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Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities 1991

Twenty-Fourth Annual Report

U.S. Nuclear Regulatory Commission

Office of Nuclear Regulatory Research

C. T. Raddatz, D. Hagemeyer

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PREVIOUS REPORTS IN SERIES

WASH-1311 A Compilation of Occupational Radiation Exposure from Light Water Cooled Nuclear Power Plants, 1969-1973, U.S. Atomic Energy Commission, May 1974.

NUREG-75/032 Occupational Radiation Exposure at Light Water Cooled Power Reactors, 1969-1974, U.S. Nuclear Regulatory Commission, June 1975.

NUREG-0109 Occupational Radiation Exposure at Light Water Cooled Power Reactors, 1969-1975, U.S. Nuclear Regulatory Commission, August 1976.

NUREG-0323 Occupational Radiation Exposure at Light Water Cooled Power Reactors, 1969-1976, U.S. Nuclear Regulatory Commission, March 1978.

NUREG-0482 Occupational Radiation Exposure at Light Water Cooled Power Reactors, 1977, U.S. Nuclear Regulatory Commission, May 1979.

NUREG-0594 Occupational Radiation Exposure at Commercial Nuclear Power Reactors, 1978, U.S. Nuclear Regulatory Commission, November 1979.

NUREG-0713 Occupational Radiation Exposure at Commercial Nuclear Power Reactors 1979, Vol. 1, U.S. Nuclear Regulatory Commission, March 1981.

NUREG-0713 Occupational Radiation Exposure at Commercial Nuclear Power Reactors 1980, Vol. 2, U.S. Nuclear Regulatory Commission, December 1981.

NUREG-0713 Occupational Radiation Exposure at Commercial Nuclear Power Reactors 1981, Vol. 3, U.S. Nuclear Regulatory Commission, November 1982.

NUREG-0713 Occupational Radiation Exposure at Commercial Nuclear Power Reactors 1982, Vol. 4, U.S. Nuclear Regulatory Commission, December 1983.

NUREG-0713 Occupational Radiation Exposure at Commercial Nuclear Power Reactors 1983, Vol. 5, U.S. Nuclear Regulatory Commission, March 1985.

NUREG-0713 Occupational Radiation Exposure At Commercial Nuclear Power Reactors and Other Facilities 1984, Vol. 6, U.S. Nuclear Regulatory Commission, October 1986.

NUREG-0713 Occupational Radiation Exposure At Commercial Nuclear Power Reactors and Other Facilities 1985, Vol. 7, U.S. Nuclear Regulatory Commission, April 1988.

NUREG-0713 Occupational Radiation Exposure At Commercial Nuclear Power Reactors and Other Facilities 1986, Vol. 8, U.S. Nuclear Regulatory Commission, August 1989.

NUREG-0713 Occupational Radiation Exposure At Commercial Nuclear Power Reactors and Other Facilities 1987, Vol. 9, U.S. Nuclear Regulatory Commission, November 1990.

NUREG-0713 Occupational Radiation Exposure At Commercial Nuclear Power Reactors and Other Facilities 1988, Vol. 10, U.S. Nuclear Regulatory Commission, July 1991.

NUREG-0713 Occupational Radiation Exposure At Commercial Nuclear Power Reactors and Other Facilities 1989, Vol. 11, U.S. Nuclear Regulatory Commission, April 1992.

NUREG-0713 Occupational Radiation Exposure At Commercial Nuclear Power Reactors and Other Facilities 1990, Vol. 12, U.S. Nuclear Regulatory Commission, January 1993.

Previous reports in the NUREG-0714 series, which are now combined with NUREG-0713, are as follows:

WASH-1350-R1 through WASH-1350-R6 First through Sixth Annual Reports of the Operation of the U.S. AEC's Centralized Ionizing Radiation Exposure Records and Reporting System, U.S. Atomic Energy Commission.

NUREG-75/108 Seventh Annual Occupational Radiation Exposure Report for Certain NRC Licensees - 1974, U.S. Nuclear Regulatory Commission, October 1975.

NUREG-0119 Eighth Annual Occupational Radiation Exposure Report for 1975, U.S. Nuclear Regulatory Commission, October 1976.

