03
MN-54	5.42E-03
CO-58	4.91E-05
FE-59	2.64E-04
CO-60	8.50E-03
ZN-65	2.67E-04
SR-89	1.36E-04
SR-90	3.39E-05
AG-110M	1.13E-04
CS-134	7.97E-04
CS-137	1.18E-02
CE-141	4.64E-06
Unidentified	7.60E-03

Total Liquid Tritium Released	5.89E-01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	3.48E+05 liters
Volume of Dilution Water Used During Period	8.32E+10 liters

Installation: Big Rock Point Location: 4 Mi NE Charlevoix, MI
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR Licensee: Consumers Power
Docket Number: 50-155 Licensed Power(MWT): 2.40E+02
Thermal Power(MWH): 1.40E+06 Net Electrical Power(MWH): 4.26E+05
Commercial Operation: 03/29/63 Initial Criticality: 09/27/62
Cooling Water Source: Lake Michigan

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.04E+01	
	Ci	1.03E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.11E+02	before processing
	m3	6.47E+01	burial volume
	Ci	2.13E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
Filters dewatered	m3	7.86E+00	
	Ci	2.05E+01	

Installation: Braidwood
Unit No.(s): 1

Location: 24 Mi SSW of Joliet, IL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-456
Thermal Power(MWH): 2.48E+07
Commercial Operation: 07/29/88
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 8.26E+06
Initial Criticality: 05/29/87

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.77E+00
CO-58	2.70E-05
KR-85	2.51E+00
KR-85M	6.34E-01
KR-88	1.27E-01
I-131	1.54E-03
XE-131M	3.65E+00
I-132	1.09E-05
I-133	2.67E-04
XE-133	1.34E+03
XE-133M	1.46E+00
I-135	1.03E-03
XE-135	7.35E+01

Total Airborne Tritium Released 7.65E+01 Ci

Installation: Braidwood
Unit No.(s): 1

Location: 24 Mi SSW of Joliet, IL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-456
Thermal Power(MWH): 2.48E+07
Commercial Operation: 07/29/88
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 8.26E+06
Initial Criticality: 05/29/87

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	5.18E-04
CR-51	2.17E-01
MN-54	1.67E-02
FE-55	9.95E-02
CO-57	1.91E-03
CO-58	1.14E+00
FE-59	1.76E-02
CO-60	8.17E-02
ZN-65	3.08E-05
BR-82	1.14E-02
KR-85M	1.07E-04
KR-88	2.70E-03
SR-89	5.71E-04
NB-95	2.18E-02
ZR-95	5.87E-03
ZR-97	1.44E-04
MO-99	1.61E-04
TC-99M	1.80E-04
RU-105	1.29E-05
AG-110M	9.59E-05
SN-113	7.84E-03
SN-117M	2.06E-05
SB-124	2.31E-02
SB-125	3.08E-01
SB-126	2.02E-04
I-131	2.40E-02
I-132	2.39E-02
I-133	1.75E-03
XE-133	1.09E-01
XE-133M	3.18E-04
CS-134	5.71E-02
I-135	2.59E-04
XE-135	1.20E-02
CS-136	7.81E-04
CS-137	5.90E-02
CS-138	8.99E-04
BA/LA-140	6.25E-04
HF-181	2.54E-05

Total Liquid Tritium Released	6.50E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	4.32E+07 liters
Volume of Dilution Water Used During Period	2.39E+10 liters

Installation: Braidwood
Unit No.(s): 2

Location: 24 Mi SSW of Joliet, IL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-457
Thermal Power(MWH): 1.95E+07
Commercial Operation: 10/17/88
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.33E+06
Initial Criticality: 03/08/88

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.96E+00
CO-58	1.25E-05
CO-60	5.01E-06
KR-85	9.93E-01
KR-85M	8.90E-01
KR-87	8.12E-02
KR-88	5.31E-01
I-131	5.44E-04
XE-131	1.09E-02
XE-131M	2.26E+00
I-132	1.77E-06
I-133	1.96E-04
XE-133	9.82E+02
XE-133M	2.10E+00
I-135	1.18E-04
XE-135	3.10E+01

Total Airborne Tritium Released 9.38E+00 Ci

Installation: Braidwood
Unit No.(s): 2

Location: 24 Mi SSW of Joliet, IL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-457
Thermal Power(MWH): 1.95E+07
Commercial Operation: 10/17/88
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.33E+06
Initial Criticality: 03/08/88

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	5.18E-04
CR-51	2.17E-01
MN-54	1.67E-02
FE-55	9.95E-02
CO-57	1.91E-03
CO-58	1.14E+00
FE-59	1.76E-02
CO-60	8.17E-02
ZN-65	3.78E-05
BR-82	1.14E-02
KR-85M	1.07E-04
KR-88	2.70E-03
SR-89	5.71E-04
SR-90	1.19E-05
NB-95	2.18E-02
ZR-95	5.87E-03
ZR-97	1.44E-04
MO-99	1.61E-04
TC-99M	1.80E-04
RU-105	1.29E-05
AG-110M	9.59E-05
SN-113	7.84E-03
SN-117M	2.06E-05
SB-124	2.31E-02
SB-125	3.08E-01
SB-126	2.02E-04
I-131	2.40E-02
I-132	2.39E-02
I-133	1.75E-03
XE-133	1.09E-01
XE-133M	3.18E-04
CS-134	5.71E-02
I-135	2.59E-04
XE-135	1.20E-02
CS-136	7.81E-04
CS-137	5.90E-02
CS-138	8.99E-04
BA/LA-140	6.25E-04
HF-181	2.54E-05

Total Liquid Tritium Released	6.50E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	4.32E+07 liters
Volume of Dilution Water Used During Period	2.39E+10 liters

Installation: Braidwood
Unit No.(s): 1&2

Location: 24 Mi SSW of Joliet, IL

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-456
Thermal Power(MWH): 2.48E+07
Commercial Operation: 07/29/88
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 8.26E+06
Initial Criticality: 05/29/87

Unit Number: 2 Type: PWR
Docket Number: 50-457
Thermal Power(MWH): 1.95E+07
Commercial Operation: 10/17/88
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.33E+06
Initial Criticality: 03/08/88

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
3	Exclusive Use Vehicle	Quadrex, Oak Ridge, TN
2	Exclusive Use Vehicle	SEG, Oak Ridge, TN
11	Exclusive Use Vehicle	U.S. Ecology, Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14	2.92E-01	1.75E-01
CO-57	2.03E-01	1.02E-01
CO-58	7.46E+01	3.59E+01
CO-60	3.33E+00	3.02E+00
CR-51	3.18E-01	1.62E-01
CS-134	1.88E+00	1.11E+01
CS-137	2.33E+0(	1.14E+01
FE-55	1.13E+01	5.97E+00
FE-59	8.89E-02	1.50E-01
H-3	1.56E+00	2.56E+01
I-131		1.03E+00
MN-54	1.26E+00	2.38E+00
NB-95	3.16E-01	1.97E-01
NI-63	2.22E+00	2.55E+00
SB-125	1.04E-01	
ZR-95	1.07E-01	9.27E-02
B		
C-14	1.04E-01	
CO-57	9.67E-02	
CO-58	3.65E+01	
CO-60	4.80E+00	
CR-51	9.51E-01	
CS-134	1.81E-01	
CS-137	4.06E-01	
FE-55	3.49E+01	
FE-59	8.20E-01	
MN-54	1.29E+01	

Installation: Braidwood Location: 24 Mi SSW of Joliet, IL
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	July-Dec
B		
NB-95	1.51E+00	
NI-63	6.69E+00	
PU-241	2.44E-01	
ZN-65	6.80E-02	
ZR-95	1.56E-01	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	5.72E+01	
	Ci	7.33E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	3.32E+02	before compaction
	m3	9.04E+01	after compaction
	Ci	1.22E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Browns Ferry Location: 10 Mi NW Decatur, AL
Unit No.(s): 1&2&3

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: BWR Licensee: Tennessee Valley Authority
Docket Number: 50-259 Licensed Power(MWT): 3.29E+03
Thermal Power(MWH): 0.00E+00 Net Electrical Power(MWH): 0.00E+00
Commercial Operation: 08/01/74 Initial Criticality: 08/17/73
Cooling Water Source: Tennessee River

Unit Number: 2 Type: BWR Licensee: Tennessee Valley Authority
Docket Number: 50-260 Licensed Power(MWT): 3.29E+03
Thermal Power(MWH): 0.00E+00 Net Electrical Power(MWH): 0.00E+00
Commercial Operation: 03/01/75 Initial Criticality: 07/20/74
Cooling Water Source: Tennessee River

Unit Number: 3 Type: BWR Licensee: Tennessee Valley Authority
Docket Number: 50-296 Licensed Power(MWT): 3.29E+03
Thermal Power(MWH): 0.00E+00 Net Electrical Power(MWH): 0.00E+00
Commercial Operation: 03/01/77 Initial Criticality: 08/08/76
Cooling Water Source: Tennessee River

Airborne Effluents

Nuclide Released	Activity (Ci)
SR-89	4.28E-06
SR-90	9.15E-07
CS-137	1.83E-04

Total Airborne Tritium Released 5.94E-01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
CO-60	1.92E-02
SR-90	1.17E-04
CS-134	3.49E-02
CS-137	2.48E-01

Total Liquid Tritium Released	2.07E-01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.49E+07 liters
Volume of Dilution Water Used During Period	5.79E+10 liters

Installation: Browns Ferry Location: 10 Mi NW Decatur, AL
Unit No.(s): 1&2&3

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: BWR Licensee: Tennessee Valley Authority
Docket Number: 50-259 Licensed Power(MWT): 3.29E+03
Thermal Power(MWH): 0.00E+00 Net Electrical Power(MWH): 0.00E+00
Commercial Operation: 08/01/74 Initial Criticality: 08/17/73
Cooling Water Source: Tennessee River

Unit Number: 2 Type: BWR Licensee: Tennessee Valley Authority
Docket Number: 50-260 Licensed Power(MWT): 3.29E+03
Thermal Power(MWH): 0.00E+00 Net Electrical Power(MWH): 0.00E+00
Commercial Operation: 03/01/75 Initial Criticality: 07/20/74
Cooling Water Source: Tennessee River

Unit Number: 3 Type: BWR Licensee: Tennessee Valley Authority
Docket Number: 50-296 Licensed Power(MWT): 3.29E+03
Thermal Power(MWH): 0.00E+00 Net Electrical Power(MWH): 0.00E+00
Commercial Operation: 03/01/77 Initial Criticality: 08/08/76
Cooling Water Source: Tennessee River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
120	Sole Use Truck	Barnwell, SC
1	Sole Use Truck	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-60	2.72E+01	3.24E+01
CS-134	5.30E+00	5.26E+00
CS-137	3.89E+01	4.45E+01
FE-55	2.49E+01	3.31E+00
MN-54	5.96E-02	
Others	2.33E+00	1.43E+01
ZN-65	1.28E+00	2.94E-01
B		
AG-110M	7.74E-03	1.60E-03
CO-60	4.67E+01	4.69E+01
CS-134	1.04E+00	1.11E+00
CS-137	5.98E+00	6.01E+00
FE-55	4.30E+01	4.33E+01
FE-59	3.78E-03	5.00E-04
MN-54	2.11E-01	8.02E-02
Others	1.15E+00	6.83E-01
ZN-65	1.92E+00	1.92E+00
D		
CO-60	4.66E+01	
CS-134	1.04E+00	
CS-137	3.83E+00	
FE-55	4.30E+01	

Installation: Browns Ferry Location: 10 Mi NW Decatur, AL
Unit No.(s): 1&2&3

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2&3(continued)

Estimate of Major Nuclide Composition (by type of waste)	%	Jan-June	July-Dec
D			
MN-54		2.16E-01	
Others		3.34E+00	
ZN-65		1.91E+01	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges Evaporator Bottoms, etc.	m3	4.08E+01	
	Ci	7.35E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.57E+02	
	Ci	1.46E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
Absorbed oily material	m3	1.44E+01	
	Ci	1.56E+01	

Installation: Brunswick
Unit No.(s): 1&2

Location: 20 Mi S Wilmington, NC

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: BWR
Docket Number: 50-325
Thermal Power(MWH): 1.37E+07
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): 4.32E+06
Initial Criticality: 10/08/76

Unit Number: 2 Type: BWR
Docket Number: 50-324
Thermal Power(MWH): 1.30E+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): 4.05E+06
Initial Criticality: 03/20/75

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.25E+01
CR-51	2.69E-02
MN-54	1.72E-03
CO-57	5.12E-07
CO-58	1.34E-03
FE-59	2.97E-05
CO-60	4.47E-03
ZN-65	4.46E-05
KR-85M	1.77E+01
KR-87	3.97E+00
KR-88	4.34E+00
SR-89	7.82E-04
SR-90	4.30E-06
NB-95	4.09E-06
I-131	1.18E-02
I-132	3.23E-02
I-133	4.60E-02
XE-133	2.34E+02
CS-134	8.91E-06
I-134	5.07E-03
I-135	5.03E-02
XE-135	3.27E+02
XE-135M	1.40E+02
CS-137	9.35E-05
XE-137	2.38E+02
XE-138	1.47E+02
BA-140	1.06E-03
LA-140	8.71E-04
CE-141	1.09E-06
CE-144	5.37E-05
HF-181	1.13E-07

Total Airborne Tritium Released 2.66E+01 Ci

Installation: Brunswick
Unit No.(s): 1&2

Location: 20 Mi S Wilmington, NC

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: BWR
Docket Number: 50-325
Thermal Power(MWH): 1.37E+07
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): 4.32E+06
Initial Criticality: 10/08/76

Unit Number: 2 Type: BWR
Docket Number: 50-324
Thermal Power(MWH): 1.30E+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): 4.05E+06
Initial Criticality: 03/20/75

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.90E-03
AR-41	6.54E-06
CR-51	1.19E-01
MN-54	4.60E-02
FE-55	3.30E-02
MN-56	8.50E-05
CO-57	2.99E-05
CO-58	2.27E-02
FE-59	7.11E-04
CO-60	1.68E-01
ZN-65	1.38E-03
ZN-69M	1.49E-05
AS-76	7.91E-04
KR-85	2.15E-03
KR-85M	1.29E-04
KR-87	5.54E-05
KR-88	1.90E-04
SR-89	3.37E-05
SR-90	6.65E-05
Y-91	8.44E-04
Y-91M	1.05E-03
SR-92	7.32E-05
Y-92	1.66E-02
Y-93	3.73E-04
NB-95	5.76E-04
ZR-95	3.03E-04
MO-99	8.17E-05
TC-99M	3.66E-03
TC-101	8.60E-05
RU-103	8.72E-04
TC-104	1.57E-04
RU-105	1.72E-03
AG-110M	9.96E-05
SB-125	1.15E-04
I-131	8.67E-04
I-132	2.61E-05
TE-132	3.44E-04

Installation: Brunswick Location: 20 Mi S Wilmington, NC
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 1&2 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
I-133	2.68E-03
XE-133	2.89E-02
XE-133M	1.43E-04
CS-134	9.20E-03
I-134	1.17E-04
I-135	5.32E-04
XE-135	1.61E-01
XE-135M	5.28E-04
CS-137	1.68E-02
BA-139	1.12E-04
LA-140	5.86E-04
CE-141	9.57E-05
LA-141	1.12E-03
LA-142	6.61E-04
CE-144	3.17E-04
W-187	1.17E-03
NP-239	2.60E-03

Total Liquid Tritium Released	4.95E+01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.74E+07 liters
Volume of Dilution Water Used During Period	1.40E+12 liters

Installation: Brunswick Location: 20 Mi S Wilmington, NC
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: BWR Licensee: Carolina Power & Light
Docket Number: 50-325 Licensed Power(MWT): 2.44E+03
Thermal Power(MWH): 1.37E+07 Net Electrical Power(MWH): 4.32E+06
Commercial Operation: 03/18/77 Initial Criticality: 10/08/76
Cooling Water Source: Cape Fear River

Unit Number: 2 Type: BWR Licensee: Carolina Power & Light
Docket Number: 50-324 Licensed Power(MWT): 2.44E+03
Thermal Power(MWH): 1.30E+07 Net Electrical Power(MWH): 4.05E+06
Commercial Operation: 11/03/75 Initial Criticality: 03/20/75
Cooling Water Source: Cape Fear River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
75	Sole Use	CNSI/Barnwell, SC

Irradiated Fuel Shipments (Disposition)

Number of Shipments	Mode of Transportation	Destination
4	Railcar/IF300 cask Sole Use	CP&L/SHNPP
3	Sole Use/Rail	CP&L/SHNPP

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	7.78E+00	1.28E+00
CO-60	2.01E+01	2.06E+01
CS-134	1.06E+00	
CS-137	2.19E+00	1.71E+00
FE-55	5.84E+01	6.49E+01
MN-54	7.57E+00	6.40E+00
NI-63	1.84E+00	2.34E+00
B		
CO-60	1.07E+01	1.08E+01
FE-55	8.24E+01	8.28E+01
MN-54	6.09E+00	5.96E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.75E+02	
	Ci	1.17E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	3.15E+02	after compaction
	Ci	9.15E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Byron
Unit No.(s): 1

Location: 3 Mi SW Byron, IL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-454
Thermal Power(MWH): 2.16E+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): 6.93E+06
Initial Criticality: 02/02/85

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.27E-01
CO-58	5.80E-06
KR-85	7.24E+00
KR-85M	3.40E-01
KR-87	3.78E-03
KR-88	1.39E-01
I-131	1.52E-03
XE-131M	3.76E+00
I-132	7.48E-05
I-133	2.19E-04
XE-133	4.13E+02
XE-133M	3.42E+00
CS-134	1.26E-05
I-135	1.01E-04
XE-135	1.54E+01
XE-135M	1.35E-01
CS-137	8.60E-06

Total Airborne Tritium Released 3.96E-01 Ci

Installation: Byron
Unit No.(s): 1

Location: 3 Mi SW Byron, IL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-454
Thermal Power(MWH): 2.16E+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): 6.93E+06
Initial Criticality: 02/02/85

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	5.78E-02
MN-54	1.88E-02
FE-55	1.04E-01
CO-57	6.27E-04
CO-58	2.24E-01
FE-59	1.63E-02
CO-60	1.17E-01
ZN-65	2.29E-03
SR-89	1.85E-14
SR-90	2.60E-03
SR-92	3.73E-06
NB-95	1.21E-02
ZR-95	7.09E-03
MO-99	1.98E-04
TC-99M	2.04E-05
RU-103	2.37E-03
AG-110M	2.25E-04
SN-113	2.72E-03
SB-124	6.32E-04
SB-125	4.29E-03
I-131	3.24E-03
XE-131M	1.59E-02
I-132	2.85E-05
TE-132	6.85E-06
BA-133	5.58E-04
I-133	1.04E-04
XE-133	1.52E+00
XE-133M	1.09E-02
CS-134	5.68E-03
I-134	1.17E-04
XE-135	2.87E-03
CS-136	3.41E-04
CS-137	4.77E-03
CS-138	1.39E-05
BA/LA-140	2.38E-04
CE-141	1.59E-04
CE-144	3.15E-04
HF-181	3.17E-04

Total Liquid Tritium Released	4.99E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	3.63E+07 liters
Volume of Dilution Water Used During Period	1.06E+10 liters

Installation: Byron
Unit No.(s): 2

Location: 3 Mi SW Byron, IL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-455
Thermal Power(MWH): 1.87E+07
Commercial Operation: 08/21/87
Cooling Water Source: Rock River

Licensee: Commonwealth Edison Co.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.01E+06
Initial Criticality: 01/09/87

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.47E-01
CO-58	1.10E-05
KR-85	7.24E+00
KR-85M	5.40E-01
KR-87	5.13E-03
KR-88	2.33E-01
SR-90	1.29E-07
I-131	2.52E-03
XE-131M	4.35E+00
I-132	5.31E-05
I-133	1.13E-04
XE-133	7.54E+02
XE-133M	9.52E+00
I-134	2.44E-05
I-135	1.74E-04
XE-135	1.87E+01
XE-135M	1.35E-01

Total Airborne Tritium Released 6.74E-01 Ci

Installation: Byron
Unit No.(s): 2

Location: 3 Mi SW Byron, IL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-455
Thermal Power(MWH): 1.87E+07
Commercial Operation: 08/21/87
Cooling Water Source: Rock River

Licensee: Commonwealth Edison Co.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.01E+06
Initial Criticality: 01/09/87

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	5.78E-02
MN-54	1.88E-02
FE-55	1.04E-01
CO-57	6.27E-04
CO-58	2.24E-01
FE-59	1.63E-02
CO-60	1.17E-01
ZN-65	2.29E-03
SR-89	1.85E-14
SR-90	2.60E-03
SR-92	3.73E-06
NB-95	1.21E-02
ZR-95	7.09E-03
MO-99	1.98E-04
TC-99M	2.04E-05
RU-103	2.37E-03
AG-110M	2.25E-04
SN-113	2.72E-03
SB-124	6.32E-04
SB-125	4.29E-03
I-131	3.24E-03
XE-131M	1.59E-02
I-132	2.85E-05
TE-132	6.85E-06
BA-133	5.58E-04
I-133	1.04E-04
XE-133	1.52E+00
XE-133M	1.09E-02
CS-134	5.68E-03
I-134	1.17E-04
XE-135	2.87E-03
CS-136	3.41E-04
CS-137	4.77E-03
CS-138	1.39E-05
BA/LA-140	2.38E-04
CE-141	1.59E-04
CE-144	3.15E-04
HF-181	3.17E-04

Total Liquid Tritium Released	4.99E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	2.73E+07 liters
Volume of Dilution Water Used During Period	1.60E+10 liters

Installation: Byron
Unit No.(s): 1&2

Location: 3 Mi SW Byron, IL

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-454
Thermal Power(MWH): 2.16E+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): 6.93E+06
Initial Criticality: 02/02/85

Unit Number: 2 Type: PWR
Docket Number: 50-455
Thermal Power(MWH): 1.87E+07
Commercial Operation: 08/21/87
Cooling Water Source: Rock River

Licensee: Commonwealth Edison Co.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.01E+06
Initial Criticality: 01/09/87

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
21	Exclusive Use	Barnwell, SC
11	Exclusive Use	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AM-241	1.00E-01	1.00E-04
C-14	3.83E+00	3.83E+00
CM-244	1.00E-01	1.00E-04
CO-58	4.25E+00	4.25E+00
CO-60	1.41E+01	1.41E+01
CS-134	3.12E+00	3.12E+00
CS-137	5.04E+00	5.04E+00
FE-55	4.70E+01	4.70E+01
H-3	4.00E-01	4.00E-01
I-129	4.00E-04	4.00E-04
MN-54	1.93E+01	1.93E+01
NI-63	3.03E+00	3.03E+00
PU-238	1.00E-04	1.00E-04
PU-239	1.00E-04	1.00E-04
PU-241	4.00E-03	4.00E-03
SR-90	1.60E-03	1.60E-03
TC-99	2.60E-03	2.60E-03
B		
C-14	4.30E+00	1.44E+00
CO-58	1.33E+01	1.10E+00
CO-60	1.55E+01	3.10E+00
CS-134	1.30E+00	2.00E-01
CS-137	1.40E+00	8.00E-01
FE-55	6.06E+01	7.06E+01
I-129	1.00E-04	2.30E-02
MN-54	1.53E+00	3.00E-01
NI-63	2.06E+00	2.24E+01
TC-99	5.00E-03	2.30E-02

Installation: Byron
Unit No.(s): 1&2

Location: 3 Mi SW Byron, IL

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.13E+02	
	Ci	4.75E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.30E+02	(not all in final burial form)
	Ci	2.38E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Callaway
Unit No.(s): 1

Location: 10 Mi SE Fulton, MO

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-483
Thermal Power(MWH): 2.45E+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): 8.01E+06
Initial Criticality: 10/02/84

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	9.42E-01
CO-57	2.91E-10
CO-58	2.48E-06
CO-60	1.28E-06
KR-85	1.56E+00
KR-85M	7.54E+01
KR-87	6.95E-05
KR-88	1.20E-01
RB-88	1.55E-07
SR-90	3.25E-08
I-131	1.42E-04
XE-131M	5.90E+00
I-132	7.63E-07
I-133	6.83E-07
XE-133	7.72E+02
XE-133M	4.89E+00
XE-135	4.16E+01

Total Airborne Tritium Released 3.69E+01 Ci

Installation: Callaway
Unit No.(s): 1

Location: 10 Mi SE Fulton, MO

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-483
Thermal Power(MWH): 2.45E+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): 8.01E+06
Initial Criticality: 10/02/84

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	6.17E-03
MN-54	2.67E-03
CO-58	1.73E-02
FE-59	4.47E-04
CO-60	6.63E-03
ZN-65	9.50E-05
SR-89	5.48E-06
SR-90	5.67E-06
NB-95	2.23E-03
ZR-95	1.34E-03
MO-99	4.30E-06
TC-99M	4.30E-06
AG-110M	5.29E-05
SN-113	1.17E-04
SB-125	1.02E-04
I-131	2.69E-04
XE-131M	2.96E-03
I-133	9.70E-07
XE-133	4.54E-01
XE-133M	4.54E-03
CS-134	4.79E-04
XE-135	2.71E-03
CS-137	4.93E-04
BA-139	8.41E-05
BA-140	3.33E-05
CE-144	1.13E-04
HF-181	1.59E-05

Total Liquid Tritium Released	1.02E+03 Ci
Volume of Liquid Waste Released (Prior to Dilution)	6.86E+07 liters
Volume of Dilution Water Used During Period	1.63E+09 liters

Installation: Callaway
Unit No.(s): 1

Location: 10 Mi SE Fulton, MO

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR
Docket Number: 50-483
Thermal Power(MWH): 2.45E+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): 8.01E+06
Initial Criticality: 10/02/84

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
2	Cask	Barnwell, SC
4	Truck	Oak Ridge, TN (Quadrex)
5	Truck	Oak Ridge, TN (SEG)
1	Cask	Richland, WA
5	Truck	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58		1.20E+00
CO-60	1.10E+00	2.62E+01
CS-134		1.00E+01
CS-137	1.20E+00	1.81E+01
FE-55	5.72E+01	2.36E+01
H-3	4.03E+01	
MN-54		7.60E+00
NI-63		1.24E+01
B		
C-14	2.60E+00	
CO-58	1.93E+01	2.22E+01
CO-60	1.43E+01	1.35E+01
CR-51	1.50E+00	
FE-55	5.02E+01	4.64E+01
MN-54	3.70E+00	7.30E+00
NB-95	1.80E+00	8.80E+00
NI-63	4.70E+00	
ZR-95	1.50E+00	1.80E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	5.30E+01	
	Ci	3.10E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	3.40E+01	burial volume
	Ci	1.88E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Calvert Cliffs
Unit No.(s): 1&2

Location: 45 Mi SE Washington D.C.

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-317
Thermal Power(MWH): 4.34E+06
Commercial Operation: 05/08/75
Cooling Water Source: Chesapeake Bay

Licensee: Baltimore Gas & Electric
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 1.34E+06
Initial Criticality: 10/07/74

Unit Number: 2 Type: PWR
Docket Number: 50-318
Thermal Power(MWH): 0.00E+00
Commercial Operation: 04/01/77
Cooling Water Source: Chesapeake Bay

Licensee: Baltimore Gas & Electric
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 11/30/76

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.35E-03
CR-51	2.67E-05
KR-85	1.19E+00
KR-85M	3.13E-01
KR-87	3.55E-04
KR-88	3.52E-03
SR-89	1.00E-04
SR-90	1.38E-05
I-131	1.45E-03
XE-131M	1.69E+01
I-133	1.54E-03
XE-133	6.35E+02
XE-133M	4.98E+00
XE-135	1.34E+01
CS-137	1.05E-04

Total Airborne Tritium Released 4.52E-01 Ci

Installation: Calvert Cliffs
Unit No.(s): 1&2

Location: 45 Mi SE Washington D.C.

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-317
Thermal Power(MWH): 4.34E+06
Commercial Operation: 05/08/75
Cooling Water Source: Chesapeake Bay

Licensee: Baltimore Gas & Electric
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 1.34E+06
Initial Criticality: 10/07/74

Unit Number: 2 Type: PWR
Docket Number: 50-318
Thermal Power(MWH): 0.00E+00
Commercial Operation: 04/01/77
Cooling Water Source: Chesapeake Bay

Licensee: Baltimore Gas & Electric
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 0.00E+00
Initial Criticality: 11/30/76

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.28E-04
CR-51	3.70E-03
MN-54	3.48E-02
CO-57	6.62E-03
CO-58	6.69E-02
CO-60	5.16E-01
SR-89	1.22E-04
SR-90	2.54E-03
SR-92	1.09E-05
NB-95	5.49E-03
ZR-95	1.19E-03
NB-97	6.67E-05
MO-99	1.94E-04
TC-99M	1.18E-03
RU-106	1.27E-02
AG-110M	8.74E-02
SN-113	4.98E-04
SB-122	4.03E-05
SB-125	1.96E-01
I-131	2.69E-02
XE-131M	3.52E-04
TE-132	4.82E-06
I-133	8.00E-03
XE-133	1.21E-01
XE-133M	2.01E-03
CS-134	7.51E-02
I-135	1.63E-04
XE-135	3.87E-04
XE-135M	5.71E-04
CS-136	6.79E-05
CS-137	3.40E-01
CE-139	1.05E-06
BA-140	3.09E-05
LA-140	2.23E-04
CE-141	4.12E-06
CE-144	2.88E-02
W-187	4.63E-04

Total Liquid Tritium Released	7.29E+01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.45E+07 liters
Volume of Dilution Water Used During Period	1.72E+12 liters

Installation: Calvert Cliffs Location: 45 Mi SE Washington D.C.
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR Licensee: Baltimore Gas & Electric
Docket Number: 50-317 Licensed Power(MWT): 2.70E+03
Thermal Power(MWH): 4.34E+06 Net Electrical Power(MWH): 1.34E+06
Commercial Operation: 05/08/75 Initial Criticality: 10/07/74
Cooling Water Source: Chesapeake Bay

Unit Number: 2 Type: PWR Licensee: Baltimore Gas & Electric
Docket Number: 50-318 Licensed Power(MWT): 2.70E+03
Thermal Power(MWH): 0.00E+00 Net Electrical Power(MWH): 0.00E+00
Commercial Operation: 04/01/77 Initial Criticality: 11/30/76
Cooling Water Source: Chesapeake Bay

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
5	Motor surface transit	CNSI - Barnwell, SC
12	Motor surface transit	SEG - Oak Ridge, TN

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14	1.10E+00	
CO-58	1.44E+00	4.91E+00
CO-60	1.41E+01	
CS-134	3.03E+00	8.18E+00
CS-137	1.10E+01	2.75E+01
FE-55	4.47E+01	8.44E+00
H-3	3.14E+00	
MN-54		2.64E+00
NI-63	1.73E+01	3.85E+01
SB-125	1.42E+00	3.72E+00
B		
C-14		1.10E+00
CO-58		1.44E+00
CO-60		1.41E+01
CS-134		3.03E+00
CS-137		1.10E+01
FE-55		4.47E+01
H-3		3.14E+00
NI-63		1.73E+01
SB-125		1.42E+00
C		
CO-60		4.53E+01
FE-55		4.96E+01
NI-63		4.80E+00

Installation: Calvert Cliffs Location: 45 Mi SE Washington D.C.
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	3.70E+00	
	Ci	6.19E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.30E+02	after compaction
	Ci	9.24E+00	
C. Irradiated Components, Control Rods, etc.	m3	1.24E+00	
	Ci	4.05E+03	
D. Other (describe)			
	m3		
	Ci		

Installation: Catawba
Unit No.(s): 1

Location: 6 Mi NNW of Rock Hill, SC

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-413
Thermal Power(MWH): 2.08E+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): 6.87E+06
Initial Criticality: 01/07/85

Airborne Effluents

Nuclide Released	Activity (Ci)
P-18	2.99E-02
AR-41	5.81E+00
CO-58	1.13E-04
CO-60	1.04E-05
ZN-69M	2.49E-06
BR-80M	8.54E-08
BR-82	2.50E-07
KR-85	1.26E+02
KR-85M	7.67E-01
KR-87	1.60E-01
KR-88	1.06E+00
RB-88	5.28E-05
SR-89	3.61E-05
SR-90	3.67E-06
Y-93	2.68E-05
NB-97	2.65E-09
ZR-97	2.17E-07
MO-99	1.46E-05
TC-99M	7.01E-06
SN-113	1.02E-06
SB-125	1.56E-06
SB-126	7.37E-08
I-131	6.90E-04
XE-131M	3.23E+00
I-132	1.90E-03
I-133	3.15E-03
XE-133	3.76E+02
XE-133M	3.65E+00
CS-134	3.35E-07
I-134	2.67E-06
I-135	2.24E-04
XE-135	1.65E+01
XE-135M	6.35E-02
CS-136	2.15E-06
CS-137	4.17E-10
CS-138	5.90E-04
XE-138	5.47E-04
CE-141	2.15E-06

Total Airborne Tritium Released 4.55E+01 Ci

Installation: Catawba
Unit No.(s): 1

Location: 6 Mi NNW of Rock Hill, SC

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-413
Thermal Power(MWH): 2.08E+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): 6.87E+06
Initial Criticality: 01/07/85

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	6.28E-04
F-18	2.86E-03
NA-24	1.18E-04
CR-51	2.96E-02
MN-54	1.72E-02
FE-55	5.77E-01
CO-57	4.96E-04
CO-58	1.22E-01
FE-59	1.80E-03
CO-60	6.34E-02
ZN-65	3.94E-04
BR-80M	4.76E-05
KR-85	1.19E-03
RB-88	4.21E-05
SR-89	1.04E-02
SR-90	4.85E-04
SR-92	4.09E-04
NB-95	5.86E-03
ZR-95	3.27E-03
NB-97	2.78E-03
ZR-97	1.22E-04
MO-99	4.33E-04
TC-99M	1.16E-03
RU-103	2.81E-04
RU-106	8.02E-04
AG-110M	1.21E-03
SN-113	6.58E-04
CD-115	9.82E-07
SB-122	6.18E-04
SB-124	4.45E-03
SB-125	4.14E-02
SB-126	1.33E-04
I-131	5.94E-03
TE-131M	2.13E-05
XE-131M	1.68E-05
I-132	2.50E-05
I-133	5.89E-04
XE-133	3.33E-02
XE-133M	4.40E-04
CS-134	5.12E-03
I-135	9.45E-06
XE-135	8.38E-03
XE-135M	3.68E-07
CS-136	1.52E-04

Installation: Catawba Location: 6 Mi NNW of Rock Hill, SC
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 1 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
CS-137	8.83E-03
CS-138	4.48E-02
BA-140	6.32E-04
LA-140	2.44E-03
CE-141	8.44E-06
CE-144	3.82E-04
W-187	1.99E-04
BI-214	4.72E-05
PB-214	6.37E-05
AC-228	3.22E-06
TH-228	1.88E-02
NP-239	1.23E-04

Total Liquid Tritium Released	2.97E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	2.06E+08 liters
Volume of Dilution Water Used During Period	1.12E+11 liters

Installation: Catawba
Unit No.(s): 2

Location: 6 Mi NNW of Rock Hill, SC

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-414
Thermal Power(MWH): 1.93E+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): 6.44E+06
Initial Criticality: 05/08/86

Airborne Effluents

Nuclide Released	Activity (Ci)
F-18	2.99E-02
AR-41	5.81E+00
CO-58	1.13E-04
CO-60	1.04E-05
ZN-69M	2.49E-06
BR-80M	8.54E-08
BR-82	2.50E-07
KR-85	1.26E+02
KR-85M	7.67E-01
KR-87	1.60E-01
KR-88	1.06E+00
RB-88	5.28E-05
SR-89	3.61E-05
SR-90	3.67E-06
Y-93	2.68E-05
NB-97	2.65E-09
ZR-97	2.17E-07
MO-99	1.46E-05
TC-99M	7.01E-06
SN-113	1.02E-06
SB-125	1.56E-06
SB-126	7.37E-08
I-131	6.90E-04
XE-131M	3.23E+00
I-132	1.90E-03
I-133	3.15E-03
XE-133	3.76E+02
XE-133M	3.65E+00
CS-134	3.35E-07
I-134	2.67E-06
I-135	2.24E-04
XE-135	1.65E+01
XE-135M	6.35E-02
CS-136	2.15E-06
CS-137	4.17E-10
CS-138	5.90E-04
XE-138	5.47E-04
CE-141	2.15E-06

Total Airborne Tritium Released 4.55E+01 Ci

Installation: Catawba
Unit No.(s): 2

Location: 6 Mi NNW of Rock Hill, SC

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-414
Thermal Power(MWH): 1.93E 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): 6.44E+06
Initial Criticality: 05/08/86

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	6.28E-04
F-18	2.86E-03
NA-24	1.18E-04
CR-51	2.96E-02
MN-54	1.72E-02
FE-55	5.77E-01
CO-57	4.96E-04
CO-58	1.22E-01
FE-59	1.80E-03
CO-60	6.34E-02
ZN-65	3.94E-04
BR-80M	4.76E-05
KR-85	1.19E-03
RB-88	4.21E-05
SR-89	1.04E-02
SR-90	4.85E-04
SR-92	4.09E-04
NB-95	5.86E-03
ZR-95	3.27E-03
NB-97	2.78E-03
ZR-97	1.22E-04
MO-99	4.33E-04
TC-99M	1.16E-03
RU-103	2.81E-04
RU-106	8.02E-04
AG-110M	1.21E-03
SN-113	6.58E-04
CD-115	9.28E-07
SB-122	6.18E-04
SB-124	4.45E-03
SB-125	4.14E-02
SB-126	1.33E-04
I-131	5.94E-03
TE-131M	2.13E-05
XE-131M	1.68E-05
I-132	2.50E-05
I-133	5.89E-04
XE-133	3.33E-02
XE-133M	4.40E-04
CS-134	5.12E-03
I-135	9.45E-06
XE-135	8.38E-03
XE-135M	3.68E-07
CS-136	1.52E-04

Installation: Catawba Location: 6 Mi NNW of Rock Hill, SC
Unit No.(s): 2

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 2 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
CS-137	8.83E-03
CS-138	4.48E-02
BA-140	6.32E-04
LA-140	2.44E-03
CE-141	8.44E-06
CE-144	3.82E-04
W-187	1.99E-04
BI-214	4.72E-05
PB-214	6.37E-05
AC-228	3.22E-06
TH-228	1.88E-02
NP-239	1.23E-04

Total Liquid Tritium Released	2.97E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	2.06E+08 liters
Volume of Dilution Water Used During Period	1.12E+11 liters

Installation: Catawba
Unit No.(s): 1&2

Location: 6 Mi NNW of Rock Hill, SC

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-413
Thermal Power(MWH): 2.08E+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): 6.87E+06
Initial Criticality: 01/07/85

Unit Number: 2 Type: PWR
Docket Number: 50-414
Thermal Power(MWH): 1.93E+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): 6.44E+06
Initial Criticality: 05/08/86

Solid Waste Disposition

	Number of Shipments	Mode of Transportation	Destination
*	5		

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58		9.90E+00
CO-60		6.90E+00
CS-134		2.55E+01
CS-137		2.80E+01
I-131		1.34E+01
MN-54		1.54E+01
ZN-69M		1.10E+00
B		
CO-58	1.92E+01	1.87E+01
CO-60	1.86E+01	1.87E+01
CR-51	1.40E+00	1.25E+00
FE-55	4.28E+01	4.34E+01
MN-54	1.11E+01	1.11E+01
NB-95	2.60E+00	2.55E+00
NI-63	1.90E+00	1.95E+00
ZR-95	1.40E+00	1.35E+00
D		
CO-58	2.89E+01	
CO-60	2.16E+01	
CR-51	1.40E+00	
FE-55	2.89E+01	
MN-54	1.50E+01	
NB-95	1.20E+00	
NI-63	3.10E+00	

* Solid waste shipments do not include brokered totals

Installation: Catawba Location: 6 Mi NNW of Rock Hill, SC
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.35E+01	
	Ci	7.04E-05	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	9.25E+01	non-compacted & brokered
	Ci	1.42E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
dewatered mechanical filters	m3	3.41E+00	
	Ci	6.74E+00	

Installation: Clinton
Unit No.(s): 1

Location: 6 Mi E Clinton, IL

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-461
Thermal Power(MWH): 1.15E+07
Commercial Operation: 11/24/87
Cooling Water Source: Salt Creek

Licensee: Illinois Power
Licensed Power(MWT): 2.89E+03
Net Electrical Power(MWH): 3.60E+06
Initial Criticality: 02/27/87

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	8.20E-03
MN-54	5.56E-05
CO-58	3.02E-05
CO-60	2.01E-04
KR-85	9.20E+00
KR-87	1.72E+00
SR-89	6.56E-05
I-131	1.53E-04
I-133	1.50E-04

Total Airborne Tritium Released 1.88E+00 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	2.50E-03
MN-54	5.25E-03
FE-55	4.82E-04
CO-58	3.99E-04
CO-60	1.65E-02
AG-110M	1.34E-04

Total Liquid Tritium Released	2.60E+00 Ci
Volume of Liquid Waste Released (Prior to Dilution)	3.20E+06 liters
Volume of Dilution Water Used During Period	2.67E+08 liters

Installation: Clinton
Unit No.(s): 1

Location: 6 Mi E Clinton, IL

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR
Docket Number: 50-461
Thermal Power(MWH): 1.15E+07
Commercial Operation: 11/24/87
Cooling Water Source: Salt Creek

Licensee: Illinois Power
Licensed Power(MWT): 2.89E+03
Net Electrical Power(MWH): 3.60E+06
Initial Criticality: 02/27/87

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
9	Truck	Barnwell, SC
34	Truck	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58		1.30E+00
CO-60	1.93E+01	3.47E+01
CR-51	4.57E+00	1.86E+00
FE-55	6.50E+01	5.15E+01
FE-59	1.52E+00	
MN-54	8.65E+00	9.57E+00
Others	9.70E-01	1.07E+00
B		
AG-110M	1.76E+01	
CO-58	4.37E+00	
CO-59		1.74E+00
CO-60	2.48E+01	2.44E+01
CR-51	2.03E+00	1.12E+01
FE-55	3.27E+01	5.43E+01
MN-54	1.85E+01	8.54E+00
Others	4.00E-02	6.00E-03

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.06E+02	
	Ci	5.43E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	6.59E+01	after compaction
	Ci	8.53E-01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Comanche Peak Location: 4.5 Mi N of Glen Rose, TX
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: PWR Licensee: TU Electric Company
Docket Number: 50-445 Licensed Power(MWT): 3.41E+03
Thermal Power(MWH): 8.16E+06 Net Electrical Power(MWH): 2.51E+06
Commercial Operation: 08/13/90 Initial Criticality: 04/03/90
Cooling Water Source: Squaw Creek Reservoir

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.04E-01
BR-82	3.86E-05
KR-85	1.99E+01
KR-85M	3.08E-03
KR-88	6.32E-04
XE-131M	1.78E+00
XE-133	8.82E+02
XE-133M	1.64E+00
XE-135	9.99E-01

Total Airborne Tritium Released 6.07E+00 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	8.73E-06
NA-24	2.52E-05
CR-51	1.74E-03
MN-54	1.37E-04
CO-58	7.83E-03
FE-59	1.02E-04
CO-60	1.66E-04
KR-85M	1.27E-05
KR-88	5.42E-06
NB-95	4.64E-04
ZR-95	3.58E-04
MO-99	1.91E-05
TC-99M	2.02E-05
RU-105	2.40E-05
SN-113	2.01E-06
SN-117M	9.91E-07
SB-122	1.21E-05
SB-124	3.87E-05
I-131	1.68E-04
XE-131M	3.77E-03
I-133	3.18E-05
XE-133	3.22E-01
XE-133M	1.05E-03
CS-134	3.24E-05
XE-135	5.24E-04
CS-137	6.87E-04
BA-140	1.06E-06
BA-141	1.43E-06
BA-142	6.44E-05
ND-147	2.01E-06

Total Liquid Tritium Released	1.87E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	6.70E+06 liters
Volume of Dilution Water Used During Period	8.14E+10 liters

Installation: Donald C. Cook
Unit No.(s): 1&2

Location: 11 Mi SSW St. Joseph, MI

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-315
Thermal Power(MWH): 2.05E+07
Commercial Operation: 08/27/75
Cooling Water Source: Lake Michigan

Licensee: Indiana Michigan Power Co.
Licensed Power(MWT): 3.25E+03
Net Electrical Power(MWH): 6.30E+06
Initial Criticality: 01/18/75

Unit Number: 2 Type: PWR
Docket Number: 50-316
Thermal Power(MWH): 1.53E+07
Commercial Operation: 07/01/78
Cooling Water Source: Lake Michigan

Licensee: Indiana Michigan Power Co.
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 4.81E+06
Initial Criticality: 03/10/78

Airborne Effluents

Nuclide Released	Activity (Ci)
NA-24	6.72E-05
AR-41	2.09E+00
CR-51	4.49E-02
CO-58	2.57E-05
CO-60	1.18E-04
KR-85	5.24E+00
KR-85M	3.97E-02
KR-87	2.41E-04
RB-88	1.64E-04
SR-89	4.05E-06
SR-90	5.07E-06
ZR-95	4.27E-08
MO-99	8.46E-07
RU-103	2.24E-07
CD-109	4.10E-06
I-131	3.17E-03
XE-131M	1.23E+00
I-133	6.74E-04
XE-133	1.74E+02
XE-133M	6.25E-01
CS-134	1.13E-04
XE-135	5.28E+00
XE-135M	3.79E-05
CS-137	2.52E-02
CS-138	3.67E-07

Total Airborne Tritium Released 9.89E+00 Ci

Installation: Donald C. Cook Location: 11 Mi SSW St. Joseph, MI
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR Licensee: Indiana Michigan Power Co.
Docket Number: 50-315 Licensed Power(MWT): 3.25E+03
Thermal Power(MWH): 2.05E+07 Net Electrical Power(MWH): 6.30E+06
Commercial Operation: 08/27/75 Initial Criticality: 01/18/75
Cooling Water Source: Lake Michigan

Unit Number: 2 Type: PWR Licensee: Indiana Michigan Power Co.
Docket Number: 50-316 Licensed Power(MWT): 3.41E+03
Thermal Power(MWH): 1.53E+07 Net Electrical Power(MWH): 4.81E+06
Commercial Operation: 07/01/78 Initial Criticality: 03/10/78
Cooling Water Source: Lake Michigan

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	5.03E-03
CR-51	1.95E-02
MN-54	1.36E-02
FE-55	1.14E-01
CO-57	5.32E-04
CO-58	2.34E-01
FE-59	2.26E-03
CO-60	4.08E-02
ZN-65	3.23E-04
SE-75	5.67E-05
AS-76	4.04E-05
KR-85	5.61E-02
SR-85	2.41E-04
SR-89	7.69E-01
SR-90	1.02E-01
ZR/NB-95	1.39E-03
ZR-97	3.10E-03
MO-99	2.17E-06
CD-109	8.62E-04
AG-110M	1.81E-01
SN-113	2.49E-04
SB-122	2.60E-03
SB-124	3.33E-02
SB-125	3.77E-02
I-131	8.19E-04
XE-131M	5.05E-03
TE-132	1.21E-05
I-133	4.10E-04
XE-133	3.08E-01
XE-133M	2.37E-03
CS-134	1.48E-02
XE-135	1.99E-03
XE-135M	8.93E-06
CS-136	6.85E-03
CS-137	2.45E-02
BA/LA-140	2.45E-05

Total Liquid Tritium Released	1.56E+03 Ci
Volume of Liquid Waste Released (Prior to Dilution)	4.52E+08 liters
Volume of Dilution Water Used During Period	2.65E+12 liters

Installation: Donald C. Cook Location: 11 Mi SSW St. Joseph, MI
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR Licensee: Indiana Michigan Power Co.
Docket Number: 50-315 Licensed Power(MWT): 3.25E+03
Thermal Power(MWH): 2.05E+07 Net Electrical Power(MWH): 6.30E+06
Commercial Operation: 08/27/75 Initial Criticality: 01/18/75
Cooling Water Source: Lake Michigan

Unit Number: 2 Type: PWR Licensee: Indiana Michigan Power Co.
Docket Number: 50-316 Licensed Power(MWT): 3.41E+03
Thermal Power(MWH): 1.53E+07 Net Electrical Power(MWH): 4.81E+06
Commercial Operation: 07/01/78 Initial Criticality: 03/10/78
Cooling Water Source: Lake Michigan

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
88	Truck	Barnwell, SC
1	Truck	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	8.00E+00	2.00E+00
CO-60	2.50E+01	1.00E+00
CS-134	9.00E+00	4.90E+01
CS-137	2.40E+01	4.50E+01
FE-55	5.00E+00	1.00E+00
H-3		1.00E+00
MN-54	1.00E+00	
NI-63	2.70E+01	1.00E+00
B		
C-14	7.00E+00	3.00E+00
CO-58	3.00E+00	3.00E+00
CO-60	1.50E+01	8.00E+00
CS-134	3.00E+00	1.00E+00
CS-137	1.50E+01	8.00E+00
FE-55	3.10E+01	4.50E+01
H-3		2.00E+00
NI-63	2.50E+01	3.00E+01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.73E+01	
	Ci	5.67E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.68E+02	after volume reduction
	Ci	8.75E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Cooper
Unit No.(s): 1

Location: 70 Mi S Omaha, NE

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-298
Thermal Power(MWH): 1.59E+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): 5.11E+06
Initial Criticality: 02/21/74

Airborne Effluents

Nuclide Released	Activity (Ci)
KR-83M	1.25E+00
KR-85	6.96E+00
KR-85M	2.67E+00
KR-87	8.23E+00
KR-88	8.84E+00
KR-89	3.52E+01
SR-91	1.54E-04
I-131	3.53E-04
I-132	3.98E-05
I-133	4.23E-04
XE-133	2.09E+01
XE-133M	1.05E-01
I-135	2.40E-04
XE-135	1.56E+01
XE-135M	6.82E+00
XE-137	4.13E+01
CS-138	5.99E-04
XE-138	3.92E+01

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	2.97E-04
CR-51	2.57E-02
MN-54	4.82E-01
FE-55	5.77E-02
CO-58	1.67E-01
FE-59	1.92E-03
CO-60	1.07E+00
ZN-65	5.39E-04
KR-85	5.17E-03
SR-89	1.47E-02
SR-90	1.13E-03
AG-110M	2.59E-02
SB-124	6.25E-04
I-131	6.24E-04
CS-134	6.82E-02
CS-136	2.00E-04
CS-137	1.14E-01

Total Liquid Tritium Released	5.07E+00 Ci
Volume of Liquid Waste Released (Prior to Dilution)	9.41E+06 liters
Volume of Dilution Water Used During Period	5.63E+10 liters

Installation: Cooper
Unit No.(s): 1

Location: 70 Mi S Omaha, NE

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR
Docket Number: 50-298
Thermal Power(MWH): 1.59E+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): 5.11E+06
Initial Criticality: 02/21/74

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
3	Exclusive use vehicle	Beatty, NV
31	Exclusive use vehicle	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AG-110M	1.49E+00	2.17E+00
C-14	5.14E-01	6.77E-01
CM-242	2.97E-05	2.35E-05
CO-58	3.29E+00	2.59E+00
CO-60	4.86E+01	5.00E+01
CR-51	2.49E-01	4.53E+00
CS-134	3.87E+00	2.88E+00
CS-137	7.50E+00	4.01E+00
FE-55	1.94E+01	1.58E+01
FE-59	1.83E-01	
H-3	1.15E-02	1.40E-02
I-131	1.36E-02	1.68E-02
MN-54	1.33E+01	1.57E+01
NI-59	1.36E-02	1.10E-02
NI-63	1.36E+00	1.10E+00
PU-241	2.40E-03	2.15E-03
SR-90	1.00E-02	7.50E-03
TC-99	7.74E-04	7.92E-04
ZN-65	2.45E-01	4.86E-01
B		
AG-110M	2.89E-01	1.86E-01
C-14	2.05E-02	2.28E-02
CM-242	5.46E-05	5.89E-05
CO-58	3.63E-02	9.77E-03
CO-60	6.38E+01	6.59E+01
CS-134	3.29E+00	3.20E+00
CS-137	5.20E+00	5.81E+00
FE-55	2.13E+01	2.04E+01
H-3	4.16E-02	4.83E-02
MN-54	4.04E+00	2.94E+00
NI-59	2.54E-01	7.81E-02
NI-63	1.64E+00	1.42E+00
PU-241	5.40E-03	5.87E-03
SB-125	6.51E-02	1.75E-02
SR-90	8.86E-05	6.38E-05
TC-99	2.16E-04	2.35E-04

Installation: Cooper Location: 70 Mi S Omaha, NE
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.30E+02	
	Ci	3.58E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.78E+02	
	Ci	1.13E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Crystal River
Unit No.(s): 3

Location: 70 Mi N Tampa, FL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-302
Thermal Power(MWH): 1.28E+07
Commercial Operation: 03/13/77
Cooling Water Source: Gulf of Mexico

Licensee: Florida Power
Licensed Power(MWT): 2.54E+03
Net Electrical Power (MWH): 4.14E+06
Initial Criticality: 01/14/77

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-58	3.96E-07
CO-60	3.09E-06
KR-85	2.62E+01
KR-85M	1.16E+00
KR-87	1.17E+00
SR-89	1.48E-07
SR-90	1.11E-06
I-131	7.63E-04
XE-131M	7.41E+01
I-133	1.07E-04
XE-133	7.10E+03
XE-133M	6.22E+01
XE-135	4.53E+01

Total Airborne Tritium Released 2.64E+01 Ci

Installation: Crystal River Location: 70 Mi N Tampa, FL
Unit No.(s): 3

Effluent and Waste Disposal Annual Report for 1990

Type: PWR Licensee: Florida Power
Docket Number: 50-302 Licensed Power(MWT): 2.54E+03
Thermal Power(MWH): 1.28E+07 Net Electrical Power(MWH): 4.14E+06
Commercial Operation: 03/13/77 Initial Criticality: 01/14/77
Cooling Water Source: Gulf of Mexico

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.88E-05
AR-41	9.06E-06
CR-51	3.54E-02
MN-54	1.43E-02
FE-55	4.99E-02
CO-58	2.28E-01
FE-59	3.71E-03
CO-60	1.27E-01
KR-85	1.21E-01
KR-85M	6.02E-04
KR-88	4.41E-04
RB-88	6.35E-03
SR-89	3.06E-04
SR-90	3.29E-04
Y-91M	1.35E-07
SR-92	8.53E-03
Y-92	3.64E-05
NB-95	1.45E-02
ZR-95	6.38E-03
ZR-97	1.07E-03
MO-99	2.78E-03
TC-99M	4.82E-03
RU-103	2.46E-03
RU-106	7.63E-03
AG-110M	2.33E-02
I-131	9.50E-03
XE-131M	4.74E-01
TE-132	5.23E-04
I-133	4.88E-04
XE-133	3.69E+00
XE-133M	3.76E-01
CS-134	2.24E-02
XE-135	2.47E-01
CS-137	3.83E-02
BA-139	2.60E-04
BA-140	1.16E-04
LA-140	9.16E-03
CE-141	2.86E-04
CE-144	1.45E-03

Total Liquid Tritium Released	5.10E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	4.23E+07 liters
Volume of Dilution Water Used During Period	9.32E+10 liters

Installation: Crystal River Location: 70 Mi N Tampa, FL
Unit No.(s): 3

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: Florida Power
Docket Number: 50-302 Licensed Power(MWT): 2.54E+03
Thermal Power(MWH): 1.28E+07 Net Electrical Power(MWH): 4.14E+06
Commercial Operation: 03/13/77 Initial Criticality: 01/14/77
Cooling Water Source: Gulf of Mexico

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
11	Exclusive use vehicle	Barnwell, SC (CNSI)
17	Exclusive use vehicle	Oak Ridge, TN (SEG)

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	1.20E+01	1.20E+01
CO-60	8.75E+00	1.18E+01
CS-134	1.86E+01	1.44E+01
CS-137	2.36E+01	3.79E+01
FE-55	7.15E+00	9.50E+00
H-3	1.71E+01	
NI-63		8.70E+00
SB-122		1.20E+00
B		
C-14		1.00E+00
CO-58	4.73E+00	3.30E+00
CO-60	4.41E+00	5.50E+00
CS-134	2.68E+00	
CS-137	5.48E+00	1.80E+00
FE-55	6.04E+01	7.60E+01
MN-54	2.63E+00	
NI-63	7.89E+00	9.90E+00
C		
CO-60	3.30E+01	
FE-55	6.57E+01	
D		
C-14		1.10E+00
CO-60		4.83E+01
FE-55		1.95E+01
NI-63		3.04E+01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 5.84E+01 Ci 7.80E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 8.36E+02 Ci 2.68E+01	
C. Irradiated Components, Control Rods, etc.	m3 4.16E-01 Ci 1.10E+02	
D. Other (describe) Solidified phosphoric acid and sludge	m3 2.71E+01 Ci 5.40E+00	

Installation: Davis-Besse
Unit No.(s): 1

Location: 21 Mi E Toledo, OH

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-346
Thermal Power(MWH): 1.32E+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): 4.16E+06
Initial Criticality: 08/12/77

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.99E-04
MN-54	4.51E-07
CO-58	1.51E-07
CO-60	2.75E-07
KR-85	1.66E+01
KR-85M	8.89E-02
KR-87	4.31E-03
KR-88	6.85E-02
RB-88	3.73E-05
I-131	2.35E-03
XE-131M	2.61E+00
I-132	1.34E-06
I-133	1.04E-03
XE-133	1.05E+03
XE-133M	8.29E+00
CS-134	7.44E-06
I-134	1.19E-06
I-135	3.59E-04
XE-135	1.36E+01
XE-135M	4.55E-03
CS-137	1.49E-05
CS-138	3.58E-06
XE-138	2.46E-03
CE-143	5.24E-08

Total Airborne Tritium Released 2.89E+01 Ci

Installation: Davis-Besse
Unit No.(s): 1

Location: 21 Mi E Toledo, OH

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-346
Thermal Power(MWH): 1.32E+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): 4.16E+06
Initial Criticality: 08/12/77

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	1.44E-03
MN-54	4.33E-04
FE-55	3.40E-02
CO-57	4.54E-04
CO-58	1.52E-02
FE-59	1.45E-04
CO-60	3.72E-02
KR-85	1.26E-02
NB-95	9.68E-06
ZR-95	8.77E-05
NB-97	6.15E-06
ZR-97	9.59E-04
TC-99M	1.86E-05
RU-103	2.62E-05
AG-110M	2.18E-02
SN-113	7.42E-04
SB-125	5.46E-03
I-131	4.62E-03
XE-131M	1.08E-02
I-133	4.07E-04
XE-133	1.86E-01
XE-133M	1.31E-03
CS-134	6.13E-03
XE-135	9.64E-04
CS-136	9.44E-05
CS-137	1.15E-02
LA-140	1.77E-05
CE-144	2.36E-04

Total Liquid Tritium Released	1.27E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	2.21E+08 liters
Volume of Dilution Water Used During Period	2.52E+10 liters

Installation: Davis-Besse Location: 21 Mi E Toledo, OH
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: Toledo Edison Co.
Docket Number: 50-346 Licensed Power(MWT): 2.77E+03
Thermal Power(MWH): 1.32E+07 Net Electrical Power(MWH): 4.16E+06
Commercial Operation: 07/31/78 Initial Criticality: 08/12/77
Cooling Water Source: Lake Erie

Solid Waste Disposition

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

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-60	2.00E+01	1.00E+01
CS-137		1.20E+01
FE-55	5.00E+01	4.40E+01
NI-63	1.20E+01	1.90E+01
B		
CO-60	2.00E+01	1.90E+01
FE-55	5.00E+01	4.80E+01
NI-63	1.20E+01	1.00E+00
C		
CO-60		6.40E+01
FE-55		7.00E+00
NI-63		1.20E+01
SB-125		1.20E+01
D		
CO-60		1.69E+01
CS-134		1.79E-01
CS-137		2.15E+00
FE-55		5.75E+01
NI-63		1.50E+01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 5.82E+01 Ci 7.96E+00	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.12E+02 Ci 4.89E+00	
C. Irradiated Components, Control Rods, etc.	m3 3.20E+00 Ci 2.23E+03	
D. Other (describe) filters, contaminated wood,metal, waste oil	m3 2.25E+02 Ci 1.56E+01	

Installation: Diablo Canyon
Unit No.(s): 1&2

Location: 12 Mi WSW of San Luis Obispo

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-275
Thermal Power(MWH): 2.72E+07
Commercial Operation: 05/07/85
Cooling Water Source: Pacific Ocean

Licensee: Pacific Gas & Electric
Licensed Power(MWT): 3.34E+03
Net Electrical Power(MWH): 8.71E+06
Initial Criticality: 04/29/84

Unit Number: 2 Type: PWR
Docket Number: 50-323
Thermal Power(MWH): 2.39E+07
Commercial Operation: 03/13/86
Cooling Water Source: Pacific Ocean

Licensee: Pacific Gas & Electric
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.56E+06
Initial Criticality: 08/19/85

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.56E+00
CO-58	7.60E-06
CO-60	6.46E-06
KR-85	2.61E+00
KR-85M	7.65E-05
ZR-95	1.35E-07
I-131	4.33E-05
XE-131M	3.77E-02
I-133	6.97E-05
XE-133	4.65E+01
XE-133M	3.33E-01
XE-135	5.31E+00
CS-137	1.88E-06

Total Airborne Tritium Released 5.59E+01 Ci

Installation: Diablo Canyon
Unit No.(s): 1&2

Location: 12 Mi WSW of San Luis Obispo

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-275
Thermal Power(MWH): 2.72E+07
Commercial Operation: 05/07/85
Cooling Water Source: Pacific Ocean

Licensee: Pacific Gas & Electric
Licensed Power(MWT): 3.34E+03
Net Electrical Power(MWH): 8.71E+06
Initial Criticality: 04/29/84

Unit Number: 2 Type: PWR
Docket Number: 50-323
Thermal Power(MWH): 2.39E+07
Commercial Operation: 03/13/86
Cooling Water Source: Pacific Ocean

Licensee: Pacific Gas & Electric
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.56E+06
Initial Criticality: 08/19/85

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	9.68E-04
NA-24	2.15E-03
CR-51	7.60E-03
MN-54	2.97E-02
FE-55	1.62E+00
CO-57	3.22E-03
CO-58	4.94E-01
FE-59	9.68E-04
CO-60	2.51E-01
BR-82	1.92E-04
SR-89	1.77E-03
SR-90	1.19E-04
SR-91	9.57E-05
SR-92	3.72E-06
ZR-95	3.41E-03
MO-99	3.87E-03
AG-110M	2.71E-03
SN-113	3.67E-04
SN-117M	1.11E-05
SB-122	3.93E-03
SB-124	2.47E-02
SB-125	1.82E-01
TE-129M	2.08E-03
I-131	2.13E-02
TE-131M	4.80E-05
I-132	1.04E-04
TE-132	1.08E-03
I-133	1.83E-02
XE-133	2.92E-02
CS-134	5.01E-02
I-134	6.79E-08
I-135	2.02E-03
XE-135	2.96E-03
CS-136	3.37E-04
CS-137	6.08E-02
CS-138	1.28E-09
LA-140	1.67E-03

Installation: Diablo Canyon Location: 12 Mi WSW of San Luis Obispo
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 1&2 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
CE-144	2.80E-04
W-187	3.08E-04

Total Liquid Tritium Released	9.68E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	5.14E+08 liters
Volume of Dilution Water Used During Period	6.77E+11 liters

Installation: Diablo Canyon Location: 12 Mi WSW of San Luis Obispo
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR Licensee: Pacific G & Electric
Docket Number: 50-275 Licensed Power(MWT): 3.34E+03
Thermal Power(MWH): 2.72E+07 Net Electrical Power(MWH): 8.71E+06
Commercial Operation: 05/07/85 Initial Criticality: 04/29/84
Cooling Water Source: Pacific Ocean

Unit Number: 2 Type: PWR Licensee: Pacific Gas & Electric
Docket Number: 50-323 Licensed Power(MWT): 3.41E+03
Thermal Power(MWH): 2.39E+07 Net Electrical Power(MWH): 7.56E+06
Commercial Operation: 03/13/86 Initial Criticality: 08/19/85
Cooling Water Source: Pacific Ocean

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
22	Truck	Barnwell, SC
6	Truck	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14		1.01E+01
CO-58		3.74E+00
CO-60	5.73E+01	1.33E+01
CS-134		1.16E+01
CS-137		2.45E+01
FE-55	7.90E+00	1.28E+01
H-3		9.54E+00
NI-63	2.19E+01	1.28E+01
B		
CO-58		1.18E+00
CO-60	8.10E+00	4.67E+00
FE-55	3.25E+01	1.79E+01
H-3	4.70E+01	7.10E+01
NI-63	5.40E+00	3.18E+00

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 2.29E+01	
	Ci 2.90E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 6.03E+01	
	Ci 1.77E+00	
C. Irradiated Components, Control Rods, etc.	m3	
	Ci	
D. Other (describe)		
	m3	
	Ci	

Installation: Dresden
Unit No.(s): 1&2&3

Location: 14 Mi SW Joliet, IL

Effluent and Waste Disposal Annual Report for 1990

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

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

Unit Number: 2 Type: BWR
Docket Number: 50-237
Thermal Power(MWH): 1.35E+07
Commercial Operation: 06/09/70
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 4.08E+06
Initial Criticality: 01/07/70

Unit Number: 3 Type: BWR
Docket Number: 50-249
Thermal Power(MWH): 1.67E+07
Commercial Operation: 11/16/71
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 5.14E+06
Initial Criticality: 01/31/71

Total Airborne Tritium Released 1.31E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
MN-54	5.48E-02
FE-55	1.50E-02
CO-58	5.57E-04
FE-59	3.95E-03
CO-60	1.79E-01
BR-82	1.51E-03
KR-88	2.43E-05
SR-90	1.28E-03
ZR-95	2.13E-05
SB-124	8.23E-05
XE-133	2.70E-05
CS-134	3.91E-03
XE-135	1.27E-05
CS-137	4.51E-01

Total Liquid Tritium Released	2.04E+01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	3.64E+07 liters
Volume of Dilution Water Used During Period	9.77E+10 liters

Installation: Dresden
Unit No.(s): 1

Location: 14 Mi SW Joliet, IL

Effluent and Waste Disposal Annual Report for 1990

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

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

Airborne Effluents

Nuclide Released	Activity (Ci)
MN-54	5.94E-07
FE-55	1.22E-04
CO-60	4.08E-05
SR-89	6.67E-05
SR-90	1.10E-06
CS-137	2.79E-05

Installation: Dresden
Unit No.(s): 2&3

Location: 14 Mi SW Joliet, IL

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 2 Type: BWR
Docket Number: 50-237
Thermal Power(MWH): 1.35E+07
Commercial Operation: 06/09/70
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 4.08E+06
Initial Criticality: 01/07/70

Unit Number: 3 Type: BWR
Docket Number: 50-249
Thermal Power(MWH): 1.67E+07
Commercial Operation: 11/16/71
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 5.14E+06
Initial Criticality: 01/31/71

Airborne Effluents

Nuclide Released	Activity (Ci)
NA-24	2.71E-06
AR-41	6.22E-02
CR-51	8.79E-03
MN-54	5.25E-03
FE-55	8.29E-02
CO-58	1.88E-03
FE-59	2.30E-03
CO-60	1.67E-02
ZN-65	5.48E-04
KR-85	1.45E-02
KR-88	8.76E-01
SR-89	6.18E-04
SR-90	5.66E-06
MO-99	5.60E-03
AG-110M	2.42E-04
SB-124	1.40E-04
I-131	3.72E-03
I-133	1.91E-02
I-135	3.17E-02
XE-135	1.87E+01
XE-135M	8.18E-01
CS-137	2.70E-04
BA-140	2.73E-02
LA-140	7.35E-03

Liquid Effluents

Nuclide Released	Activity (Ci)
MN-54	1.54E-05
FE-55	6.90E-05
CO-60	1.42E-04
I-132	1.21E-06
CS-134	1.81E-05
I-135	1.76E-06
CS-137	5.78E-05

Installation: Dresden
Unit No.(s): 1&2&3

Location: 14 Mi SW Joliet, IL

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

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

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

Unit Number: 2 Type: BWR
Docket Number: 50-237
Thermal Power(MWH): 1.35E+07
Commercial Operation: 06/09/70
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 4.08E+06
Initial Criticality: 01/07/70

Unit Number: 3 Type: BWR
Docket Number: 50-249
Thermal Power(MWH): 1.67E+07
Commercial Operation: 11/16/71
Cooling Water Source: Kankakee River

Licensee: Commonwealth Edison
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 5.14E+06
Initial Criticality: 01/31/71

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
49	Motor freight(excl. use)	Barnwell, SC
48	Motor freight(excl. use)	CNSI, Barnwell, SC
11	Motor freight(excl. use)	CNSI, Channahon, IL
13	Motor freight(excl. use)	Quadrex, Oak Ridge, TN
9	Motor freight(excl. use)	SEG, Oak Ridge, TN
6	Motor freight(excl. use)	Westinghouse DDR, PA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	2.17E+00	
CO-60	4.51E+01	9.99E+00
CS-137	1.13E+01	
FE-55	1.80E+01	5.69E+01
FE-59		9.20E-01
MN-54	1.65E+01	3.16E-01
NI-63	5.41E+00	
Other	1.52E+00	
B		
CO-60	2.54E+01	2.24E+01
CS-137	4.65E+00	
FE-55	6.20E+01	6.35E+01
FE-59		2.10E+00
MN-54	6.59E+00	9.51E+00
NI-63		1.16E+00
Other	1.36E+00	

Installation: Dresden Location: 14 Mi SW Joliet, IL
Unit No.(s): 1&2&3

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2&3(continued)

Estimate of Major Nuclide Composition (by type of waste) %	Jan-June	July-Dec
D		
CO-60		2.11E+01
CS-137		9.35E+00
FE-55		6.00E+01
H-3		4.72E+00
NI-63		1.10E+00
SR-90		3.06E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.46E+02	
	Ci	4.78E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.78E+03	
	Ci	3.05E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3	3.88E+02	
	Ci	9.08E-01	

Installation: Duane Arnold
Location: 8 Mi NW Cedar Rapids, IA
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Licensee: Iowa Electric Light & Power
Docket Number: 50-331
Licensed Power(MWT): 1.66E+03
Thermal Power(MWH): 9.64E+06
Net Electrical Power(MWH): 3.01E+06
Commercial Operation: 02/01/75
Initial Criticality: 03/23/74
Cooling Water Source: Cedar River

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	5.82E-04
MN-54	7.65E-04
CO-58	2.80E-04
FE-59	4.40E-05
CO-60	2.49E-03
KR-85	2.90E-04
SR-89	2.14E-05
SR-90	1.23E-07
I-131	2.59E-04
XE-131M	7.21E-05
I-132	3.50E-06
I-133	3.84E-04
XE-133	5.30E-01
I-135	1.05E-05
XE-135	2.29E+01
XE-135M	2.23E+01
CS-137	6.67E-06
BA/LA-140	2.48E-06

Total Airborne Tritium Released 1.63E+01 Ci

Installation: Duane Arnold
Unit No.(s): 1

Location: 8 Mi NW Cedar Rapids, IA

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR
Docket Number: 50-331
Thermal Power(MWH): 9.64E+06
Commercial Operation: 02/01/75
Cooling Water Source: Cedar River

Licensee: Iowa Electric Light & Power
Licensed Power(MWT): 1.66E+03
Net Electrical Power(MWH): 3.01E+06
Initial Criticality: 03/23/74

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
13	Truck	Barnwell, SC
2	Truck	Madison, PA
7	Truck	Oak Ridge, TN
3	Truck	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AG-110M,CO-57,I-131,SR-89,SR-90,FE-59		1.23E+00
AG-110M,I-131,SR-89,SR-90,FE-59	5.84E-01	
C-14	7.25E-02	2.40E-02
CO-58	5.55E+00	8.17E+00
CO-60	3.30E+01	3.64E+01
CR-51	2.40E+00	5.67E+00
CS-134	7.55E+00	8.17E-01
CS-137	9.19E+00	1.24E+00
FE-55	3.20E+01	2.88E+01
H-3	5.06E-02	3.59E-03
MN-54	8.01E+00	1.69E+01
NI-63	1.62E+00	7.49E-01
TRUs	1.28E-03	1.21E-04
B		
CE-144,CR-51,CS-137,CS-134,FE-59,ZN-65	7.90E-01	
CE-144,CS-137,CS-134,CR-51,ZN-65		9.02E-01
CM-242	3.78E-03	4.26E-03
CO-58	1.59E+00	1.81E+00
CO-60	1.76E+01	2.00E+01
FE-55	5.94E+01	6.77E+01
FE-59	1.94E+00	2.20E+00
MN-54	5.14E+00	5.83E+00
NI-63	1.35E+01	1.53E+00
PU-241	3.51E-02	3.97E-02
TRUs	1.21E-03	1.23E-03
C		
C-14	1.29E-03	
CM-242	8.05E-08	
CO-60	8.19E+01	
CS-137,NB-94,NI-59,CO-58,CO-57,SR-90	4.29E-01	
FE-55	4.97E+01	
H-3	1.67E-02	
I-129	4.30E-11	

Installation: Duane Arnold Location: 8 Mi NW Cedar Rapids, IA
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	July-Dec
C		
MN-54	4.54E+00	
NI-63	3.45E+00	
PU-241	6.67E-07	
TC-99	5.15E-06	
TRUs	8.33E-07	
U-233	1.70E-12	
U-235	1.90E-10	
D		
CE-144,CS-134,CS-137,CR-51,ZN-65	8.04E-01	
CM-242	3.82E-03	
CO-58	1.62E+00	
CO-60	1.79E+01	
FE-55	6.05E+01	
FE-59	1.98E+00	
MN-54	5.22E+00	
NI-63	1.20E+01	
PU-241	3.55E-02	
TRUs	1.09E-03	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	6.68E+01	
	Ci	1.52E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	2.53E+02	
	Ci	2.67E+01	
C. Irradiated Components, Control Rods, etc.	m3	3.25E+00	
	Ci	3.63E+04	
D. Other (describe)			
wet trash	m3	1.04E+01	
	Ci	1.90E+00	

Installation: Joseph M. Parley Location: Dothan, AL
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: PWR Licensee: Alabama Power
Docket Number: 50-348 Licensed Power(MWT): 2.65E+03
Thermal Power(MWH): 2.25E+07 Net Electrical Power(MWH): 6.91E+06
Commercial Operation: 12/01/77 Initial Criticality: 08/09/77
Cooling Water Source: Chatahoochee River

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.34E+01
KR-85	7.20E-01
KR-85M	1.57E-03
KR-88	7.36E-04
XE-131M	2.39E-02
I-133	5.19E-06
XE-133	2.33E+01
XE-133M	2.85E-02
XE-135	3.97E+01

Total Airborne Tritium Released 3.32E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	5.43E-03
MN-54	3.21E-04
FE-55	2.09E-02
CO-57	7.79E-07
CO-58	1.17E-02
FE-59	1.69E-03
CO-60	1.40E-02
ZN-65	4.27E-06
KR-85M	1.93E-06
KR-87	6.69E-07
RB-88	3.17E-04
SR-90	1.65E-05
SR-92	2.63E-05
NB-95	1.15E-03
ZR-95	2.49E-04
NB-97	1.50E-04
TC-99M	7.32E-06
RU-103	1.82E-05
RU-105	1.84E-05
RU-106	2.17E-04
AG-110M	2.84E-03
SB-124	1.40E-05
SB-125	9.97E-03
I-131	1.01E-05
I-133	4.59E-06
XE-133	3.42E-03
XE-133M	3.90E-06
CS-134	1.09E-03
XE-135	1.09E-03
CS-137	4.62E-03
CS-138	1.44E-05

Total Liquid Tritium Released	7.35E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	4.18E+08 liters
Volume of Dilution Water Used During Period	5.56E+10 liters

Installation: Joseph M. Farley Location: Dothan, AL
Unit No.(s): 2

Effluent and Waste Disposal Annual Report for 1990

Type: PWR Licensee: Alabama Power
Docket Number: 50-364 Licensed Power(MWT): 2.65E+03
Thermal Power(MWH): 1.69E+07 Net Electrical Power(MWH): 5.25E+06
Commercial Operation: 07/30/81 Initial Criticality: 05/05/81
Cooling Water Source: Chattahoochee River

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.21E+01
KR-85	8.34E-02
I-131	3.15E-06
XE-133	1.58E+00
XE-133M	1.51E-03
XE-135	1.69E-02

Total Airborne Tritium Released 5.43E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	9.88E-03
MN-54	3.18E-04
FE-55	2.82E-02
CO-57	9.78E-07
CO-58	9.75E-03
FE-59	3.01E-03
CO-60	1.03E-02
RB-88	1.46E-05
SR-92	2.78E-05
NB-95	1.20E-03
ZR-95	2.45E-04
NB-97	2.63E-04
RU-103	4.24E-06
RU-105	1.48E-05
RU-106	9.65E-05
AG-110M	2.10E-03
SB-124	8.13E-06
SB-125	1.21E-02
I-131	1.21E-06
XE-133	4.60E-03
CS-134	1.22E-03
XE-135	6.81E-06
CS-137	4.24E-03
ND-147	1.50E-06

Total Liquid Tritium Released	6.72E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	4.25E+08 liters
Volume of Dilution Water Used During Period	5.96E+10 liters

Installation: Joseph M. Farley Location: Dothan, AL
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR Licensee: Alabama Power
Docket Number: 50-348 Licensed Power(MWT): 2.65E+03
Thermal Power(MWH): 2.25E+07 Net Electrical Power(MWH): 6.91E+06
Commercial Operation: 12/01/77 Initial Criticality: 08/09/77
Cooling Water Source: Chatahoochee River

Unit Number: 2 Type: PWR Licensee: Alabama Power
Docket Number: 50-364 Licensed Power(MWT): 2.65E+03
Thermal Power(MWH): 1.69E+07 Net Electrical Power(MWH): 5.25E+06
Commercial Operation: 07/30/81 Initial Criticality: 05/05/81
Cooling Water Source: Chatahoochee River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
52	Highway	CNSI, Barnwell, SC

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14	2.20E+00	
CO-58		1.08E+01
CO-60	3.19E+01	3.31E+01
CS-137		2.10E+00
FE-55	5.02E+01	2.42E+01
MN-54		3.00E+00
NI-63	1.07E+01	2.17E+01
PU-241	1.00E+00	
SB-125		1.10E+00
B		
AG-110M		1.40E+00
CO-58	2.96E+01	9.20E+00
CO-60	8.00E+00	2.23E+01
CR-51	5.20E+00	3.00E+00
FE-55	3.72E+01	3.69E+01
H-3	3.70E+00	1.49E+01
MN-54	2.90E+00	1.80E+00
NB-95	2.80E+00	1.40E+00
NI-63	5.70E+00	6.10E+00
ZR-95	1.50E+00	

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 7.01E+01	
	Ci 2.84E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 8.09E+01	
	Ci 4.78E+00	
C. Irradiated Components, Control Rods, etc.	m3	
	Ci	
D. Other (describe)		
	m3	
	Ci	

Installation: Fermi
Unit No.(s): 2

Location: Laguna Beach, MI

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-341
Thermal Power(MWH): 2.25E+07
Commercial Operation: 01/23/88
Cooling Water Source: Lake Erie

Licensee: Detroit Edison Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 7.10E+06
Initial Criticality: 06/21/85

Airborne Effluents

Nuclide Released	Activity (Ci)
NA-24	1.00E-02
AR-41	9.78E+01
CR-51	9.43E-03
MN-54	6.77E-05
MN-56	2.01E-03
CO-58	2.22E-04
FE-59	7.82E-06
CO-60	1.56E-04
ZN-65	1.96E-04
ZN-69M	3.95E-05
SE-75	5.11E-07
AS-76	1.90E-04
BR-82	4.86E-06
KR-85M	3.83E+00
KR-87	1.10E-01
KR-88	1.02E+01
KR-89	1.02E+01
RB-89	1.27E+00
SR-89	4.61E-04
SR-90	6.01E-06
SR-91	1.81E-02
Y-91M	1.04E-02
TC-99M	2.46E-02
AG-110M	3.89E-05
BA-131	7.21E-06
I-131	3.42E-03
I-132	1.62E-02
I-133	2.03E-02
XE-133	1.26E+00
I-134	2.84E-03
I-135	1.97E-02
XE-135	5.80E-01
XE-135M	3.35E+00
XE-137	2.49E+01
CS-138	1.00E+00
XE-138	8.84E+00
BA-139	1.82E+00
BA-140	1.41E-03
LA-140	9.63E-04
W-187	4.14E-05

Installation: Permi
Unit No.(s): 2

Location: Laguna Beach, MI

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-341
Thermal Power(MWH): 2.25E+07
Commercial Operation: 01/23/88
Cooling Water Source: Lake Erie

Licensee: Detroit Edison Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 7.10E+06
Initial Criticality: 06/21/85

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	5.30E-02
CR-51	1.43E-01
MN-54	7.95E-04
FE-55	6.47E-05
CO-58	1.57E-03
CO-60	1.18E-03
ZN-65	2.34E-03
AS-76	2.70E-03
SR-89	1.07E-04
SR-90	5.45E-07
MO-99	3.29E-03
TC-99M	8.45E-03
AG-110M	9.28E-06
SB-122	1.84E-04
BA-131	1.61E-04
I-131	2.85E-04
I-133	6.93E-04
XE-135	3.11E-04
W-187	2.76E-04

Total Liquid Tritium Released	7.47E-01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	8.34E+05 liters
Volume of Dilution Water Used During Period	1.75E+10 liters

Installation: Fermi
Unit No.(s): 2

Location: Laguna Beach, MI

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR
Docket Number: 50-341
Thermal Power(MWH): 2.25E+07
Commercial Operation: 01/23/88
Cooling Water Source: Lake Erie

Licensee: Detroit Edison Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 7.10E+06
Initial Criticality: 06/21/85

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
38	Truck	Barnwell, SC
4	Truck	Channahon, IL
13	Truck	Oak Ridge, TN

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AG-110M	5.00E-01	
C-14	2.00E-01	3.00E-01
CO-58	3.10E+00	4.90E+00
CO-60	1.24E+01	1.21E+01
CR-51	4.50E+00	2.51E+01
FE-55	5.35E+01	3.69E+01
FE-59	4.00E-01	1.00E-01
H-3	1.00E-01	
MN-54	1.05E+01	7.50E+00
NI-63	4.00E-01	3.00E-01
ZN-65	1.42E+01	1.16E+01
ZR-95		1.30E+00
B		
C-14		1.00E-01
CO-58	1.80E+00	3.00E+00
CO-60	1.02E+01	9.40E+00
CR-51	2.60E+00	3.40E+00
FE-55	7.67E+01	7.42E+01
FE-59	1.20E+00	1.80E+00
MN-54	6.80E+00	8.00E+00
NI-63	3.00E-01	
C		
CO-60		3.07E+01
FE-55		5.90E+01
H-3		3.00E-01
MN-54		6.10E+00
NI-63		1.20E+00
SB-124		2.50E+00
SB-125		3.00E-01

Installation: Permi
Unit No.(s): 2

Location: Laguna Beach, MI

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 2 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.86E+02	
	Ci	1.06E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	9.39E+02	compacted; before super compaction
	Ci	1.55E+01	
C. Irradiated Components, Control Rods, etc.	m3	3.25E+00	compacted; before super compaction
	Ci	1.98E+04	
D. Other (describe)			
	m3		
	Ci		

Installation: James A. Fitzpatrick Location: 36 Mi N Syracuse, NY
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: BWR Licensee: Power Authority of the State of NY
Docket Number: 50-333 Licensed Power(MWT): 2.44E+03
Thermal Power(MWH): 1.42E+07 Net Electrical Power(MWH): 4.60E+06
Commercial Operation: 07/28/75 Initial Criticality: 11/17/74
Cooling Water Source: Lake Ontario

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.77E+01
CR-51	7.13E-03
MN-54	1.14E-04
CO-57	2.52E-07
CO-58	2.33E-04
FE-59	1.82E-05
CO-60	4.53E-04
ZN-65	8.91E-03
KR-85M	9.55E+01
KR-87	4.98E+01
KR-88	1.30E+02
SR-89	9.70E-05
SR-90	1.38E-06
RU-103	8.03E-07
AG-110M	2.36E-07
SB-124	1.29E-06
I-131	1.97E-03
XE-131M	3.55E+01
I-133	7.05E-03
XE-133	3.52E+02
XE-133M	9.29E+01
XE-135	1.72E+02
XE-135M	3.87E+01
CS-137	3.93E-05
XE-137	1.98E+02
XE-138	1.46E+02
BA/LA-140	1.13E-04
CE-141	1.86E-06
CE-144	2.32E-05

Total Airborne Tritium Released 1.21E+01 Ci

Installation: James A. Fitzpatrick Location: 36 Mi N Syracuse, NY
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: BWR Licensee: Power Authority of the State of NY
Docket Number: 50-333 Licensed Power(MWT): 2.44E+03
Thermal Power(MWH): 1.42E+07 Net Electrical Power(MWH): 4.60E+06
Commercial Operation: 07/28/75 Initial Criticality: 11/17/74
Cooling Water Source: Lake Ontario

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.30E-04
CR-51	9.41E-06
MN-54	2.29E-03
FE-55	5.81E-03
CO-58	1.82E-05
FE-59	1.64E-05
CO-60	3.11E-03
ZN-65	1.40E-02
SR-89	2.41E-05
SR-90	1.93E-05
TC-99M	2.01E-06
CS-134	4.95E-04
XE-135	2.44E-04
CS-137	1.49E-03
CE-141	6.04E-07
CE-144	1.80E-06

Total Liquid Tritium Released	3.08E+00 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.93E+06 liters
Volume of Dilution Water Used During Period	6.56E+11 liters

Installation: James A. Fitzpatrick Location: 36 Mi N Syracuse, NY
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR Licensee: Power Authority of the State of NY
Docket Number: 50-333 Licensed Power(MWT): 2.44E+03
Thermal Power(MWH): 1.42E+07 Net Electrical Power(MWH): 4.60E+06
Commercial Operation: 07/28/75 Initial Criticality: 11/17/74
Cooling Water Source: Lake Ontario