NUREG-0322 Ninth Annual Occupational Radiation Exposure Report for 1976, U.S. Nuclear Regulatory Commission, October 1977.

NUREG-0463 Tenth Annual Occupational Radiation Exposure Report for 1977, U.S. Nuclear Regulatory Commission, October 1978.

NUREG-0593 Eleventh Annual Occupational Radiation Exposure Report for 1978, U.S. Nuclear Regulatory Commission, January 1981.

NUREG-0714 Twelfth Annual Occupational Radiation Exposure Report for 1979, Vol. 1, U.S. Nuclear Regulatory Commission, August 1982.

NUREG-0714 Occupational Radiation Exposure, Thirteenth and Fourteenth Annual Reports, 1980 and 1981, Vols. 2 and 3, U.S. Nuclear Regulatory Commission, October 1983.

NUREG-0714 Occupational Radiation Exposure, Fifteenth and Sixteenth Annual Reports, 1982 and 1983, Vols. 4 and 5, U.S. Nuclear Regulatory Commission, October 1985.

ABSTRACT

This report summarizes the occupational exposure data that are maintained in the U.S. Nuclear Regulatory Commission's (NRC) Radiation Exposure Information and Reporting System (REIRS). The bulk of the information contained in the report was extracted from the 1991 annual statistical reports submitted by six of the seven categories[1] of NRC licensees subject to the reporting requirements of 10 CFR § 20.407. Since there are no geologic repositories for high level waste currently licensed, only six categories will be considered in this report. These six categories of licensees also submit personal identification and exposure information for terminating employees pursuant to 10 CFR § 20.408, and some analysis of this "termination" data is also presented in this report.

Annual reports for 1991 were received from a total of 436 NRC licensees, 115 of which were operators of nuclear power reactors. Compilations of the 436 reports indicated that 206,732 individuals were monitored, 103,740 of whom received a measurable dose (Table 3.1). The collective dose incurred by these individuals was calculated to be 31,830 person-rem (person-cSv)[2] which represents a 20% decrease from the 1990 value. The number of workers receiving a measurable dose decreased, as well as the collective dose, resulting in the average measurable dose dropping to 0.31 rem (cSv) for 1991. The average measurable dose is defined to be the total collective dose divided by the number of workers receiving a measurable dose.

A total of 96,231 termination reports (Table 5.1) were submitted to the NRC which contained personal identification and exposure information for 68,115 individuals who had completed their work assignment or employment with a covered category of NRC licensees during 1991. The total number of monitored individuals for whom personal identification and exposure information has been incorporated into REIRS during the 23 years that it has been operating is now 686,587, with 608,177 of those terminating from nuclear power facilities. Analyses of these termination data indicate that 7,763 individuals completed work assignments at two or more nuclear reactor facilities during calendar year 1991 and received an average dose of 0.52 rem (cSv). Approximately 2,912 of these individuals worked at two or more reactor facilities during one calendar quarter and received an average quarterly dose of 0.19 rem (cSv). The dose distributions reported by reactor licensees under 10 CFR § 20.407 are adjusted each year from termination data to account for the duplicate reporting of transient workers by multiple licensees. In 1991, the average measurable dose calculated from reported data was 0.29 rem (cSv). The corrected dose distribution resulted in an average measurable dose of 0.31 rem (cSv).

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1 Commercial nuclear power reactors; industrial radiographers; fuel processors, fabricators, and reprocessors; manufacturers and distributors of byproduct material; independent spent fuel storage installations; facilities for land disposal of low-level waste; and geologic repositories for high-level waste.

2 In the International System of Units the sievert (Sv) is the name given to the units for dose equivalent. One centisievert (cSv) equals one rem; therefore, person-rem becomes person-cSv.

EDITOR'S NOTE

The NRC currently has a three-year contract with Science Applications International Corporation (SAIC) to assist the NRC Staff in the preparation of the NUREG-0713 series. Mr. Charles Hinson (NRR) assisted in the preparation of this NUREG, serving as the NRC Technical Reviewer. SAIC will be suggesting changes in the presentation of certain data in these reports. Readers should be alert to these changes, and the NRC welcomes responses, especially where these changes can be improved upon.