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
32	Truck	Barnwell, SC
5	Truck	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14	9.51E-03	8.69E-03
CO-58		5.17E-01
CO-60	1.39E+01	1.24E+01
CR-51		4.01E+00
CS-134	7.46E-01	4.74E-01
CS-137	1.71E+00	1.29E+00
FE-55	1.35E+01	8.96E+00
FE-59		1.52E-01
H-3		3.07E-03
MN-54	2.73E+00	2.91E+00
NI-59		7.69E-05
NI-63	4.78E-01	4.66E-01
SR-89		3.07E-02
ZN-65	6.58E+01	6.87E+01
ZR-95		1.03E-02
B		
C-14		2.11E-02
CO-58	1.00E+00	1.11E+00
CO-60	3.54E+01	3.53E+01
CS-134	2.41E+00	2.36E+00
CS-137	3.67E+00	3.56E+00
FE-55	1.97E+01	1.96E+01
MN-54	4.67E+00	4.61E+00
NI-63	1.56E+00	1.55E+00
ZN-65	3.20E+01	3.19E+01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.26E+02	
	Ci	2.04E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.57E+02	compacted & non-compacted
	Ci	1.68E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Fort Calhoun
Unit No.(s): 1

Location: 19 Mi N Omaha, NE

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-285
Thermal Power(MWH): 7.67E+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): 2.42E+06
Initial Criticality: 08/06/73

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.19E+00
FE-55	1.87E-05
CO-58	1.67E-05
KR-85	7.38E-01
KR-85M	3.53E-02
KR-87	1.66E-03
KR-88	2.38E-03
SR-90	5.22E-08
I-131	1.77E-03
XE-131M	2.46E+00
I-133	1.37E-03
XE-133	4.50E+02
XE-133M	2.58E+00
XE-135	2.92E+00
XE-135M	6.48E-03
XE-138	6.30E-03

Total Airborne Tritium Released 7.38E+00 Ci

Installation: Fort Calhoun Location: 19 Mi N Omaha, NE
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: PWR Licensee: Omaha Public Power
Docket Number: 50-285 Licensed Power(MWT): 1.50E+03
Thermal Power(MWH): 7.67E+06 Net Electrical Power(MWH): 2.42E+06
Commercial Operation: 06/20/74 Initial Criticality: 08/06/73
Cooling Water Source: Missouri River

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	1.11E-02
MN-54	4.94E-04
FE-55	1.09E-01
CO-57	9.09E-05
CO-58	2.48E-01
CO-60	2.31E-02
ZN-65	2.83E-05
SE-75	2.60E-04
SR-89	2.42E-03
SR-90	3.57E-04
NB-95	5.26E-03
ZR-95	2.13E-03
TC-99M	2.48E-05
RU-103	3.95E-04
RU-106	1.02E-04
AG-110M	6.98E-03
SB-124	5.24E-03
SB-125	1.02E-01
SB-126	1.31E-04
I-129	7.94E-05
I-131	3.11E-02
XE-131M	6.96E-03
XE-133	9.71E-01
XE-133M	1.83E-03
CS-134	4.29E-02
XE-135	2.86E-04
CS-137	2.08E-01
BA-140	4.42E-04
LA-140	5.11E-03

Total Liquid Tritium Released	1.74E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.19E+08 liters
Volume of Dilution Water Used During Period	5.36E+11 liters

Installation: Fort Calhoun Location: 19 Mi N Omaha, NE
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: Omaha Public Power
Docket Number: 50-285 Licensed Power(MWT): 1.50E+03
Thermal Power(MWH): 7.67E+06 Net Electrical Power(MWH): 2.42E+06
Commercial Operation: 06/20/74 Initial Criticality: 08/06/73
Cooling Water Source: Missouri River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
53	Closed Sole Use Vehicle	Barnwell, SC
2	Closed Sole Use Vehicle	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14	4.47E+01	3.90E+00
CO-60	1.30E+00	2.90E+00
CS-134	3.38E+01	5.91E+01
CS-137	1.30E+01	2.80E+00
FE-55		1.50E+00
H-3	1.50E+00	3.90E+00
MN-54	1.30E+00	1.50E+00
MO-99		1.14E+01
TC-99	3.60E+00	1.14E+01
B		
AG-110M	2.60E+00	2.60E+00
CE-144	2.00E+00	1.90E+00
CO-58	1.18E+01	1.15E+01
CO-60	1.10E+00	1.00E+00
CS-134	5.70E+00	5.60E+00
CS-137	6.12E+01	6.05E+01
MO-99		4.50E+00
PR-144	2.00E+00	1.90E+00
RH-103	2.70E+00	2.70E+00
RH-106	1.80E+00	
RU-103	2.70E+00	2.70E+00
RU-106	1.80E+00	
TC-99	4.70E+00	4.50E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	8.94E+00	
	Ci	4.73E+00	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.13E+02	
	Ci	2.75E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Fort St. Vrain Location: 35 Mi N Denver, CO
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: HTG Licensee: Public Service Co of Colorado
Docket Number: 50-267 Licensed Power(MWT): 8.42E+02
Thermal Power(MWH): Net Electrical Power(MWH):
Commercial Operation: 07/01/79
Cooling Water Source: South Platte River

Total Airborne Tritium Released 7.28E-01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
CO-60	6.14E-05
SR-90	9.65E-06
CS-137	1.11E-05

Total Liquid Tritium Released	3.22E+00 Ci
Volume of Liquid Waste Released (Prior to Dilution)	3.74E+07 liters
Volume of Dilution Water Used During Period	2.19E+09 liters

Installation: Fort St. Vrain Location: 35 Mi N Denver, CO
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: HTG Licensee: Public Service Co of Colorado
Docket Number: 50-267 Licensed Power(MWT): 8.42E+02
Thermal Power(MWH): Net Electrical Power(MWH):
Commercial Operation: 07/01/79 Initial Criticality: 01/31/74
Cooling Water Source: South Platte River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
16	Highway	RAMP, Denver, CO
2	Highway	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-60	6.00E-02	
CS-137	2.00E-02	
FE-55	5.00E-01	
H-3	5.90E+01	
S-35	4.00E+01	
B		
CO-60	3.00E+00	2.50E+00
CS-137	2.00E+00	2.50E+00
FE-55	1.80E+01	1.60E+01
H-3	7.00E+01	6.80E+01
S-35	1.00E+01	1.00E+01
D		
CO-60	4.00E-02	
FE-55	3.60E-01	
H-3	9.80E+01	
S-35	7.00E-01	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	5.72E+00	uncompacted
	Ci	1.36E-01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	8.94E+01	uncompacted
	Ci	2.05E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
Oil	m3	5.95E+00	uncompacted
	Ci	1.17E-01	

Installation: R. E. Ginna
Unit No.(s): 1

Location: 16 Mi NE Rochester, NY

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-244
Thermal Power(MWH): 1.07E+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): 3.45E+06
Initial Criticality: 11/08/69

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	7.98E-01
CO-60	5.29E-07
KR-85	1.06E+01
KR-85M	9.84E-02
KR-87	8.79E-02
KR-88	1.66E-01
I-131	5.11E-03
XE-131M	5.90E+00
I-133	7.02E-04
XE-133	5.49E+02
XE-133M	4.82E+00
XE-135	2.05E+01
XE-135M	2.11E+00
CS-137	2.24E-06
XE-138	2.47E-01
Unidentified	3.42E-05

Total Airborne Tritium Released 1.24E+02 Ci

Installation: R. E. Ginna
Unit No.(s): 1

Location: 16 Mi NE Rochester, NY

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-244
Thermal Power(MWH): 1.07E+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): 3.45E+06
Initial Criticality: 11/08/69

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	3.10E-03
MN-54	5.09E-04
FE-55	3.69E-03
CO-58	3.66E-03
FE-59	1.02E-04
CO-60	1.02E-02
SR-89	1.30E-04
SR-90	1.96E-04
ZR-NB-95	1.74E-03
MO-99	6.69E-06
RU-103	4.22E-05
RU-106	3.69E-04
AG-110M	4.93E-03
SB-122	3.35E-04
SB-124	2.19E-03
SB-125	6.14E-04
I-131	4.86E-02
TE-131M	8.98E-03
I-133	2.00E-02
XE-133	2.94E-01
CS-134	9.11E-03
I-135	7.46E-03
XE-135	3.76E-03
CS-136	2.35E-03
CS-137	2.18E-02
BA-LA-140	2.71E-04
CE-141	5.73E-06

Total Liquid Tritium Released	3.21E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.19E+08 liters
Volume of Dilution Water Used During Period	6.01E+11 liters

Installation: R. E. Ginna Location: 16 Mi NE Rochester, NY
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: Rochester Gas & Electric
Docket Number: 50-244 Licensed Power(MWT): 1.52E+03
Thermal Power(MWH): 1.07E+07 Net Electrical Power(MWH): 3.45E+06
Commercial Operation: 07/01/70 Initial Criticality: 11/08/69
Cooling Water Source: Lake Ontario

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
44	Highway Vehicle	Barnwell, SC

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	6.80E+00	8.70E+00
CO-60	1.90E+01	2.40E+01
CS-134		6.90E+00
CS-137	8.70E+00	2.00E+01
FE-55	2.30E+01	1.74E+01
NI-63	1.80E+01	1.30E+01
SB-124		4.90E+00
SB-125	4.30E+00	
B		
CO-58	1.90E+01	1.60E+01
CO-60	1.50E+01	1.40E+01
CS-137	2.30E+01	1.70E+01
FE-55	2.60E+01	2.30E+01
NI-63	7.90E+00	1.60E+01
SB-124		6.00E+00
SB-125	5.30E+00	4.80E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.04E+02	after compaction
	Ci	2.27E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	9.43E+01	after compaction
	Ci	5.65E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Grand Gulf
Unit No.(s): 1

Location: 25 Mi Vicksburg, MS

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-416
Thermal Power(MWH): 2.43E+07
Commercial Operation: 07/01/85
Cooling Water Source: Mississippi River

Licensee: System Energy Resources, Inc.
Licensed Power(MWT): 3.83E+03
Net Electrical Power(MWH): 7.40E+06
Initial Criticality: 08/18/82

Airborne Effluents

Nuclide Released	Activity (Ci)
F-18	7.64E+00
NA-24	5.08E-05
AR-41	9.43E-02
CR-51	3.41E-04
MN-54	4.59E-05
CO-58	4.44E-06
FE-59	1.89E-06
CO-60	6.96E-05
AS-76	5.43E-06
KR-85M	6.93E-03
KR-89	3.17E+01
SR-89	4.38E-06
SR-90	1.11E-07
TC-99M	1.47E-03
I-131	5.22E-04
XE-131M	1.51E-02
I-133	2.72E-04
XE-133	4.54E+01
XE-133M	1.86E-01
CS-134	1.06E-07
XE-135	4.29E+01
XE-135M	7.75E+00
CS-137	6.30E-07
XE-138	4.64E-02
CE-144	8.56E-06

Total Airborne Tritium Released 3.32E+00 Ci

Installation: Grand Gulf
Unit No.(s): 1

Location: 25 Mi Vicksburg, MS

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-416
Thermal Power(MWH): 2.43E+07
Commercial Operation: 07/01/85
Cooling Water Source: Mississippi River

Licensee: System Energy Resources, Inc.
Licensed Power(MWT): 3.83E+03
Net Electrical Power(MWH): 7.40E+06
Initial Criticality: 08/18/82

Liquid Effluents

Nuclide Released	Activity (Ci)
F-18	4.95E-04
NA-24	3.22E-04
CR-51	2.24E-01
MN-54	4.66E-02
FE-55	2.77E-01
MN-56	2.39E-05
CO-58	5.65E-03
FE-59	8.66E-03
CO-60	7.51E-02
CU-64	2.18E-03
ZN-65	7.62E-05
AS-76	3.48E-03
SR-92	2.27E-06
ZR-NB-95	9.49E-05
MO-99	6.20E-05
TC-99M	1.50E-04
AG-110M	2.01E-04
SB-124	1.13E-04
I-131	2.59E-04
I-133	1.77E-05
XE-133	2.70E-03
CS-134	1.18E-04
XE-135	1.78E-03
CS-137	1.44E-04
BA-LA-140	1.30E-05

Total Liquid Tritium Released	1.89E+01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	3.89E+07 liters
Volume of Dilution Water Used During Period	2.66E+09 liters

Installation: Grand Gulf
Unit No.(s): 1

Location: 25 Mi Vicksburg, MS

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR
Docket Number: 50-416
Thermal Power(MWH): 2.43E+07
Commercial Operation: 07/01/85
Cooling Water Source: Mississippi River

Licensee: System Energy Resources, Inc.
Licensed Power(MWT): 3.83E+03
Net Electrical Power(MWH): 7.40E+06
Initial Criticality: 08/18/82

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
23	Truck	Barnwell, SC
18	Truck	Barnwell, SC via SEG

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	6.00E+00	
CO-60	2.50E+01	1.90E+01
CR-51	2.00E+00	
FE-55	1.50E+01	7.00E+01
MN-54	4.20E+01	9.00E+00
Others	1.00E+01	2.00E+00
B		
CO-60	7.00E+00	7.20E+00
FE-55	7.80E+01	8.14E+01
FE-59	2.00E+00	1.10E+00
MN-54	1.10E+01	1.03E+01
Others	2.00E+00	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.28E+02	
	Ci	1.35E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	3.21E+02	before compaction
	m3	3.41E+01	after compaction
	Ci	2.14E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Haddam Neck
Location: 9.5 Mi SE Middletown, CT
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Licensee: Connecticut Yankee Atomic Power
Docket Number: 50-213
Licensed Power(MWT): 1.82E+03
Thermal Power(MWH): 3.81E+06
Net Electrical Power(MWH): 1.15E+06
Commercial Operation: 01/01/68
Initial Criticality: 07/24/67
Cooling Water Source: Connecticut River

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.75E-02
MN-54	5.82E-05
CO-60	5.78E-05
KR-85	1.61E+01
KR-85M	6.79E-02
KR-87	1.99E-02
KR-88	7.57E-02
SR-89	6.79E-06
SR-90	2.55E-05
I-131	2.55E-03
XE-131M	7.91E+00
I-133	4.19E-04
XE-133	1.43E+03
XE-133M	4.62E+00
CS-134	5.34E-04
XE-135	3.92E+00
XE-135M	9.51E-03
CS-137	1.48E-03
XE-137	4.38E-02
XE-138	3.52E-02

Total Airborne Tritium Released 7.81E+01 Ci

Installation: Haddam Neck
Unit No.(s): 1

Location: 9.5 Mi SE Middletown, CT

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-213
Thermal Power(MWH): 3.81E+06
Commercial Operation: 01/01/68
Cooling Water Source: Connecticut River

Licensee: Connecticut Yankee Atomic Power
Licensed Power(MWT): 1.82E+03
Net Electrical Power(MWH): 1.15E+06
Initial Criticality: 07/24/67

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	1.69E-03
MN-54	1.49E-02
FE-55	5.43E-01
CO-58	9.16E-03
FE-59	3.52E-03
CO-60	9.33E-02
SR-89	2.17E-03
SR-90	2.26E-03
ZR-NB-95	9.90E-06
RU-103	2.91E-05
RU-106	4.11E-04
AG-110M	1.29E-03
SB-124	1.36E-05
SB-125	1.13E-04
I-131	6.76E-02
XE-131M	3.76E-02
I-132	3.89E-01
I-133	2.67E-01
XE-133	7.31E-01
XE-133M	1.01E-03
CS-134	9.70E-03
I-134	7.67E-01
I-135	4.85E-01
XE-135	1.43E-03
CS-136	1.32E-04
CS-137	2.83E-02
BA-LA-140	2.73E-03
CE-144	2.21E-04

Total Liquid Tritium Released	9.89E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	7.17E+07 liters
Volume of Dilution Water Used During Period	4.16E+11 liters

Installation: Haddam Neck Location: 9.5 Mi SE Middletown, CT
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: Connecticut Yankee Atomic Power
Docket Number: 50-213 Licensed Power(MWT): 1.82E+03
Thermal Power(MWH): 3.81E+06 Net Electrical Power(MWH): 1.15E+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
31	Truck	Barnwell, SC

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AM-241	3.65E-03	1.08E-03
C-14	7.50E-02	2.00E+00
CM-242	3.75E-03	3.71E-04
CM-243	1.97E-03	5.09E-04
CM-244	1.97E-03	5.09E-04
CO-57	5.50E-02	
CO-58	3.15E+00	1.97E+00
CO-60	3.78E+01	4.28E+01
CR-51	1.14E+00	1.77E+00
CS-134	3.81E+00	5.50E-01
CS-137	6.04E+00	2.56E+00
FE-55	4.04E+01	4.16E+01
FE-59	9.00E-02	1.50E-01
H-3	1.30E-01	1.60E-01
I-129	8.06E-05	4.36E-05
MN-54	2.50E+00	3.02E+00
NI-63	4.06E+00	5.25E+00
PU-238	6.28E-03	1.59E-03
PU-239	9.40E-04	2.60E-04
PU-240	9.40E-04	2.60E-04
PU-241	5.20E-02	5.00E-02
SR-90	7.55E-04	1.40E-02
TC-99	4.44E-05	5.06E-05
B		
AM-241	1.92E-02	1.92E-02
C-14	2.47E-01	2.47E-01
CM-242	1.65E-02	1.65E-02
CM-243	1.12E-02	1.12E-02
CM-244	1.12E-02	1.12E-02
CO-58	2.98E+00	2.98E+00
CO-60	1.03E+01	1.03E+01
CS-134	1.41E+00	1.41E+00
CS-137	7.54E+00	7.54E+00
FE-55	6.18E+01	6.18E+01
H-3	4.57E-01	4.57E-01
I-129	1.51E-01	1.51E-01

Installation: Haddam Neck Location: 9.5 Mi SE Middletown, CT
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Estimate of Major Nuclide Composition (by type of waste)	%	Jan-June	July-Dec
B			
NI-63		5.87E+00	5.87E+00
PU-238		1.88E-01	1.88E-01
PU-239		2.23E-02	2.23E-02
PU-240		2.23E-02	2.23E-02
PU-241		8.85E+00	8.85E+00
SR-90		9.04E-02	9.04E-02
TC-99		2.86E-02	2.86E-02
C			
AM-241		2.00E-14	
C-14		4.61E-03	
CM-242		1.88E-13	
CM-243		1.11E-14	
CM-244		1.11E-14	
CO-58		2.15E+00	
CO-60		4.58E+01	
CR-51		2.03E+00	
FE-55		4.27E+01	
FE-59		1.70E-01	
MN-54		3.38E+00	
NB-95		8.75E-05	
NI-59		3.00E-02	
NI-63		3.65E+00	
NP-237		1.67E-15	
PU-238		2.84E-14	
PU-239		5.00E-15	
PU-240		5.00E-15	
PU-241		6.97E-15	
TC-99		4.13E-06	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	4.14E+01	after compaction
	Ci	6.98E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.03E+02	after compaction
	Ci	2.20E+01	
C. Irradiated Components, Control Rods, etc.	m3	2.15E+01	after compaction
	Ci	2.20E+05	
D. Other (describe)			
	m3		
	Ci		

Installation: Harris
Unit No.(s): 1

Location: 20 Mi SW Raleigh, NC

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-400
Thermal Power(MWH): 2.05E+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): 6.34E+06
Initial Criticality: 01/03/87

Airborne Effluents

Nuclides Released	Activity (Ci)
AR-41	6.08E-02
CO-60	7.72E-05
KR-85	1.22E-01
KR-85M	1.26E+01
KR-87	4.21E+00
KR-88	2.10E+01
XE-131M	9.64E-02
XE-133	5.15E+02
XE-133M	8.55E+00
XE-135	3.01E+01
XE-135M	2.81E-03
XE-138	4.20E+00

Total Airborne Tritium Released 1.56E+00 Ci

Installation: Harris
Unit No.(s): 1

Location: 20 Mi SW Raleigh, NC

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-400
Thermal Power(MWH): 2.05E+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): 6.34E+06
Initial Criticality: 01/03/87

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	1.22E-04
NA-24	7.23E-05
CR-51	2.49E-03
MN-54	3.61E-03
FE-55	3.69E-02
CO-57	1.50E-03
CO-58	5.03E-01
FE-59	5.89E-05
CO-60	1.36E-01
ZN-65	1.06E-04
KR-85M	8.13E-06
SR-89	1.62E-05
SR-90	2.41E-05
ZR/NB-95	1.63E-04
NB-97	1.45E-05
MO-99	5.19E-05
TC-99M	2.12E-04
RU-103	4.75E-05
AG-110M	8.56E-05
SN-113	4.88E-05
SB-122	1.41E-04
SB-125	3.46E-02
I-131	1.96E-03
TE-131	1.76E-04
XE-131M	3.60E-05
TE-132	1.20E-05
I-133	4.69E-05
XE-133	4.70E-03
XE-133M	2.41E-05
CS-134	2.55E-03
I-134	1.25E-05
XE-135	1.22E-04
CS-137	4.75E-03
BA-139	3.04E-05
CS-139	4.38E-04
CE-143	2.77E-05
PR-144	8.97E-04
HF-181	1.86E-05

Total Liquid Tritium Released	7.26E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	9.24E+07 liters
Volume of Dilution Water Used During Period	1.62E+10 liters

Installation: Harris Location: 20 Mi SW Raleigh, NC
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: Carolina Power & Light
Docket Number: 50-400 Licensed Power(MWT): 2.77E+03
Thermal Power(MWH): 2.05E+07 Net Electrical Power(MWH): 6.34E+06
Commercial Operation: 05/02/87 Initial Criticality: 01/03/87
Cooling Water Source: Makeup Reservoir

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
4	Truck	Barnwell, SC
45	Truck	Barnwell, SC via SEG

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AM-241		7.57E-06
C-14		9.84E-02
CM-243/244		5.23E-06
CO-58	3.94E+01	3.43E+00
CO-60	5.88E+00	1.94E+01
CS-137		5.25E-02
FE-55	4.33E+01	4.22E+01
H-3		3.11E-02
MN-54	2.55E+00	1.33E+01
NI-63	8.81E+00	2.11E+01
PU-238		1.40E-05
PU-239/240		3.54E-05
SB-125		2.33E-01
SR-90		2.13E-02
B		
C-14		2.90E-02
CO-58	3.69E+00	1.45E+00
CO-60	5.50E+00	6.53E+00
CR-51	1.12E+00	4.83E-02
CS-137	1.19E-01	4.45E-03
FE-55	8.61E+01	9.02E+01
H-3	4.70E-01	3.43E-01
MN-54	1.86E+00	1.09E-01
NB-95	4.18E-01	6.80E-03
NI-59		9.13E-02
NI-63	5.53E-01	1.03E+00
TH-234		3.84E-03
ZR-95		1.66E-01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.72E+01	
	Ci	5.37E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	4.34E+02	before compaction
	m3	6.01E+01	after compaction
	Ci	8.85E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Edwin I. Hatch
Unit No.(s): 1&2

Location: 11 Mi N Baxley, GA

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: BWR
Docket Number: 50-321
Thermal Power(MWH): 1.35E+07
Commercial Operation: 12/31/75
Cooling Water Source: Altamaha River

Licensee: Georgia Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 4.07E+06
Initial Criticality: 09/12/74

Unit Number: 2 Type: BWR
Docket Number: 50-366
Thermal Power(MWH): 2.08E+07
Commercial Operation: 09/05/79
Cooling Water Source: Altamaha River

Licensee: Georgia Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 6.53E+06
Initial Criticality: 07/04/78

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	2.87E-04
MN-54	3.39E-05
CO-58	1.10E-05
CO-60	2.30E-04
ZN-65	2.74E-04
KR-85M	2.88E+00
KR-87	6.73E+00
SR-89	1.77E-04
SR-90	1.62E-06
NB-95	9.28E-08
MO-99	2.77E-05
I-131	6.02E-03
I-133	1.88E-02
XE-133	7.93E+02
CS-134	3.09E-06
I-135	2.09E-02
XE-135	1.24E+02
XE-135M	5.05E+01
CS-137	2.92E-05
XE-138	1.27E+02
BA-140	5.74E-04
LA-140	9.05E-04
CE-141	2.64E-07

Total Airborne Tritium Released 3.99E+01 Ci

Installation: Edwin I. Hatch
Unit No.(s): 1&2

Location: 11 Mi N Baxley, GA

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: BWR
Docket Number: 50-321
Thermal Power(MWH): 1.35E+07
Commercial Operation: 12/31/75
Cooling Water Source: Altamaha River

Licensee: Georgia Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 4.07E+06
Initial Criticality: 09/12/74

Unit Number: 2 Type: BWR
Docket Number: 50-366
Thermal Power(MWH): 2.08E+07
Commercial Operation: 09/05/79
Cooling Water Source: Altamaha River

Licensee: Georgia Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 6.53E+06
Initial Criticality: 07/04/78

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	3.59E-02
AR-41	1.57E-05
CR-51	2.81E-02
MN-54	6.80E-03
MN-56	2.87E-05
CO-58	3.31E-03
FE-59	2.93E-04
CO-60	3.65E-02
NI-65	3.03E-06
ZN-65	8.76E-02
AS-76	2.23E-04
KR-85	4.47E-04
SR-89	5.86E-04
SR-91	5.89E-05
Y-91M	9.79E-05
SR-92	1.04E-05
NB-95	2.66E-04
ZR-95	2.01E-04
NB-97	1.23E-03
MO-99	4.16E-04
TC-99M	1.23E-03
SB-125	2.29E-04
I-131	7.40E-03
XE-131M	2.90E-04
I-132	7.32E-04
I-133	1.12E-02
XE-133	6.51E-03
XE-133M	3.47E-06
CS-134	2.37E-02
I-134	3.34E-04
I-135	5.75E-03
XE-135	2.72E-02
XE-135M	1.00E-02
CS-136	8.23E-05
CS-137	7.40E-02
CS-138	2.61E-04
BA-140	1.27E-04

Installation: Edwin I. Hatch Location: 11 Mi N Baxley, GA
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 1&2 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
LA-140	3.73E-04
CE-141	8.16E-05
CE-144	1.49E-04
NP-239	5.59E-03

Total Liquid Tritium Released	2.26E+01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	2.67E+07 liters
Volume of Dilution Water Used During Period	6.51E+09 liters

Installation: Edwin I. Hatch Location: 11 Mi N Baxley, GA
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: BWR Licensee: Georgia Power
Docket Number: 50-321 Licensed Power(MWT): 2.44E+03
Thermal Power(MWH): 1.35E+07 Net Electrical Power(MWH): 4.07E+06
Commercial Operation: 12/31/75 Initial Criticality: 09/12/74
Cooling Water Source: Altamaha River

Unit Number: 2 Type: BWR Licensee: Georgia Power
Docket Number: 50-366 Licensed Power(MWT): 2.44E+03
Thermal Power(MWH): 2.08E+07 Net Electrical Power(MWH): 6.53E+06
Commercial Operation: 09/05/79 Initial Criticality: 07/04/78
Cooling Water Source: Altamaha River

Solid Waste Disposition

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

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-60	1.77E+01	1.79E+01
CS-137	2.03E+00	4.78E+00
FE-55	1.06E+01	1.08E+01
Others	2.00E+01	2.46E+01
ZN-65	4.96E+01	4.21E+01
B		
CO-60	2.68E+01	2.68E+01
CS-137	6.70E+00	6.55E+00
FE-55	4.20E+00	4.17E+00
Others	1.15E+01	1.13E+01
ZN-65	5.08E+01	5.12E+01
C		
CO-60	1.57E+01	5.94E+01
FE-55	4.20E+01	3.52E+01
NI-63		5.41E+00
Others	3.20E+01	1.00E-02
ZN-65	1.03E+01	
D		
CO-60		5.86E+01
FE-55		2.93E+01
MN-54		1.50E+00
Others		4.50E+00
ZN-65		6.11E+00

Installation: Edwin I. Hatch Location: 11 Mi N Baxley, GA
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	3.35E+02	
	Ci	2.45E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.01E+03	after compaction
	Ci	7.84E+00	
C. Irradiated Components, Control Rods, etc.	m3	1.85E+01	
	Ci	2.60E+04	
D. Other (describe)			
Torus Filters	m3	1.72E+01	
	Ci	9.99E+00	

Installation: Hope Creek
Unit No.(s): 1

Location: 18 Mi SE Wilmington, DE

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-354
Thermal Power(MWH): 1.35E+07
Commercial Operation: 12/20/86
Cooling Water Source: Delaware River

Licensee: Public Serv Elec & Gas Co of NJ
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 4.07E+06
Initial Criticality: 06/28/86

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	8.81E-08
MN-54	3.17E-04
FE-59	5.16E-05
CO-60	1.66E-04
ZN-65	3.74E-03
KR-83M	3.95E+00
KR-85M	4.73E+01
KR-87	7.83E+01
KR-88	1.24E+02
KR-89	1.06E+02
I-131	1.20E-03
I-133	1.47E-04
XE-133	7.49E+01
XE-133M	3.37E+00
XE-135	1.65E+02
XE-135M	3.04E+01
XE-137	1.22E+02
CE-138	1.36E+01
XE-138	6.13E+01

Total Airborne Tritium Released 8.20E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	2.06E-05
CR-51	7.48E-02
MN-54	1.58E-01
FE-55	9.20E-01
CO-58	8.06E-03
FE-59	2.98E-02
CO-60	3.65E-02
ZN-65	2.64E-01
SR-92	5.57E-04
TC-99M	3.36E-05
AG-110M	1.52E-03
SB-124	1.49E-05
I-131	6.73E-06
XE-133	2.42E-03
XE-135	1.05E-03

Total Liquid Tritium Released	1.18E+01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	8.46E+06 liters
Volume of Dilution Water Used During Period	5.30E+10 liters

Installation: Hope Creek
Unit No.(s): 1

Location: 18 Mi SE Wilmington, DE

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR
Docket Number: 50-354
Thermal Power(MWT): 1.35E+07
Commercial Operation: 12/20/86
Cooling Water Source: Delaware River

Licensee: Public Serv Elec & Gas Co of NJ
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 4.07E+06
Initial Criticality: 06/28/86

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
62	Truck	Barnwell, SC
1	Truck	Oak Ridge, TN
1	Truck	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14	4.00E-02	
CO-58		2.00E-01
CO-60	3.10E+00	1.30E+00
CR-51	2.75E+00	1.40E+00
FE-55	2.25E+01	1.80E+01
FE-59		1.00E-01
MN-54	5.13E+00	2.00E+00
NI-63		1.00E-01
ZN-65	6.52E+01	7.68E+01
B		
C-14	1.30E-01	
CO-58	1.35E+00	2.00E-01
CO-60	2.17E+00	1.30E+00
CR-51	1.10E+01	1.40E+00
FE-50		1.00E-01
FE-55	2.72E+01	1.80E+01
FE-59	2.34E+00	
MN-54	5.77E+00	2.00E+00
NI-63	2.20E-01	1.00E-01
ZN-65	4.96E+01	7.68E+01
D		
CE-144		5.00E-01
CO-58		6.00E-01
CO-60	5.66E+00	2.60E+00
CR-51		7.40E+00
FE-55	7.08E+01	3.41E+01
FE-59		9.00E-01
H-3		1.20E+00
MN-54	4.43E+00	7.10E+00
NI-63	5.90E-01	
ZN-65	1.83E+01	4.51E+01

Installation: Hope Creek Location: 18 Mi SE Wilmington, DE
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.39E+02	before compaction
	Ci	2.29E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	3.61E+01	after compaction
	Ci	6.20E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
solidified oil	m3	1.15E+01	before compaction
	Ci	9.78E-02	
lubricating oil	m3	1.98E+01	before compaction
	Ci	1.48E+00	

Installation: Humboldt Bay Location: 4 Mi SW Eureka, CA
Unit No.(s): 3

Effluent and Waste Disposal Annual Report for 1990

Type: BWR Licensee: Pacific Gas & Electric
Docket Number: 50-133 Licensed Power(MWT): 0.00E+00
Thermal Power(MWH): Net Electrical Power(MWH):
Commercial Operation: 08/01/63 Initial Criticality: 02/16/63
Cooling Water Source: Humboldt Bay

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-60	2.27E-05
SR-90	7.82E-07
CS-137	1.50E-05

Liquid Effluents

Nuclide Released	Activity (Ci)
CO-60	1.44E-04
SR-90	2.40E-04
CS-134	1.89E-05
CS-137	5.37E-03

Total Liquid Tritium Released	3.48E-03 Ci
Volume of Liquid Waste Released (Prior to Dilution)	4.42E+05 liters
Volume of Dilution Water Used During Period	5.96E+10 liters

Installation: Humboldt Bay Location: 4 Mi SW Eureka, CA
Unit No.(s): 3

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR Licensee: Pacific Gas & Electric
Docket Number: 50-133 Licensed Power(MWT): 0.00E+00
Thermal Power(MWH): Net Electrical Power(MWH):
Commercial Operation: 08/01/63 Initial Criticality: 02/16/63
Cooling Water Source: Humboldt Bay

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
1	Truck	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
B		
AM-241		2.40E-01
C-14		8.01E-02
CO-60		1.00E+00
CS-134		5.38E-02
CS-137		2.82E+01
FE-55		4.90E+01
NI-63		5.69E+00
PU-241		2.92E+00
SR-90		2.85E+00
D		
AM-241		2.28E-01
CO-60		6.68E+00
CS-134		2.28E-01
CS-137		4.84E+01
FE-55		3.26E+01
NI-63		3.76E+00
PU-241		1.93E+00
SR-90		4.87E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3		
	Ci		
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	2.59E+01	compacted & non-compacted
	Ci	8.36E-02	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe) absorbed liquids	m3	3.40E+00	non-compacted
	Ci	7.02E-03	

Installation: Indian Point
Unit No.(s): 1&2

Location: 3 Mi SW Peekskill, NY

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-3
Thermal Power(MWH):
Commercial Operation:
Cooling Water Source: Hudson River

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

Unit Number: 2 Type: PWR
Docket Number: 50-247
Thermal Power(MWH): 1.66E+07
Commercial Operation: 08/01/74
Cooling Water Source: Hudson River

Licensee: Consolidated Edison
Licensed Power(MWT): 2.76E+03
Net Electrical Power(MWH): 5.21E+06
Initial Criticality: 05/22/73

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.55E+00
FE-55	2.09E-06
CO-58	2.57E-05
CO-60	5.59E-04
NI-63	1.29E-05
KR-85	1.20E-05
KR-85M	1.77E+00
KR-87	5.10E-01
KR-88	1.58E+00
TE-123M	9.08E-06
I-131	4.44E-03
XE-131M	1.83E+01
I-133	4.34E-03
XE-133	2.15E+03
XE-133M	1.82E+01
XE-135	3.00E+01
XE-135M	2.51E+00
CS-137	3.17E-04
XE-138	1.07E+00

Total Airborne Tritium Released 2.56E-01 Ci

Installation: Indian Point
Unit No.(s): 1&2

Location: 3 Mi SW Peekskill, NY

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-
Thermal Power(MW
Commercial Opera
Cooling Water Sour dson River

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

Unit Number: 2 Type: PWR
Docket Number: 50-247
Thermal Power(MWH): 1.66E+07
Commercial Operation: 08/01/74
Cooling Water Source: Hudson River

Licensee: Consolidated Edison
Licensed Power(MWT): 2.76E+03
Net Electrical Power(MWH): 5.21E+06
Initial Criticality: 05/22/73

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.19E-01
CR-51	5.89E-04
MN-54	3.17E-04
FE-55	4.72E-02
CO-58	2.05E-02
FE-59	1.63E-04
CO-60	3.09E-02
NI-63	7.57E-02
SR-89	3.14E-05
TC-99M	3.39E-07
RU-106	3.01E-07
AG-110M	4.04E-04
SB-122	1.78E-02
TE-123M	1.37E-03
SB-124	9.05E-02
SB-125	1.53E-04
I-131	1.52E-01
XE-131M	3.14E-03
I-132	9.19E-02
I-133	1.87E-01
XE-133	1.17E-01
I-134	8.48E-02
I-135	1.15E-01
XE-135	1.59E-02
XE-135M	3.78E-02
CS-137	1.67E-02
CS-138	9.32E-03
BA-139	3.25E-06
LA-140	3.62E-04

Total Liquid Tritium Released	6.44E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.59E+08 liters
Volume of Dilution Water Used During Period	1.07E+12 liters

Installation: Indian Point
Unit No.(s): 1&2

Location: 3 Mi SW Peekskill, NY

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-3
Thermal Power(MWH):
Commercial Operation:
Cooling Water Source: Hudson River

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

Unit Number: 2 Type: PWR
Docket Number: 50-247
Thermal Power(MWH): 1.66E+07
Commercial Operation: 08/01/74
Cooling Water Source: Hudson River

Licensee: Consolidated Edison
Licensed Power(MWT): 2.76E+03
Net Electrical Power(MWH): 5.21E+06
Initial Criticality: 05/22/73

Solid Waste Disposition

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

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AG-110M	1.00E-01	
CE-144		4.00E-01
CO-57		5.00E-01
CO-58	1.40E+01	1.10E+01
CO-60	3.48E+01	1.77E+01
CS-134	4.00E-01	3.00E-01
CS-137	4.60E+00	1.05E+01
FE-55	7.30E+00	1.62E+01
FE-59	1.00E-01	
H-3	7.00E-01	
MN-54	7.00E-01	7.25E-01
NI-59	1.00E-01	2.23E+00
NI-63	2.32E+01	2.99E+01
Others	2.70E+00	1.35E+00
PU-241		5.00E-01
SB-124	1.00E+00	7.60E+00
SB-125	1.00E+00	3.00E-01
SR-89		7.50E-01
SR-90	1.00E-01	
ZN-65	1.00E-01	
ZR-95	9.10E+00	
B		
C-14	2.00E-01	6.00E-01
CE-144		1.00E+00
CO-58	7.80E+00	1.20E+00
CO-60	2.63E+01	2.65E+01
CS-134	1.60E+00	1.15E+01
CS-137	8.20E+00	3.10E+00
FE-55	3.32E+01	3.79E+01

Installation: Indian Point Location: 3 Mi SW Peekskill, NY
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	July-Dec
B		
H-3		2.00E-01
MN-54		2.00E-01
NB-94		6.00E-01
NI-63	2.26E+01	1.52E+01
PU-239/240,AM-241	1.00E-01	
PU-241		1.00E-01
SB-124		1.00E-01
SB-125		9.00E-01
SR-89		4.00E-01
SR-90	1.00E-01	5.00E-01
C		
CO-58	1.00E-01	
CO-60	5.35E+01	
FE-55	3.27E+01	
H-3	1.00E-01	
MN-54	6.00E-01	
NI-59	1.00E-01	
NI-63	1.29E+01	
Others	1.00E-01	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	5.89E+01	after compaction
	Ci	1.57E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	2.00E+02	after compaction
	Ci	2.54E+01	
C. Irradiated Components, Control Rods, etc.	m3	4.13E-01	after compaction
	Ci	4.91E+02	
D. Other (describe)			
	m3		
	Ci		

Installation: Indian Point
Unit No.(s): 3

Location: 3 Mi SW Peekskill, NY

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-286
Thermal Power(MWH): 1.57E+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): 5.03E+06
Initial Criticality: 04/06/76

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.23E-01
CO-58	2.68E-05
KR-85	8.61E+00
KR-85M	7.38E-01
KR-87	6.90E-04
KR-88	1.85E-02
I-131	1.37E-04
XE-131M	4.51E+00
XE-133	5.74E+02
XE-133M	2.79E+00
CS-134	5.91E-06
XE-135	3.61E+01
CS-137	1.12E-05

Total Airborne Tritium Released 2.87E+00 Ci

Installation: Indian Point
Unit No.(s): 3

Location: 3 Mi SW Peekskill, NY

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-286
Thermal Power(MWH): 1.57E+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): 5.03E+06
Initial Criticality: 04/06/76

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	4.61E-04
NA-24	1.86E-04
AR-41	1.62E-05
CR-51	1.79E-02
MN-54	1.46E-03
FE-55	6.33E-02
CO-57	3.24E-05
CO-58	9.49E-02
FE-59	1.02E-03
CO-60	1.57E-02
NI-63	1.78E-02
KR-85	6.75E-02
KR-85M	4.94E-04
SR-85	2.96E-04
KR-88	5.70E-05
RB-88	7.61E-04
SR-89	2.56E-05
NB-95	2.20E-03
ZR-95	7.48E-04
TC-99M	1.34E-04
RU-103	2.59E-05
AG-110M	7.36E-03
SN-113	4.17E-04
SB-124	1.44E-02
SB-125	1.56E-02
I-131	3.28E-03
XE-131M	9.15E-02
I-133	7.63E-04
XE-133	4.16E+00
XE-133M	3.13E-02
CS-134	2.71E-02
XE-135	9.46E-03
CS-136	2.26E-04
CS-137	2.28E-02
CS-138	3.73E-05
LA-140	2.40E-04

Total Liquid Tritium Released	3.33E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	6.54E+06 liters
Volume of Dilution Water Used During Period	1.08E+12 liters

Installation: Indian Point Location: 3 Mi SW Peekskill, NY
Unit No.(s): 3

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: Power Authority of the State of NY
Docket Number: 50-286 Licensed Power(MWT): 3.02E+03
Thermal Power(MWH): 1.57E+07 Net Electrical Power(MWH): 5.03E+06
Commercial Operation: 08/30/76 Initial Criticality: 04/06/76
Cooling Water Source: Hudson River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
13	Truck	Alaron, Wampum, PA
11	Truck	Barnwell, SC
1	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		
CO-58	1.40E+01	7.55E+00
CO-60	1.10E+01	2.12E+01
CR-51	1.50E+00	9.19E-01
CS-134	2.00E+01	2.12E+01
CS-137	1.80E+01	1.80E+01
FE-55	2.60E+01	1.96E+01
MN-54	1.40E+00	8.84E-01
NI-63	5.90E+00	9.19E+00
B		
CO-58	5.00E+00	5.00E+00
CO-60	2.80E+01	2.80E+01
CS-137	2.00E+00	2.00E+00
FE-55	5.90E+01	5.90E+01
NI-63	5.00E+00	5.00E+00
D		
CO-58	5.00E+00	5.00E+00
CO-60	2.80E+01	2.80E+01
CS-137	2.00E+00	2.00E+00
FE-55	5.90E+01	5.90E+01
NI-63	5.00E+00	5.00E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	3.51E+01	
	Ci	1.26E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	3.37E+01	
	Ci	9.81E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
Dry compressible, contaminated equip.	m3	5.97E+02	before volume reduction
	Ci	1.36E+01	

Installation: Kewaunee
Unit No.(s): 1

Location: 27 Mi ESE Green Bay, WI

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-305
Thermal Power(MWH): 1.24E+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): 3.90E+06
Initial Criticality: 03/07/74

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	9.41E-01
CO-58	1.30E-06
CO-60	7.51E-06
KR-85	7.65E-02
RB-88	1.38E-07
NB-95	1.06E-06
SN-113	6.40E-08
I-131	1.15E-06
XE-131M	5.32E-01
I-132	3.29E-09
I-133	1.72E-09
XE-133	7.34E-01
XE-133M	4.88E-05
XE-135	2.84E-02
XE-135M	4.34E-06
CS-137	9.69E-07
Unidentified	3.23E-03

Total Airborne Tritium Released 5.98E+00 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.53E-05
CR-51	2.02E-02
MN-54	3.01E-03
FE-55	1.61E-02
NI-56	2.56E-04
CO-57	1.17E-04
CO-58	9.01E-02
FE-59	3.05E-03
CO-60	3.47E-02
NB-95	5.75E-03
ZR-95	3.98E-03
ZR-97	1.17E-04
AG-110M	1.92E-02
SN-113	2.36E-03
SB-122	1.53E-05
SB-124	1.91E-03
SB-125	2.72E-03
I-133	3.24E-05
XE-133M	1.22E-04
CS-134	6.92E-04
CS-137	8.02E-04
W-187	6.87E-04