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PREFACE

A number of NRC licensees have inquired as to how the occupational radiation exposure data that are extracted from the annual statistical summary reports required by § 20.407, the termination reports required by § 20.408, and the annual dose data reported by work function in accordance with Subsection 6.9.1.5 of the standard technical specifications for nuclear power plants are used by the NRC staff. This is a very appropriate inquiry that may be of importance to many affected licensees. In combination with other sources of information, the principal uses of the data are to provide facts regarding routine occupational exposures to radiation and radioactive material that occur in connection with certain NRC-licensed activities. These facts are used by the NRC staff as indicated below:

1. The data permit evaluation, from the viewpoint of trends, of the effectiveness of the overall NRC/licensee radiation protection and ALARA efforts by certain licensees. They also provide for the identification (and subsequent correction) of unfavorable trends.

2. The external dose data assist in the evaluation of the radiological risk associated with certain categories of NRC-licensed activities and are used for comparative analyses of radiation protection performance: US/foreign, BWRs/PWRs, civilian/military, plant/plant, nuclear industry/other industries, etc.

3. The data provide for the monitoring of transient workers who may affect dose distribution statistics through multiple counting, or who may exceed regulatory limits on radiation exposure due to the accumulation of exposure at multiple sites per calendar quarter or calendar year.

4. The data help provide facts for evaluating the adequacy of the current risk limitation system (e.g., are individual lifetime dose limits, worker population collective dose limits, and requirements for optimization needed?).

5. The data permit comparisons of occupational radiation risks with potential public risks when action for additional protection of the public involves worker exposures.

6. The data are used in the establishment of priorities for the utilization of NRC health physics resources: research, standards development, and regulatory program development.

7. The data provide facts for answering Congressional and Administration inquiries and for responding to questions raised by public interest groups, special interest groups, labor unions, etc.

8. The data provide information that may be used in the planning of epidemiological studies.

FOREWORD

Based on information received from 436 licensees required to submit annual reports, collective dose decreased by 20% in 1991 as compared to 1990 figures. The majority of this decrease resulted from a sharp drop in collective dose at light water reactors which represent 90% of the dose reported. Fuel fabricators also reported a sharp drop in collective doses. Collective doses reported by industrial radiographers, manufacturers and distributors, and low level waste disposal facilities were somewhat higher than in 1990.

NUREG-0713, Volume 13, summarizes the occupational exposure data for 1991 that are maintained in the U.S. Nuclear Regulatory Commission's Radiation Exposure Information Reporting System (REIRS). It does not present staff positions or requirements. However, NRC staff believes that it can be a useful tool in evaluating the effectiveness of an ALARA program.

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Occupational Radiation Exposure
at Commercial Nuclear Power Reactors and Other Facilities
Twenty-fourth Annual Report, 1991

1 INTRODUCTION

One of the basic purposes of the Atomic Energy Act and the implementing regulations in Title 10, Code of Federal Regulations, Chapter I, Part 20, is to protect the health and safety of the public, including the employees of the licensees conducting operations under those regulations. Among the regulations designed to ensure that the standards for protection against radiation set out in 10 CFR Part 20 are met is a requirement that licensees provide individuals likely to be exposed to radiation with devices to monitor their exposure. Each licensee is also required to maintain indefinitely records of the results of such monitoring. However, there was no initial provision that these records or any summary of them be transmitted to a central location where the data could be retrieved and analyzed.

On November 4, 1968, the U.S. Atomic Energy Commission (AEC) published an amendment to Part 20 requiring the reporting of certain occupational radiation exposure information to a central repository at AEC Headquarters. This information was required of the four categories[3] of AEC licensees that were considered to involve the greatest potential for significant occupational doses and of AEC facilities and contractors exempt from licensing. A procedure was established whereby the appropriate occupational exposure data were extracted from these reports and entered into the Commission's Radiation Exposure Information Reporting System (REIRS), a computer system that was maintained at the Oak Ridge National Laboratory Computer Technology Center in Oak Ridge, Tennessee, until May 1990. At that time the data were transferred to a database management system at Science Applications International Corporation (SAIC) at Oak Ridge, Tennessee. The computerization of these data ensure that they are kept indefinitely and facilitate their retrieval and analysis. The data maintained in REIRS have been summarized and published in a report every year since 1969. Annual reports for each of the years 1969 through 1973 presented the data reported by both AEC licensees and contractors and were published in six documents designated as WASH-1350-R1 through WASH-1350-R6.