Total Liquid Tritium Released	3.79E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	3.21E+06 liters
Volume of Dilution Water Used During Period	3.57E+10 liters

Installation: Kewaunee Location: 27 Mi ESE Green Bay, WI
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: Wisconsin Public Service
Docket Number: 50-305 Licensed Power(MWT): 1.65E+03
Thermal Power(MWH): 1.24E+07 Net Electrical Power(MWH): 3.90E+06
Commercial Operation: 06/16/74 Initial Criticality: 03/07/74
Cooling Water Source: Lake Michigan

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
5	CNSI 14-190H Cask	Barnwell, SC
2	CNSI Conventional Van	Barnwell, SC
2	Containers on Flatbed Trailers	Oak Ridge, TN

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14	1.18E-01	2.64E-01
CO-57	1.88E-01	1.58E-01
CO-58	1.53E+01	9.79E+00
CO-60	4.59E+01	4.41E+01
CS-134	7.63E+00	8.96E+00
CS-137	5.78E+00	1.02E+01
FE-55	3.18E+00	3.86E+00
MN-54	2.16E+00	2.17E+00
NB-94	3.42E-02	2.48E-02
NI-63	1.86E+01	1.94E+01
PU-241	1.25E-02	8.49E-03
SB-125	7.91E-01	1.00E+00
TC-99	1.26E-04	8.54E-05
TRU	6.30E-03	4.31E-03
B		
C-14		1.92E+00
CM-242	6.63E-04	
CO-57	9.64E-02	3.02E-01
CO-58	1.51E+01	5.46E+01
CO-60	2.15E+01	6.20E+00
CS-134	1.61E-01	
CS-137	1.71E-01	
FE-55	4.72E+01	1.89E+01
MN-54	9.29E-01	8.30E-01
NB-95	3.11E-01	4.31E+00
NI-63	1.19E+01	8.80E+00
PU-241	2.02E+00	
SB-125	2.90E-01	1.68E+00
SN-113	1.71E-01	4.50E-01
TRU	7.37E-03	4.05E-02
ZR-95	1.28E-01	1.89E+00
D		
AG-110M	1.04E-01	
C-14	1.39E-03	

Installation: Kewaunee Location: 27 Mi ESE Green Bay, WI
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	July-Dec
D		
CM-242	3.75E+01	
CO-57	4.38E-02	
CO-58	8.99E-01	
CO-60	5.75E+01	
CS-134	1.20E-01	
CS-137	5.14E-01	
FE-55	2.41E+00	
MN-54	4.16E-01	
NB-94	1.98E-01	
NB-95	2.49E-02	
PU-241	5.50E-02	
SB-125	3.66E-01	
SN-113	3.61E-02	
SR-90	4.86E-03	
TC-99	1.13E-03	
TRU	1.76E-03	
ZN-65	1.46E-03	
ZR-95	2.54E-03	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.79E+01	
	Ci	3.31E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	4.67E+01	
	Ci	1.15E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
Contam.scrap,filter elements,sealand	m3	4.60E+01	
	Ci	2.18E+01	

Installation: LaCrosse
Unit No.(s): 1

Location: 19 Mi S LaCrosse, WI

Effluent and Waste Disposal Annual Report for 1990

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

Licensee: Dairyland Power
Licensed Power(MWT): 1.65E+02
Net Electrical Power(MWH):
Initial Criticality: 07/11/67

Airborne Effluents

Nuclide Released	Activity (Ci)
MN-54	2.15E-08
CO-58	1.00E-08
CO-60	3.15E-06
ZN-65	1.73E-07
SR-89	1.75E-04
CS-137	1.60E-06

Total Airborne Tritium Released 4.91E-01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
MN-54	3.23E-03
FE-55	2.30E-02
CO-60	2.90E-02
SR-89	7.57E-04
SR-90	4.25E-04
CS-134	3.05E-05
CS-137	1.21E-02

Total Liquid Tritium Released	7.74E-01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	4.27E+05 liters
Volume of Dilution Water Used During Period	8.35E+09 liters

Installation: LaCrosse Location: 19 Mi S LaCrosse, WI
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR Licensee: Dairyland Power
Docket Number: 50-409 Licensed Power(MWT): 1.65E+02
Thermal Power(MWH): Net Electrical Power(MWH):
Commercial Operation: 11/01/69 Initial Criticality: 07/11/67
Cooling Water Source: Mississippi River

Solid Waste Disposition

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

Estimate of Major Nuclide Composition (1v type of waste) %	Annual
B	
CO-60	4.27E+01
CS-137	2.10E+00
FE-55	4.73E+01
MN-54	1.90E+00
NI-63	5.60E+00
PU-241	4.00E-01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3		
	Ci		
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.70E+01	before processing
	m3	4.59E+00	burial volume
	Ci	7.44E-01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: LaSalle
Unit No.(s): 1&2

Location: 11 Mi SE Ottawa, IL

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: BWR
Docket Number: 50-373
Thermal Power(MWH): 2.64E+07
Commercial Operation: 01/01/84
Cooling Water Source: Reservoir

Licensee: Commonwealth Edison Company
Licensed Power(MWT): 3.32E+03
Net Electrical Power(MWH): 8.64E+06
Initial Criticality: 06/21/82

Unit Number: 2 Type: BWR
Docket Number: 50-374
Thermal Power(MWH): 1.91E+07
Commercial Operation: 10/19/84
Cooling Water Source: Reservoir

Licensee: Commonwealth Edison Company
Licensed Power(MWT): 3.32E+03
Net Electrical Power(MWH): 6.18E+06
Initial Criticality: 03/10/84

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	8.41E+00
MN-54	7.15E-06
CO-60	1.22E-03
KR-85	6.68E+02
KR-85M	4.17E+00
AG-110M	4.47E-05
I-131	2.17E-03
I-132	2.02E-03
I-133	1.98E-02
XE-133	6.09E+00
I-134	2.03E-03
I-135	3.60E-03
XE-135	1.96E-02

Total Airborne Tritium Released 1.70E-01 Ci

Installation: LaSalle
Unit No.(s): 1

Location: 11 Mi SE Ottawa, IL

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-373
Thermal Power(MWH): 2.64E+07
Commercial Operation: 01/01/84
Cooling Water Source: Reservoir

Licensee: Commonwealth Edison Company
Licensed Power(MWT): 3.32E+03
Net Electrical Power(MWH): 8.64E+06
Initial Criticality: 06/21/82

Liquid Effluents

Nuclide Released	Activity (Ci)
MN-54	7.22E-04
FE-55	9.74E-04
CO-60	3.77E-03
SR-89	2.51E-06
SR-90	1.52E-07
CS-134	2.03E-04
CS-137	2.98E-04

Total Liquid Tritium Released	1.83E-01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.99E+05 liters
Volume of Dilution Water Used During Period	1.73E+08 liters

Installation: LaSalle
Unit No.(s): 2

Location: 11 Mi SE Ottawa, IL

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-374
Thermal Power(MWH): 1.91E+07
Commercial Operation: 10/19/84
Cooling Water Source: Reservoir

Licensee: Commonwealth Edison Company
Licensed Power(MWT): 3.32E+03
Net Electrical Power(MWH): 6.18E+06
Initial Criticality: 03/10/84

Liquid Effluents

Nuclide Released	Activity (Ci)
MN-54	1.22E-03
FE-55	1.14E-02
CO-58	1.85E-05
CO-60	5.33E-03
SR-89	1.96E-06
SR-90	1.54E-07
CS-134	2.56E-04
CS-137	3.97E-04

Total Liquid Tritium Released	1.91E-01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	2.08E+05 liters
Volume of Dilution Water Used During Period	1.39E+08 liters

Installation: LaSalle
Location: 11 Mi SE Ottawa, IL
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: BWR
Licensee: Commonwealth Edison Company
Docket Number: 50-373
Licensed Power(MWT): 3.32E+03
Thermal Power(MWH): 2.64E+07
Net Electrical Power(MWH): 8.64E+06
Commercial Operation: 01/01/84
Initial Criticality: 06/21/82
Cooling Water Source: Reservoir

Unit Number: 2 Type: BWR
Licensee: Commonwealth Edison Company
Docket Number: 50-374
Licensed Power(MWT): 3.32E+03
Thermal Power(MWH): 1.91E+07
Net Electrical Power(MWH): 6.18E+06
Commercial Operation: 10/19/84
Initial Criticality: 03/10/84
Cooling Water Source: Reservoir

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
14	Truck	Barnwell, SC
37	Truck	Beatty, NV
1	Truck	Channahon, IL
38	Truck	Oak Ridge, TN
2	Truck	Waltz Mill, PA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-60	3.41E+01	2.61E+01
FE-55	4.82E+01	6.07E+01
MN-54	1.25E+01	9.92E+00
B		
CO-60	3.07E+01	
CR-51	2.59E+01	1.40E+01
FE-55		4.50E+01
FE-59		1.60E+01
MN-54	2.72E+01	1.50E+01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.90E+02	
	Ci	2.89E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	7.14E+02	
	Ci	5.66E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Limerick
Unit No.(s): 1&2

Location: 21 Mi NW Phildelphia, PA

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: BWR
Docket Number: 50-352
Thermal Power(MWH): 1.82E+07
Commercial Operation: 02/01/86
Cooling Water Source: Schuylkill River

Licensee: Philadelphia Electric Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 5.62E+06
Initial Criticality: 12/22/84

Unit Number: 2 Type: BWR
Docket Number: 50-353
Thermal Power(MWH): 2.29E+07
Commercial Operation: 01/08/90
Cooling Water Source: Schuylkill River

Licensee: Philadelphia Electric Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 7.23E+06
Initial Criticality: 08/12/89

Airborne Effluents

Nuclide Released	Activity (Ci)
KR-85	1.54E-03
I-131	3.36E-05
I-133	1.47E-03
XE-133	1.57E+01
XE-135	1.34E+01

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	4.15E-05
CR-51	3.72E-02
MN-54	3.77E-02
FE-55	2.32E-01
CO-58	1.55E-03
FE-59	2.51E-04
CO-60	5.56E-03
ZN-65	2.38E-02
AS-76	3.00E-06
SR-90	2.57E-04
TC-99M	4.72E-05
XE-133	1.61E-02
CS-134	1.62E-03
XE-135	1.34E-02
CS-137	3.23E-03

Total Liquid Tritium Released	3.02E+01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	2.95E+07 liters
Volume of Dilution Water Used During Period	1.42E+10 liters

Installation: Limerick
Unit No.(s): 1

Location: 21 Mi NW Phildelphia, PA

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-352
Thermal Power(MWH): 1.82E+07
Commercial Operation: 02/01/86
Cooling Water Source: Schuylkill River

Licensee: Philadelphia Electric Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 5.62E+06
Initial Criticality: 12/22/04

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.12E-04
CR-51	1.86E-04
XE-133	4.47E-01
XE-135	3.27E+00

Installation: Limerick
Unit No.(s): 2

Location: 21 Mi NW Phildelphia, PA

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-353
Thermal Power(MWH): 2.29E+07
Commercial Operation: 01/08/90
Cooling Water Source: Schuylkill River

Licensee: Philadelphia Electric Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 7.23E+06
Initial Criticality: 08/12/89

Airborne Effluents

Nuclide Released	Activity (Ci)
MN-54	1.92E-04
CO-58	3.12E-05
FE-59	6.72E-05
CO-60	1.55E-04
ZN-65	9.86E-05
KR-85	7.34E-04
XE-133	3.58E-01
XE-135	1.09E+00

Installation: Limerick
Unit No.(s): 1&2

Location: 21 Mi NW Phildelphia, PA

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: BWR
Docket Number: 50-352
Thermal Power(MWH): 1.82E+07
Commercial Operation: 02/01/86
Cooling Water Source: Schuylkill River

Licensee: Philadelphia Electric Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 5.62E+06
Initial Criticality: 12/22/84

Unit Number: 2 Type: BWR
Docket Number: 50-353
Thermal Power(MWH): 2.29E+07
Commercial Operation: 01/08/90
Cooling Water Source: Schuylkill River

Licensee: Philadelphia Electric Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 7.23E+06
Initial Criticality: 08/12/89

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
99	Truck	Barnwell, SC
32	Truck	Quadrex, Barnwell, SC
49	Truck	SEG, Barnwell, SC

Estimate of Major Nuclide Composition (by type of waste)

	%	Jan-June	Jul-Dec
A			
	C-14	7.14E-02	7.41E-02
	CO-58	3.53E+00	2.83E+00
	CO-60	3.21E+00	3.48E+00
	CR-51	5.25E+01	4.48E+01
	CS-134	6.28E+00	5.35E+00
	CS-137	9.36E+00	8.59E+00
	FE-55	1.33E+00	1.70E+00
	H-3	1.98E-02	2.07E-02
	MN-54	7.99E-01	1.91E+00
	NI-63	2.64E-02	1.11E-01
	SR-90	1.76E-02	9.56E-03
	ZN-65	2.28E+01	3.06E+01
B			
	AG-110M		2.00E-02
	C-14	2.00E-01	3.10E-01
	CE-141	8.00E-02	1.20E-01
	CO-58	3.28E+00	1.74E+00
	CO-60	7.48E+00	4.25E+00
	CR-51	1.11E+01	6.30E+00
	CS-134	9.19E+00	8.54E+00
	CS-137	1.49E+01	1.42E+01
	FE-55	2.76E+00	2.12E+00
	H-3	4.00E-02	2.60E-01
	MN-54	1.86E+00	9.50E-01
	NB-95	5.00E-02	4.10E-01
	NI-63	1.40E-01	2.30E-01
	SR-89	4.40E-01	7.20E-01

Installation: Limerick Location: 21 Mi NW Phildelphia, PA
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	July-Dec
B		
SR-90	4.00E-02	
ZN-65	4.84E+01	6.03E+01
D		
CO-60		5.32E+00
CS-134		1.44E+01
CS-137		3.13E+01
MN-54		3.85E+00
SR-90		3.00E-02
ZN-65		4.51E+01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	6.11E+02	
	Ci	1.23E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	7.30E+01	compacted & non-compacted
	Ci	6.70E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
CRD Filters & Trash	m3	2.10E+00	
	Ci	2.35E+00	

Installation: Maine Yankee
Unit No.(s): 1

Location: 3.9 Mi S Wicassett, ME

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-309
Thermal Power(MWH): 1.50E+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): 4.86E+06
Initial Criticality: 10/23/72

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.50E-01
CR-51	2.80E-04
MN-54	3.45E-05
CO-57	1.14E-05
CO-58	6.65E-04
CO-60	1.09E-02
KR-85	1.50E-01
KR-85M	8.42E-01
KR-87	4.24E-01
KR-88	5.24E-01
NB-95	6.94E-07
CD-109	1.16E-05
AG-110M	3.07E-05
SB-125	1.60E-04
I-131	4.41E-03
XE-131M	7.20E+00
I-132	3.25E-03
I-133	1.03E-03
XE-133	9.15E+02
XE-133M	5.47E+00
CS-134	5.84E-04
I-134	3.02E-06
I-135	5.55E-03
XE-135	1.62E+01
XE-135M	3.04E-01
CS-137	1.00E-03
XE-138	1.72E-01
CE-144	3.01E-05

Total Airborne Tritium Released 3.74E+01 Ci

Installation: Maine Yankee
Unit No.(s): 1

Location: 3.9 Mi S Wicassett, ME

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-309
Thermal Power(MWH): 1.50E+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): 4.86E+06
Initial Criticality: 10/23/72

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	4.79E-03
MN-54	1.81E-04
FE-55	1.97E-02
CO-57	3.28E-05
CO-58	2.23E-02
CO-60	1.21E-02
ZN-65	2.66E-06
BR-84	3.35E-06
KR-85	7.10E-03
KR-85M	1.80E-04
SR-85	1.43E-05
KR-87	2.58E-05
KR-88	9.90E-05
SR-89	1.94E-03
NB-95	2.69E-04
ZR-NB-95	6.36E-05
TC-99M	1.23E-03
RU-103	9.44E-07
CD-109	2.50E-04
AG-110M	4.48E-03
SN-113	2.71E-05
SB-122	3.74E-04
SB-124	4.42E-02
SB-125	2.57E-02
I-131	2.79E-02
TE-131	9.17E-07
XE-131M	9.14E-02
I-132	1.65E-05
I-133	1.99E-03
XE-133	4.50E+00
XE-133M	2.08E-02
CS-134	2.03E-03
XE-135	4.74E-03
XE-135M	8.67E-05
CS-137	1.63E-02
BA-LA-140	6.59E-04
CE-141	5.52E-05
LA-142	2.31E-07
CE-144	2.46E-07
HG-203	9.11E-05
Unidentified	1.93E-04

Total Liquid Tritium Released	2.43E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	6.03E+07 liters
Volume of Dilution Water Used During Period	6.43E+11 liters

Installation: Maine Yankee Location: 3.9 Mi S Wicassett, ME
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: Maine Yankee Atomic Power
Docket Number: 50-309 Licensed Power(MWT): 2.70E+03
Thermal Power(MWH): 1.50E+07 Net Electrical Power(MWH): 4.86E+06
Commercial Operation: 12/28/72 Initial Criticality: 10/23/72
Cooling Water Source: Back River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
22	Trucking over highway	CNSI, Barnwell, SC

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14		9.50E-01
CD-109		1.43E+00
CO-58		5.55E+01
CO-60	1.53E+01	1.91E+01
CS-134	8.90E+00	3.26E+00
CS-137	6.15E+01	4.40E+00
FE-55	6.20E+00	7.96E+00
MN-54		1.02E+00
NI-63	1.40E+00	1.77E+00
SB-124		2.84E+00
SB-125	1.40E+00	
SR-90	1.70E+00	
B		
AG-110M	1.20E+00	
CE-141	1.60E+00	
CO-58	1.13E+01	8.58E+00
CO-60	2.20E+01	2.18E+01
CR-51		3.09E+00
CS-134	2.50E+00	
CS-137	1.03E+01	1.11E+01
FE-55	2.53E+01	2.44E+01
NI-63	1.42E+01	2.19E+01
RU-106		4.36E+00
SB-125	1.90E+00	
ZR-95	5.10E+00	1.24E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.16E+01	burial volume
	Ci	1.72E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.58E+02	burial volume
	Ci	1.26E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: McGuire
Unit No.(s): 1

Location: 17 Mi N of Charlotte, NC

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-369
Thermal Power(MWH): 1.48E+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): 4.73E+06
Initial Criticality: 08/08/81

Airborne Effluents

Nuclide Released	Activity (Ci)
NA-24	2.79E-09
CL-38	3.15E-08
K-40	2.08E-05
AR-41	1.90E+00
CR-51	4.02E-05
CO-58	1.15E-04
CO-60	1.79E-04
BR-82	4.51E-08
KR-85	2.94E+01
KR-85M	9.53E-01
KR-87	2.62E-01
KR-88	1.15E+00
RB-88	5.38E-05
RB-89	4.43E-07
SR-90	1.02E-06
SR-92	1.85E-09
MO-99	6.09E-09
TC-99M	4.42E-09
I-130	1.56E-08
I-131	6.57E-04
XE-131M	5.35E+00
I-132	9.15E-05
I-133	6.06E-04
XE-133	4.61E+02
XE-133M	4.29E+00
CS-134	7.47E-09
I-134	3.34E-06
I-135	1.28E-05
XE-135	1.40E+01
XE-135M	5.33E-02
CS-136	1.89E-09
CS-137	9.09E-06
CS-138	2.17E-06
XE-138	1.50E-02
BA-139	1.65E-07
PB-214	9.71E-07

Total Airborne Tritium Released 2.50E+01 Ci

Installation: McGuire
Unit No.(s): 1

Location: 17 Mi N of Charlotte, NC

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-369
Thermal Power(MWH): 1.48E+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): 4.73E+06
Initial Criticality: 08/08/81

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.48E-03
K-40	2.99E-04
AR-41	8.09E-05
CR-51	1.11E-01
MN-54	7.05E-02
FE-55	5.41E-01
MN-56	2.95E-05
CO-57	3.25E-03
CO-58	5.23E-01
FE-59	6.51E-03
CO-60	4.48E-01
ZN-65	1.24E-03
BR-82	2.80E-04
BR-84	5.49E-06
KR-85	3.17E-04
KR-85M	2.13E-04
RB-86	1.26E-05
KR-87	6.89E-06
KR-88	4.58E-05
RB-88	8.50E-04
SR-89	1.23E-04
SR-90	1.03E-05
SR-91	1.64E-06
Y-91M	1.29E-06
SR-92	6.42E-04
Y-93	9.44E-05
NB-95	3.55E-02
ZR-95	1.77E-02
NB-97	1.25E-03
ZR-97	1.05E-04
MO-99	1.69E-04
TC-99M	9.09E-04
RU-103	1.38E-03
RU-106	9.60E-03
AG-110M	1.71E-02
SN-113	6.25E-03
CD-115	3.21E-05
IN-115M	1.48E-06
SB-122	5.60E-04
SB-124	4.27E-03
SB-125	1.02E-01
SB-126	3.42E-05
I-131	1.96E-02
XE-131M	2.48E-03

Installation: McGuire Location: 17 Mi N of Charlotte, NC
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 1 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
I-132	1.81E-03
TE-132	1.87E-04
I-133	2.40E-02
XE-133	8.85E-01
XE-133M	1.40E-02
CS-134	1.50E-02
I-134	1.33E-04
I-135	9.11E-03
XE-135	7.08E-02
XE-135M	1.68E-03
CS-136	5.17E-05
CS-137	2.18E-02
CS-138	2.86E-04
XE-138	5.13E-06
BA-140	8.87E-05
LA-140	1.32E-03
CE-141	1.49E-04
CE-143	3.16E-06
CE-144	4.78E-03
W-187	4.69E-05
NP-239	1.89E-05

Total Liquid Tritium Released	4.58E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	8.43E+06 liters *
Volume of Dilution Water Used During Period	3.05E+12 liters *

*These volumes represent the total dilution flow for both McGuire 1&2 since there is one primary release point for the site.

Installation: McGuire
Unit No.(s): 2

Location: 17 Mi N of Charlotte, NC

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-370
Thermal Power(MWH): 1.93E+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): 6.46E+06
Initial Criticality: 05/08/83

Airborne Effluents

Nuclide Released	Activity (Ci)
NA-24	2.79E-09
CL-38	3.15E-08
K-40	2.08E-05
AR-41	1.90E+00
CR-51	4.02E-05
CO-58	1.15E-04
CO-60	1.79E-04
BR-82	4.51E-08
KR-85	2.94E+01
KR-85M	9.53E-01
KR-87	2.62E-01
KR-88	1.15E+00
RB-88	5.38E-05
RB-89	4.43E-07
SR-90	1.02E-06
SR-92	1.85E-09
MO-99	6.09E-09
TC-99M	4.42E-09
I-130	1.56E-08
I-131	6.57E-04
XE-131M	5.35E+00
I-132	9.15E-05
I-133	6.06E-04
XE-133	4.61E+02
XE-133M	4.29E+00
CS-134	7.47E-09
I-134	3.34E-06
I-135	1.28E-05
XE-135	1.40E+01
XE-135M	5.33E-02
CS-136	1.89E-09
CS-137	9.09E-06
CS-138	2.17E-06
XE-138	1.50E-02
BA-139	1.65E-07
PB-214	9.71E-07

Total Airborne Tritium Released 2.50E+01 Ci

Installation: McGuire
Unit No.(s): 2

Location: 17 Mi N of Charlotte, NC

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-370
Thermal Power(MWH): 1.93E+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): 6.46E+06
Initial Criticality: 05/08/83

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.48E-03
K-40	2.99E-04
AR-41	8.09E-05
CR-51	1.11E-01
MN-54	7.05E-02
FE-55	5.41E-01
MN-56	2.95E-05
CO-57	3.25E-03
CO-58	5.23E-01
FE-59	6.51E-03
CO-60	4.48E-01
ZN-65	1.24E-03
BR-82	2.80E-04
BR-84	5.49E-06
KR-85	3.17E-04
KR-85M	2.13E-04
RB-86	1.26E-05
KR-87	6.89E-06
KR-88	4.58E-05
RB-88	8.50E-04
SR-89	1.23E-04
SR-90	1.03E-05
SR-91	1.64E-06
Y-91M	1.29E-06
SR-92	6.42E-04
Y-93	9.44E-05
NB-95	3.55E-02
ZR-95	1.77E-02
NB-97	1.25E-03
ZR-97	1.05E-04
MO-99	1.69E-04
TC-99M	9.09E-04
RU-103	1.38E-03
RU-106	9.60E-03
AG-110M	1.71E-02
SN-113	6.25E-03
CD-115	3.21E-05
IN-115M	1.48E-06
SB-122	5.60E-04
SB-124	4.27E-03
SB-125	1.02E-01
SB-126	3.42E-05
I-131	1.96E-02
XE-131M	2.48E-03

Installation: McGuire Location: 17 Mi N of Charlotte, NC
Unit No.(s): 2

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 2 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
I-132	1.81E-03
TE-132	1.87E-04
I-133	2.40E-02
XE-133	8.85E-01
XE-133M	1.40E-02
CS-134	1.50E-02
I-134	1.33E-04
I-135	9.11E-03
XE-135	7.08E-02
XE-135M	1.68E-03
CS-136	5.17E-05
CS-137	2.18E-02
CS-138	2.88E-04
XE-138	5.13E-06
BA-140	8.87E-05
LA-140	1.32E-03
CE-141	1.49E-04
CE-143	3.16E-06
CE-144	4.78E-03
W-187	4.69E-05
NP-239	1.89E-05

Total Liquid Tritium Released	4.58E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	8.43E+06 liters *
Volume of Dilution Water Used During Period	3.05E+12 liters *

*These volumes represent the total dilution flow for both McGuire 1&2 since there is one primary release point for the site.

Installation: McGuire Location: 17 Mi N of Charlotte, NC
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR Licensee: Duke Power Co.
Docket Number: 50-369 Licensed Power(MWT): 3.41E+03
Thermal Power(MWH): 1.48E+07 Net Electrical Power(MWH): 4.73E+06
Commercial Operation: 12/01/81 Initial Criticality: 08/08/81
Cooling Water Source: Lake Norman

Unit Number: 2 Type: PWR Licensee: Duke Power Co.
Docket Number: 50-370 Licensed Power(MWT): 3.41E+03
Thermal Power(MWH): 1.93E+07 Net Electrical Power(MWH): 6.46E+06
Commercial Operation: 03/01/84 Initial Criticality: 05/08/83
Cooling Water Source: Lake Norman

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
46		

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AG-110M	1.13E-02	
BA-140		8.67E-07
C-14	1.94E-01	9.00E-02
CE-144	2.02E-04	7.81E-06
CM-242	3.75E-04	1.00E-03
CO-57	1.62E-01	1.00E-01
CO-58	4.13E+00	1.79E+01
CO-60	3.86E+01	1.82E+01
CR-51		1.79E-01
CS-134	6.92E+00	1.99E+01
CS-137	1.42E+01	2.45E+01
FE-55	1.15E+01	5.41E+00
FE-59		5.00E-03
H-3	3.49E-02	1.68E-03
I-131	1.81E-04	1.31E-06
MN-54	5.07E+00	4.07E+00
NB-95	3.83E-01	7.00E-02
NI-63	1.71E+01	8.08E+00
PB-212		2.62E-07
PB-214		3.75E-07
PU-241	9.40E-03	2.00E-02
RU-106	1.56E-04	6.94E-06
SB-125	1.19E+00	1.30E+00
SN-113	1.84E-05	8.67E-07
SR-90	4.71E-02	8.00E-02
TE-125M	3.91E-02	5.00E-02
TRU	9.40E-04	2.02E-03
ZN-65	2.77E-05	
ZR-95	2.62E-01	3.00E-02

Installation: McGuire Location: 17 Mi N of Charlotte, NC
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	July-Dec
B		
C-14	2.00E-02	2.00E-02
CM-242	1.00E-02	1.00E-02
CO-58	3.48E+01	3.48E+01
CO-60	3.20E+01	3.20E+01
CS-137	8.40E-01	8.40E-01
FE-55	2.33E+01	2.33E+01
MN-54	5.36E+00	5.36E+00
NI-63	3.36E+00	3.36E+00
PU-241	3.00E-01	3.00E-01
SR-90	3.00E-02	3.00E-02
TRU	1.00E-02	1.00E-02
D		
AG-110M	1.36E+00	
C-14	2.00E-02	
CE-144	2.43E+00	
CM-242	3.00E-02	
CO-58	3.65E+00	
CO-60	3.33E+01	
CS-137	1.06E+00	
FE-55	4.47E+01	
MN-54	3.27E+00	
NB-95	1.30E+00	
NI-63	4.87E+00	
PU-241	7.20E-01	
RU-106	2.15E+00	
SB-125	1.10E+00	
SR-90	1.00E-02	
TRU	1.00E-02	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.27E+02	
	Ci	9.19E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.25E+02	compacted & non-compacted
	Ci	2.68E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
Dewatered Mechanical Filters	m3	1.10E+01	
	Ci	3.50E+01	

Installation: Millstone
Unit No.(s): 1

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-245
Thermal Power(MWH): 1.56E+07
Commercial Operation: 03/01/71
Cooling Water Source: Niantic Bay

Licensee: Northeast Nuclear Energy
Licensed Power(MWT): 2.01E+03
Net Electrical Power(MWH): 5.09E+06
Initial Criticality: 10/26/70

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.64E+00
CR-51	1.74E-04
MN-54	2.73E-05
CO-58	2.54E-05
CO-60	2.51E-04
ZN-65	5.34E-04
KR-85M	1.79E+00
KR-87	9.15E+00
KR-88	5.60E+00
SR-89	3.51E-04
SR-90	1.38E-06
I-131	7.31E-04
I-133	1.69E-03
XE-133	4.29E+01
XE-135	1.29E+01
XE-135M	9.54E+00
CS-137	1.20E-04
XE-138	3.33E+01
BA-140	3.85E-04

Total Airborne Tritium Released 3.86E+01 Ci

Installation: Millstone
Unit No.(s): 1

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-245
Thermal Power(MWH): 1.56E+07
Commercial Operation: 03/01/71
Cooling Water Source: Niantic Bay

Licensee: Northeast Nuclear Energy
Licensed Power(MWT): 2.01E+03
Net Electrical Power(MWH): 5.09E+06
Initial Criticality: 10/26/70

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	2.20E-03
MN-54	9.17E-03
FE-55	3.85E-02
CO-58	2.79E-04
FE-59	1.10E-04
CO-60	6.00E-02
ZN-65	1.15E-02
SR-89	2.03E-05
SR-90	7.86E-05
TC-99M	7.14E-05
SB-125	3.67E-06
I-131	2.01E-04
I-132	8.06E-06
I-133	1.66E-04
XE-133	9.15E-04
CS-134	1.57E-05
I-135	6.18E-05
XE-135	7.96E-04
XE-135M	9.54E-05
CS-137	1.64E-02

Total Liquid Tritium Released	2.02E+01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.20E+07 liters
Volume of Dilution Water Used During Period	8.14E+11 liters

Installation: Millstone
Unit No.(s): 1

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR
Docket Number: 50-245
Thermal Power(MWH): 1.56E+07
Commercial Operation: 03/01/71
Cooling Water Source: Niantic Bay

Licensee: Northeast Nuclear Energy
Licensed Power(MWT): 2.01E+03
Net Electrical Power(MWH): 5.09E+06
Initial Criticality: 10/26/70

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
37	Truck	CNSI, Barnwell, SC
3	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		
AG-110M	8.00E-02	8.00E-02
AM-241	2.00E-02	
BA-140	4.10E-01	2.00E-02
C-14	2.40E-01	1.30E-01
CE-141	8.00E-02	
CM-244	1.00E-02	
CO-58	2.00E-02	1.20E-01
CO-60	1.28E+01	9.89E+00
CR-51		2.00E-02
CS-134	9.00E-02	2.00E-02
CS-137	1.10E+01	5.88E+00
FE-55	1.03E+01	3.48E+01
H-3	7.00E-01	2.00E-02
I-131	3.00E-02	2.00E-02
LA-140	7.00E-02	
MN-54	1.43E+00	5.56E+00
NI-59	3.00E-01	
NI-63	1.46E+00	5.10E-01
PU-241	9.90E-01	3.00E-02
SB-125		3.00E-02
SR-89	4.00E-02	5.00E-02
SR-90	2.00E-02	6.00E-02
ZN-65	6.00E+01	4.25E+01
B		
AM-241	3.40E-01	
CO-58	1.00E-02	1.71E+00
CO-60	2.20E+01	1.88E+01
CS-134	1.10E-01	7.02E-03
CS-137	9.36E+00	1.64E+00
FE-55	5.31E+01	7.02E+01
H-3	7.00E-02	2.20E-01
MN-54	2.78E+00	2.45E+00
NI-63	4.36E+00	3.89E+00
PU-238	1.00E-02	

Installation: Millstone Location: 3.2 Mi WSW of New London, CT
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	July-Dec
B		
PU-241	3.00E-02	
SR-90	1.00E-02	
ZN-65	7.80E+00	1.13E+00
C		
CO-58	5.70E-01	
CO-60	3.42E+01	
CR-51	7.00E-02	
FE-55	5.76E+01	
FE-59	2.00E-02	
HF-175	8.00E-01	
HF-181	1.26E+00	
MN-54	3.29E+00	
NI-59	2.00E-02	
NI-63	2.21E+00	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.84E+02	non-compacted burial volume
	Ci	6.35E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.05E+02	compacted burial volume
	Ci	1.94E+01	
C. Irradiated Components, Control Rods, etc.	m3	4.63E+00	non-compacted burial volume
	Ci	3.34E+04	
D. Other (describe)			
	m3		
	Ci		

Installation: Millstone
Unit No.(s): 2

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-336
Thermal Power(MWH): 1.69E+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): 5.30E+06
Initial Criticality: 10/17/75

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.50E+00
CO-58	3.62E-06
KR-85	7.26E+01
KR-85M	3.10E+00
KR-88	2.86E+00
RB-88	2.39E-04
I-131	2.08E-02
XE-131M	4.54E+01
I-133	2.03E-02
XE-133	2.67E+03
XE-133M	1.41E+01
XE-135	8.52E+01

Total Airborne Tritium Released 1.00E+02 Ci

Installation: Millstone
Unit No.(s): 2

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-336
Thermal Power(MWH): 1.69E+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): 5.30E+06
Initial Criticality: 10/17/75

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.72E-03
CR-51	4.01E-02
MN-54	1.41E-02
FE-55	3.76E+00
CO-57	1.37E-03
CO-58	7.88E-01
CO-60	6.00E-01
KR-85	8.09E-01
KR-85M	7.11E-04
SR-87M	6.34E-05
KR-88	8.60E-04
SR-89	6.79E-01
SR-90	3.23E-01
SR-92	1.14E-02
Y-93	8.09E-05
NB-95	4.07E-03
NB-97	5.15E-02
MO-99	5.45E-04
TC-99M	1.10E-03
AG-110M	3.68E-02
SB-124	9.10E-02
SB-125	1.70E-01
I-131	1.02E-01
XE-131M	7.14E-01
I-132	1.82E-02
I-133	4.08E-02
XE-133	3.94E+01
XE-133M	6.61E-01
CS-134	4.31E-01
I-135	1.17E-02
XE-135	2.98E-01
XE-135M	1.11E-02
CS-136	8.69E-03
CS-137	1.57E+00
BA-139	8.86E-05
LA-140	3.05E-03
LA-141	2.73E-03
CE-143	1.05E-04
CE-144	4.24E-04

Total Liquid Tritium Released	5.28E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.49E+08 liters
Volume of Dilution Water Used During Period	9.82E+11 liters

Installation: Millstone
Unit No.(s): 2

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR
Docket Number: 50-336
Thermal Power(MWH): 1.69E+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): 5.30E+06
Initial Criticality: 10/17/75

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
11	Truck	CNSI, Barnwell, SC
9	Truck	Quadrex, Oak Ridge, TN
7	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AG-110M		9.00E-02
C-14		3.88E+00
CO-58		1.82E+00
CO-60		2.43E+02
CS-134		3.40E-01
CS-137		1.18E+00
FE-55		6.07E+01
H-3		2.00E-02
NI-63		7.55E+00
PU-241		1.20E-01
SR-89		1.00E-02
SR-90		1.00E-02
B		
AM-241	2.94E-04	4.28E-04
C-14	8.81E-04	3.55E+00
CM-242	5.89E-04	8.55E-04
CM-244	2.94E-04	8.55E-05
CO-58	3.65E+01	2.68E+00
CO-60	1.76E+01	3.74E+01
CS-134	1.17E+00	2.82E+00
CS-137	2.10E+00	1.11E+01
FE-55	1.04E+01	2.36E+01
H-3	2.65E-03	6.17E-02
I-131		4.88E-03
MN-54	6.76E-03	4.97E-01
NI-63	3.22E+01	1.88E+01
ZN-65		2.59E-02

Installation: Millstone Location: 3.2 Mi WSW of New London, CT
Unit No.(s): 2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 2 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.54E+00	compacted burial volume
	Ci	4.87E+00	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.57E+02	compacted burial volume
	Ci	4.47E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Millstone
Unit No.(s): 3

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-423
Thermal Power(MWH): 2.52E+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): 8.22E+06
Initial Criticality: 01/23/86

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	1.09E-05
MN-54	7.59E-06
KR-85	5.53E+00
KR-85M	5.16E-01
KR-87	6.06E-02
SR-89	4.08E-08
SR-90	1.60E-08
SB-125	7.11E-06
I-131	2.38E-03
XE-131M	7.78E-02
I-133	2.38E-03
XE-133	1.84E+02
XE-133M	1.87E-02
XE-135	2.03E+01
CS-137	2.21E-06
CE-141	1.78E-08
ND-147	5.23E-05

Total Airborne Tritium Released 9.67E+00 Ci

Installation: Millstone
Unit No.(s): 3

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-423
Thermal Power(MWH): 2.52E+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): 8.22E+06
Initial Criticality: 01/23/86

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	5.66E-04
AR-41	1.28E-05
CR-51	7.51E-03
MN-54	1.99E-01
FE-55	7.18E-01
CO-57	1.55E-03
CO-58	1.16E-01
FE-59	2.33E-04
CO-60	4.03E-01
ZN-65	2.73E-03
KR-85	7.42E-04
KR-85M	1.32E-05
KR-87	3.23E-06
RB-88	1.07E-04
SR-89	1.76E-04
SR-92	4.15E-02
NB-95	3.10E-02
ZR-95	4.46E-03
NB-97	2.19E-01
MO-99	1.98E-04
TC-99M	5.48E-03
RU-106	2.15E-02
AG-110M	1.31E-01
SB-125	3.53E-02
SN-125	5.91E-04
I-131	3.02E-02
XE-131M	1.67E-05
I-132	5.14E-06
I-133	9.74E-03
XE-133	5.12E-02
XE-133M	6.87E-06
CS-134	2.31E-01
I-135	9.21E-05
XE-135	3.38E-02
XE-135M	2.66E-05
CS-136	1.04E-03
CS-137	2.47E-01
CE-141	2.40E-06
CE-144	1.23E-03
PR-144	7.20E-03
HF-181	6.19E-05

Total Liquid Tritium Released	7.74E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.81E+07 liters
Volume of Dilution Water Used During Period	1.70E+12 liters

Installation: Millstone
Unit No.(s): 3

Location: 3.2 Mi WSW of New London, CT

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR
Docket Number: 50-423
Thermal Power(MWH): 2.52E+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): 8.22E+06
Initial Criticality: 01/23/86

Solid Waste Disposition

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

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AG-110M		6.00E-02
C-14		2.00E-02
CO-57		2.70E-01
CO-58		4.40E-01
CO-60		1.33E+01
CS-134		8.57E+00
CS-137		1.52E+01
FE-55		4.16E+01
H-3		1.00E-02
MN-54		4.43E+00
NI-63		1.61E+01
PU-241		1.00E-02
SR-89		2.00E-02
SR-90		2.00E-02
B		
C-14		6.42E-03
CO-58	4.55E+01	9.96E+00
CO-60	4.69E+00	1.08E+01
CS-134		9.17E+00
CS-136		3.23E-01
CS-137	4.28E-03	1.20E+01
FE-55	3.52E+01	3.82E+01
H-3		4.03E+00
I-131		8.52E-01
MN-54	4.14E+00	2.19E+00
NI-63	1.05E+01	1.23E+01
ZN-65	8.00E-04	9.65E-02

Installation: Millstone Location: 3.2 Mi WSW of New London, CT
Unit No.(s): 3

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 3 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	4.24E+01	non-compacted burial volume
	Ci	1.72E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	3.36E+01	compacted burial volume
	Ci	4.09E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Monticello
Unit No.(s): 1

Location: 23 Mi SE St. Cloud, MN

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-263
Thermal Power(MWH): 1.40E+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): 4.51E+06
Initial Criticality: 12/10/70

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	7.61E-08
CR-51	4.47E-09
MN-54	1.09E-05
CO-58	7.10E-08
CO-60	3.70E-04
ZN-65	2.59E-04
KR-85	7.37E-08
KR-85M	7.02E+00
KR-87	2.60E+01
KR-88	1.78E+01
KR-89	8.91E+00
SR-89	1.23E-03
SR-90	3.98E-06
ZR-95	4.37E-07
I-131	3.74E-02
I-133	1.94E-01
XE-133	6.30E+02
XE-133M	1.23E+01
I-135	2.56E-01
XE-135	3.47E+02
XE-135M	6.18E+02
CS-137	1.76E-04
XE-137	8.50E+02
XE-138	4.40E+02
BA-140	3.84E-03
CE-141	8.77E-05

Total Airborne Tritium Released 8.54E+01 Ci

Installation: Monticello Location: 23 Mi SE St. Cloud, MN
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Sol.J Effluents

Type: BWR Licensee: Northern States Power
Docket Number: 50-263 Licensed Power(MWT): 1.67E+03
Thermal Power(MWH): 1.40E+07 Net Electrical Power(MWH): 4.51E+06
Commercial Operation: 06/30/71 Initial Criticality: 12/10/70
Cooling Water Source: Mississippi River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
3	Railway	CNSI, Barnwell, SC
7	Truck	CNSI, Barnwell, SC
4	Railway	US Ecology, Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
BA-140	5.94E-01	3.97E-02
CE-141	1.27E-01	1.51E-02
CO-58	5.09E-01	2.27E-02
CO-60	3.65E+01	4.26E+01
CR-51	5.80E-01	
CS-134	6.07E-01	8.56E-01
CS-137	6.64E+00	2.89E+00
FE-55	4.12E+01	4.43E+01
FE-59	1.13E-01	
I-131	1.09E+00	7.85E-02
LA-140	2.54E-01	9.08E-03
MN-54	4.88E+00	3.25E+00
NI-63	1.44E+00	1.77E-01
SR-89	7.95E-01	8.64E-01
SR-90	2.91E-02	1.72E-01
ZN-65	3.97E+00	4.58E+00
B		
BA-140	1.60E-01	3.82E-01
CE-141	4.10E-01	1.00E-01
CO-58		8.50E-01
CO-60	3.50E+01	3.69E+01
CR-51		4.06E+00
CS-134		1.82E+00
CS-137		3.67E+00
FE-55	3.96E+01	3.17E+01
FE-59		1.02E+00
I-131	6.80E-02	5.38E-01
LA-140		1.06E-01
MN-54	8.50E-02	6.74E+00
NI-63	1.63E+00	2.54E-01
RU-103	7.00E-02	
SR-89		1.54E+00
SR-90		1.06E-01
ZN-65	2.00E+01	3.02E+00

Installation: Monticello Location: 23 Mi SE St. Cloud, MN
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evapurator Bottoms, etc.	m3	5.93E+01	after compaction
	Ci	1.16E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	3.47E+01	after compaction
	Ci	8.79E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Nine Mile Point Location: 8 Mi NE Oswego, NY
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: BWR Licensee: Niagara Mohawk Power
Docket Number: 50-220 Licensed Power(MWT): 1.85E+03
Thermal Power(MWH): 4.07E+06 Net Electrical Power(MWH): 1.28E+06
Commercial Operation: 12/01/69 Initial Criticality: 09/05/69
Cooling Water Source: Lake Ontario

Airborne Effluents

Nuclide Released	Activity (Ci)
FE-55	2.95E-04
CO-60	8.89E-04
SR-89	3.07E-04
SR-90	8.14E-06
I-131	9.71E-04
I-133	1.79E-02
I-135	1.81E-02
CS-137	1.68E-04
BA-LA-140	8.28E-05

Total Airborne Tritium Released 1.86E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
FE-55	1.70E-03
CO-60	2.56E-04

Total Liquid Tritium Released	1.41E+00 Ci
Volume of Liquid Waste Released (Prior to Dilution)	8.35E+05 liters
Volume of Dilution Water Used During Period	4.30E+11 liters

Installation: Nine Mile Point Location: 8 Mi NE Oswego, NY
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR Licensee: Niagara Mohawk Power
Docket Number: 50-220 Licensed Power(MWT): 1.85E+03
Thermal Power(MWH): 4.07E+06 Net Electrical Power(MWH): 1.28E+06
Commercial Operation: 12/01/69 Initial Criticality: 09/05/69
Cooling Water Source: Lake Ontario

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
65		Barnwell, SC
15	Truck	CNSI, Barnwell, SC
9		Hanford, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-60	6.76E+01	2.42E+01
CS-137	1.86E+01	2.09E+01
FE-55	9.40E+00	5.26E+01
MN-54	1.69E+00	4.59E-01
NI-63	2.09E+00	1.01E+00
Others	6.20E-01	5.33E-01
SR-90		3.08E-01
B		
CO-60	3.32E+01	
CS-134	8.29E-01	
CS-137	5.94E+01	
H-3	5.33E+00	
MN-54	1.07E+00	
Others	1.71E-01	
D		
C-14	9.87E-01	1.15E+00
CO-60	3.86E+01	6.01E+01
CS-134	1.65E-01	
CS-137	4.82E+01	2.89E+01
FE-55	7.61E+00	6.34E+00
H-3	1.03E+00	2.03E+00
MN-54	1.05E+00	
NI-63	1.85E+00	1.01E+00
Others	5.08E-01	4.70E-01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	7.24E+01	non-compacted
	Ci	4.26E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	5.38E+00	before compaction
	Ci	1.41E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
DAW shipped offsite for proc. & burial	m3	1.68E+02	after compaction
	Ci	6.96E+00	

Installation: Nine Mile Point
Unit No.(s): 2

Location: 8 Mi NE Oswego, NY

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-410
Thermal Power(MWH): 1.34E+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): 4.14E+06
Initial Criticality: 05/23/87

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.30E-01
CR-51	2.30E-03
MN-54	1.86E-04
FE-55	2.43E-04
CO-57	3.00E-04
CO-58	4.28E-05
FE-59	5.13E-05
CO-60	3.48E-04
ZN-65	6.73E-04
SE-75	1.79E-04
KR-85	4.25E-04
KR-85M	4.78E+00
KR-87	2.08E+00
KR-88	7.24E+01
SR-89	1.54E-04
MO-99	2.72E-04
I-131	4.70E-04
I-133	4.98E-03
XE-133	1.25E-05
I-135	6.99E-04
XE-135	1.06E+00
XE-135M	4.13E+00
XE-137	4.20E+01
XE-138	2.40E+01
BA-LA-140	7.40E-06

Total Airborne Tritium Released 3.70E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	5.84E-03
MN-54	5.15E-03
FE-55	6.40E-03
CO-58	1.87E-03
FE-59	7.08E-04
CO-60	1.12E-02
ZN-65	3.23E-02
MO-99	1.01E-05
TC-99M	9.84E-06
XE-133	1.05E-04
XE-135	1.16E-04

Total Liquid Tritium Released	4.78E+00 Ci
Volume of Liquid Waste Released (Prior to Dilution)	6.75E+06 liters
Volume of Dilution Water Used During Period	5.37E+10 liters

Installation: Nine Mile Point Location: 8 Mi NE Oswego, NY
Unit No.(s): 2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR Licensee: Niagara Mohawk Power
Docket Number: 50-410 Licensed Power(MWT): 3.32E+03
Thermal Power(MWH): 1.34E+07 Net Electrical Power(MWH): 4.14E+06
Commercial Operation: 04/05/88 Initial Criticality: 05/23/87
Cooling Water Source: Lake Ontario

Solid Waste Disposition		
Number of Shipments	Mode of Transportation	Destination
48	Truck	Barnwell, SC
24	Truck	Barnwell, SC via vendor

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	1.89E+00	1.77E+00
CO-60	4.43E+00	1.38E+01
CR-51	6.81E+01	8.08E+00
FE-55	2.56E+00	4.23E+00
MN-54	2.24E+00	6.74E+00
Others	1.05E+00	1.76E+00
ZN-65	1.97E+01	6.37E+01
B		
CO-58	1.73E+00	
CO-60	1.56E+01	4.12E+00
CR-51	2.78E+00	5.87E+01
FE-55	1.94E+00	1.31E+01
FE-59		1.46E+00
H-3		2.37E+00
MN-54	8.32E+00	2.22E+00
Others	2.73E+00	2.13E+00
ZN-65	6.69E+01	1.59E+01
D		
CO-58		3.25E+01
CO-60		2.96E+01
CS-137		4.60E+00
FE-55		2.20E+00
MN-54		8.29E+00
ZN-65		2.28E+01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.68E+02	non-compacted
	Ci	6.72E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	5.86E+01	before compaction
	Ci	7.43E-01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
DAW shipped offsite for proc. & burial	m3	1.38E+01	after compaction
	Ci	2.80E-01	

Installation: North Anna
Unit No.(s): 1&2

Location: 40 Mi NW Richmond, VA

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-338
Thermal Power(MWH): 2.31E+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): 7.23E+06
Initial Criticality: 04/05/78

Unit Number: 2 Type: PWR
Docket Number: 50-339
Thermal Power(MWH): 1.91E+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): 5.98E+06
Initial Criticality: 06/12/80

Airborne Effluents

Nuclide Released	Activity (Ci)
NA-24	4.31E-09
AR-41	2.54E+00
MN-54	2.78E-10
FE-55	1.36E-04
CO-58	3.05E-04
CO-60	1.66E-04
ZN-65	4.02E-08
BR-84	2.57E-09
KR-85	2.59E+01
KR-85M	1.77E-01
SR-85	3.56E-09
KR-87	1.87E-01
KR-88	2.61E-01
RU-106	7.27E-05
SB-122	3.77E-07
I-131	6.32E-03
XE-131M	9.84E+00
I-132	5.61E-05
I-133	1.77E-03
XE-133	8.94E+02
XE-133M	1.91E+00
CS-134	1.35E-05
I-134	4.63E-05
I-135	1.06E-04
XE-135	1.52E+01
XE-135M	1.22E+00
CS-136	2.84E-09
CS-137	3.97E-05
CS-138	1.76E-07
XE-138	3.49E-01
TM-170	7.88E-05

Total Airborne Tritium Released 3.11E+01 Ci

Installation: North Anna
Unit No.(s): 1&2

Location: 40 Mi NW Richmond, VA

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-338
Thermal Power(MWH): 2.31E+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): 7.23E+06
Initial Criticality: 04/05/78

Unit Number: 2 Type: PWR
Docket Number: 50-339
Thermal Power(MWH): 1.91E+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): 5.98E+06
Initial Criticality: 06/12/80

Liquid Effluents

Nuclide Released	Activity (Ci)
AR-41	1.44E-04
CR-51	5.83E-03
MN-54	6.16E-03
CO-57	1.52E-04
CO-58	2.26E-01
FE-59	1.52E-03
CO-60	2.79E-01
ZN-65	9.20E-05
BR-84	1.59E-04
KR-85	2.80E-01
KR-85M	1.49E-04
SR-85	1.21E-03
RB-88	9.57E-05
NB-95	8.08E-03
ZR-95	1.04E-03
CD-109	6.98E-05
AG-110M	2.15E-02
SB-122	1.39E-06
SB-124	2.58E-03
SB-125	4.12E-02
I-131	1.56E-02
XE-131M	3.87E-01
I-132	4.91E-04
I-133	4.55E-02
XE-133	2.63E+01
XE-133M	1.45E-01
CS-134	2.54E-03
I-134	3.99E-05
I-135	3.40E-03
XE-135	1.08E-01
XE-135M	9.78E-04
CS-136	1.02E-04
CS-137	8.50E-03
CS-138	4.49E-05
BA-139	3.61E-03
BA-140	2.20E-04

Total Liquid Tritium Released	1.67E+03 Ci
Volume of Liquid Waste Released (Prior to Dilution)	3.62E+08 liters
Volume of Dilution Water Used During Period	2.72E+12 liters

Installation: North Anna Location: 40 Mi NW Richmond, VA
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR Licensee: Virginia Electric & Power
Docket Number: 50-338 Licensed Power(MWT): 2.89E+03
Thermal Power(MWH): 2.31E+07 Net Electrical Power(MWH): 7.23E+06
Commercial Operation: 06/06/78 Initial Criticality: 04/05/78
Cooling Water Source: Lake Anna

Unit Number: 2 Type: PWR Licensee: Virginia Electric & Power
Docket Number: 50-339 Licensed Power(MWT): 2.89E+03
Thermal Power(MWH): 1.91E+07 Net Electrical Power(MWH): 5.98E+06
Commercial Operation: 12/14/80 Initial Criticality: 06/12/80
Cooling Water Source: Lake Anna

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
18	Truck	Barnwell, SC
1	Truck	Quadrex, Oak Ridge, TN
16	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CE-144	2.07E+00	
CO-58	2.62E+00	2.45E+01
CO-60	2.88E+01	2.06E+01
CS-134	1.25E+00	2.90E+00
CS-137	2.39E+00	4.90E+00
FE-55	1.51E+01	1.42E+01
MN-54		1.10E+00
NI-63	4.54E+01	2.81E+01
B		
CO-58		3.15E+01
CO-60	3.34E+01	1.37E+01
CR-51		2.80E+00
CS-134	3.63E+00	1.60E+00
CS-137	1.14E+01	8.40E+00
FE-55	4.17E+01	2.67E+01
MN-54	1.39E+00	1.50E+00
NB-95		3.80E+00
NI-63	5.86E+00	3.40E+00
SB-125	1.31E+00	
ZR-95		5.20E+00
D		
CO-58		3.50E+00
CO-60		2.58E+01
CS-134		1.88E+01
CS-137		5.18E+01

Installation: North Anna Location: 40 Mi NW Richmond, VA
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	8.95E+01	
	Ci	7.10E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	6.89E+02	before processing
	m3	1.23E+02	after processing
	Ci	1.41E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
Oil	m3	7.02E+00	before incineration
	m3	0.00E+00	after incineration
	Ci	6.54E-05	

Installation: Oconee
Unit No.(s): 1&2&3

Location: 30 Mi W Greenville, SC

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-269
Thermal Power(MWH): 1.96E+07
Commercial Operation: 07/15/73
Cooling Water Source: Lake Keowee

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 6.45E+06
Initial Criticality: 04/19/73

Unit Number: 2 Type: PWR
Docket Number: 50-270
Thermal Power(MWH): 1.90E+07
Commercial Operation: 09/09/74
Cooling Water Source: Lake Keowee

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 6.27E+06
Initial Criticality: 11/11/73

Unit Number: 3 Type: PWR
Docket Number: 50-287
Thermal Power(MWH): 2.23E+07
Commercial Operation: 12/16/74
Cooling Water Source: Lake Keowee

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 7.43E+06
Initial Criticality: 09/05/74

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.30E+00
CO-57	6.44E-08
CO-58	1.70E-05
CO-60	1.67E-05
SE-75	5.40E-08
KR-85	2.10E+02
KR-85M	1.45E+01
KR-87	5.69E-01
KR-88	3.34E+00
RB-88	1.38E-02
SR-90	1.49E-07
SR-92	1.40E-06
NB-95	1.10E-07
ZR-95	4.51E-05
NB-97	1.01E-07
TC-99M	3.13E-06
RU-103	1.03E-06
RU-106	1.76E-06
SB-125	3.54E-04
I-131	7.62E-03
XE-131M	8.64E+01
I-132	9.70E-04
TE-132	2.07E-08
I-133	5.87E-03
XE-133	8.15E+03
XE-133M	3.09E+01
CS-134	5.60E-05
I-134	1.79E-04
I-135	2.21E-03
XE-135	3.19E+02
XE-135M	2.04E+01

Installation: Oconee Location: 30 Mi W Greenville, SC
Unit No.(s): 1&2&3

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 1&2&3(continued)

Airborne Effluents

Nuclide Released	Activity (Ci)
CS-136	1.64E-05
CS-137	8.28E-04
CS-138	7.38E-04
BA-140	5.97E-05
NP-239	1.46E-06

Total Airborne Tritium Released 1.01E+02 Ci

Installation: Oconee
Unit No.(s): 1&2&3

Location: 30 Mi W Greenville, SC

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-269
Thermal Power(MWH): 1.96E+07
Commercial Operation: 07/15/73
Cooling Water Source: Lake Keowee

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 6.45E+06
Initial Criticality: 04/19/73

Unit Number: 2 Type: PWR
Docket Number: 50-270
Thermal Power(MWH): 1.90E+07
Commercial Operation: 09/09/74
Cooling Water Source: Lake Keowee

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 6.27E+06
Initial Criticality: 11/11/73

Unit Number: 3 Type: PWR
Docket Number: 50-287
Thermal Power(MWH): 2.23E+07
Commercial Operation: 12/16/74
Cooling Water Source: Lake Keowee

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 7.43E+06
Initial Criticality: 09/05/74

Liquid Effluents

Nuclide Released	Activity (Ci)
AR-41	1.19E-04
CR-51	7.12E-02
MN-54	1.06E-02
FE-55	1.51E+00
CO-57	4.66E-04
CO-58	3.60E-01
FE-59	5.49E-04
CO-60	1.46E-01
ZN-65	2.40E-04
KR-85M	1.75E-06
KR-87	1.39E-05
KR-88	9.11E-06
RB-88	2.97E-04
SR-89	2.28E-04
SR-90	3.59E-05
SR-92	1.82E-03
NB-95	3.07E-02
ZR-95	1.44E-02
NB-97	1.72E-02
TC-99M	7.85E-04
RU-103	5.10E-03
RU-106	6.37E-02
AG-110M	3.01E-01
SN-113	2.21E-03
SB-122	2.21E-04
SB-124	5.47E-03
SB-125	1.98E-01
I-131	2.04E-02
XE-131M	7.17E-03
I-132	1.68E-03
TE-132	2.12E-03

Installation: Oconee Location: 30 Mi W Greenville, SC
Unit No.(s): 1&2&3

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 1&2&3(continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
I-133	5.36E-03
XE-133	1.10E+00
XE-133M	5.19E-03
CS-134	2.63E-02
I-135	1.07E-05
XE-135	5.79E-02
XE-135M	3.99E-06
CS-136	7.77E-05
CS-137	2.64E-01
CS-138	4.75E-03
BA-140	3.80E-03
LA-140	3.13E-02
CE-141	4.31E-04
CE-144	5.75E-03

Total Liquid Tritium Released	9.92E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	9.89E+05 Liters
Volume of Dilution Water Used During Period	1.04E+12 Liters

Installation: Oconee
Unit No.(s): 1&2&3

Location: 30 Mi W Greenville, SC

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-269
Thermal Power(MWH): 1.96E+07
Commercial Operation: 07/15/73
Cooling Water Source: Lake Keowee

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 6.45E+06
Initial Criticality: 04/19/73

Unit Number: 2 Type: PWR
Docket Number: 50-270
Thermal Power(MWH): 1.90E+07
Commercial Operation: 09/09/74
Cooling Water Source: Lake Keowee

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 6.27E+06
Initial Criticality: 11/11/73

Unit Number: 3 Type: PWR
Docket Number: 50-287
Thermal Power(MWH): 2.23E+07
Commercial Operation: 12/16/74
Cooling Water Source: Lake Keowee

Licensee: Duke Power
Licensed Power(MWT): 2.57E+03
Net Electrical Power(MWH): 7.43E+06
Initial Criticality: 09/05/74

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
20		Alaron, Barnwell, SC
28		Barnwell, SC
115		SEG, Barnwell, SC

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AG-110M	1.95E-01	5.29E-01
C-14		1.16E-01
CE-144		8.54E-04
CO-57		5.00E-02
CO-58	1.11E+01	9.78E+00
CO-60	2.49E+00	2.29E+00
CR-51	9.77E-02	2.90E-02
CS-134	2.91E+01	3.02E+01
CS-137	4.79E+01	4.87E+01
FE-55	2.78E+00	2.62E+00
H-3		1.12E-01
I-131		1.71E-03
MN-54	1.00E+00	5.94E-01
NB-95	9.77E-02	5.12E-02
NI-63	4.27E+00	3.92E+00
PU-241		1.17E-01
RU-103		2.56E-03
RU-106		1.70E-03
SB-122	9.02E-01	
SB-125	9.77E-02	3.59E-01
SR-90		3.83E-01

Installation: Oconee
Unit No.(s): 1&2&3

Location: 30 Mi W Greenville, SC

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2&3(continued)

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	July-Dec
A		
TE-125M		4.78E-02
TRU		4.12E-03
ZR-95		2.30E-02
B		
CM-242	3.00E-02	3.00E-02
CO-60	1.59E+00	1.59E+00
CS-124		2.97E+01
CS-134	2.96E+01	
CS-137	5.43E+01	5.43E+01
FE-55	2.83E+00	2.83E+00
NI-63	1.08E+01	1.08E+00
PU-241	1.90E-01	1.90E-01
SR-90	6.00E-02	6.00E-02
TC-99	5.20E-01	5.20E-01
TRU	1.00E-02	1.00E-02
D		
AG-110M	2.40E+01	1.14E+01
C-14		9.00E-01
CE-144	1.00E+00	2.84E+00
CO-57		2.04E-06
CO-58	2.00E+00	3.33E+01
CO-60	3.80E+01	9.41E+00
CS-134		1.00E+00
CS-137	1.50E-03	3.47E+00
FE-55	3.00E+00	6.10E-04
H-3	1.48E-01	7.04E+00
MN-54	2.00E+00	1.01E+00
NB-95		4.79E+00
NI-63	2.90E+01	7.59E+00
PU-241	1.00E+00	1.78E-01
RU-106		1.15E+01
SB-125		1.19E+00
SR-90		8.90E-01
TE-125		8.90E-02
TRU		3.31E-02
ZR-95		1.80E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.07E+02	
	Ci	1.70E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	3.15E+02	compacted & non-compacted
	Ci	1.55E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
Dewatered mechanical filters	m3	1.76E+01	
	Ci	6.92E+01	

Installation: Oyster Creek Location: 9 Mi S Toms River, NJ
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: BWR Licensee: GPU Nuclear Corporation
Docket Number: 50-219 Licensed Power(MWT): 1.93E+03
Thermal Power(MWH): 1.36E+07 Net Electrical Power(MWH): 4.31E+06
Commercial Operation: 12/01/69 Initial Criticality: 05/03/69
Cooling Water Source: Barnegat Bay

Airborne Effluents

Nuclide Released	Activity (Ci)
KR-85M	3.05E+01
KR-87	1.19E+02
KR-88	1.18E+02
SR-89	7.89E-03
SR-90	3.22E-05
TC-99M	9.14E-03
I-131	2.30E-02
I-133	1.14E-01
XE-133	8.93E+01
I-135	4.04E-02
XE-135	3.78E+02
CS-137	4.56E-06
BA-140	4.10E-04

Total Airborne Tritium Released 1.15E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
MN-54	6.00E-07
CO-60	7.00E-07
CS-134	1.30E-05
CS-137	5.27E-05

Volume of Liquid Waste Released (Prior to Dilution)	3.78E+01 liters
Volume of Dilution Water Used During Period	4.16E+08 liters

Installation: Oyster Creek Location: 9 Mi S Toms River, NJ
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR Licensee: GPU Nuclear Corporation
Docket Number: 50-219 Licensed Power(MWT): 1.93E+03
Thermal Power(MWH): 1.36E+07 Net Electrical Power(MWH): 4.31E+06
Commercial Operation: 12/01/69 Initial Criticality: 05/03/69
Cooling Water Source: Barnegat Bay

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
52	Truck	Barnwell, SC
6	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14	7.00E-03	2.10E-02
CM-242	1.00E-03	1.00E-03
CO-58	1.00E+00	1.22E+00
CO-60	2.75E+01	3.68E+01
CR-51	1.40E+00	2.35E+00
CS-134	1.16E+01	3.07E+00
CS-137	3.19E+01	1.32E+01
FE-55	2.39E+01	3.53E+01
H-3	1.60E-02	1.50E-02
MN-54	2.46E+00	7.63E+00
NI-63	2.26E-01	3.38E-01
PU-241	4.00E-02	7.10E-02
SR-90	5.60E-02	6.20E-02
B		
C-14	9.29E-04	1.05E-03
CE-141	1.39E-02	1.10E-02
CE-144	1.39E-02	4.41E-03
CO-58	5.58E-01	4.41E-01
CO-60	2.36E+01	2.93E+01
CR-51	1.03E+00	1.42E+00
CS-134	2.77E+00	2.28E+00
CS-137	8.38E+00	7.82E+00
FE-55	5.84E+01	5.31E+01
FE-59	8.37E-02	1.32E-01
H-3	5.58E-03	9.98E-03
LA-140	2.79E-01	4.41E-01
MN-54	4.30E+00	3.73E+00
NI-63	1.39E-01	2.20E-01
PU-241	6.97E-02	6.61E-02
SR-89	5.58E-01	1.10E-01
SR-90	7.60E-02	6.61E-02
ZN-65	9.76E-02	1.54E-01
C		
C-14	6.40E-02	
CO-60	3.88E+01	

Installation: Oyster Creek Location: 9 Mi S Toms River, NJ
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	July-Dec
C		
FE-55	3.76E+01	
NB-94	2.00E-03	
NI-3	4.44E+00	
NI-59	2.90E-02	
PU-241	2.00E-03	
SB-125	1.90E+01	
D		
C-14	1.00E-03	
CM-242	1.00E-03	
CO-60	8.86E+01	
CS-134	1.94E+00	
CS-137	2.21E+00	
FE-55	8.09E+01	
H-3	5.10E-02	
MN-54	5.63E+00	
NI-63	8.27E-01	
PU-241	1.69E-01	
SR-90	2.00E-02	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.49E+02	
	Ci	9.14E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	6.60E+01	compacted & non-compacted
	Ci	1.17E+01	
C. Irradiated Components, Control Rods, etc.	m3	2.20E+00	
	Ci	1.95E+02	
D. Other (describe)			
Other waste	m3	5.60E+00	
	Ci	1.01E+01	

Installation: Palisades
Unit No.(s): 1

Location: 5 Mi S South Haven, MI

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-255
Thermal Power(MWH): 1.01E+07
Commercial Operation: 12/31/71
Cooling Water Source: Lake Michigan

Licensee: Consumers Power
Licensed Power(MWT): 2.53E+03
Net Electrical Power(MWH): 3.01E+06
Initial Criticality: 05/24/71

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.75E-01
CR-51	3.64E-06
CO-58	2.33E-05
CO-60	1.72E-05
SE-75	4.17E-05
KR-85	3.60E-01
KR-85M	4.31E-02
KR-87	9.92E-02
KR-88	1.20E-01
SR-89	4.68E-06
SR-90	2.88E-06
NB-95	4.84E-07
ZR-95	2.22E-06
AG-110M	4.85E-07
SB-125	2.82E-06
I-131	1.86E-03
XE-131M	1.73E-01
I-132	1.03E-03
I-133	1.12E-03
XE-133	1.18E+02
XE-133M	2.87E-01
CS-134	3.28E-05
I-135	8.82E-05
XE-135	1.22E+00
XE-135M	9.49E-01
CS-136	3.58E-07
CS-137	1.23E-04
XE-138	3.45E-01
CE-141	1.74E-06
Unidentified	2.07E-05

Total Airborne Tritium Released 5.58E+00 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
CO-58	4.01E-03
CO-60	1.78E-03
SR-89	4.74E-06
SR-90	5.99E-06
XE-133	6.67E-05
CS-134	1.11E-04
CS-137	1.10E-03
Unidentified	7.32E-04

Total Liquid Tritium Released	1.49E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	2.48E+06 liters
Volume of Dilution Water Used During Period	1.16E+11 liters

Installation: Palisades Location: 5 Mi S South Haven, MI
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: Consumers Power
Docket Number: 50-255 Licensed Power(MWT): 2.53E+03
Thermal Power(MWH): 1.01E+07 Net Electrical Power(MWH): 3.01E+06
Commercial Operation: 12/31/71 Initial Criticality: 05/24/71
Cooling Water Source: Lake Michigan

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
5	Truck	Barnwell, SC
1	Truck	Richland, WA
1	Truck	SEG, Barnwell, SC
7	Truck	U.S. Ecol,WA & SEG,SC
1	Truck	U.S. Ecology, Richland, WA

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	3.34E+01	
	Ci	4.02E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	2.41E+02	after compaction
	Ci	2.07E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
filters	m3	1.02E+01	
	Ci	2.65E+01	

Installation: Palo Verde
Unit No.(s): 1

Location: 36 Mi W Phoenix, AZ

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-528
Thermal Power(MWH): 1.45E+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): 4.72E+06
Initial Criticality: 05/25/85

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.17E-01
CO-58	8.11E-10
CO-60	4.31E-04
BR-82	4.99E-05
KR-85	9.04E+01
KR-85M	4.57E-01
KR-87	3.22E-01
KR-88	4.37E-01
RB-88	1.26E-02
I-131	2.23E-03
XE-131M	3.12E+00
I-133	1.60E-04
XE-133	5.79E+02
XE-133M	3.00E+00
CS-134	1.24E-05
I-135	1.10E-05
XE-135	3.12E+01
CS-137	1.86E-05
CS-138	4.67E-05
LA-140	5.11E-07

Total Airborne Tritium Released 1.66E+02 Ci

Installation: Palo Verde
Unit No.(s): 2

Location: 36 Mi W Phoenix, AZ

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-529
Thermal Power(MWH): 1.91E+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): 6.24E+06
Initial Criticality: 04/18/86

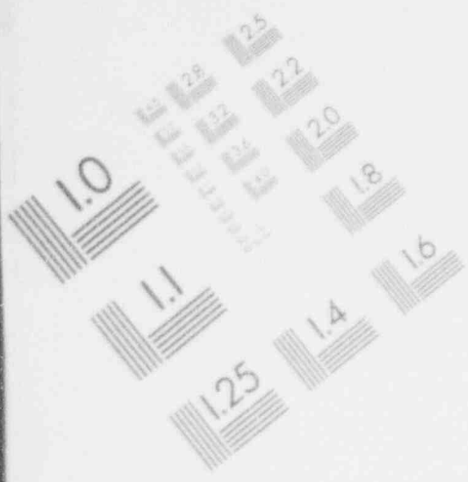
Airborne Effluents

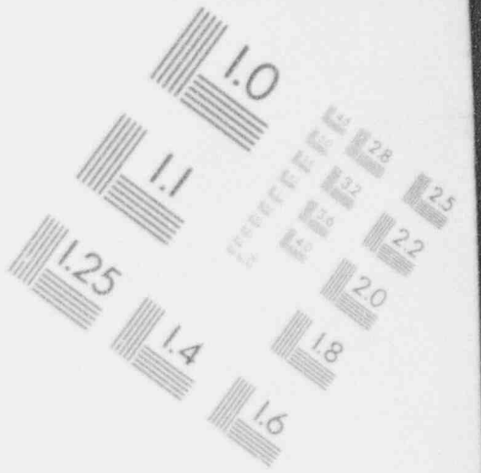
Nuclide Released	Activity (Ci)
AR-41	2.89E+00
CR-51	3.54E-05
MN-54	4.40E-06
CO-58	7.43E-05
CO-60	5.40E-05
BR-82	2.04E-04
KR-85	7.88E+00
KR-85M	5.75E-03
KR-88	1.05E-01
RB-88	2.82E-03
NB-95	8.92E-06
ZR-95	4.25E-06
RU-103	2.05E-04
TE-123M	3.13E-06
SB-124	2.93E-04
I-131	1.99E-03
XE-131M	4.08E+00
I-133	1.12E-04
XE-133	6.48E+02
XE-133M	1.71E+00
XE-135	1.06E+01
CS-138	9.09E-07
XE-138	3.47E-04

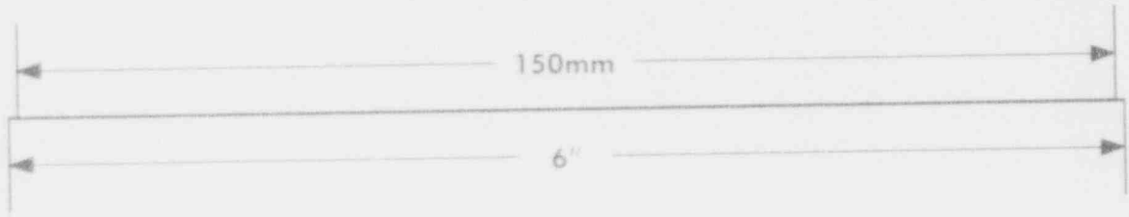
Total Airborne Tritium Released 1.82E+02 Ci

1

IMAGE EVALUATION
TEST TARGET (MT-3)







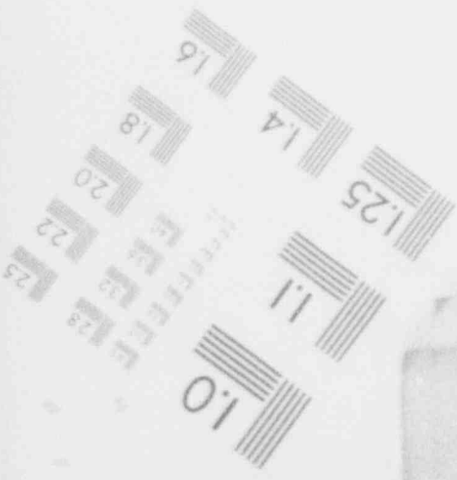


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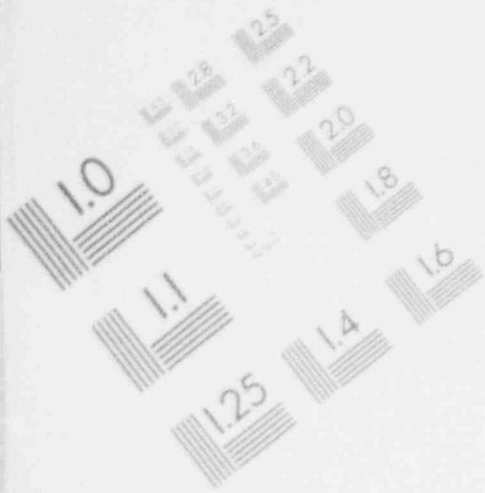
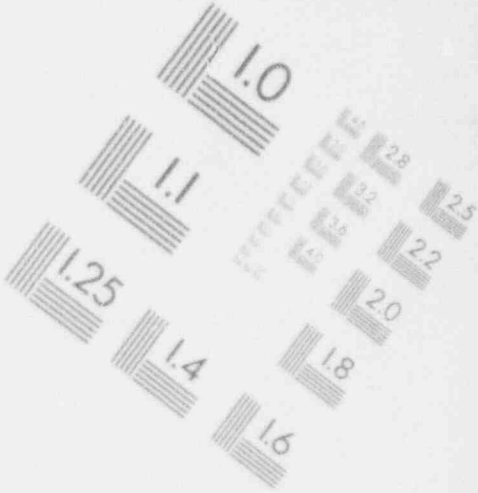
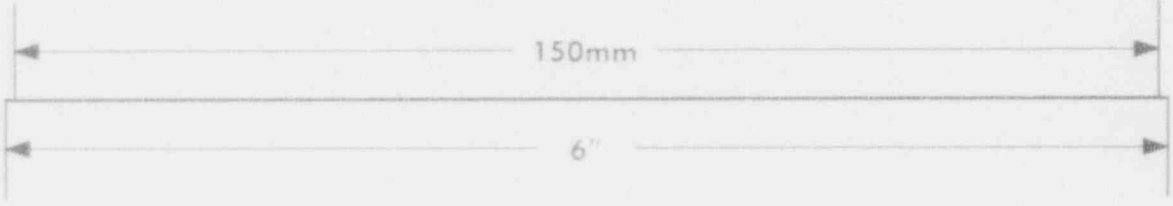
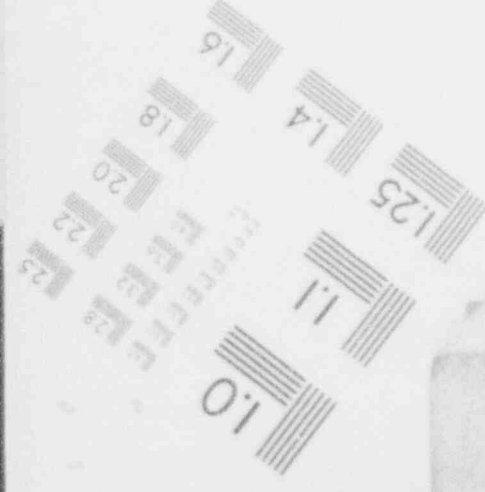
IMAGE EVALUATION TEST TARGET (MT-3)









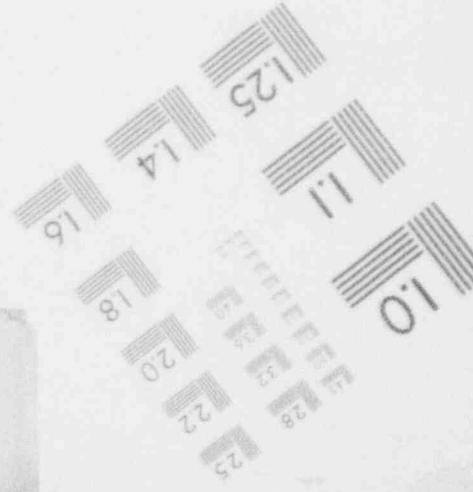


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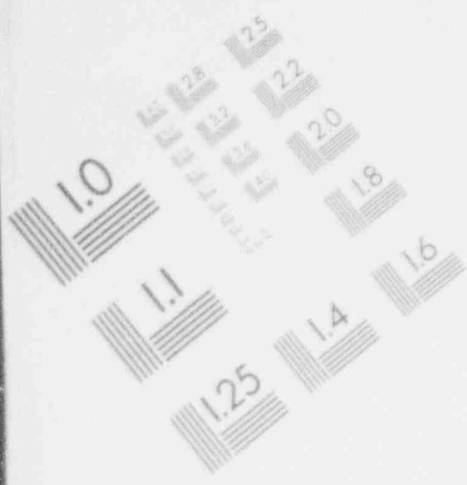
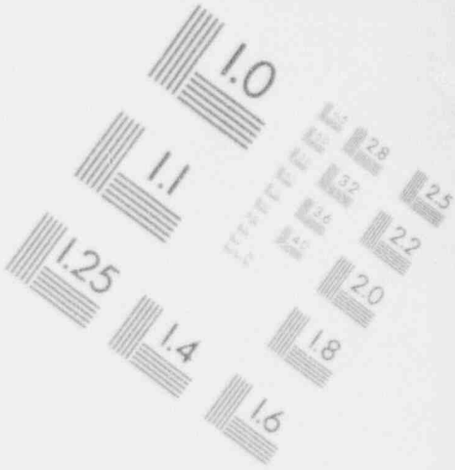
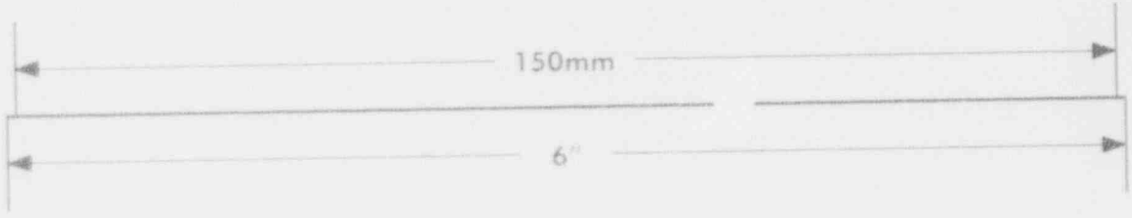
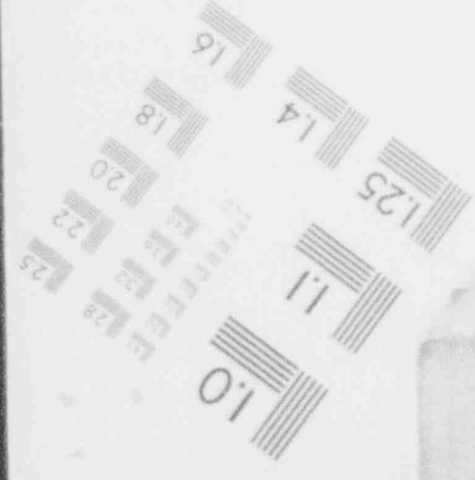
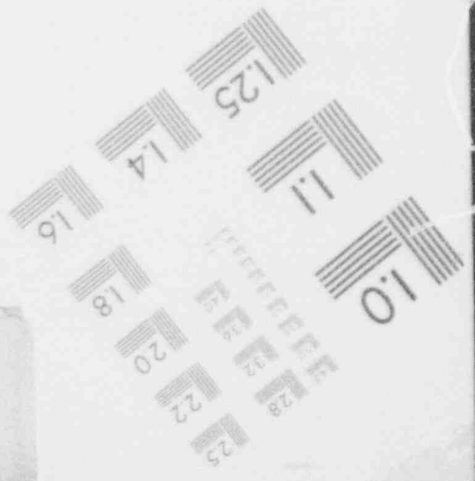
IMAGE EVALUATION TEST TARGET (MT-3)

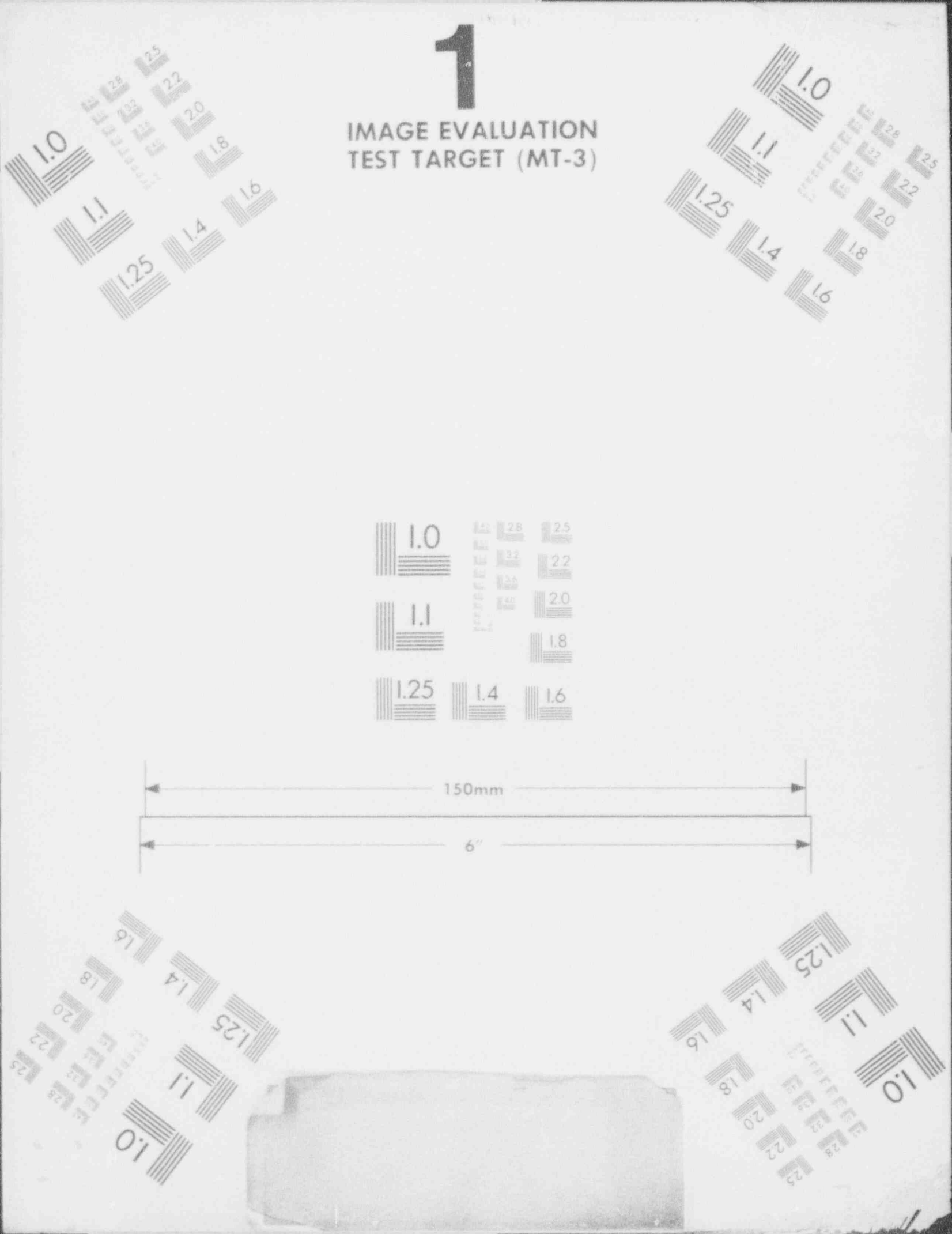











1
IMAGE EVALUATION
TEST TARGET (MT-3)
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
150mm
6"

Installation: Palo Verde
Unit No.(s): 3

Location: 36 Mi W Phoenix, AZ

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-530
Thermal Power(MWH): 2.92E+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): 9.64E+06
Initial Criticality: 10/25/87

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.74E+00
BR-82	2.78E-04
KR-85	2.53E+00
KR-85M	5.64E+00
KR-87	1.50E+00
KR-88	5.06E+00
RB-88	1.12E-02
I-131	1.13E-03
XE-131M	1.39E+00
I-133	3.45E-04
XE-133	1.08E+03
XE-133M	3.94E+00
XE-135	9.28E+01
XE-135M	1.90E-01
CS-137	5.90E-08
CS-138	1.17E-04

Total Airborne Tritium Released 4.05E+02 Ci

Installation: Palo Verde
Unit No.(s): 1&2&3

Location: 36 Mi W Phoenix, AZ

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-528
Thermal Power(MWH): 1.45E+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): 4.72E+06
Initial Criticality: 05/25/85

Unit Number: 2 Type: PWR
Docket Number: 50-529
Thermal Power(MWH): 1.91E+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): 6.24E+06
Initial Criticality: 04/18/86

Unit Number: 3 Type: PWR
Docket Number: 50-530
Thermal Power(MWH): 2.92E+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): 9.64E+06
Initial Criticality: 10/25/87