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3 Commercial nuclear power reactors; industrial radiographers; fuel processors, fabricators, and reprocessors; manufacturers and distributors of specified quantities of byproduct material.

In January 1975, with the separation of the AEC into the Energy Research and Development Administration (ERDA) and the U.S. Nuclear Regulatory Commission (NRC), each agency assumed responsibility for collecting and maintaining occupational radiation exposure information reported by the facilities under its jurisdiction. The annual reports published by the NRC on occupational exposure for calendar year 1974 and subsequent years do not contain information pertaining to ERDA facilities or contractors. Comparable information for facilities and contractors under ERDA, now the Department of Energy (DOE), is collected and published by DOE's Division of Operational Safety at Germantown, Maryland.

In 1982 and 1983, paragraph 20.408(a) of Title 10 of the Code of Federal Regulations was amended to require three additional categories of NRC licensees to submit annual statistical exposure reports and individual termination exposure reports. The new categories are (1) geologic repositories for high-level radioactive waste, (2) independent spent fuel storage installations, and (3) facilities for the land disposal of low-level radioactive waste. Therefore, this document presents the exposure information that was reported by NRC licensees representing two of these new categories. (There are no geologic repositories for high-level waste currently licensed.)

This report and each of the predecessors summarizes information reported during previous years. However, more licensee-specific data, such as the annual reports submitted by each commercial power reactor pursuant to 10 CFR § 20.407 and their technical specifications, may be found in those documents listed on the inside of the front cover of this report. Additional operating data and statistics for each power reactor for the years 1973 through 1982 may be found in a series of reports, "Nuclear Power Plant Operating Experience" [Refs. 1-9]. These documents are available for viewing at all NRC public document rooms, or they may be purchased from the National Technical Information Service, as shown in the Reference section.

2 LIMITATIONS OF THE DATA

All of the figures compiled in this report relating to exposures and doses are based on the results and interpretations of the readings of various types of personnel monitoring devices employed by each licensee. This information, obtained from routine personnel monitoring programs, is sufficient to characterize the radiation environment in which individuals work and is used in evaluating the radiation protection program.

Monitoring requirements are based, in general, on 10 CFR § 20.202, which requires licensees to monitor individuals who receive or are likely to receive a dose in any calendar quarter in excess of 25% of the applicable quarterly limits. For most adults the quarterly limit for the whole body is 1.25 rem (cSv), so 0.312 rem (cSv) per quarter is the level above which monitoring is required. Depending on the administrative policy of each licensee, persons such as visitors and clerical workers may also be provided with monitoring devices for identification or convenience, although the probability of their being exposed to measurable levels of radiation is extremely small. Licensees are given the option of reporting the dose distribution of only those individuals for whom monitoring is required, or the dose distribution of all those for whom monitoring is provided. Many licensees elect to report the latter; however, this may increase the number of individuals that one could consider to be radiation workers. In an effort to account for this, the number of individuals reported as having "no measurable exposure" has been subtracted from the total number of individuals monitored in order to calculate an average dose per individual receiving a measurable dose, as well as the average dose per monitored individual (for example, see Table 3.1).

One source of error that is present in the calculation of the annual collective dose (i.e., the summation of each monitored person's whole body dose) incurred by workers is the assumption that the midpoint of the dose range is the mean dose of the individuals reported in each dose range (dose ranges are shown in Table 3.2). This allows the collective dose to be calculated without knowing each person's actual annual dose. Comparison of calculated collective dose with actual reported TLD dose totals shows that the actual mean dose of the individuals reported in each range is usually less than the midpoint. Thus, the calculated collective doses presented for categories of licensees shown in this report may be as much as 10% higher than the sum of the actual individual doses. However, 80% of the nuclear power reactors reported the actual collective dose in 1991 so the total collective dose used in this report is more accurate than if the collective dose would have been calculated for each site.