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
78	Truck	Hanford, WA

Estimate of Major Nuclide Composition (by type of waste) %	Jan-June	Jul-Dec
A		
AG-110M	5.04E-05	4.15E-01
AM-241	6.66E-06	4.29E-04
C-14	1.71E+00	3.08E+00
CE-144	7.13E-03	1.91E-01
CM-242	1.03E-08	
CM-243/244	5.74E-06	7.06E-04
CO-58	1.64E+01	1.47E+01
CO-60	1.62E+01	1.33E+01
CR-51	7.54E-01	7.99E-01
CS-134	4.70E+00	5.32E+00
CS-137	9.05E+00	1.04E+01
FE-55	3.80E+01	2.75E+01
FE-59	3.32E-01	
H-3	3.32E-01	
I-133	2.68E-04	
MN-54	1.66E+00	1.22E+00
NB-95	1.34E+00	5.16E-01
NI-63	2.10E+00	1.12E+01
PU-238	4.49E-04	1.75E-03
PU-239/240	4.92E-04	1.23E-03
PU-241	2.85E-02	1.41E-01
RU-106		7.47E-01
SB-124	4.70E+00	6.53E+00

Installation: Palo Verde Location: 36 Mi W Phoenix, AZ
Unit No.(s): 1&2&3

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2&3(continued)

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	July-Dec
A		
SB-125	3.45E-01	1.61E+00
SN-113	1.55E-04	
SR-90	9.83E-03	8.97E-02
TC-99	7.79E-04	2.44E-03
ZN-65	3.16E-02	6.97E-02
ZR-95	7.35E-01	1.15E-01
B		
AG-110M		7.85E-01
C-14	5.28E-01	6.77E-01
CE-144		3.36E-01
CO-58	5.65E+00	6.29E+00
CO-60	8.19E+00	9.85E+00
CR-51	3.86E+00	2.23E-01
CS-134	7.06E+00	9.03E+00
CS-137	1.57E+01	2.14E+01
FE-55	2.81E+01	2.68E+01
H-3	4.90E-01	7.13E-01
I-131	3.08E-01	3.84E-01
MN-54	1.25E+00	7.00E-02
NB-95	1.10E+00	4.42E-01
NI-63	9.67E+00	1.11E+01
RU-103	1.48E-01	
SB-124	1.74E+01	1.15E+01
SB-125	1.64E-01	
SR-90		3.80E-02
TC-99	3.64E-06	
ZR-95	3.10E-01	3.21E-01
D		
C-14		9.86E+01
CE-144		1.42E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	5.65E+02	
	Ci	2.32E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.95E+02	compacted & non-compacted
	Ci	8.32E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe) solidified oil	m3	5.65E+00	
	Ci	1.45E-04	

Installation: Peach Bottom Location: 17.9 Mi S Lancaster, PA
Unit No.(s): 2&3

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 2 Type: BWR Licensee: Philadelphia Electric
Docket Number: 50-277 Licensed Power(MWT): 3.44E+03
Thermal Power(MWH): 2.11E+07 Net Electrical Power(MWH): 6.70E+06
Commercial Operation: 07/05/74 Initial Criticality: 09/16/73
Cooling Water Source: Susquehanna River

Unit Number: 3 Type: BWR Licensee: Philadelphia Electric
Docket Number: 50-278 Licensed Power(MWT): 3.44E+03
Thermal Power(MWH): 2.37E+07 Net Electrical Power(MWH): 7.53E+06
Commercial Operation: 12/23/74 Initial Criticality: 08/07/74
Cooling Water Source: Susquehanna River

Airborne Effluents

Nuclide Released	Activity (Ci)
NA-24	3.27E-05
CR-51	1.02E-04
CO-58	7.00E-07
CO-60	2.19E-06
KR-85M	5.57E+02
KR-87	3.65E+02
KR-88	5.21E+02
RB-88	1.14E-02
RB-89	1.17E-03
SR-89	2.34E-03
SR-90	8.27E-05
SR-91	2.05E-03
Y-91M	1.48E-02
MO-99	1.23E-04
TC-99M	1.67E-04
I-131	1.31E-02
XE-131M	8.22E+01
I-132	3.47E-05
TE-132	9.04E-06
I-133	4.07E-02
XE-133	6.97E+03
XE-133M	7.02E+01
I-135	1.68E-02
XE-135	1.75E+03
XE-135M	4.41E+02
CS-137	9.05E-05
CS-138	1.48E-01
XE-138	6.28E+01
BA-139	2.46E-02
BA-140	2.55E-03
LA-140	1.20E-03
Unidentified	4.20E+02

Total Airborne Tritium Released 3.11E+01 Ci

Installation: Peach Bottom Location: 17.9 Mi S Lancaster, PA
Unit No.(s): 2&3

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 2 Type: BWR Licensee: Philadelphia Electric
Docket Number: 50-277 Licensed Power(MWT): 3.44E+03
Thermal Power(MWH): 2.11E+07 Net Electrical Power(MWH): 6.70E+06
Commercial Operation: 07/05/74 Initial Criticality: 09/16/73
Cooling Water Source: Susquehanna River

Unit Number: 3 Type: BWR Licensee: Philadelphia Electric
Docket Number: 50-278 Licensed Power(MWT): 3.44E+03
Thermal Power(MWH): 2.37E+07 Net Electrical Power(MWH): 7.53E+06
Commercial Operation: 12/23/74 Initial Criticality: 08/07/74
Cooling Water Source: Susquehanna River

Liquid Effluents

Nuclide Released	Activity (Ci)
P-32	1.61E-03
CR-51	4.04E-03
MN-54	5.03E-05
FE-55	1.74E-03
CO-58	5.43E-05
CO-60	1.44E-03
ZN-65	5.00E-04
KR-85M	7.34E-05
KR-88	7.23E-05
SR-89	2.74E-04
SR-90	1.28E-04
SR-92	1.63E-05
NB-95	7.01E-05
MO-99	4.01E-06
TC-99M	4.51E-06
AG-110M	5.03E-04
I-131	2.34E-04
XE-131M	7.18E-04
XE-133	6.98E-02
XE-133M	1.17E-03
CS-134	4.30E-04
XE-135	5.00E-02
XE-135M	4.41E-05
CS-137	2.23E-03
LA-140	2.47E-04

Total Liquid Tritium Released	2.35E+01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.43E+07 liters
Volume of Dilution Water Used During Period	1.78E+11 liters

Installation: Peach Bottom
Unit No.(s): 2&3

Location: 17.9 Mi S Lancaster, PA

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 2 Type: BWR
Docket Number: 50-277
Thermal Power(MWH): 2.11E+07
Commercial Operation: 07/05/74
Cooling Water Source: Susquehanna River

Licensee: Philadelphia Electric
Licensed Power(MWT): 3.44E+03
Net Electrical Power(MWH): 6.70E+06
Initial Criticality: 09/16/73

Unit Number: 3 Type: BWR
Docket Number: 50-278
Thermal Power(MWH): 2.37E+07
Commercial Operation: 12/23/74
Cooling Water Source: Susquehanna River

Licensee: Philadelphia Electric
Licensed Power(MWT): 3.44E+03
Net Electrical Power(MWH): 7.53E+06
Initial Criticality: 08/07/74

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
124		
82		Quadrex
10		SEG

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	6.28E+02	
	Ci	1.66E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.45E+02	compacted & non-compacted
	Ci	3.58E+01	
C. Irradiated Components, Control Rods, etc.	m3	2.08E+01	
	Ci	2.85E+04	
D. Other (describe)			
Filters	m3	1.41E+01	
	Ci	3.14E+01	

Installation: Perry
Unit No.(s): 1

Location: 7 Mi NE Painesville, OH

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-440
Thermal Power(MWH): 2.00E+07
Commercial Operation: 11/18/87
Cooling Water Source: Lake Erie

Licensee: Cleveland Electric Illuminating Co
Licensed Power(MWT): 3.58E+03
Net Electrical Power(MWH): 6.59E+06
Initial Criticality: 06/06/86

Airborne Effluents

Nuclide Released	Activity (Ci)
KR-85M	6.27E-01
KR-87	6.16E-01
KR-88	5.35E-01
SR-89	1.36E-03
SR-90	6.75E-06
I-131	9.70E-03
I-132	9.68E-05
I-133	1.32E-02
XE-133	2.97E+01
XE-133M	2.84E-01
CS-134	1.76E-11
XE-135	3.86E+01
XE-135M	1.08E+01
CS-137	2.81E-11
XE-137	2.78E-01
XE-138	2.27E+00

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	2.39E-01
MN-54	4.20E-02
FE-55	2.26E-02
CO-58	1.22E-02
FE-59	4.51E-03
CO-60	1.46E-01
ZN-65	7.88E-02
SR-89	1.52E-03
SR-90	2.45E-05
SR-92	5.76E-04
NB-95	3.19E-04
ZR-95	1.38E-04
ZR-97	8.67E-05
TC-99M	9.75E-05
AG-110M	3.16E-02
SB-124	9.24E-05
I-131	7.47E-04
I-133	1.17E-04
XE-133	8.20E-03
CS-134	1.23E-02
XE-135	1.22E-03
CS-137	1.55E-02
LA-140	1.44E-03

Total Liquid Tritium Released	8.79E+00 Ci
Volume of Liquid Waste Released (Prior to Dilution)	2.85E+10 liters
Volume of Dilution Water Used During Period	1.62E+11 liters

Installation: Perry
Unit No.(s): 1

Location: 7 Mi NE Painesville, OH

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR
Docket Number: 50-440
Thermal Power(MWH): 2.00E+07
Commercial Operation: 11/18/87
Cooling Water Source: Lake Erie

Licensee: Cleveland Electric Illuminating Co
Licensed Power(MWT): 3.58E+03
Net Electrical Power(MWH): 6.59E+06
Initial Criticality: 06/06/86

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
17	Truck	Barnwell, SC
20	Truck	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AG-110M		6.63E-01
AM-241		2.89E-05
C-14	5.46E-01	3.75E-02
CE-141		3.64E-05
CE-144		1.39E-01
CM-242		1.58E-04
CO-57		1.80E-03
CO-58	3.78E+00	5.45E-01
CO-60	4.21E+01	1.18E+01
CR-51	8.76E+00	4.08E+00
CS-134	1.59E+00	3.19E-01
CS-137	2.44E+00	4.97E-01
FE-55	1.25E+01	7.04E+01
FE-59	1.85E+00	3.26E-01
H-3	6.15E+00	2.53E-01
I-129		1.08E-05
MN-54	1.52E+01	2.81E+00
NB-95		2.96E-02
NI-59		9.71E-03
NI-63	1.12E+00	2.64E-01
PU-238		7.09E-06
PU-239/240		4.09E-06
PU-241		8.26E-03
SB-124		6.63E-03
SR-90	5.10E-02	1.74E-02
TC-99		6.98E-05
ZN-65	3.50E+00	7.56E+00
B		
AG-110M	1.76E+00	4.00E-01
C-14	1.00E-02	
CE-144		3.00E-02
CO-58	1.65E+01	3.64E+00
CO-60	1.97E+01	1.92E+01
CR-51	1.45E+01	1.00E-02
CS-137		2.60E-01

Installation: Perry Location: 7 Mi NE Painesville, OH
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Estimate of Major Nuclide Composition (by type of waste) %	Jan-June	July-Dec
B		
FE-55		6.11E+01
FE-59	3.78E+00	2.12E+00
H-3	3.00E-02	
MN-54	4.22E+01	1.24E+01
NB-95	1.59E+00	
NI-63		2.60E-01
SR-90		2.00E-02
ZN-65		6.00E-01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.61E+02	
	Ci	1.91E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.10E+03	
	Ci	3.00E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Pilgrim
Unit No.(s): 1

Location: 25 Mi SE Boston, MA

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-293
Thermal Power(MWH): 1.29E+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): 4.24E+06
Initial Criticality: 06/16/72

Airborne Effluents

Nuclide Released	Activity (Ci)
MN-54	4.32E-06
CO-60	1.35E-05
KR-85M	2.12E+02
KR-87	5.50E+00
KR-88	1.70E+02
SR-89	6.18E-04
SR-90	6.67E-06
I-131	9.23E-03
I-133	3.81E-02
XE-133	4.56E+02
XE-135	3.00E+01
XE-135M	1.07E+01
CS-137	1.51E-07
XE-138	2.35E+01
BA/LA-140	3.41E-04

Total Airborne Tritium Released 1.59E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	6.22E-04
MN-54	3.87E-03
FE-55	5.03E-04
CO-58	2.52E-03
FE-59	8.07E-05
CO-60	5.91E-03
ZN-65	7.46E-06
SR-89	3.06E-05
SR-90	2.41E-05
AG-110M	5.58E-04
XE-133	1.63E-05
CS-134	1.73E-06
XE-135	1.59E-04
CS-137	1.23E-03
BA/LA-140	2.85E-04

Total Liquid Tritium Released	3.68E+00 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.66E+06 liters
Volume of Dilution Water Used During Period	4.41E+09 liters

Installation: Pilgrim
Unit No.(s): 1

Location: 25 Mi SE Boston, MA

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR
Docket Number: 50-293
Thermal Power(MWH): 1.29E+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): 4.24E+06
Initial Criticality: 06/16/72

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
3	Tractor-Trailer	Alaron, Wampum,PA/CNSI SC
30	Tractor-Trailer	CNSI, Barnwell, SC
7	Tractor-Trailer	Quadrex, Oak Ridge,TN/CNSI SC
23	Tractor-Trailer	SEG, Oak Ridge,TN/CNSI SC

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AG-110M	2.64E-03	4.12E-01
BA-140	9.61E-02	9.90E-02
C-14	1.01E-02	5.00E-03
CE-141	1.93E-02	
CE-144	3.57E-02	1.80E-01
CM-242	3.45E-05	
CO-58	1.00E+01	1.39E+01
CO-60	3.41E+01	3.37E+01
CR-51	5.58E-01	2.08E+01
CS-134	5.77E-01	4.02E-01
CS-137	2.89E+01	2.15E+00
FE-55	6.78E+00	1.57E+01
FE-59	2.59E-01	7.65E-01
H-3	9.48E-03	2.00E-03
I-129	1.38E-03	
I-131	1.14E-02	2.10E-02
LA-140	1.08E-01	
MN-54	1.62E+01	8.02E+00
NI-63	2.15E+00	2.59E+00
PU-241	1.56E-02	7.00E-03
SR-89		4.00E-02
SR-90	7.24E-03	3.20E-02
TC-99	1.16E-03	
TRU	1.46E-03	
ZN-65	4.61E-02	1.26E+00
B		
AM-241		9.99E-03
C-14	2.00E-03	9.99E-03
CE-144		1.40E-01
CM-242	8.00E-05	
CM-243/244		2.30E-01
CO-58	1.29E+00	2.48E+00
CO-60	3.19E+01	3.95E+01

Installation: Pilgrim Location: 25 Mi SE Boston, MA
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Estimate of Major Nuclide Composition (by type of waste) %	Jan-June	July-Dec
P		
CR-51		2.69E+00
CS-134		1.10E-01
CS-137	6.06E+00	6.85E+00
FE-55	5.75E+01	4.11E+01
FE-59		4.49E-01
H-3	2.00E-02	3.99E-03
I-129	4.00E-03	9.99E-04
MN-54	1.46E+00	1.48E+00
NI-59		9.99E-03
NI-63	1.47E+00	3.91E+00
PU-238		4.99E-03
PU-239/240		6.99E-03
PU-241	1.90E-01	4.49E-01
SB-124		4.99E-02
SR-89		5.99E-02
SR-90	6.00E-02	3.99E-02
TC-99	4.00E-02	3.00E-02
TRU	1.00E-02	
ZN-65		3.00E-01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.58E+02	
	Ci	6.53E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	2.13E+02	
	Ci	9.40E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Point Beach
Unit No.(s): 1&2

Location: 15 Mi N Manitowoc, WI

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-266
Thermal Power(MWH): 1.09E+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): 3.53E+06
Initial Criticality: 11/02/70

Unit Number: 2 Type: PWR
Docket Number: 50-301
Thermal Power(MWH): 1.16E+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): 3.79E+06
Initial Criticality: 05/30/72

Airborne Effluents

Nuclide Released	Activity (Ci)
F-18	1.10E-05
AR-41	1.11E+00
CO-57	1.23E-06
CO-58	2.74E-05
CO-60	3.56E-06
KR-85	1.78E-01
KR-85M	1.85E-01
KR-87	4.05E-01
KR-88	4.49E-01
NB-95	9.56E-10
ZR-95	7.43E-10
I-131	7.85E-05
I-132	1.09E-05
I-133	1.13E-04
XE-133	1.96E+00
XE-133M	2.06E-02
I-135	3.15E-08
XE-135	1.09E+00
XE-135M	6.49E-01
CS-137	1.91E-04
XE-138	1.99E+00

Total Airborne Tritium Released 1.28E+02 Ci

Installation: Point Beach Location: 15 Mi N Manitowoc, WI
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR Licensee: Wisconsin Electric Power Company
Docket Number: 50-266 Licensed Power(MWT): 1.52E+03
Thermal Power(MWH): 1.09E+07 Net Electrical Power(MWH): 3.53E+06
Commercial Operation: 12/21/70 Initial Criticality: 11/02/70
Cooling Water Source: Lake Michigan

Unit Number: 2 Type: PWR Licensee: Wisconsin Electric Power Company
Docket Number: 50-301 Licensed Power(MWT): 1.52E+03
Thermal Power(MWH): 1.16E+07 Net Electrical Power(MWH): 3.79E+06
Commercial Operation: 10/01/72 Initial Criticality: 05/30/72
Cooling Water Source: Lake Michigan

Liquid Effluents

Nuclide Released	Activity (Ci)
F-18	2.26E-03
CR-51	8.71E-05
MN-54	3.10E-05
CO-57	4.08E-06
CO-58	3.25E-04
CO-60	1.41E-03
SR-89	1.55E-03
SR-90	4.32E-04
NB-95	8.68E-05
ZR-95	1.58E-05
NB-97	8.80E-06
AG-110M	1.71E-04
SB-125	1.28E-05
I-131	1.53E-04
I-132	4.45E-05
I-133	3.01E-03
CS-137	1.94E-03
CE-144	9.47E-06

Total Liquid Tritium Released	8.72E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	3.80E+08 liters
Volume of Dilution Water Used During Period	6.91E+11 liters

Installation: Point Beach
Unit No.(s): 1&2

Location: 15 Mi N Manitowoc, WI

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-266
Thermal Power(MWH): 1.09E+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): 3.53E+06
Initial Criticality: 11/02/70

Unit Number: 2 Type: PWR
Docket Number: 50-301
Thermal Power(MWH): 1.16E+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): 3.79E+06
Initial Criticality: 05/30/72

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
24		Barnwell, SC
2		Hanford, WA

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	4.43E+01	burial volume
	Ci	2.05E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	8.58E+01	burial volume
	Ci	2.75E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Prairie Island Location: 26 Mi SE Minneapolis, MN
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR Licensee: Northern States Power
Docket Number: 50-282 Licensed Power(MWT): 1.65E+03
Thermal Power(MWH): 1.23E+07 Net Electrical Power(MWH): 3.83E+06
Commercial Operation: 12/16/73 Initial Criticality: 12/01/73
Cooling Water Source: Mississippi River

Unit Number: 2 Type: PWR Licensee: Northern States Power
Docket Number: 50-306 Licensed Power(MWT): 1.65E+03
Thermal Power(MWH): 1.22E+07 Net Electrical Power(MWH): 3.80E+06
Commercial Operation: 12/21/74 Initial Criticality: 12/17/74
Cooling Water Source: Mississippi River

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.17E+00
CO-58	1.95E-05
CO-60	5.01E-06
KR-85	2.57E+00
KR-85M	1.81E-02
KR-88	1.28E-04
SR-89	6.92E-07
CD-109	3.23E-05
SB-125	1.19E-06
I-131	1.43E-03
XE-131M	8.93E-01
I-133	5.16E-05
XE-133	7.68E+01
XE-133M	6.56E-01
CS-134	4.90E-06
XE-135	7.09E-01
CS-137	1.19E-05

Total Airborne Tritium Released 1.26E+02 Ci

Installation: Prairie Island
Unit No.(s): 1&2

Location: 26 Mi SE Minneapolis, MN

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-282
Thermal Power(MWH): 1.23E+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): 3.83E+06
Initial Criticality: 12/01/73

Unit Number: 2 Type: PWR
Docket Number: 50-306
Thermal Power(MWH): 1.22E+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): 3.80E+06
Initial Criticality: 12/17/74

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	6.12E-04
AR-41	2.50E-05
SC-47	4.93E-04
CR-51	2.94E-03
MN-54	3.77E-04
FE-55	3.39E-02
CO-57	2.29E-05
CO-58	3.37E-02
FE-59	5.03E-03
CO-60	9.66E-03
ZN-65	3.34E-05
SR-89	1.31E-03
SR-92	8.20E-06
NB-97	1.37E-04
ZR-97	6.37E-05
TC-99M	9.32E-06
RH-105	4.78E-06
AG-110M	2.74E-02
SN-113	1.29E-03
SB-122	7.25E-04
SB-124	6.83E-03
SB-125	5.11E-03
SB-126	1.44E-05
I-131	2.75E-04
XE-131M	4.50E-04
XE-133	1.95E-02
XE-133M	8.91E-05
CS-134	1.47E-04
XE-135	4.55E-04
CS-136	2.77E-06
CS-137	2.18E-04
LA-140	2.39E-05
LA-142	3.60E-06
CE-144	4.65E-05
ND-147	7.12E-06

Total Liquid Tritium Released	3.98E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.73E+08 liters
Volume of Dilution Water Used During Period	5.92E+11 liters

Installation: Prairie Island Location: 26 Mi SE Minneapolis, MN
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR Licensee: Northern States Power
Docket Number: 50-282 Licensed Power(MWT): 1.65E+03
Thermal Power(MWH): 1.23E+07 Net Electrical Power(MWH): 3.83E+06
Commercial Operation: 12/16/73 Initial Criticality: 12/01/73
Cooling Water Source: Mississippi River

Unit Number: 2 Type: PWR Licensee: Northern States Power
Docket Number: 50-306 Licensed Power(MWT): 1.65E+03
Thermal Power(MWH): 1.22E+07 Net Electrical Power(MWH): 3.80E+06
Commercial Operation: 12/21/74 Initial Criticality: 12/17/74
Cooling Water Source: Mississippi River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
3	Truck	Barnwell, SC
2	Truck	Oak Ridge, TN
4	Truck	Richland, WA

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

A		
C-14	1.00E-01	
CO-58		1.38E+01
CO-60	4.47E+01	3.80E+01
CS-134	3.10E+00	3.60E+00
CS-137	1.16E+01	8.00E+00
FE-55	1.27E+01	1.12E+01
H-3	1.10E+00	
MN-54		2.[illegible]E+00
NI-63	2.66E+01	2.[illegible]E+01
B		
C-14		1.13E+01
CO-60		2.95E+01
FE-55		4.65E+01
H-3		1.60E+00
NI-63		1.11E+01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	3.19E+01	after compaction
	Ci	3.23E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	2.35E+01	after compaction
	Ci	2.32E-01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Quad-Cities
Unit No.(s): 1&2

Location: 20 Mi NE Moline, IL

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: BWR
Docket Number: 50-265
Thermal Power(MWH): 1.70E+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): 5.33E+06
Initial Criticality: 10/18/71

Unit Number: 2 Type: BWR
Docket Number: 50-265
Thermal Power(MWH): 1.38E+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): 4.35E+06
Initial Criticality: 04/26/72

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.10E+00
CR-51	1.07E-02
MN-54	4.61E-03
CO-58	6.41E-04
FE-59	4.32E-05
CO-60	1.01E-02
ZN-65	4.17E-05
KR-85M	9.88E-01
KR-87	1.93E+00
KR-88	1.56E+01
SR-89	1.59E-03
SR-90	1.40E-05
NB-95	1.54E-05
MO-99	4.39E-03
I-131	4.65E-03
I-133	1.06E-02
XE-133	4.48E+00
I-135	1.85E-02
XE-135	2.72E+00
XE-135M	1.04E+01
CS-137	2.73E-04
XE-138	4.25E+01
BA-140	7.51E-04
LA-140	3.27E-03
HF-181	2.03E-05

Total Airborne Tritium Released 1.16E+02 Ci

Installation: Quad-Cities Location: 20 Mi NE Moline, IL
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: BWR Licensee: Commonwealth Edison Co.
Docket Number: 50-265 Licensed Power(MWT): 2.51E+03
Thermal Power(MWH): 1.70E+07 Net Electrical Power(MWH): 5.33E+06
Commercial Operation: 02/18/73 Initial Criticality: 10/18/71
Cooling Water Source: Mississippi River

Unit Number: 2 Type: BWR Licensee: Commonwealth Edison Co.
Docket Number: 50-265 Licensed Power(MWT): 2.51E+03
Thermal Power(MWH): 1.38E+07 Net Electrical Power(MWH): 4.55E+06
Commercial Operation: 03/10/73 Initial Criticality: 04/26/72
Cooling Water Source: Mississippi River

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	2.48E-02
MN-54	9.55E-03
FE-55	7.11E-03
CO-58	2.94E-03
FE-59	1.30E-03
CO-60	6.06E-02
ZN-65	7.88E-04
AS-76	1.72E-04
SR-89	5.47E-04
SR-90	7.24E-05
NB-95	4.70E-05
AG-110M	1.03E-03
SB-124	6.45E-05
XE-133	6.75E-04
XE-135	9.68E-04
CS-137	4.24E-03
LA-140	1.98E-05

Total Liquid Tritium Released	2.61E+01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	6.95E+06 liters
Volume of Dilution Water Used During Period	1.38E+12 liters

Installation: Quad-Cities
Unit No.(s): 1&2

Location: 20 Mi NE Moline, IL

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: BWR
Docket Number: 50-265
Thermal Power(MWH): 1.70E+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): 5.33E+06
Initial Criticality: 10/18/71

Unit Number: 2 Type: BWR
Docket Number: 50-265
Thermal Power(MWH): 1.38E+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): 4.35E+06
Initial Criticality 04/26/72

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
40		CNSI- Barnwell, SC
2		CNSI- Channanhan
8		CNSI- WA
11		Hittman- SEG
10		Kindrick- Quadrex
1		Raytech- CNSI
4		Raytech- CNSI, Channahan
1		Raytech- WA
6		USE- WA

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.21E+03	
	Ci 1.24E+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 Location: 25 Mi SE Sacramento, CA
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: PWR Licensee: Sacramento Municipal Utility
Docket Number: 50-312 Licensed Power(MWT): 2.77E+03
Thermal Power(MWH): 0.00E+00 Net Electrical Power(MWH): 0.00E+00
Commercial Operation: 04/17/75 Initial Criticality: 09/16/74
Cooling Water Source: Folsom Canal

Airborne Effluents

Nuclide Released	Activity (Ci)
KR-85	2.20E-01

Total Airborne Tritium Released 2.92E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
FE-55	5.49E-06
CO-60	9.13E-05
CS-134	8.50E-06
CS-137	1.02E-04

Total Liquid Tritium Released	1.37E+01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.84E+07 liters
Volume of Dilution Water Used During Period	1.83E+10 liters

Installation: Rancho Seco Location: 25 Mi SE Sacramento, CA
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: Sacramento Municipal Utility
Docket Number: 50-312 Licensed Power(MWT): 2.77E+03
Thermal Power(MWH): 0.00E+00 Net Electrical Power(MWH): 0.00E+00
Commercial Operation: 04/17/75 Initial Criticality: 09/16/74
Cooling Water Source: Folsom Canal

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
5	Truck	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AG-110M		3.68E-01
C-14		1.73E-01
CD-109		1.08E+00
CO-58		1.02E+00
CO-60		2.44E+00
CS-134		1.94E+01
CS-137		6.79E+01
FE-55		2.24E+00
H-3		8.28E-01
MN-54		3.09E-01
NI-63		3.63E+00
SB-125		2.79E-01
SR-90		1.49E-01
B		
AG-110M	1.13E-01	
C-14	8.17E-01	
CO-60	1.14E+01	
CS-134	3.39E-01	
CS-137	2.04E+00	
FE-55	1.04E+01	
H-3	5.69E+01	
MN-54	1.46E-01	
NI-63	1.71E+01	
SB-125	2.25E-01	
D		
C-14	3.46E-01	
CO-60		1.47E+01
CS-134		8.36E+00
CS-137	1.91E-01	7.69E+01
FE-55	1.22E-01	
H-3	9.94E+01	

Installation: Rancho Seco Location: 25 Mi SE Sacramento, CA
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.50E+01	burial volume
	Ci	3.69E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	5.89E+00	burial volume
	Ci	1.26E-01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
Oil	m3	9.56E+00	before incineration
	m3	0.00E+00	after incineration
	Ci	6.91E-04	
Moisture Seperator Reheaters&Chevrons	m3	7.11E-01	burial volume
	Ci	5.50E-03	

Installation: River Bend
Unit No.(s): 1

Location: 24 Mi NNW Baton Rouge, LA

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-458
Thermal Power(MWH): 1.78E+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): 5.59E+06
Initial Criticality: 10/31/85

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	1.64E-05
MN-54	1.26E-05
CO-58	4.01E-05
CO-60	1.05E-04
KR-85M	7.49E+00
KR-87	2.54E+01
KR-88	7.36E+00
SR-89	5.89E 04
SR-90	2.66E-05
I-131	4.83E-02
I-133	2.47E-01
XE-133	4.34E+02
XE-133M	2.40E+00
XE-135	4.17E+02
XE-135M	6.71E+01
XE-137	9.36E+00
XE-138	6.14E+01
BA-140	2.57E-03
CE-141	8.91E-05

Total Airborne Tritium Released 4.52E+01 Ci

Installation: River Bend
Unit No.(s): 1

Location: 24 Mi NNW Baton Rouge, LA

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-458
Thermal Power(MWH): 1.78E+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): 5.59E+06
Initial Criticality: 10/31/85

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	7.83E-06
CR-51	3.66E-01
MN-54	4.65E-02
FE-55	6.98E-02
CO-57	1.75E-05
CO-58	2.35E-02
FE-59	2.00E-02
CO-60	1.14E-01
ZN-65	3.31E-03
AS-76	1.20E-03
SR-89	5.63E-04
SR-90	5.93E-04
Y-91M	1.12E-03
SR-92	5.07E-04
Y-92	7.50E-03
NB-95	3.22E-03
ZR-95	2.03E-03
NB-97	2.71E-03
MO-99	2.88E-03
TC-99M	2.53E-03
RU-103	1.88E-03
RU-105	6.93E-04
AG-110M	2.01E-03
SN-113	1.97E-04
SB-122	3.92E-04
SB-124	3.41E-03
I-131	4.50E-03
XE-131M	1.45E-04
TE-132	1.12E-03
I-133	9.14E-04
XE-133	1.87E-01
XE-133M	9.48E-03
CS-134	5.85E-04
XE-135	2.47E-01
CS-137	7.09E-04
BA-140	4.83E-04
LA-140	3.91E-02
CE-141	4.89E-03
CE-144	1.16E-03
W-187	2.27E-04
NP-239	8.67E-03

Total Liquid Tritium Released	8.35E+01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.67E+07 liters
Volume of Dilution Water Used During Period	5.04E+09 liters

Installation: River Bend
Unit No.(s): 1

Location: 24 Mi NNW Baton Rouge, LA

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR
Docket Number: 50-458
Thermal Power(MWH): 1.78E+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): 5.59E+06
Initial Criticality: 10/31/85

Solid Waste Disposition

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

Estimate of Major Nuclide Composition (by type of waste) %	Jan-June	Jul-Dec
A		
AM-241	2.56E-04	1.87E-04
BA-140		9.00E-02
C-14	2.03E-01	8.20E-02
CE-141		1.32E-02
CM-242	1.51E-04	1.09E-04
CM-244	3.09E-04	1.88E-04
CO-57	8.95E-01	4.18E-03
CO-58	1.43E+01	1.59E+00
CO-60	3.57E+01	3.44E+01
CR-51	7.94E+00	1.18E+00
CS-134		1.03E+00
CS-136		5.25E-04
CS-137		9.53E-01
FE-55	1.65E+01	5.03E+01
FE-59	1.22E+00	8.19E-02
H-3	2.34E+00	1.52E-01
I-129		5.08E-04
I-131	9.31E-05	2.49E-02
I-133		7.86E-17
LA-140		1.67E-06
MN-54	1.78E+01	8.38E+00
MO-99	7.09E-08	2.23E-02
NB-95	8.92E-02	1.47E-02
NI-63	1.17E+00	5.50E-01
NP-239		8.90E-06
PU-238	5.65E-04	3.48E-04
PU-239	4.14E-04	2.57E-04
PU-241	1.50E-02	9.29E-03
RU-103		3.06E-03
SB-122	1.98E-08	
SB-124	2.66E-01	1.17E-02
SN-113		5.25E-04
SR-90		5.81E-02
TC-99		1.44E-03
TE-132		5.12E-06
ZN-65	1.45E+00	1.02E+00

Installation: River Bend Location: 24 Mi NW Baton Rouge, LA
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Estimate of Major Nuclide Composition (by type of waste) %	Jan-June	July-Dec
A		
ZR-95	1.41E-01	3.23E-03
B		
C-14	1.70E+00	2.78E+00
CO-58		7.00E-01
CO-60	6.23E+01	5.49E+01
CR-51	1.00E+00	5.60E-01
FE-55	2.18E+01	2.69E+01
H-3		5.00E-02
MN-54	9.00E+00	7.03E+00
NI-63	1.30E+00	4.97E+00
PU-241		5.60E-01
ZN-65	2.90E+00	1.13E+00
ZR-95		1.07E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.39E+02	after compaction
	Ci	3.90E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.06E+02	after compaction
	Ci	1.23E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: H. B. Robinson
Unit No.(s): 2

Location: 4.5 Mi WNW Hartsville, SC

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-261
Thermal Power(MWH): 1.08E+07
Commercial Operation: 03/07/71
Cooling Water Source: Robinson Impoundment

Licensee: Carolina Power & Light
Licensed Power(MWT): 2.30E+03
Net Electrical Power(MWH): 3.31E+06
Initial Criticality: 09/20/70

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.77E+00
CR-51	5.93E-06
MN-54	5.66E-08
CO-58	7.48E-06
CO-60	1.20E-04
KR-85	3.54E+00
KR-85M	2.76E-03
KR-87	2.43E-05
KR-88	1.29E-03
NB-95	2.34E-08
I-131	1.09E-07
XE-131M	1.11E-03
XE-133	7.74E-01
XE-133M	1.01E-02
XE-135	1.04E-01
CS-137	9.44E-08
CE-144	1.48E-07

Total Airborne Tritium Released 4.44E+00 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.08E-05
CR-51	4.53E-03
MN-54	1.68E-03
FE-55	1.86E-01
CO-57	8.05E-06
CO-58	1.27E-02
FE-59	2.13E-04
CO-60	9.48E-02
ZN-65	5.57E-06
SR-90	3.87E-06
SR-92	8.43E-06
NB-95	1.68E-04
NB-97	7.16E-05
RU-103	4.65E-07
AG-110M	3.58E-03
SN-113	1.53E-05
SB-124	1.02E-02
SB-125	4.51E-02
XE-131M	3.58E-04
XE-133	1.40E-01
XE-133M	1.95E-03
CS-134	5.69E-05
XE-135	4.24E-04
CS-137	7.92E-04

Total Liquid Tritium Released	3.53E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	4.61E+06 liters
Volume of Dilution Water Used During Period	7.63E+11 liters

Installation: H. B. Robinson Location: 4.5 Mi WNW Hartsville, SC
Unit No.(s): 2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: Carolina Power & Light
Docket Number: 50-261 Licensed Power(MWT): 2.30E+03
Thermal Power(MWH): 1.08E+07 Net Electrical Power(MWH): 3.31E+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
61	Sole Use Vehicle	Barnwell, SC

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14	1.00E-01	
CO-58		5.43E+00
CO-60	3.17E+01	5.56E+01
CR-51		1.59E+00
CS-134	7.00E+00	
CS-137	1.57E+01	
FE-55	3.75E+01	3.11E+01
H-3,C-14		1.11E-01
MN-54	1.20E+00	3.10E+00
NI-63	5.50E+00	3.17E+00
SB-125	1.30E+00	
B		
C-14	1.00E-02	
C-14,TC-99,I-129,CS-137		1.39E-02
CO-58	6.86E+00	3.20E+00
CO-60	1.16E+01	1.31E+01
CR-51	9.16E+00	5.38E+00
FE-55	6.02E+01	6.83E+01
NB-95	2.72E+00	1.77E+00
NI-63	7.43E+00	8.34E+00
ZP-95	2.06E+00	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	8.25E+00	
	Ci	7.74E+00	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	4.34E+02	before compaction
	m3	6.17E+01	after compaction
	Ci	6.70E+00	
C. Irradiated Components, Co[illegible] R ds, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Salem
Unit No.(s): 1

Location: 20 Mi S Wilmington, DE

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-272
Thermal Power(MWH): 1.90E+07
Commercial Operation: 06/30/77
Cooling Water Source: Delaware River

Licensee: PSE&
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 5.96E+06
Initial Criticality: 12/11/76

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.10E-03
CO-58	1.77E-05
CO-60	1.53E-05
KR-85	2.27E+00
KR-85M	3.45E-02
KR-88	1.09E-02
I-131	1.17E-03
XE-131M	3.23E+00
XE-133	3.01E+02
XE-133M	2.68E+00
XE-135	3.87E+00

Total Airborne Tritium Released 8.58E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	1.87E-03
NA-24	2.15E-03
AR-41	1.26E-06
CR-51	1.16E-02
MN-54	1.52E-01
FE-55	5.77E-02
CO-57	7.54E-03
CO-58	1.98E+00
FE-59	1.15E-03
CO-60	2.39E-01
ZN-65	7.74E-03
BR-84	7.11E-05
KR-87	1.41E-05
KR-88	5.92E-05
SR-89	1.62E-03
SR-90	1.80E-04
NB-95	9.76E-03
ZR-95	4.53E-03
TC-99M	8.53E-04
TC-101	8.69E-05
RH-105	1.02E-04
CD-109	4.07E-04
AG-110M	8.40E-04
SN-113	3.57E-04
SB-122	1.65E-03
SB-124	1.94E-02
SB-125	6.09E-02
SB-126	6.38E-05
I-131	3.53E-02
XE-131M	5.46E-03
TE-132	5.64E-05
I-133	8.36E-03
XE-133	6.51E-01
XE-133M	3.72E-03
CS-134	1.91E-01
I-135	1.42E-04

Installation: Salem Location: 20 Mi S Wilmington, DE
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 1 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
XE-135	9.45E-03
CS-136	1.21E-03
CS-137	2.02E-01
CS-138	1.69E-04
BA-140	1.10E-04
LA-140	5.35E-04
LA-141	1.76E-03
CE-144	1.69E-04
PR-147	5.66E-04

Total Liquid Tritium Released	3.53E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	9.74E+06 liters
Volume of Dilution Water Used During Period	1.82E+12 liters

Installation: Salem
Unit No.(s): 2

Location: 20 Mi S Wilmington, DE

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-311
Thermal Power(MWH): 1.69E+07
Commercial Operation: 10/13/81
Cooling Water Source: Delaware River

Licensee: PSE&G
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 5.41E+06
Initial Criticality: 08/02/80

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	9.44E-03
CO-58	1.93E-05
CO-60	8.56E-06
KR-85	7.15E-01
KR-85M	1.56E-02
KR-87	3.70E-04
KR-88	1.16E-02
I-131	1.78E-04
XE-131M	2.56E-01
XE-133	1.47E+02
XE-133M	1.79E-01
XE-135	5.39E-01
CS-137	9.06E-07

Total Airborne Tritium Released 6.84E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	4.82E-04
NA-24	2.28E-03
AR-41	2.75E-05
CR-51	1.48E-02
MN-54	1.52E-01
FE-55	1.52E-01
CO-57	7.92E-03
CO-58	2.01E+00
FE-59	1.09E-03
CO-60	2.36E-01
ZN-65	1.06E-02
ZN-69M	4.29E-05
KR-85M	1.52E-04
RB-88	3.32E-04
SR-89	1.64E-03
SR-90	8.64E-05
SR-92	4.41E-05
NB-95	1.03E-02
ZR-95	1.74E-03
TC-99M	8.67E-04
CD-109	1.76E-04
AG-110M	2.56E-03
SN-113	6.85E-04
SB-122	1.94E-03
SB-124	2.22E-02
SB-125	7.41E-02
SB-126	5.95E-05
I-131	3.83E-02
XE-131M	4.78E-03
TE-132	2.08E-05
I-133	1.07E-02
XE-133	9.02E-01
XE-133M	8.19E-03

Installation: Salem Location: 20 Mi S Wilmington, DE
Unit No.(s): 2

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 2 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
CS-134	1.86E-01
I-135	7.09E-04
XE-135	3.08E-02
CS-136	1.32E-03
CS-137	1.95E-01
CS-138	2.10E-04
LA-140	6.23E-04
CE-141	4.24E-05
LA-141	1.06E-03
CE-144	7.67E-05

Total Liquid Tritium Released	3.03E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	9.09E+06 liters
Volume of Dilution Water Used During Period	1.41E+12 liters

Installation: Salem
Unit No.(s): 1&2

Location: 20 Mi S Wilmington, DE

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-272
Thermal Power(MWH): 1.90E+07
Commercial Operation: 06/30/77
Cooling Water Source: Delaware River

Licensee: PSE&G
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 5.96E+06
Initial Criticality: 12/11/76

Unit Number: 2 Type: PWR
Docket Number: 50-311
Thermal Power(MWH): 1.69E+07
Commercial Operation: 10/13/81
Cooling Water Source: Delaware River

Licensee: PSE&G
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 5.41E+06
Initial Criticality: 08/02/80

Solid Waste Disposition

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

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58		5.64E+01
CO-60		8.30E+00
CS-134		1.40E+00
CS-137		1.50E+00
FE-55		2.16E+01
MN-54		5.00E+00
NI-63		5.80E+00
B		
CE-144	2.30E-01	2.00E-01
CO-58	5.66E+01	5.66E+01
CO-60	9.39E+00	9.40E+00
CS-134	2.13E+00	2.10E+00
CS-137	4.21E+00	4.20E+00
FE-55	1.57E+01	1.57E+01
H-3	1.00E-01	1.00E-01
MN-54	1.20E+00	1.20E+00
NI-63	9.11E+00	9.10E+00
PU-241	1.25E+00	1.20E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.26E+01	non-compacted
	Ci	1.43E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	7.66E+01	after compaction
	Ci	1.78E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: San Onofre
Unit No.(s): 1

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-206
Thermal Power(MWH): 5.04E+06
Commercial Operation: 01/01/68
Cooling Water Source: Pacific Ocean

Licensee: So. California Edison Co.
Licensed Power(MWT): 1.35E+03
Net Electrical Power(MWH): 1.54E+06
Initial Criticality: 06/14/67

Airborne Effluents

Nuclide Released	Activity (Ci)
CR-51	3.55E-07
CO-58	9.49E-07
CO-60	2.33E-07
BR-82	8.19E-06
KR-85	6.33E+00
KR-85M	1.33E+01
KR-88	2.06E-03
RB-88	1.46E-04
I-131	7.22E-03
XE-131M	1.01E+01
I-132	2.09E-04
I-133	1.89E-03
XE-133	1.74E+03
XE-133M	6.65E+00
CS-134	1.82E-06
I-135	5.49E-05
XE-135	1.87E+01
XE-135M	4.77E+00
CS-137	2.43E-05
CS-138	2.34E-04
CE-143	7.07E-08

Total Airborne Tritium Released 9.13E+01 Ci

Installation: San Onofre
Unit No.(s): 1

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-206
Thermal Power(MWH): 5.04E+06
Commercial Operation: 01/01/68
Cooling Water Source: Pacific Ocean

Licensee: So. California Edison Co.
Licensed Power(MWT): 1.35E+03
Net Electrical Power(MWH): 1.54E+06
Initial Criticality: 06/14/67

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	2.44E-05
CR-51	2.05E-03
MN-54	1.28E-03
FE-55	8.02E-03
CO-57	6.91E-05
CO-58	2.09E-02
FE-59	3.35E-04
CO-60	1.74E-02
ZN-65	4.73E-06
KR-85	1.98E-01
KR-85M	7.38E-03
KR-88	4.01E-03
SR-89	1.97E-04
SR-90	6.66E-04
SR-92	4.16E-03
NB-95	2.32E-04
ZR-95	1.16E-04
MO-99	5.00E-05
TC-99M	4.79E-05
RU-103	2.77E-04
AG-110M	2.53E-04
SB-124	1.62E-04
SB-125	1.61E-04
I-131	3.41E-02
XE-131M	1.41E-01
I-133	1.48E-03
XE-133	5.13E+00
XE-133M	4.90E-03
CS-134	1.22E-01
I-135	1.76E-05
XE-135	1.57E-04
CS-136	1.64E-03
CS-137	1.88E-01
BA-140	7.79E-05
LA-140	9.51E-05
CE-141	7.94E-05
CE-144	1.08E-04

Total Liquid Tritium Released	1.42E+03 Ci
Volume of Liquid Waste Released (Prior to Dilution)	2.78E+06 liters
Volume of Dilution Water Used During Period	3.57E+11 liters

Installation: San Onofre
Unit No.(s): 1

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR
Docket Number: 50-206
Thermal Power(MWH): 5.04E+06
Commercial Operation: 01/01/68
Cooling Water Source: Pacific Ocean

Licensee: So. California Edison Co.
Licensed Power(MWT): 1.35E+03
Net Electrical Power(MWH): 1.54E+06
Initial Criticality: 06/14/67

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
B		
AM-241		5.02E-02
C-14	1.48E-03	6.56E-02
CO-58	9.07E-01	5.70E-01
CO-60	4.42E+00	3.31E+01
CS-134	3.49E+00	2.71E+00
CS-137	9.58E+00	1.02E+01
CU-243/244		1.36E-01
EU-154		1.23E-01
EU-155		3.66E-02
FE-55	3.01E+00	2.24E+00
H-3	7.57E+01	2.62E+01
I-129	3.56E-01	5.98E-01
MN-54		2.87E-01
NI-63	2.48E+00	1.49E+01
PU-238		9.49E-02
PU-239/240		1.97E-02
PU-241		3.14E+00
SR-90		5.45E+00
TC-99	9.73E-02	7.21E-04
D		
AM-241		4.98E-02
C-14		3.72E-05
CO-57		2.11E-02
CO-60		4.59E+01
CS-137		5.07E-02
CU-242		3.85E-04
CU-243/244		2.08E-02
FE-55		2.90E+01
H-3		1.31E+00
I-129		3.09E-04
MN-54		1.01E-01
NI-63		2.16E+01
PU-238		5.56E-02
PU-239/240		1.97E-02
PU-241		1.81E+00
SR-89		4.62E-04
SR-90		8.43E-02
TC-99		8.13E-04

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	
	Ci	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 5.81E+01	
	Ci 4.40E+00	
C. Irradiated Components, Control Rods, etc.	m3	
	Ci	
D. Other (describe)		
Filters	m3 5.66E-02	
	Ci 8.34E+00	

Installation: San Onofre
Unit No.(s): 2&3

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 2 Type: PWR
Docket Number: 50-361
Thermal Power(MWH): 2.55E+07
Commercial Operation: 08/08/83
Cooling Water Source: Pacific Ocean

Licensee: So. California Edison Co.
Licensed Power(MWT): 3.39E+03
Net Electrical Power(MWH): 8.31E+06
Initial Criticality: 07/26/82

Unit Number: 3 Type: PWR
Docket Number: 50-362
Thermal Power(MWH): 2.04E+07
Commercial Operation: 04/01/84
Cooling Water Source: Pacific Ocean

Licensee: So. California Edison Co.
Licensed Power(MWT): 3.39E+03
Net Electrical Power(MWH): 6.58E+06
Initial Criticality: 08/29/83

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.49E+01
CR-51	1.39E-05
MN-54	2.60E-07
CO-57	9.55E-08
CO-58	4.93E-04
CO-60	7.17E-05
BR-82	4.12E-04
KR-85	3.12E+00
KR-85M	4.46E-01
KR-87	2.22E-04
RB-88	1.78E-03
SR-89	2.11E-09
NB-95	5.00E-08
MO-99	7.68E-07
TC-99M	7.88E-07
SN-113	1.36E-10
I-131	6.44E-03
XE-131M	6.49E-01
I-132	3.53E-04
TE-132	5.84E-11
I-133	5.72E-03
XE-133	1.10E+03
XE-133M	2.48E-01
CS-134	2.25E-07
I-135	4.39E-04
XE-135	4.50E+01
CS-137	3.48E-05
CS-138	3.09E-04
BA-139	1.78E-08
CE-143	1.24E-05
CE-144	2.29E-06

Total Airborne Tritium Released 3.27E+01 Ci

Installation: San Onofre
Unit No.(s): 2&3

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 2 Type: PWR
Docket Number: 50-361
Thermal Power(MWH): 2.55E+07
Commercial Operation: 08/08/83
Cooling Water Source: Pacific Ocean

Licensee: So. California Edison Co.
Licensed Power(MWT): 3.39E+03
Net Electrical Power(MWH): 8.31E+06
Initial Criticality: 07/26/82

Unit Number: 3 Type: PWR
Docket Number: 50-362
Thermal Power(MWH): 2.04E+07
Commercial Operation: 04/01/84
Cooling Water Source: Pacific Ocean

Licensee: So. California Edison Co.
Licensed Power(MWT): 3.39E+03
Net Electrical Power(MWH): 6.58E+06
Initial Criticality: 08/29/83

Liquid Effluents

Nuclide Released	Activity (Ci)
AR-41	1.22E-06
CR-51	6.28E-03
MN-54	1.67E-03
FE-55	4.12E-02
CO-57	1.60E-04
CO-58	3.86E-02
FE-59	4.84E-04
CO-60	8.72E-03
ZN-65	3.33E-06
KR-85M	2.17E-05
KR-88	3.17E-02
Y-91M	3.55E-04
SR-92	2.62E-05
NB-95	4.83E-03
ZR-95	2.41E-03
NB-97	5.52E-05
MO-99	1.29E-05
TC-99M	1.31E-05
RU-103	1.28E-04
AG-110M	1.40E-03
SN-113	6.22E-04
SB-124	1.30E-03
SB-125	1.27E-02
I-131	3.96E-04
XE-131M	1.33E-02
I-132	6.29E-05
TE-132	6.70E-05
I-133	9.35E-06
XE-133	5.31E-01
XE-133M	2.35E-03
CS-134	2.84E-02
XE-135	1.89E-03
CS-137	5.18E-02
BA-139	8.35E-05

Installation: San Onofre Location: 2.5 Mi S San Clemente, CA
Unit No.(s): 2&3

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 2&3 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
LA-140	2.20E-04
CE-141	1.42E-05
CE-144	2.26E-04

Total Liquid Tritium Released	9.27E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	3.62E+07 liters
Volume of Dilution Water Used During Period	2.60E+12 liters

Installation: San Onofre
Unit No.(s): 2&3

Location: 2.5 Mi S San Clemente, CA

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 2 Type: PWR
Docket Number: 50-361
Thermal Power(MWH): 2.55E+07
Commercial Operation: 08/08/83
Cooling Water Source: Pacific Ocean

Licensee: So. California Edison Co.
Licensed Power(MWT): 3.39E+03
Net Electrical Power(MWH): 8.31E+06
Initial Criticality: 07/26/82

Unit Number: 3 Type: PWR
Docket Number: 50-362
Thermal Power(MWH): 2.04E+07
Commercial Operation: 04/01/84
Cooling Water Source: Pacific Ocean

Licensee: So. California Edison Co.
Licensed Power(MWT): 3.39E+03
Net Electrical Power(MWH): 6.58E+06
Initial Criticality: 08/29/83

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
B		
C-14	9.87E-03	1.65E-02
CM-242	3.52E-01	
CO-58	1.02E+00	1.85E+00
CO-60	8.08E+00	1.30E+01
CS-134	1.04E+01	7.59E+00
CS-137	1.70E+01	2.01E+01
FE-55	1.95E+01	2.61E+01
H-3	3.84E+01	2.49E+01
I-129	3.29E-02	3.61E-03
MN-54	5.36E-01	1.04E+00
NB-95	5.81E-01	8.92E-01
NI-63	2.68E+00	3.38E+00
PU-241	4.81E-01	
SB-125	4.87E-01	8.37E-01
SR-89		2.32E-02
TC-99	7.42E-02	1.30E-03
ZR-95	2.40E-01	2.99E-01
D		
AG-110M	6.53E-02	2.60E-01
AM-241		2.21E-04
C-14	7.05E-03	1.76E-04
CE-141		4.56E-05
CE-144	1.56E-01	4.27E-01
CM-242	5.20E-03	
CO-57	7.80E-02	1.46E-01
CO-58	1.52E+01	4.97E+00
CO-60	8.27E+00	9.71E+00
CR-51	9.28E-01	7.99E-03
CS-134	1.51E+00	7.22E-01
CS-136		4.41E-05
CS-137	4.16E+00	2.46E+00
CU-242		1.17E-02
CU-243/244		6.14E-04
FE-55	3.90E+01	6.78E+01
FE-59	1.46E-01	1.04E-02
H-3	2.09E+01	8.37E-01
I-129	5.51E-04	1.24E-03
MN-54	1.28E+00	1.09E+00
NB-94		5.86E-03
NB-95	1.29E+00	2.47E-02
NI-63	5.64E+00	9.54E+00
PU-238		5.46E-04
PU-239/240		6.33E-04
PU-241	9.20E-02	1.54E-01
RU-103		8.44E-03

Installation: San Onofre Location: 2.5 Mi S San Clemente, CA
Unit No.(s): 2&3

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 2&3 (continued)

Estimate of Major Nuclide Composition (by type of D	Jan-June	July-Dec
RU-106	1.28E-01	6.14E-01
SB-124	9.35E-02	2.93E-02
SB-125	3.20E-01	8.78E-01
SR-89	5.60E-03	7.07E-04
SR-90	3.77E-03	1.05E-02
TC-99	3.29E-04	4.47E-04
ZR-95	6.97E-01	2.58E-01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3		
	Ci		
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.74E+02	
	Ci	6.42E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
Filters	m3	1.79E+00	
	Ci	2.70E+01	

Installation: San Onofre Location: 2.5 Mi S San Clemente, CA
Unit No.(s): 1&2&3

Effluent and Waste Disposal Annual Report for 1993
Solid Effluents

Unit Number: 1 Type: PWR Licensee: So. California Edison Co.
Docket Number: 50-206 Licensed Power(MWT): 1.35E+03
Thermal Power(MWH): 5.04E+06 Net Electrical Power(MWH): 1.54E+06
Commercial Operation: 01/01/68 Initial Criticality: 06/14/67
Cooling Water Source: Pacific Ocean

Unit Number: 2 Type: PWR Licensee: So. California Edison Co.
Docket Number: 50-361 Licensed Power(MWT): 3.39E+03
Thermal Power(MWH): 2.55E+07 Net Electrical Power(MWH): 8.31E+06
Commercial Operation: 08/08/83 Initial Criticality: 07/26/82
Cooling Water Source: Pacific Ocean

Unit Number: 3 Type: PWR Licensee: So. California Edison Co.
Docket Number: 50-362 Licensed Power(MWT): 3.39E+03
Thermal Power(MWH): 2.04E+07 Net Electrical Power(MWH): 6.58E+06
Commercial Operation: 04/01/84 Initial Criticality: 08/29/83
Cooling Water Source: Pacific Ocean

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
7	Truck/Trailer	Barnwell, SC
1	Truck/Cask	Beatty, NV
11	Truck/Trailer	Beatty, NV
1	Truck/Cask	Richland, WA
2	Truck/Trailer	Richland, WA

Estimate of Major Nuclide Composition (by type of waste) %	Jan-June	Jul-Dec
D		
AG-110M		5.57E-02
AM-241		2.49E-03
C-14		6.18E-04
CE-144		1.98E-01
CO-57		1.31E-01
CO-58		2.23E+00
CO-60		2.15E+01
CR-51		1.06E-02
CS-134		4.26E-01
CS-137		9.81E-01
CU-242		1.12E-02
CU-243/244		2.81E-03
FE-55		5.54E+01
FE-59		1.04E-02
H-3		2.42E+00
I-129		1.07E-05
MN-54		1.98E+00
NB-95		2.73E-02
NI-63		1.42E+01

Installation: San Onofre Location: 2.5 Mi S San Clemente, CA
Unit No.(s): 1&2&3

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2&3(continued)

Estimate of Major Nuclide Composition (by type of waste)	%	Jan-June	July-Dec
D			
PU-238			3.01E-03
PU-239/240			2.04E-03
PU-241			2.15E-01
SB-124			3.63E-03
SR-89			6.07E-04
SR-90			2.65E-02
TC-99			3.92E-04
ZR-95			1.55E-01

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)			
Filters	m3	2.12E-01	
	Ci	1.04E+00	

Installation: Seabrook
Unit No.(s): 1

Location: 13 Mi S Portsmouth, NH

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-443
Thermal Power(MWH): 1.26E+07
Commercial Operation: 08/19/90
Cooling Water Source: Atlantic Ocean

Licensee: North Atlantic
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 4.09E+06
Initial Criticality: 06/13/89

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.08E+01
KR-85M	3.56E+00
XE-133	3.68E+01
XE-135	5.59E+01

Total Airborne Tritium Released 2.52E-01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	2.32E-04
CO-58	1.16E-03
FE-59	1.43E-05
SB-124	8.02E-04

Total Liquid Tritium Released	1.13E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.03E+08 liters
Volume of Dilution Water Used During Period	7.58E+11 liters

Installation: Sequoyah
Unit No.(s): 1&2

Location: Daisy, TN

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-327
Thermal Power(MWH): 2.10E+07
Commercial Operation: 07/01/81
Cooling Water Source: Chickamauga Lake

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.82E+06
Initial Criticality: 07/05/80

Unit Number: 2 Type: PWR
Docket Number: 50-328
Thermal Power(MWH): 2.19E+07
Commercial Operation: 06/01/82
Cooling Water Source: Chickamauga Lake

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.18E+06
Initial Criticality: 11/05/81

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	9.75E+00
CR-51	9.97E-06
CO-57	1.58E-09
CO-58	5.28E-05
CO-60	5.23E-06
KR-85	1.34E+01
KR-85M	6.52E+00
KR-87	1.29E-01
KR-88	5.03E+00
MO-99	1.74E-07
TC-99M	1.74E-07
I-131	1.97E-04
XE-131M	5.00E+01
I-133	1.78E-05
XE-133	5.80E+03
XE-133M	7.55E+01
XE-135	1.08E+02
XE-135M	8.11E-02

Total Airborne Tritium Released 1.17E+01 Ci

Installation: Sequoyah Location: Daisy, TN
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR Licensee: Tennessee Valley Authority
Docket Number: 50-327 Licensed Power(MWT): 3.41E+03
Thermal Power(MWH): 2.10E+07 Net Electrical Power(MWH): 6.82E+06
Commercial Operation: 07/01/81 Initial Criticality: 07/05/80
Cooling Water Source: Chickamauga Lake

Unit Number: 2 Type: PWR Licensee: Tennessee Valley Authority
Docket Number: 50-328 Licensed Power(MWT): 3.41E+03
Thermal Power(MWH): 2.19E+07 Net Electrical Power(MWH): 7.18E+06
Commercial Operation: 06/01/82 Initial Criticality: 11/05/81
Cooling Water Source: Chickamauga Lake

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	3.76E-05
AR-41	2.23E-05
CR-51	4.62E-02
MN-54	7.39E-03
FE-55	1.87E-01
MN-56	7.67E-06
CO-57	3.26E-03
CO-58	7.10E-01
FE-59	4.88E-03
CO-60	7.94E-02
ZN-65	2.73E-04
ZN-69M	1.86E-05
BR-82	6.53E-06
BR-84	8.59E-05
KR-85M	2.09E-04
RB-86	9.97E-05
KR-87	3.64E-05
KR-88	9.80E-06
SR-91	2.20E-05
Y-91	4.17E-03
Y-91M	5.80E-05
SR-92	8.96E-06
Y-93	8.70E-05
NB-95	7.02E-03
ZR-95	2.90E-03
NB-97	8.01E-05
MO-99	3.58E-02
TC-99M	3.58E-02
RU-103	1.08E-03
SB-124	4.03E-03
SB-125	6.57E-02
SB-127	2.71E-05
TE-129M	2.77E-04
I-131	3.80E-03
XE-131M	1.98E-02
TE-132	3.55E-05
I-133	1.08E-04

Installation: Sequoyah Location: Daisy, TN
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 1&2 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
XE-133	1.68E+00
XE-133M	2.16E-02
CS-134	1.80E-03
I-135	1.49E-05
XE-135	3.04E-02
XE-135M	2.96E-05
CS-136	5.87E-05
CS-137	3.61E-03
CS-138	1.34E-05
BA-140	2.63E-03
LA-140	6.54E-03
CE-141	1.71E-03
CE-143	1.63E-04
CE-144	1.88E-03

Total Liquid Tritium Released	8.53E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	9.20E+07 liters
Volume of Dilution Water Used During Period	5.60E+09 liters

Installation: Sequoyah
Unit No.(s): 1&2

Location: Daisy, TN

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-327
Thermal Power(MWH): 2.10E+07
Commercial Operation: 07/01/81
Cooling Water Source: Chickamauga Lake

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.82E+06
Initial Criticality: 07/05/80

Unit Number: 2 Type: PWR
Docket Number: 50-328
Thermal Power(MWH): 2.19E+07
Commercial Operation: 06/01/82
Cooling Water Source: Chickamauga Lake

Licensee: Tennessee Valley Authority
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.18E+06
Initial Criticality: 11/05/81

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
208	Motor freight	Barnwell, SC
1	Motor freight	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	2.99E+01	3.74E+01
CO-60	2.00E+01	1.64E+01
CS-134		7.79E+00
CS-137	4.44E+00	9.26E+00
FE-55	1.62E+01	1.81E+01
H-3	1.37E+00	
MN-54	6.56E+00	5.01E+00
NI-63	1.67E+01	5.67E+00
B		
CO-58	3.06E+00	2.62E+01
CO-60	1.68E+01	1.30E+01
CR-51		8.64E+00
FE-55	7.10E+01	4.21E+01
NB-95		2.23E+00
NI-63	7.62E+00	5.83E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	4.05E+01	
	Ci	6.27E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	2.18E+02	
	Ci	2.79E+02	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Shoreham
Unit No.(s): 1

Location: Brookhaven, NY

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR
Docket Number: 50-322
Thermal Power(MWH):
Commercial Operation:
Cooling Water Source: Long Island Sound

Licensee: Long Island Power Authority
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH):
Initial Criticality: 02/15/85

Solid Waste Disposition

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

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
AG-110M	3.58E+00	3.34E+00
CE-141	2.60E-02	2.30E-02
CE-144	1.27E+00	1.06E+00
CO-57	1.09E-01	1.02E-01
CO-58	1.26E+01	1.34E+01
CO-60	2.67E+01	2.51E+01
CR-51	1.72E+01	1.81E+01
CS-137	3.75E-01	3.41E-01
FE-55	2.19E+01	2.19E+01
FE-59	1.49E+00	1.68E+00
H-3	3.64E+00	3.26E+00
MN-54	1.34E+00	2.76E+00
NB-95		1.48E-01
NI-59	1.90E-02	1.80E-02
NI-63	1.03E+00	9.90E-01
PU-241	4.24E+00	3.33E+00
SB-124	1.34E-01	1.27E-01
SR-90	7.00E-03	7.00E-03
ZN-65	4.40E+00	4.17E+00
B		
AG-110M	3.07E+00	3.07E+00
CO-57		7.00E-03
CO-58	1.08E+01	1.09E+01
CO-60	2.30E+01	2.29E+01
CR-51	1.48E+01	1.54E+01
CS-137		3.00E-03
FE-55	1.89E+01	1.86E+01
FE-59	1.28E+00	1.31E+00
H-3	3.08E-01	4.50E-02
MN-54	2.41E+01	2.39E+01
NI-59		1.00E-03
NI-63		6.00E-02
SB-124		8.00E-03
ZN-65	3.79E+00	3.76E+00
ZR-95		5.00E-03

Installation: Shoreham Location: Brookhaven, NY
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	July-Dec
C		
C-14		3.00E-03
CO-60		2.94E+01
FE-55		6.64E+01
MN-54		1.89E+00
NI-59		1.50E-02
NI-63		2.24E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	3.58E+01	burial volume
	Ci	6.12E-03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.18E+01	burial volume
	Ci	9.16E-02	
C. Irradiated Components, Control Rods, etc.	m3	2.80E+00	burial volume
	Ci	8.19E-01	
D. Other (describe)			
	m3		
	Ci		

Installation: South Texas Location: 12 Mi SSW Bay City, TX
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: PWR Licensee: Houston Lighting & Power
Docket Number: 50-498 Licensed Power(MWT): 3.80E+03
Thermal Power(MWH): 1.90E+07 Net Electrical Power(MWH): 6.00E+06
Commercial Operation: 08/25/88 Initial Criticality: 03/08/88
Cooling Water Source: Main Cooling Reservoir

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.54E+00
CR-51	1.19E-04
MN-54	4.41E-06
CO-58	3.05E-04
FE-59	3.43E-06
CO-60	2.46E-05
KR-85M	8.12E-05
ZR-95	3.99E-06
SB-124	1.16E-07
I-131	3.45E-04
XE-131M	1.38E-03
I-133	1.41E-04
XE-133	1.65E+02
XE-133M	7.91E-04
CS-134	1.24E-06
XE-135	4.42E+00
CS-137	3.13E-04
Unidentified	2.61E-05

Total Airborne Tritium Released 2.23E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	9.77E-01
MN-54	1.18E-01
FE-55	1.19E+00
CO-58	4.16E+00
FE-59	1.01E-01
CO-60	3.48E-01
ZN-65	4.63E-03
SR-90	3.20E-05
SR-92	4.23E-07
NB-95	9.59E-02
ZR-95	5.09E-02
ZR-97	2.05E-04
MO-99	1.98E-05
TC-99M	2.01E-05
AG-110M	2.01E-02
TE-129M	1.75E-04
I-131	2.04E-03
I-133	1.61E-04
XE-133	1.17E+00
CS-134	9.75E-03
XE-135	4.23E-03
CS-137	1.45E-02
LA-140	1.38E-03
CE-144	5.86E-04

Total Liquid Tritium Released	3.45E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.45E+07 liters
Volume of Dilution Water Used During Period	7.40E+11 liters

Installation: South Texas
Unit No.(s): 2

Location: 12 Mi SSW Bay City, TX

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-499
Thermal Power(MWH): 2.02E+07
Commercial Operation: 06/19/89
Cooling Water Source: Main Cooling Reservoir

Licensee: Houston Lighting & Power
Licensed Power(MWT): 3.80E+03
Net Electrical Power(MWH): 6.43E+06
Initial Criticality: 03/12/89

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	4.73E+00
CR-51	3.40E-05
MN-54	4.34E-06
CO-58	1.08E-04
FE-59	4.75E-06
CO-60	1.12E-05
KR-85M	6.13E-02
ZR-95	5.04E-06
I-131	1.73E-04
XE-131M	2.95E-02
I-133	2.86E-05
XE-133	1.00E+02
XE-133M	3.47E-02
XE-135	3.78E+00
CE-144	8.71E-06
Unidentified	2.26E-04

Total Airborne Tritium Released 1.90E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	6.22E-01
MN-54	1.09E-01
FE-55	2.61E+00
CO-58	1.46E+00
FE-59	1.07E-01
CO-60	4.10E-01
ZN-65	8.85E-03
NB-95	2.47E-01
ZR-95	1.37E-01
ZR-97	7.63E-07
MO-99	1.04E-05
TC-99M	1.05E-05
RU-103	2.50E-04
AG-110M	7.38E-04
TE-127	6.17E-04
I-131	3.35E-03
TE-132	1.18E-05
I-133	1.77E-05
XE-133	4.88E+00
CS-134	3.15E-04
XE-135	1.64E-02
CS-137	2.28E-03
BA-140	2.77E-06
LA-140	5.57E-05
CE-141	6.38E-06
CE-144	1.02E-04

Total Liquid Tritium Released	4.70E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.85E+07 liters
Volume of Dilution Water Used During Period	7.40E+11 liters

Installation: South Texas Location: 12 Mi SSW Bay City, TX
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR Licensee: Houston Lighting & Power
Docket Number: 50-498 Licensed Power(MWT): 3.80E+03
Thermal Power(MWH): 1.90E+07 Net Electrical Power(MWH): 6.00E+06
Commercial Operation: 08/25/88 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): 3.80E+03
Thermal Power(MWH): 2.02E+07 Net Electrical Power(MWH): 6.43E+06
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
2	Truck	CNSI, Barnwell, SC
9	Truck	SEG, Oak Ridge, TN

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	8.28E+01	5.23E+01
CO-60	6.20E+00	1.89E+01
CR-51		2.60E+00
FE-55	1.80E+00	5.50E+00
H-3	1.60E+00	2.40E+00
MN-54	3.50E+00	6.20E+00
NB-95		2.00E+00
NI-63	2.60E+00	7.90E+00
ZR-95		1.10E+00
B		
CO-58	2.64E+01	7.10E+00
CR-51	3.94E+01	1.42E+01
FE-55	6.80E+00	2.50E+00
H-3	4.62E+01	7.12E+01
NB-95	3.80E+00	1.20E+00
ZR-95	3.40E+00	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.16E+01	non-compacted
	Ci	1.33E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	4.60E+01	compacted & non-compacted
	Ci	5.88E-01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: St. Lucie
Unit No.(s): 1

Location: 8 Mi S Ft. Pierce, FL

Effluent and Waste Disposal Annual Report for 1980

Type: PWR
Docket Number: 50-335
Thermal Power(MWH): 1.43E+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): 4.49E+06
Initial Criticality: 04/22/76

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.75E+00
CO-57	2.20E-06
CO-60	1.27E-05
KR-85M	4.96E+00
KR-88	1.88E+00
I-131	8.35E-03
XE-131M	3.50E-01
I-132	5.56E-02
TE-132	1.94E-05
I-133	5.50E-03
XE-133	5.17E+02
XE-133M	3.16E-01
XE-135	9.20E+01
CS-138	5.86E-02

Total Airborne Tritium Released 8.01E+01 Ci

Installation: St. Lucie
Unit No.(s): 1

Location: 8 Mi S Ft. Pierce, FL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-335
Thermal Power(MWH): 1.43E+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): 4.49E+06
Initial Criticality: 04/22/76

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	5.38E-04
CR-51	5.43E-02
MN-54	3.75E-03
FE-55	1.18E-01
FE-59	2.39E-04
CO-57	2.97E-04
CO-58	2.48E-01
FE-59	1.02E-03
CO-60	5.40E-02
KR-85M	4.76E-05
SR-89	2.19E-03
SR-90	4.82E-05
Y-90	4.82E-05
Y-92	2.30E-04
NB-95	1.74E-02
ZR-95	1.02E-02
NB-97	6.09E-03
TC-99M	7.75E-05
RU-103	8.00E-04
AG-110	4.72E-03
SN-113	1.70E-03
SB-122	3.21E-03
SB-124	4.14E-02
SB-125	1.21E-01
TE-129	8.07E-04
I-131	2.61E-02
XE-131M	3.34E-03
I-132	6.22E-05
TE-132	3.82E-05
I-133	1.38E-02
XE-133	6.02E-01
XE-133M	4.16E-03
CS-134	4.03E-02
I-135	1.04E-04
XE-135	3.16E-03
CS-136	1.84E-04
CS-137	5.46E-02
CS-138	9.76E-05
LA-140	1.76E-03
CE-141	1.99E-05

Total Liquid Tritium Released	2.84E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	6.74E+07 liters
Volume of Dilution Water Used During Period	1.65E+12 liters

Installation: St. Lucie
Unit No. (1): 2

Location: 8 Mi S Ft. Pierce, FL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-389
Thermal Power(MWH): 1.70E+07
Commercial Operation: 08/08/83
Cooling Water Source: Atlantic Ocean

Licensee: Florida Power & Light
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 5.32E+06
Initial Criticality: 06/02/83

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.39E+00
CO-58	2.86E-05
KR-85	4.11E-01
KR-85M	2.31E+00
KR-87	1.58E-02
KR-88	6.52E+00
SR-89	3.06E-06
I-131	5.72E-03
XE-131M	1.77E+00
I-132	6.03E-03
I-133	2.11E-02
XE-133	4.76E+02
XE-133M	2.25E+00
XE-135	4.33E+01
CS-137	3.40E-05

Total Airborne Tritium Released 2.55E+01 Ci

Installation: St. Lucie
Unit No.(s): 2

Location. 8 Mi S Ft. Pierce, FL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-389
Thermal Power(MWH): 1.70E+07
Commercial Operation: 08/08/83
Cooling Water Source: Atlantic Ocean

Licensee: Florida Power & Light
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 5.32E+06
Initial Criticality: 06/02/83

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	5.38E-04
CR-51	5.43E-02
MN-54	3.75E-03
FE-55	9.82E-02
CO-57	2.97E-04
CO-58	2.48E-01
FE-59	1.26E-03
CO-60	5.40E-02
KR-85M	4.76E-05
SR-89	1.83E-03
SR-90	4.82E-05
Y-90	4.82E-05
Y-92	2.30E-04
NB-95	1.74E-02
ZR-95	1.02E-02
NB-97	6.09E-03
TC-99M	7.75E-05
RU-103	8.00E-04
AG-110	4.72E-03
SN-113	1.70E-03
SB-122	3.21E-03
SB-124	4.14E-02
SB-125	1.21E-01
TE-129	8.07E-04
I-131	6.19E-03
XE-131M	3.34E-03
I-132	6.22E-05
TE-132	3.82E-05
I-133	1.44E-03
XE-133	5.99E-01
XE-133M	4.16E-03
CS-134	3.73E-02
I-135	1.04E-04
XE-135	3.16E-03
CS-136	6.70E-05
CS-137	5.09E-02
CS-138	1.08E-04
LA-140	1.76E-03
CE-141	1.99E-05

Total Liquid Tritium Released	2.84E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	7.63E+06 liters
Volume of Dilution Water Used During Period	1.65E+12 liters

Installation: St. Lucie
Unit No.(s): 1&2

Location: 8 Mi S Ft. Pierce, FL

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-335
Thermal Power(MWH): 1.43E+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): 4.49E+06
Initial Criticality: 04/22/76

Unit Number: 2 Type: PWR
Docket Number: 50-389
Thermal Power(MWH): 1.70E+07
Commercial Operation: 08/08/83
Cooling Water Source: Atlantic Ocean

Licensee: Florida Power & Light
Licensed Power(MWT): 2.70E+03
Net Electrical Power(MWH): 5.32E+06
Initial Criticality: 06/02/83

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
59	Sole Use Truck	Barnwell, SC

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
BE-7	4.41E+00	
CO-58	1.44E+01	8.26E+00
CO-60	2.75E+01	1.39E+01
CR-51	4.93E+00	
CS-134	7.84E+00	2.43E+01
CS-137	1.19E+01	3.21E+01
FE-55	1.24E+01	3.39E+00
I-131	2.35E+00	
MN-54	3.51E+00	3.40E+00
NB-95	2.46E+00	
NI-63	4.82E+00	1.21E+01
ZR-95	1.42E+00	
B		
CO-58	3.99E+00	7.76E+00
CO-60	1.15E+01	1.95E+01
CR-51		2.16E+00
CS-134	4.96E+00	8.06E+00
CS-137	1.50E+01	2.40E+01
FE-55	5.99E+01	2.58E+01
H-3		4.49E+00
NB-95	1.18E+00	9.80E-01
NI-63	1.26E+00	2.20E+00
SB-125	8.40E-01	3.83E+00
C		
CO-58		6.00E-01
CO-60		3.86E+01
FE-55		5.31E+01
MN-54		4.90E+00
NI-63		2.80E+00

Installation: St. Lucie
Unit No.(s): 1&2

Location: 8 Mi S Ft. Pierce, FL

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	July-Dec
D		
CO-60	4.26E+01	1.94E+01
CS-134	1.92E+00	5.91E+00
CS-137	6.25E+00	2.16E+01
FE-55	3.57E+01	4.93E+01
MN-54	9.70E-01	
NI-63	9.56E+00	2.21E+00
SB-125	1.74E+00	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	4.57E+01	
	Ci	6.62E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.18E+02	volume reduced
	Ci	8.16E+00	
C. Irradiated Components, Control Rods, etc.	m3	1.63E+00	
	Ci	5.21E+03	
D. Other (describe)			
	m3	4.94E+01	non-compressible metal
	m3	5.87E+00	solidified tank sludge
	m3	5.89E+00	solidified phosphoric acid
	Ci	6.24E+00	

Installation: Summer
Unit No.(s): 1

Location: 26 Mi NW Columbia, SC

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-395
Thermal Power(MWH): 1.93E+07
Commercial Operation: 01/01/84
Cooling Water Source: Monticello Reservoir

Licensee: South Carolina Electric & Gas Co.
Licensed Power(MWT): 2.77E+03
Net Electrical Power(MWH): 6.11E+06
Initial Criticality: 10/22/82

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	3.09E+00
CR-51	3.13E-05
CO-58	5.85E-05
CO-60	1.69E-05
KR-85	2.04E+00
KR-85M	1.38E+00
KR-87	6.73E-01
KR-88	1.36E+00
RB-88	1.77E-02
NB-95	3.94E-06
ZR-95	3.19E-06
TC-99M	7.86E-06
RU-103	3.77E-06
I-131	4.41E-04
XE-131M	1.19E+00
I-132	5.35E-04
I-133	2.60E-04
XE-133	7.02E+02
XE-133M	3.59E+00
CS-134	9.11E-07
I-134	1.75E-05
I-135	7.91E-05
XE-135	3.47E+01
XE-135M	7.24E-01
CS-137	1.95E-06
CS-138	1.22E-02
XE-138	1.13E-03

Total Airborne Tritium Released 2.28E+00 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
F-18	2.23E-03
NA-24	3.03E-04
CR-51	5.65E-03
MN-54	3.16E-02
FE-55	3.84E-02
NI-56	4.35E-07
CO-57	1.59E-04
CO-58	2.50E-02
FE-59	5.30E-05
CO-60	3.97E-02
ZN-65	1.24E-03
KR-85	7.16E-07
KR-85M	5.85E-07
KR-87	2.06E-06
SR-89	7.81E-04
SR-90	1.02E-03
ZR-NB-95	3.24E-03
ZR-97	4.74E-06
MO-99	9.70E-04
TC-99M	6.99E-04

Installation: Summer Location: 26 Mi NW Columbia, SC
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 1 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
RU-103	2.35E-04
RU-106	3.15E-03
AG-110M	5.84E-04
SN-113	1.95E-04
SB-122	5.20E-04
SB-124	1.40E-03
SB-125	1.60E-02
SB-126	6.54E-05
I-131	3.53E-02
XE-131M	2.82E-03
I-132	2.20E-02
TE-132	2.72E-04
I-133	3.34E-02
XE-133	3.36E-01
XE-133M	2.62E-03
CS-134	2.25E-02
I-134	1.15E-02
I-135	2.28E-02
XE-135	1.85E-03
CS-136	1.85E-04
CS-137	3.19E-02
CS-138	1.03E-03
BA-LA-140	1.59E-04
CE-141	3.11E-05
CE-144	1.57E-03
NP-239	4.53E-06

Total Liquid Tritium Released	4.22E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	2.06E+08 liters
Volume of Dilution Water Used During Period	1.47E+12 liters

Installation: Summer
Unit No.(s): 1

Location: 26 Mi NW Columbia, SC

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR
Docket Number: 50-395
Thermal Power(MWH): 1.93E+07
Commercial Operation: 01/01/84
Cooling Water Source: Monticello Reservoir

Licensee: South Carolina Electric & Gas Co.
Licensed Power(MWT): 2.77E+03
Net Electrical Power(MWH): 6.11E+06
Initial Criticality: 10/22/82

Solid Waste Disposition

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

Irradiated Fuel Shipments (Disposition)

Number of Shipments	Mode of Transportation	Destination
1	Truck	Chalk River, Canada

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	2.40E+00	1.22E+01
CO-60	1.85E+01	2.13E+01
CS-134	9.82E+00	6.03E+00
CS-137	1.12E+01	8.43E+00
FE-55	4.35E+01	2.70E+01
MN-54		4.48E+00
NI-63	9.44E+00	2.16E+01
SB-125		1.01E+00
B		
CO-58	2.23E+01	1.57E+00
CO-60	7.89E+00	1.99E+01
CR-51	3.80E+00	
CS-134	6.22E+00	8.29E+00
CS-137	5.33E+00	1.39E+01
FE-55	4.77E+01	4.12E+01
H-3		1.60E+00
MN-54		2.69E+00
NI-63		6.94E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.91E+01	
	Ci	2.07E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	7.67E+02	before compaction
	m3	8.13E+01	after compaction
	Ci	1.51E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Surry
Unit No.(s): 1&2

Location: 19 Mi NW Newport News, VA

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-280
Thermal Power(MWH): 1.51E+07
Commercial Operation: 12/22/72
Cooling Water Source: James River

Licensee: Virginia Electric & Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 4.77E+06
Initial Criticality: 07/01/72

Unit Number: 2 Type: PWR
Docket Number: 50-281
Thermal Power(MWH): 1.85E+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): 5.84E+06
Initial Criticality: 03/07/73

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.25E-01
CR-51	2.89E-05
MN-54	1.17E-06
CO-58	8.43E-05
CO-60	4.92E-04
SE-75	1.05E-08
KR-85	5.81E+00
KR-85M	7.76E-02
KR-87	9.53E-02
KR-88	1.35E-01
RB-88	1.52E-04
NB-95	5.03E-06
AG-110M	3.08E-06
SB-125	6.17E-09
I-131	1.33E-03
XE-131M	2.55E+00
I-132	5.05E-03
I-133	8.32E-04
XE-133	4.33E+02
XE-133M	1.55E+00
CS-134	5.55E-05
I-135	2.96E-05
XE-135	6.80E+00
XE-135M	1.05E-01
CS-137	9.34E-04
CS-138	2.39E-04
XE-138	2.80E-01

Total Airborne Tritium Released 2.17E+01 Ci

Installation: Surry
Unit No.(s): 1&2

Location: 19 Mi NW Newport News, VA

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-280
Thermal Power(MWH): 1.51E+07
Commercial Operation: 12/22/72
Cooling Water Source: James River

Licensee: Virginia Electric & Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 4.77E+06
Initial Criticality: 07/01/72

Unit Number: 2 Type: PWR
Docket Number: 50-281
Thermal Power(MWH): 1.85E+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): 5.84E+06
Initial Criticality: 03/07/73

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-22	1.91E-06
NA-24	2.08E-04
AR-41	8.93E-04
CR-51	2.37E-01
MN-54	1.11E-02
FE-55	1.83E+00
CO-57	6.23E-04
CO-58	3.42E-01
FE-59	1.84E-02
CO-60	4.44E-01
ZN-65	9.35E-05
KR-85M	3.76E-05
KR-87	4.17E-05
KR-88	6.07E-05
RB-88	2.60E-04
NB-95	2.31E-02
ZR-95	1.48E-02
MO-99	2.34E-05
TC-99M	9.12E-05
RU-103	6.78E-03
AG-110M	2.32E-02
SB-124	2.12E-02
SB-125	4.40E-01
I-131	3.60E-02
XE-131M	2.29E-02
I-132	2.57E-04
TE-132	5.54E-04
I-133	1.78E-04
XE-133	3.66E+00
XE-133M	3.17E-02
CS-134	1.96E-01
XE-135	8.64E-02
XE-135M	2.82E-03
CS-136	4.71E-06
CS-137	9.54E-01
BA-140	3.09E-05
LA-140	5.40E-04

Installation: Surry
Unit No.(s): 1&2

Location: 19 Mi NW Newport News, VA

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 1&2 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
CE-141	4.16E-04
CE-144	3.65E-04
ND-147	1.92E-05

Total Liquid Tritium Released	1.11E+03 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.74E+08 liters
Volume of Dilution Water Used During Period	2.40E+12 liters

Installation: Surry
Unit No.(s): 1&2

Location: 19 Mi NW Newport News, VA

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-280
Thermal Power(MWH): 1.51E+07
Commercial Operation: 12/22/72
Cooling Water Source: James River

Licensee: Virginia Electric & Power
Licensed Power(MWT): 2.44E+03
Net Electrical Power(MWH): 4.77E+06
Initial Criticality: 07/01/72

Unit Number: 2 Type: PWR
Docket Number: 50-281
Thermal Power(MWH): 1.85E+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): 5.84E+06
Initial Criticality: 03/07/73

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
12	Truck	Barnwell, SC
15	Truck	Oak Ridge, TN

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
BE-7		1.21E+00
CO-60	6.37E+01	3.08E+01
CS-134		7.14E+00
CS-137	1.39E+00	2.76E+01
FE-55	4.64E+00	1.21E+01
MN-54	1.19E+00	
NI-63	2.69E+01	1.83E+01
B		
CO-58	1.18E+00	
CO-60	2.94E+01	3.02E+01
CR-51	1.48E+00	
CS-134	1.43E+00	1.40E+00
CS-137	1.73E+01	1.19E+01
FE-55	3.79E+01	3.05E+01
NI-63	1.13E+01	2.53E+01
D		
CO-60	7.42E+01	
CS-134	1.79E+00	
CS-137	2.32E+01	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	3.43E+01	
	Ci	1.13E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	6.55E+02	before processing
	m3	1.01E+02	after processing
	Ci	6.51E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
Organic waste	m3	1.30E+01	
	Ci	4.17E-03	

Installation: Susquehanna
Unit No.(s): 1&2

Location: 7 Mi NE Berwick, PA

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: BWR
Docket Number: 50-387
Thermal Power(MWH): 2.05E+07
Commercial Operation: 06/08/83
Cooling Water Source: Susquehannna River

Licensee: Pennsylvania Power & Light Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 6.44E+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: Susquehannna River

Licensee: Pennsylvania Power & Light Company
Licensed Power(MWT): 3.29E+03
Net Electrical Power(MWH): 8.29E+06
Initial Criticality: 05/08/84

Airborne Effluents

Nuclide Released	Activity (Ci)
MN-54	3.28E-04
CO-58	7.42E-05
FE-59	5.27E-05
CO-60	1.55E-04
ZN-65	2.53E-04
XE-133	7.21E+01

Total Airborne Tritium Released 9.24E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
AR-41	4.24E-07
CR-51	3.28E-03
MN-54	2.20E-02
FE-55	9.20E-02
CO-58	1.19E-03
FE-59	2.00E-03
CO-60	1.32E-02
ZN-65	7.00E-04
AG-110M	1.03E-04
XE-133	5.11E-04
XE-135	3.39E-04