The average dose per individual, as well as the dose distributions shown for groups of licensees, also could have been affected by the multiple reporting of individuals who were monitored by two or more licensees during the year. Since individuals are not identified in the annual reports, an individual who was monitored by five different licensees would have been counted once on each report. Therefore, when the data were summed to determine the total number of individuals monitored by a group of licensees, this person would be counted as five individuals rather than as one. This could also affect the distribution of doses because the individual has been counted five times in the lower dose ranges rather than one time in the higher range corresponding to the actual accumulated dose (the sum of the doses incurred at each facility). This source of error has the greatest potential impact on the data reported by power reactor facilities since they employ many short-term workers. Further discussion of this point is provided in Section 5.

Another fact that should be kept in mind when examining the annual statistical data is that all of the personnel included in the report may not have been monitored throughout the entire year. Many licensees, such as radiography firms and nuclear power facilities, may monitor numerous individuals for periods much less than a year. The average doses calculated from these data, therefore, are less than the average dose that an individual would receive if involved in that activity for the full year.

Considerable attention should also be given when referencing the collective totals presented in this report. The differences between the totals presented for all licensees that reported versus only those licensees that are required to report should be noted. Likewise, one should pay close attention to the differences between all power reactors [including the high temperature gas reactor (HTGR), all pressurized water reactors (PWRs), all boiling water reactors (BWRs), and all light water reactors (LWRs)]. The totals may be inclusive or exclusive of those licensees that were in commercial operation for less than one full year. These parameters vary throughout the tables and appendices of this report in order to provide the most comprehensive analysis of all the data available. The apparent discrepancies among the various tables are a necessary side-effect of this endeavor.

Also, it should again be pointed out that this report contains information reported by NRC licensees only. Since the NRC licenses all commercial nuclear power reactors, fuel processors, fabricators and reprocessors, and independent spent fuel storage facilities, information shown for these categories reflects the U.S. experience. This is not the case, however, for the remaining categories of industrial radiography, manufacturing and distribution of specified quantities of by-product material, and low-level waste disposal.

Companies that conduct these types of activities in Agreement States[4] are licensed by the state and are not required to submit occupational exposure reports to the NRC. Approximately twice as many facilities are licensed to Agreement States than the number licensed by the NRC. This report also does not include non-occupational exposure such as medical x-rays, fluoroscopy, and accelerators. Information shown for these categories does not reflect the total U.S. experience.

[4] States that have entered into an agreement with the NRC that allows each state to license organizations using radioactive materials for certain purposes. As of 01/31/92, there are 28 Agreement States.

3 ANNUAL PERSONNEL MONITORING REPORTS - 10 CFR § 20.407

3.1 Definition of Terms and Sources of Data

3.1.1 Statistical Summary Reports

On February 4, 1974, 10 CFR § 20.407 was amended to require certain categories[5] of licensees to submit an annual statistical report indicating the distribution of the whole body doses incurred by individuals whom they monitored for exposure to radiation. Since the regulations do not require these licensees to report the collective dose incurred by the individuals shown on the statistical reports, the dose distributions are used as the basis for the staff's calculation of the collective dose (see Section 3.1.4).

3.1.2 Number of Monitored Individuals

This is the total number of individuals that the NRC licensees covered by 10 CFR § 20.407 reported as being monitored for exposure to external radiation during the year. This number must include all individuals for whom monitoring is required, and may include visitors, service representatives, contract workers, clerical workers, and any other individuals for whom the licensee feels that monitoring devices should be provided. Most licensees submit the dose distribution of the total number of persons for whom monitoring was provided in their annual § 20.407 reports, but a few report only those for whom monitoring was required.

3.1.3 Number of Workers with Measurable Doses

The number of workers with measurable doses is obtained from the annual dose distribution reports submitted by NRC licensees pursuant to 10 CFR § 20.407 by subtracting the number of individuals having less than measurable doses from the total number of monitored individuals. This figure is used to calculate the average measurable dose per worker because it deletes those individuals who received exposures too small to be detected by personnel monitoring devices, many of whom probably did not routinely work in radiation areas (and were monitored for convenience or for identification purposes).

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5 Commercial nuclear power reactors; industrial radiographers; fuel processors, fabricators and reprocessors; manufacturers and distributors of by-product material; independent spent fuel storage installations; and facilities for land disposal of low-level radioactive waste.

3.1.4 Collective Dose

The concept of collective dose is used in this report to denote the summation of the whole body external doses received by all monitored individuals and has the units person-rem (person-cSv)[6]. Since 10 CFR § 20.407 does not require licensees to list their collective dose on the required annual dose distribution report, the staff must calculate this collective dose from the reports by summing the products obtained by multiplying the number of individuals reported in each of the dose ranges by the midpoint of the corresponding range. This assumes that the midpoint of the range is equal to the arithmetic mean of the individual doses in the range. Past experience has shown that the actual mean dose of individuals reported in each dose range is less than the midpoint of the range, and therefore the resultant calculated collective doses shown in this report for these licensees may be about 10% higher than the sum of the actual individual doses. In 1981, a few power reactor licensees began reporting the actual collective dose (as determined from official personnel dosimetry results) on the § 20.407 annual reports, and, when provided, the NRC staff used these doses instead of the above-described calculations. **The staff would prefer to use the actual collective dose and encourages more licensees to make it available by including the total dose on the § 20.407 annual submittal.**

3.1.5 Average Individual Dose

The average individual dose is obtained by dividing the collective dose by the total number of individuals reported as being monitored. This figure is usually less than the average measurable dose because it includes the number of those individuals who received zero or less than measurable doses.

3.1.6 Average Measurable Dose

The average measurable dose is obtained by dividing the collective dose by the number of workers that received a measurable dose. This is the average most commonly used in this and other reports when examining trends and comparing doses received by workers in various segments of the nuclear industry because it reflects the deletion of those individuals receiving zero or minimal doses, many of whom were monitored for convenience.

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6 In the International Systems of Units, the sievert (Sv) is the name given to the units for dose equivalent. One centisievert (cSv) equals one rem; therefore person-rem becomes person-cSv.

3.1.7 Number of Licensees Reporting

This is the number of NRC licenses issued to companies to use radioactive material for certain activities that would place them in one of the six categories that are required to report pursuant to 10 CFR § 20.407. The third column in Table 3.1 shows the number of licensees that have filed such reports during the last several years. Agreement State licensees do not submit such reports to the NRC.

3.1.8 CR

One of the parameters that the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) recommends be calculated for occupational dose distributions to aid in the comparison of exposure data is a ratio "CR." CR is defined to be the ratio of the annual collective dose incurred by individuals whose annual doses exceed 1.5[7] rem to the total annual collective dose. One UNSCEAR report [Ref. 10] states that normal values of CR should be between 0.05 and 0.50. This means that, usually, no more than 50% of the collective dose should be due to individual doses that exceed 1.5 rem. The last column in Table 3.1 shows the values of CR for the different types of licensees; one can see that most categories now have a CR that is less than 0.50 and that 1991 is the seventh year in a row the CR for commercial LWRs, and the grand total for all licensees, has dropped below 0.50.

3.2 Annual Whole Body Dose Distributions

Table 3.2 is a compilation of the statistical summary reports currently being submitted by six categories of licensees (see Section 3.3 for a description of each licensee category). In nearly every category a large number of individuals receive doses which are less than measurable, and very few doses exceed 4 or 5 rem (cSv). About 90% of the reported individuals continue to be monitored by nuclear power facilities where they receive about 90% of the total collective dose.

It should be pointed out that annual exposures that exceed 5 rem (cSv) are not necessarily classified as personnel overexposures. Although 1.25 rem (cSv) is the quarterly limit set forth in paragraph (a) of 10 CFR § 20.101, paragraph (b) permits licensees, under certain conditions, to allow a worker to receive

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7 The collective dose of workers with doses exceeding 1.5 rems (cSv) was calculated by assuming that half of the collective dose incurred by workers with doses between 1 and 2 rems (cSv) was due to doses greater than 1.5 rems (cSv). This value was then added to the collective dose incurred by workers in the higher ranges.