Total Liquid Tritium Released	5.80E+01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	9.56E+06 liters
Volume of Dilution Water Used During Period	1.50E+10 liters

Installation: Susquehanna Location: 7 Mi NE Berwick, PA
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: BWR Licensee: Pennsylvania Power & Light Company
Docket Number: 50-387 Licensed Power(MWT): 3.29E+03
Thermal Power(MWH): 2.05E+07 Net Electrical Power(MWH): 6.44E+06
Commercial Operation: 06/08/83 Initial Criticality: 09/10/82
Cooling Water Source: Susquehannna River

Unit Number: 2 Type: BWR Licensee: Pennsylvania Power & Light Company
Docket Number: 50-388 Licensed Power(MWT): 3.29E+03
Thermal Power(MWH): 2.63E+07 Net Electrical Power(MWH): 8.29E+06
Commercial Operation: 02/12/85 Initial Criticality: 05/08/84
Cooling Water Source: Susquehannna River

Solid Waste Disposition

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

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14	1.66E-01	3.40E-02
CO-58	5.56E-01	2.28E-01
CO-60	6.84E+00	1.10E+01
CR-51	5.79E+00	1.77E-01
CS-134	1.76E-02	7.61E-03
CS-137	1.61E-02	1.43E-02
FE-55	7.07E+01	7.39E+01
FE-59	1.79E+00	5.90E-02
H-3	3.95E-02	1.32E-02
I-129	4.47E-04	3.69E-04
I-131	8.08E-04	1.63E-03
MN-54	1.32E+01	1.31E+01
NI-63	7.44E-02	3.33E-01
PU-241		7.20E-04
SB-124	5.53E-02	1.03E-03
SR-90	2.12E-04	1.35E-04
TC-99	7.67E-04	3.88E-04
ZN-65	2.26E-01	1.49E+00
B		
C-14	1.57E-02	
CO-58	3.81E-01	3.45E-01
CO-60	7.39E+00	7.60E+00
CR-51	6.37E-01	6.47E-01
FE-55	7.93E+01	8.06E+01
FE-59	9.93E-01	1.05E+00
H-3	1.72E-03	1.77E-02
I-129	3.59E-02	5.44E-02
MN-54	9.98E+00	7.71E+00
NI-63		1.03E-01

Installation: Susquehanna Location: 7 Mi NE Berwick, PA
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1&2 (continued)

Estimate of Major Nuclide Composition (by type of waste)	%	Jan-June	July-Dec
B			
PU-241			1.22E-02
TC-99		1.37E-01	8.11E-02
ZN-65		1.18E+00	1.40E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.85E+02	
	Ci	2.95E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.22E+02	
	Ci	8.19E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Three Mile Island Location: 10 Mi SE Harrisburg, PA
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990

Type: PWR Licensee: GPU Nuclear Group
Docket Number: 50-289 Licensed Power(MWT): 2.57E+03
Thermal Power(MWH): 1.69E+07 Net Electrical Power(MWH): 5.30E+06
Commercial Operation: 09/02/74 Initial Criticality: 06/05/74
Cooling Water Source: Susquehanna River

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	8.83E-01
CO-58	2.28E-08
KR-85	9.64E-01
KR-85M	7.87E-01
KR-87	1.75E-01
KR-88	7.37E-01
I-131	1.53E-03
XE-131M	4.50E+00
I-132	4.64E-05
I-133	7.96E-04
XE-133	6.36E+02
XE-133M	5.14E+00
CS-134	4.80E-08
I-135	2.21E-04
XE-135	1.49E+01
XE-135M	9.81E-01
CS-137	5.66E-08
XE-138	1.18E-01

Total Airborne Tritium Released 2.26E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	1.23E-04
MN-54	4.32E-05
FE-55	2.08E-03
CO-58	8.63E-03
FE-59	4.18E-05
CO-60	2.01E-04
KR-85	2.05E-03
SR-89	1.91E-05
NB-95	6.21E-05
ZR-95	9.00E-06
AG-110M	2.64E-04
SB-125	5.51E-04
I-131	1.51E-03
XE-133	5.88E-06
CS-134	3.91E-03
CS-137	6.12E-03
LA-140	7.14E-06

Total Liquid Tritium Released	2.10E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	5.19E+07 liters
Volume of Dilution Water Used During Period	2.59E+10 liters

Installation: Three Mile Island Location: 10 Mi SE Harrisburg, PA
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: GPU Nuclear Group
Docket Number: 50-289 Licensed Power(MWT): 2.57E+03
Thermal Power(MWH): 1.69E+07 Net Electrical Power(MWH): 5.30E+06
Commercial Operation: 09/02/74 Initial Criticality: 06/05/74
Cooling Water Source: Susquehanna River

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
4	Tractor	CNSI, Barnwell, SC
1	Tractor-Closed Van	SEG, Oak Ridge, TN
16	Tractor-Flatbed	SEG, Oak Ridge, TN
8	Tractor-Flatbed	US Ecology, Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	1.03E+01	1.20E+01
CS-134	2.94E+01	5.82E+00
CS-137	4.76E+01	8.90E+00
H-3		6.51E+01
NI-63	4.71E+00	
B		
CO-58	1.27E+01	1.30E+01
CS-137	1.30E+01	1.27E+01
FE-55	1.07E+01	1.07E+01
I-131	3.23E+01	3.27E+01
NI-63	1.39E+01	1.37E+01
D		
CO-60		3.14E+01
FE-55		2.77E+01
H-3		1.30E+01
NI-63		1.94E+01

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.42E+02	
	Ci 6.47E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 4.40E+02	
	Ci 5.86E+00	
C. Irradiated Components, Control Rods, etc.	m3	
	Ci	
D. Other (describe)		
Oil for incineration	m3 8.50E-01	
	Ci 1.83E-04	

Installation: Three Mile Island Location: 10 Mi SE Harrisburg, PA
Unit No.(s): 2

Effluent and Waste Disposal Annual Report for 1990

Type: PWR Licensee: Metro. ED & Jersey Central Power & Light
Docket Number: 50-320 Licensed Power(MWT): 2.77E+03
Thermal Power(MWH): Net Electrical Power(MWH):
Commercial Operation: 12/30/78 Initial Criticality: 03/28/78
Cooling Water Source: Susquehanna River

Airborne Effluents

Nuclide Released	Activity (Ci)
CO-58	1.15E-07
SR-90	1.49E-07
CS-137	3.48E-06

Total Airborne Tritium Released 1.03E+01 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
SR-90	6.45E-05
CS-137	1.12E-04

Total Liquid Tritium Released	8.80E-04 Ci
Volume of Liquid Waste Released (Prior to Dilution)	4.22E+05 liters
Volume of Dilution Water Used During Period	4.80E+10 liters

Installation: Three Mile Island Location: 10 Mi SE Harrisburg, PA
Unit No.(s): 2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR Licensee: Metro. ED & Jersey Central Power & Light
Docket Number: 50-320 Licensed Power(MWT): 2.77E+03
Thermal Power(MWH): Net Electrical Power(MWH):
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
4	Tractor-cask	CNSI, Barnwell, SC
6	Tractor-flatbed	SEG, Oak Ridge, TN
2	Tractor-cask	US Ecology, Beatty, NV
1	Tractor-cask	US Ecology, Richland, WA
1	Tractor-flatbed	US Ecology, Richland, WA

Irradiated Fuel Shipments (Disposition)

Number of Shipments	Mode of Transportation	Destination
3	Rail Cask	INEL, Scoville, ID

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CS-137	6.38E+00	4.06E+01
FE-55	3.99E+00	
NI-63	9.12E+00	4.72E-01
PM-147		2.12E+00
SR-90	7.68E+01	5.58E+01
B		
CS-137		2.12E+01
PM-147		7.56E+00
PU-241		4.48E+00
SB-125		1.56E+00
SR-90		6.01E+01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.59E+01	before compaction
	Ci	7.74E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	3.24E+02	before compaction
	Ci	1.54E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Trojan
Unit No.(s): 1

Location: 43 Mi NW Portland, OR

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-344
Thermal Power(MWH): 1.90E+07
Commercial Operation: 05/20/76
Cooling Water Source: Columbia River

Licensee: Portland General Electric
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.07E+06
Initial Criticality: 12/15/75

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	5.16E-01
MN-54	1.32E-07
FE-55	5.59E-06
CO-58	9.47E-06
KR-85	1.99E+00
KR-85M	1.74E-02
KR-87	1.14E-02
KR-88	2.10E-02
SR-89	8.88E-05
SR-90	9.13E-07
MO-99	1.07E-05
I-131	1.51E-03
XE-131M	5.90E-01
I-132	2.87E-03
I-133	1.63E-03
XE-133	2.02E+02
XE-133M	3.00E-01
CS-134	7.86E-06
I-134	4.71E-03
I-135	2.74E-03
XE-135	4.05E-01
XE-135M	5.29E-02
CS-136	1.43E-06
CS-137	1.12E-05
XE-137	1.57E-02
XE-138	2.95E-02
BA-140	1.98E-06

Total Airborne Tritium Released 9.22E+01 Ci

Installation: Trojan
Unit No.(s): 1

Location: 43 Mi NW Portland, OR

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-344
Thermal Power(MWH): 1.90E+07
Commercial Operation: 05/20/76
Cooling Water Source: Columbia River

Licensee: Portland General Electric
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.07E+06
Initial Criticality: 12/15/75

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	4.95E-03
MN-54	8.71E-04
FE-55	6.33E-02
CO-57	4.71E-05
CO-58	1.21E-02
FE-59	9.74E-05
CO-60	1.93E-02
SR-89	3.75E-04
SR-90	7.04E-05
NB-95	4.96E-03
ZR-95	4.01E-03
MO-99	7.78E-06
TC-99M	7.92E-06
RU-103	7.41E-03
RU-106	1.47E-02
AG-110M	1.47E-03
SN-113	5.03E-05
SB-125	5.16E-03
I-131	2.09E-04
I-132	3.49E-05
TE-132	4.04E-05
XE-133	1.13E-03
CS-134	2.37E-04
XE-135	6.74E-05
CS-137	8.17E-04
BA-140	4.23E-05
LA-140	2.27E-04
CE-141	2.62E-04
CE-144	3.12E-03
Unidentified	4.98E-06

Total Liquid Tritium Released	2.19E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	7.12E+07 liters
Volume of Dilution Water Used During Period	6.27E+10 liters

Installation: Trojan
Unit No.(s): 1

Location: 43 Mi NW Portland, OR

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR
Docket Number: 50-344
Thermal Power(MWH): 1.90E+07
Commercial Operation: 05/20/76
Cooling Water Source: Columbia River

Licensee: Portland General Electric
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.07E+06
Initial Criticality: 12/15/75

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
8	Exclusive Truck	Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14		7.77E-02
CO-57		7.31E-02
CO-58	1.69E+00	3.15E-01
CO-60	1.69E+00	2.37E+01
CS-134	1.69E+00	1.09E+01
CS-137	1.69E+00	2.62E+01
FE-55	9.15E+01	4.68E+00
H-3		6.17E-02
MN-54		9.77E-01
NI-63		3.18E+01
PU-238		1.72E-03
PU-239/240		3.78E-03
PU-241		1.22E-01
RU-106	1.69E+00	
SB-125		2.28E-01
SR-90		9.02E-01
B		
C-14	2.16E+01	
CE-141	6.31E-02	
CE-144	3.78E-01	
CO-58	2.71E+00	
CO-60	1.58E+00	
CR-51	8.20E-01	
CS-134	2.52E-01	
CS-137	8.20E-01	
FE-55	3.59E+00	
H-3	6.46E+01	
MN-54	6.31E-02	
NB-95	8.20E-01	
NI-63	6.94E-01	
PU-238	6.31E-02	
PU-239	6.31E-02	
PU-241	5.04E-01	
RU-103	3.15E-01	
RU-106	4.41E-01	
ZR-95	6.31E-01	

Installation: Trojan Location: 43 Mi NW Portland, OR
Unit No.(s): 1

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 1 (continued)

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.45E+01	
	Ci	5.82E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.56E+02	
	Ci	1.58E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Turkey Point
Unit No.(s): 3

Location: 10 Mi E Florida City, FL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-250
Thermal Power(MWH): 1.12E+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): 3.36E+06
Initial Criticality: 10/20/72

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.18E+00
CO-58	9.66E-06
CO-60	4.40E-05
BR-82	9.77E-05
KR-85	5.47E+00
KR-85M	2.01E-02
KR-87	9.89E-04
RU-103	7.68E-07
I-131	4.52E-03
XE-131M	8.89E+00
I-133	4.10E-04
XE-133	6.62E+02
XE-133M	1.02E+00
CS-134	7.96E-06
XE-135	8.72E+00
XE-135M	3.54E-02
CS-136	1.92E-06
CS-137	1.63E-05
CS-138	3.41E-09

Total Airborne Tritium Released 4.59E+01 Ci

Installation: Turkey Point
Unit No.(s): 3

Location: 10 Mi E Florida City, FL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-250
Thermal Power(MWH): 1.12E+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): 3.36E+06
Initial Criticality: 10/20/72

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	6.06E-06
CR-51	2.29E-03
MN-54	2.14E-02
FE-55	2.99E-02
CO-57	9.20E-06
CO-58	3.79E-02
FE-59	1.91E-04
CO-60	2.74E-02
KR-85	4.07E-03
NB-95	4.04E-04
ZR-95	2.86E-05
ZR-97	2.32E-05
MO-99	2.44E-04
RU-103	6.80E-05
AG-110	3.43E-03
SN-117M	2.40E-05
SB-124	1.13E-03
SB-125	8.53E-03
I-131	4.90E-04
XE-131M	6.44E-02
I-133	1.41E-04
XE-133	1.44E+00
XE-133M	3.60E-03
CS-134	1.38E-03
XE-135	2.68E-04
XE-135M	2.06E-06
CS-137	5.61E-03
LA-140	2.22E-05
CE-144	3.68E-06

Total Liquid Tritium Released	3.22E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	8.53E+06 liters
Volume of Dilution Water Used During Period	2.44E+11 liters

Installation: Turkey Point
Unit No.(s): 4

Location: 10 Mi E Florida City, FL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-251
Thermal Power(MWH): 1.44E+07
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): 4.38E+06
Initial Criticality: 06/11/73

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.19E+00
CO-58	9.21E-06
CO-60	4.40E-05
BR-82	9.77E-05
KR-85	3.10E+00
KR-85M	3.84E-02
KR-87	2.00E-03
RU-103	5.35E-07
I-131	1.79E-03
XE-131M	2.02E+00
I-133	3.96E-04
XE-133	5.76E+02
XE-133M	8.80E-01
CS-134	7.96E-06
XE-135	8.55E+00
XE-135M	3.30E-02
CS-136	1.92E-06
CS-137	1.64E-05

Total Airborne Tritium Released 3.35E+01 Ci

Installation: Turkey Point
Unit No.(s): 4

Location: 10 Mi E Florida City, FL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-251
Thermal Power(MWH): 1.44E+07
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): 4.38E+06
Initial Criticality: 06/11/73

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	6.06E-06
CR-51	2.29E-03
MN-54	2.14E-02
FE-55	2.99E-02
CO-57	9.20E-06
CO-58	3.79E-02
FE-59	1.91E-04
CO-60	2.74E-02
KR-85	4.07E-03
NB-95	4.04E-04
ZR-95	2.86E-05
ZR-97	2.32E-05
MO-99	2.44E-04
RU-103	6.80E-05
AG-110	3.43E-03
SN-117M	2.40E-05
SB-124	1.13E-03
SB-125	8.53E-03
I-131	3.28E-04
XE-131M	6.44E-02
I-133	1.20E-05
XE-133	1.44E+00
XE-133M	3.60E-03
CS-134	1.38E-03
XE-135	2.68E-04
XE-135M	2.06E-06
CS-137	5.61E-03
LA-140	6.86E-05
CE-144	3.68E-06
NP-239	5.60E-05

Total Liquid Tritium Released	3.22E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	8.53E+06 liters
Volume of Dilution Water Used During Period	2.44E+11 liters

Installation: Turkey Point Location: 10 Mi E Florida City, FL
Unit No.(s): 3&4

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 3 Type: PWR Licensee: Florida Power & Light
Docket Number: 50-250 Licensed Power(MWT): 2.20E+03
Thermal Power(MWH): 1.12E+07 Net Electrical Power(MWH): 3.36E+06
Commercial Operation: 12/14/72 Initial Criticality: 10/20/72
Cooling Water Source: Closed Cycle Canal

Unit Number: 4 Type: PWR Licensee: Florida Power & Light
Docket Number: 50-251 Licensed Power(MWT): 2.20E+03
Thermal Power(MWH): 1.44E+07 Net Electrical Power(MWH): 4.38E+06
Commercial Operation: 09/07/73 Initial Criticality: 06/11/73
Cooling Water Source: Closed Cycle Canal

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
7	Truck	Barnwell, SC
22	Truck	Oak Ridge, TN

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	2.00E+00	
CO-60	6.90E+01	6.90E+01
CS-134	1.00E+00	1.00E+00
CS-137	4.00E+00	6.00E+00
FE-55	3.00E+00	2.00E+00
MN-54		1.00E+00
NI-63	2.00E+01	2.00E+01
SB-125		1.00E+00
B		
AG-110M		1.00E+00
CO-58	2.70E+01	2.00E+00
CO-60	4.40E+01	3.10E+01
CR-51	4.00E+00	1.00E+00
CS-134		2.00E+00
CS-137	2.00E+00	9.00E+00
FE-55	1.30E+01	3.70E+01
I-131	2.00E+00	
NB-95		1.00E+00
NI-63	8.00E+00	1.50E+01
SB-125		1.00E+00
D		
AG-110M		1.00E+00
CO-58	1.00E+00	2.00E+00
CO-60	3.70E+01	3.10E+01
CR-51		1.00E+00
CS-134	1.00E+00	2.00E+00
CS-137	5.10E+01	9.00E+00
FE-55	4.00E+00	3.70E+01

Installation: Turkey Point Location: 10 Mi E Florida City, FL
Unit No.(s): 3&4

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit No.: 3&4 (continued)

Estimate of Major Nuclide Composition (by type of waste) %	Jan-June	July-Dec
D		
NB-95		1.00E+00
NI-63	6.00E+00	1.50E+01
SB-125		1.00E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	2.87E+01	
	Ci	6.82E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.41E+03	before volume reduction
	m3	1.61E+02	burial volume
	Ci	1.15E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
Non-compressible waste	m3	2.56E+01	
	Ci	2.77E-01	

Installation: Vermont Yankee
Unit No.(s): 1

Location: 5 Mi S Brattleboro, VT

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-271
Thermal Power(MWH): 1.13E+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): 3.62E+06
Initial Criticality: 03/24/72

Airborne Effluents

Nuclide Released	Activity (Ci)
MN-54	1.37E-04
CO-58	6.87E-06
FE-59	2.54E-05
CO-60	5.62E-04
ZN-65	6.41E-05
KR-85M	8.01E+01
KR-87	1.28E+02
KR-88	9.86E+01
SR-89	6.94E-03
SR-90	8.86E-05
I-131	5.51E-02
I-133	1.04E-01
XE-133	1.27E+03
XE-133M	3.78E+01
CS-134	3.58E-04
I-135	1.64E-01
XE-135	6.55E+02
XE-135M	8.11E+02
CS-137	4.66E-04
XE-138	1.99E+03
BA-LA-140	8.59E-03
CE-141	2.89E-0f

Total Airborne Tritium Relea ed 9.67E+01 Ci

Installation: Vogtle
Unit No.(s): 1&2

Location: 25 Mi SSE Augusta, GA

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-424
Thermal Power(MWH): 2.32E+07
Commercial Operation: 05/31/87
Cooling Water Source: Savannah River

Licensee: Georgia Power
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.34E+06
Initial Criticality: 03/09/87

Unit Number: 2 Type: PWR
Docket Number: 50-425
Thermal Power(MWH): 2.17E+07
Commercial Operation: 05/20/89
Cooling Water Source: Savannah River

Licensee: Georgia Power
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.85E+06
Initial Criticality: 03/28/89

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	7.17E+00
CR-51	7.06E-06
MN-54	8.38E-07
CO-57	2.35E-07
CO-58	4.20E-05
FE-59	3.74E-06
CO-60	2.86E-06
KR-85	4.06E-01
KR-85M	1.75E-01
KR-88	3.88E-03
SR-90	9.94E-08
I-131	2.80E-05
XE-131M	1.71E+00
I-133	5.23E-05
XE-133	1.72E+02
XE-133M	7.13E-01
XE-135	5.93E+00

Total Airborne Tritium Released 2.15E+02 Ci

Liquid Effluents

Nuclide Released	Activity (Ci)
BE-7	1.39E-03
NA-24	5.71E-04
AR-41	5.84E-05
CR-51	6.51E-02
MN-54	1.38E-02
FE-55	3.53E-01
CO-57	1.47E-03
CO-58	3.17E-01
FE-59	1.64E-02
CO-60	3.83E-02
ZN-65	1.19E-04
KR-85M	3.14E-06
KR-88	2.55E-05
SR-92	2.64E-05
Y-92	5.66E-05
NB-95	8.66E-03
ZR-95	3.11E-03
NB-97	4.24E-04
TC-99M	1.89E-04
AG-110M	3.16E-04
SN-113	6.04E-04
SB-122	6.89E-03
SB-124	3.00E-02

Installation: Vogtle Location: 25 Mi SSE Augusta, GA
Unit No.(s): 1&2

Effluent and Waste Disposal Annual Report for 1990

Unit No.: 1&2 (continued)

Liquid Effluents

Nuclide Released	Activity (Ci)
SB-125	1.38E-01
TE-129M	7.38E-03
I-131	1.03E-02
XE-131M	1.53E-03
I-132	4.14E-04
TE-132	4.67E-04
I-133	4.44E-04
XE-133	2.00E-01
XE-133M	5.59E-04
CS-134	2.01E-05
XE-135	3.11E-03
CS-137	8.17E-05
BA-140	2.20E-05
LA-140	1.54E-04
CE-144	4.20E-05
HF-181	2.93E-04
W-187	3.05E-05

Total Liquid Tritium Released	1.17E+03 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.33E+07 liters
Volume of Dilution Water Used During Period	7.08E+09 liters

Installation: Vogtle
Unit No.(s): 1&2

Location: 25 Mi SSE Augusta, GA

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-424
Thermal Power(MWH): 2.32E+07
Commercial Operation: 05/31/87
Cooling Water Source: Savannah River

Licensee: Georgia Power
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 7.34E+06
Initial Criticality: 03/09/87

Unit Number: 2 Type: PWR
Docket Number: 50-425
Thermal Power(MWH): 2.17E+07
Commercial Operation: 05/20/89
Cooling Water Source: Savannah River

Licensee: Georgia Power
Licensed Power(MWT): 3.41E+03
Net Electrical Power(MWH): 6.85E+06
Initial Criticality: 03/28/89

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
8	Tractor and Shielded cask	CNSI, Barnwell, SC
10	Tractor-Trailer	UEG, Oakridge, TN

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	2.62E+01	4.61E+01
CO-60	3.05E+01	3.22E+01
Others	4.33E+01	2.16E+01
B		
CO-58		3.58E+01
CO-60	4.34E+01	
FE-55	2.40E+01	2.46E+01
Others	3.27E+01	3.96E+01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	3.59E+01	
	Ci	1.63E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	5.70E+01	after compaction
	Ci	6.57E-01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Waterford
Unit No.(s): 3

Location: 20 Mi W New Orleans, LA

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-382
Thermal Power(MWH): 2.69E+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): 8.60E+06
Initial Criticality: 03/04/85

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	4.37E-01
CO-58	1.12E-07
BR-82	4.56E-05
KR-85	1.98E-02
KR-85M	6.82E+00
KR-87	6.71E-02
KR-88	3.03E-01
I-131	5.99E-04
XE-131M	2.08E+00
I-133	4.66E-05
XE-133	5.58E+03
XE-133M	1.60E+00
XE-135	1.46E+02

Total Airborne Tritium Released 2.05E+02 Ci

Installation: Waterford
Unit No.(s): 3

Location: 20 Mi W New Orleans, LA

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-382
Thermal Power(MWH): 2.69E+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): 8.60E+06
Initial Criticality: 03/04/85

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	1.09E-04
CR-51	1.43E-03
MN-54	1.60E-03
FE-55	3.50E-02
CO-57	2.55E-04
CO-58	1.63E-01
FE-59	1.59E-04
CO-60	1.60E-02
KR-85	1.70E-02
KR-85M	7.19E-03
KR-87	7.21E-05
KR-88	3.60E-03
RB-88	2.79E-01
SR-89	3.02E-05
SR-92	2.34E-04
NB-95	2.18E-03
ZR-95	7.74E-04
NB-97	6.99E-04
ZR-97	1.66E-04
TC-99M	1.73E-04
RU-106	5.75E-04
AG-110M	5.08E-03
SN-113	7.21E-04
SB-122	6.72E-04
SB-124	5.62E-03
SB-125	5.16E-02
SB-126	1.20E-04
I-131	9.11E-03
XE-131M	1.72E-01
I-133	9.10E-05
XE-133	2.46E+01
XE-133M	2.76E-01
CS-134	5.55E-02
XE-135	2.15E-01
CS-137	9.84E-02
BA-139	2.98E-04
BA-140	6.55E-04
LA-140	1.56E-03
W-187	6.81E-05

Total Liquid Tritium Released	7.12E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	9.49E+06 liters
Volume of Dilution Water Used During Period	1.77E+12 liters

Installation: Waterford
Unit No.(s): 3

Location: 20 Mi W New Orleans, LA

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR
Docket Number: 50-382
Thermal Power(MWH): 2.69E+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): 8.60E+06
Initial Criticality: 03/04/85

Solid Waste Disposition

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

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	3.05E+00	
CO-60	3.95E+00	
CS-134	2.58E+01	
CS-137	5.14E+01	
FE-55	1.09E-01	
MN-54	1.38E+00	
NI-63	1.43E+01	
B		
CO-58	9.26E+00	3.71E+01
CO-60	8.63E+00	5.37E+00
CS-134	1.10E+01	8.55E+00
CS-137	1.91E+01	1.35E+01
FE-55	3.32E+01	2.06E+01
MN-54	2.70E+00	4.18E+00
NI-63	1.46E+01	9.08E+00
D		
CO-58	9.13E+00	
CS-134	1.08E+01	
CS-137	1.88E+01	
FE-55	3.27E+01	
MN-54	2.67E+00	
NI-63	1.44E+01	

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.55E+01	burial volume
	Ci	5.90E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	2.75E+02	before volume reduction
	m3	3.95E+01	burial volume
	Ci	9.98E-01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
Waste Oil	m3	7.43E+00	before incineration
	m3	0.00E+00	after incineration
	Ci	9.40E-03	

Installation: WNP-2
Unit No.(s): 2

Location: 12 Mi NW Richland, WA

Effluent and Waste Disposal Annual Report for 1990

Type: BWR
Docket Number: 50-397
Thermal Power(MWH): 1.80E+07
Commercial Operation: 12/13/84
Cooling Water Source: Columbia River

Licensee: Washington Public Pwr. Supply Sys.
Licensed Power(MWT): 3.32E+03
Net Electrical Power(MWH): 5.74E+06
Initial Criticality: 01/19/84

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	1.77E+01
CR-51	1.09E-03
MN-54	9.60E-05
CO-58	4.30E-05
CO-60	1.35E-03
ZN-65	1.04E-03
KR-85M	4.22E+01
KR-87	4.33E+00
KR-88	2.91E+01
SR-89	1.34E-02
SR-90	7.91E-05
I-131	8.67E-02
I-132	4.51E-02
I-133	1.36E-01
XE-133	4.31E+02
XE-133M	6.53E+00
CS-134	7.60E-05
I-134	1.05E-02
I-135	9.49E-02
XE-135	1.09E+02
XE-135M	9.15E+01
CS-137	1.32E-04
XE-137M	3.82E+01
XE-138	1.20E+02
BA-LA-140	4.54E-02
CE-141	8.12E-05

Total Airborne Tritium Released 3.70E+01 Ci

Installation: WNP-2 Location: 12 Mi NW Richland, WA
Unit No.(s): 2

Effluent and Waste Disposal Annual Report for 1990

Type: BWR Licensee: Washington Public Pwr. Supply Sys.
Docket Number: 50-397 Licensed Power(MWT): 3.32E+03
Thermal Power(MWH): 1.80E+07 Net Electrical Power(MWH): 5.74E+06
Commercial Operation: 12/13/84 Initial Criticality: 01/19/84
Cooling Water Source: Columbia River

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	2.10E-03
MN-54	3.66E-04
FE-55	1.35E-04
CO-58	2.60E-04
FE-59	1.30E-04
CO-60	5.19E-03
ZN-65	3.00E-03
SR-89	1.30E-04
SR-90	5.85E-05
ZR-NB-95	1.10E-04
I-131	1.20E-03
XE-133	6.40E-03
CS-134	1.30E-03
XE-135	1.00E-03
CS-137	1.20E-03
CE-141	7.60E-05

Total Liquid Tritium Released	7.54E-01 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.57E+06 liters
Volume of Dilution Water Used During Period	1.06E+09 liters

Installation: WNP-2 Location: 12 Mi NW Richland, WA
Unit No.(s): 2

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: BWR
Docket Number: 50-397
Thermal Power(MWH): 1.80E+07
Commercial Operation: 12/13/84
Cooling Water Source: Columbia River

Licensee: Washington Public Pwr. Supply Sys.
Licensed Power(MWT): 3.32E+03
Net Electrical Power(MWH): 5.74E+06
Initial Criticality: 01/19/84

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
34	Cask	U.S. Ecology, Richland, WA
6	Flatbed trailer	U.S. Ecology, Richland, WA

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
CO-58	2.70E+00	2.20E+00
CO-60	1.74E+01	2.68E+01
CR-51	3.23E+01	1.57E+01
CS-134	5.00E+00	8.20E+00
CS-137	5.20E+00	7.50E+00
FE-55	4.70E+00	7.10E+00
I-131	1.20E+00	
LA-140	6.00E-01	
MN-54	1.80E+00	1.80E+00
NB-95		1.00E+00
ZN-65	2.73E+01	2.74E+01
ZR-95		8.00E-01
B		
CO-58		6.00E-01
CO-60		4.34E+01
CR-51		2.70E+00
FE-55		3.05E+01
MN-54		1.40E+00
NB-95		1.70E+00
NI-63		1.90E+00
SB-125		1.70E+00
ZN-65		1.42E+01
ZR-95		7.00E-01

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.51E+02	burial volume
	Ci	1.23E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.83E+02	burial volume (compacted)
	Ci	5.97E+01	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Wolf Creek
Unit No.(s): 1

Location: 3.5 Mi NE Burlington, KS

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-482
Thermal Power(MWH): 2.36E+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): 7.87E+06
Initial Criticality: 05/22/85

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-41	2.72E+00
MN-54	4.50E-06
CO-58	6.52E-06
CO-60	7.53E-05
KR-85	1.89E-01
KR-85M	5.62E-01
KR-88	5.53E-02
I-131	8.48E-05
XE-131M	1.43E+01
XE-133	9.54E+02
XE-133M	1.15E+01
XE-135	1.53E+01

Total Airborne Tritium Released 1.87E+01 Ci

Installation: Wolf Creek
Unit No.(s): 1

Location: 3.5 Mi NE Burlington, KS

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-482
Thermal Power(MWH): 2.36E+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): 7.87E+06
Initial Criticality: 05/22/85

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	6.19E-06
AR-41	2.09E-04
CR-51	1.64E-02
MN-54	3.32E-03
FE-55	8.84E-02
CO-57	4.49E-04
CO-58	9.22E-02
FE-59	2.34E-03
CO-60	4.95E-02
KR-85	9.60E-02
KR-85M	4.16E-03
KR-87	1.43E-04
KR-88	2.96E-03
RB-88	2.85E-02
SR-92	5.57E-05
NB-95	3.67E-04
ZR-95	7.90E-05
NB-97	6.93E-05
AG-110M	1.81E-04
SN-113	2.32E-05
SN-117M	3.93E-04
SB-124	2.48E-03
SB-125	1.43E-02
SB-126	3.80E-05
I-131	1.79E-04
XE-131M	1.48E-01
XE-133	1.27E+01
XE-133M	1.20E-01
CS-134	7.07E-03
XE-135	5.68E-02
CS-137	8.89E-03
BA-139	1.74E-04
LA-140	2.23E-05
CE-141	7.08E-05

Total Liquid Tritium Released	5.90E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.84E+08 liters
Volume of Dilution Water Used During Period	1.14E+12 liters

Installation: Wolf Creek
Unit No.(s): 1

Location: 3.5 Mi NE Burlington, KS

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR
Docket Number: 50-482
Thermal Power(MWH): 2.36E+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): 7.87E+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)	% Jan-June	Jul-Dec
A		
AG-110M		1.24E+00
AM-241		1.10E-02
C-14	2.51E-01	3.50E-01
CE-144		9.20E-02
CM-243/244		7.00E-03
CO-58		1.99E+01
CO-60	8.91E+00	8.07E+00
CR-51		2.99E+00
CS-134		2.25E-01
CS-137		3.93E-01
FE-55	8.57E+01	4.75E+01
H-3	1.66E+00	2.29E+00
I-131		6.00E-02
MN-54	1.27E+00	1.16E+00
NB-95		1.07E+00
NI-63	2.23E+00	1.28E+01
PU-238		2.70E-02
PU-241		1.99E-01
ZR-95		1.57E+00
B		
C-14	7.00E-03	2.30E-02
CO-58	3.60E+00	9.07E-01
CO-60	1.04E+01	1.23E+01
CR-51		3.70E-02
CS-137	1.37E+00	1.43E+00
FE-55	7.60E+01	7.65E+01
H-3		1.37E-01
MN-54	1.52E+00	1.38E+00
NI-63	7.11E+00	7.37E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	1.16E+01	
	Ci	2.70E+01	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	7.15E+01	
	Ci	4.70E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Yankee Rowe
Unit No.(s): 1

Location: 20 Mi NW Greenfield, MA

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-029
Thermal Power(MWH): 2.94E+06
Commercial Operation: 07/01/61
Cooling Water Source: Deerfield River

Licensee: Yankee Atomic Electric
Licensed Power(MWT): 6.00E+02
Net Electrical Power(MWH): 8.26E+05
Initial Criticality: 08/19/60

Airborne Effluents

Nuclide Released	Activity (Ci)
AR-37	7.71E-02
AR-41	6.52E-01
CR-51	4.83E-07
MN-54	2.93E-06
CO-58	1.34E-06
FE-59	3.05E-07
CO-60	1.83E-05
KR-85	5.12E+00
KR-85M	1.00E+00
KR-87	1.22E+00
KR-88	2.12E+00
ZR-NB-95	1.90E-07
I-131	1.34E-04
XE-131M	2.89E-01
I-133	1.14E-05
XE-133	3.86E+01
XE-133M	4.20E-01
CS-134	3.75E-07
I-135	7.79E-07
XE-135	2.33E+01
XE-135M	3.88E+01
CS-137	1.94E-06
XE-138	1.28E+00
BA-LA-140	1.06E-06

Total Airborne Tritium Released 3.74E+00 Ci

Installation: Yankee Rowe
Unit No.(s): 1

Location: 20 Mi NW Greenfield, MA

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-029
Thermal Power(MWH): 2.94E+06
Commercial Operation: 07/01/61
Cooling Water Source: Deerfield River

Licensee: Yankee Atomic Electric
Licensed Power(MWT): 6.00E+02
Net Electrical Power(MWH): 8.26E+05
Initial Criticality: 08/19/60

Liquid Effluents

Nuclide Released	Activity (Ci)
CR-51	8.30E-07
MN-54	6.58E-06
FE-55	2.53E-03
CO-58	6.58E-07
FE-59	2.28E-06
CO-60	1.99E-04
KR-85	3.31E-02
SB-124	1.52E-06
I-131	2.50E-05
XE-131M	2.09E-03
TE-132	1.97E-07
I-133	3.26E-06
XE-133	1.42E-01
XE-133M	1.05E-03
CS-134	3.53E-04
XE-135	6.07E-04
CS-137	1.04E-03
CE-144	1.63E-06

Total Liquid Tritium Released	1.92E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.96E+07 liters
Volume of Dilution Water Used During Period	1.72E+11 liters

Installation: Yankee Rowe
Unit No.(s): 1

Location: 20 Mi NW Greenfield, MA

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Type: PWR
Docket Number: 50-029
Thermal Power(MWH): 2.94E+06
Commercial Operation: 07/01/61
Cooling Water Source: Deerfield River

Licensee: Yankee Atomic Electric
Licensed Power(MWT): 6.00E+02
Net Electrical Power(MWH): 8.26E+05
Initial Criticality: 08/19/60

Solid Waste Disposition

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

Estimate of Major Nuclide Composition (by type of waste)	% Jan-June	Jul-Dec
A		
C-14	1.72E-01	1.51E-01
CO-60	5.40E+00	2.75E+00
CS-134	1.42E+01	1.60E+01
CS-137	6.27E+01	2.11E+01
FE-55	9.22E+00	2.35E+01
H-3		3.41E+01
NI-63	5.48E+00	1.71E+00
PU-241	1.99E-01	
SR-90	1.59E+00	
B		
C-14		2.26E-01
CO-60		4.15E+00
CS-134		2.39E+01
CS-137		3.01E+01
FE-55		3.67E+01
H-3		5.00E-03
NB-95		1.92E+00
NI-63		2.54E+00

Type of Waste	Unit		Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3	4.93E+01	
	Ci	1.64E+02	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3	1.33E+02	compacted & non-compacted
	Ci	5.73E+00	
C. Irradiated Components, Control Rods, etc.	m3		
	Ci		
D. Other (describe)			
	m3		
	Ci		

Installation: Zion
Unit No.(s): 1&2

Location: 6 Mi N Waukegan, IL

Effluent and Waste Disposal Annual Report for 1990

Unit Number: 1 Type: PWR
Docket Number: 50-295
Thermal Power(MWH): 1.41E+07
Commercial Operation: 12/31/73
Cooling Water Source: Lake Michigan

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.25E+03
Net Electrical Power(MWH): 4.45E+06
Initial Criticality: 06/19/73

Unit Number: 2 Type: PWR
Docket Number: 50-304
Thermal Power(MWH): 8.42E+06
Commercial Operation: 09/17/74
Cooling Water Source: Lake Michigan

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.25E+03
Net Electrical Power(MWH): 2.65E+06
Initial Criticality: 12/24/73

Airborne Effluents

Nuclide Released	Activity (Ci)
NA-24	3.01E-05
AR-41	1.71E-01
MN-54	1.14E-07
CO-57	5.50E-09
CO-58	7.47E-06
CO-60	5.62E-05
SE-75	2.90E-08
BR-82	8.44E-06
KR-85	2.19E+00
KR-88	1.46E-01
RB-88	1.24E-04
NB-95	6.90E-09
MO-99	2.40E-07
AG-110M	3.90E-09
SN-113	2.20E-10
I-131	1.31E-03
XE-131M	3.19E-01
I-132	1.55E-05
I-133	1.29E-04
XE-133	1.07E+02
XE-133M	8.90E-03
CS-134	7.22E-06
I-135	3.52E-05
XE-135	7.73E-02
CS-136	1.20E-07
CS-137	1.72E-05
CS-138	3.48E-04
CE-143	7.40E-12
W-187	5.38E-07

Total Airborne Tritium Released 1.80E+01 Ci

Installation: Zion
Unit No.(s): 1

Location: 6 Mi N Waukegan, IL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-295
Thermal Power(MWH): 1.41E+07
Commercial Operation: 12/31/73
Cooling Water Source: Lake Michigan

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.25E+03
Net Electrical Power(MWH): 4.45E+06
Initial Criticality: 06/19/73

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	3.76E-03
CR-51	3.48E-02
MN-54	4.98E-03
FE-55	9.00E-02
CO-57	1.88E-03
CO-58	1.02E+00
FE-59	1.44E-02
CO-60	4.66E-01
NI-65	2.70E-04
RB-88	9.10E-05
NB-95	6.32E-03
ZR-95	5.39E-03
MO-99	3.85E-04
TC-99M	2.90E-05
AG-110M	7.20E-02
SN-113	5.68E-04
SB-124	1.49E-01
SB-125	4.46E-01
SB-126	2.48E-03
I-131	6.94E-02
I-133	5.08E-02
XE-133	1.03E-01
XE-133M	1.00E-04
CS-134	8.78E-02
XE-135	1.25E-03
CS-136	4.60E-05
CS-137	1.19E-01
LA-140	7.10E-04

Total Liquid Tritium Released	2.90E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.43E+08 liters
Volume of Dilution Water Used During Period	1.04E+12 liters

Installation: Zion
Unit No.(s): 2

Location: 6 Mi N Waukegan, IL

Effluent and Waste Disposal Annual Report for 1990

Type: PWR
Docket Number: 50-304
Thermal Power(MWH): 8.42E+06
Commercial Operation: 09/17/74
Cooling Water Source: Lake Michigan

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.25E+03
Net Electrical Power(MWH): 2.65E+06
Initial Criticality: 12/24/73

Liquid Effluents

Nuclide Released	Activity (Ci)
NA-24	4.58E-04
CR-51	2.56E-03
MN-54	4.41E-03
FE-55	2.80E-02
CO-57	4.57E-04
CO-58	1.91E-01
FE-59	2.40E-03
CO-60	2.72E-01
RB-88	7.70E-04
SR-90	4.89E-05
NB-95	3.59E-03
ZR-95	1.91E-03
MO-99	1.09E-03
AG-110M	3.33E-02
SN-113	2.20E-04
SB-124	1.93E-02
SB-125	1.31E-01
I-131	2.21E-02
I-132	4.10E-05
I-133	5.52E-03
XE-133	3.02E-01
XE-133M	6.70E-04
CS-134	5.47E-02
XE-135	2.06E-03
CS-136	3.20E-05
CS-137	1.51E-01
LA-140	5.28E-04

Total Liquid Tritium Released	3.91E+02 Ci
Volume of Liquid Waste Released (Prior to Dilution)	1.36E+08 liters
Volume of Dilution Water Used During Period	8.69E+11 liters

Installation: Zion
Unit No.(s): 1&2

Location: 6 Mi N Waukegan, IL

Effluent and Waste Disposal Annual Report for 1990
Solid Effluents

Unit Number: 1 Type: PWR
Docket Number: 50-295
Thermal Power(MWH): 1.41E+07
Commercial Operation: 12/31/73
Cooling Water Source: Lake Michigan

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.25E+03
Net Electrical Power(MWH): 4.45E+06
Initial Criticality: 06/19/73

Unit Number: 2 Type: PWR
Docket Number: 50-304
Thermal Power(MWH): 8.42E+06
Commercial Operation: 09/17/74
Cooling Water Source: Lake Michigan

Licensee: Commonwealth Edison
Licensed Power(MWT): 3.25E+03
Net Electrical Power(MWH): 2.65E+06
Initial Criticality: 12/24/73

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
27		Barnwell, SC
2		Richland, WA

Type of Waste	Unit	Description
A. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m3 1.09E+02	
	Ci 1.81E+03	
B. Dry Compressible Waste, Contaminated Equipment, etc.	m3 1.70E+01	
	Ci 2.15E+02	
C. Irradiated Components, Control Rods, etc.	m3	
	Ci	
D. Other (describe)		
Solidified ethylene glycol	m3 1.34E+01	
	Ci 2.83E-05	
Solidified oil	m3 5.10E+00	
	Ci 5.60E-04	

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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 1990 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 1990 release data are summarized in tabular form. Data covering specific radionuclides are summarized.

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