TABLE 3.1
ANNUAL EXPOSURE DATA FOR CERTAIN CATEGORIES OF LICENSEES
1982-1991

License Category+	Calendar Year	Number of Licensees Reporting	Number of Monitored Individuals	Number of Workers With Measurable Doses	Collective Dose (person-rems or person-cSv)	Average Individual Dose (rems or cSv)	Average Measurable Dose per Worker (rems or cSv)	CR*
Industrial Radiography	1991	248	6,820	4,649	2,160	0.31	0.46	0.40
	1990	258	6,523	4,458	2,120	0.33	0.48	0.42
	1989	276	6,745	4,352	2,067	0.31	0.47	0.42
	1988	286	6,878	4,223	1,981	0.29	0.47	0.43
	1987	312	7,236	4,454	1,835	0.25	0.41	0.36
	1986	335	7,952	5,130	2,108	0.26	0.41	0.39
	1985	340	8,476	5,550	2,374	0.28	0.43	0.45
	1984	361	8,458	5,446	2,490	0.30	0.46	0.46
	1983	340	8,624	5,131	2,384	0.28	0.46	0.45
	1982	353	9,235	6,160	2,998	0.32	0.49	0.46
Manufacturing and Distribution	1991	58	4,930	1,956	721	0.15	0.37	0.59
	1990	57	4,203	2,279	693	0.16	0.30	0.55
	1989	48	4,554	2,345	770	0.17	0.33	0.53
	1988	16	2,177	868	343	0.16	0.40	0.62
	1987	24	3,589	2,317	716	0.20	0.31	0.54
	1986	33	4,042	2,065	745	0.18	0.36	0.49
	1985	33	3,958	2,250	755	0.19	0.34	0.50
	1984	40	5,076	1,977	671	0.13	0.34	0.46
	1983	33	5,051	2,003	824	0.16	0.41	0.54
	1982	34	5,453	2,199	890	0.16	0.40	0.51
Low-Level Waste Disposal	1991	2	905	147	39	0.04	0.27	0.24
	1990	2	784	115	26	0.03	0.23	0.17
	1989	2	925	119	35	0.04	0.29	0.17
	1988	2	864	171	27	0.03	0.16	0.06
	1987	2	778	173	24	0.03	0.14	0.00
	1986	2	996	175	31	0.03	0.18	0.05
	1985	2	1,240	252	70	0.06	0.28	0.24
	1984	2	925	297	72	0.08	0.24	0.16
	1983	1	612	358	71	0.12	0.20	0.14
	1982	1	680	251	53	0.08	0.21	0.20
Independent Spent Fuel Storage	1991	2	41	24	4	0.10	0.17	0.00
	1990	2	56	22	6	0.11	0.27	0.00
	1989	2	190	102	33	0.17	0.33	0.09
	1988	2	217	57	25	0.12	0.44	0.27
	1987	2	129	64	41	0.32	0.64	0.60
	1986	1	32	32	34	1.06	1.06	0.46
	1985	1	32	32	34	1.06	1.06	0.51
	1984	1	32	32	13	0.41	0.41	0.06
	1983	1	33	27	8	0.24	0.30	0.00
	1982	1	35	32	9	0.26	0.28	0.00
Fuel Fabrication and Processing	1991	11	11,702	3,929	378	0.03	0.10	0.01
	1990	11	14,505	3,871	422	0.03	0.11	0.01
	1989	8	11,583	2,992	243	0.02	0.08	0.00
	1988	10	11,994	3,869	455	0.04	0.12	0.01
	1987	10	10,370	3,994	514	0.05	0.13	0.01
	1986	10	8,017	3,790	466	0.06	0.12	0.01
	1985	11	8,596	5,032	643	0.07	0.13	0.05
	1984	14	9,488	5,772	818	0.09	0.14	0.04
	1983	15	9,023	5,013	835	0.09	0.17	0.19
	1982	16	9,808	5,433	831	0.08	0.15	0.20
Commercial Light Water Reactors**	1991	115	182,334	93,035	28,528	0.16	0.31	0.25
	1990	116	187,081	98,802	36,607	0.20	0.37	0.33
	1989	113	188,477	100,080	35,930	0.19	0.36	0.33
	1988	111	193,532	96,653	40,055	0.21	0.41	0.38
	1987	105	205,895	97,992	39,708	0.19	0.41	0.37
	1986	101	191,978	96,535	41,932	0.22	0.43	0.44
	1985	93	180,254	94,873	43,624	0.24	0.46	0.47
	1984	88	165,803	95,224	55,353	0.33	0.58	0.57
	1983	80	139,885	83,546	56,758	0.41	0.68	0.60
	1982	79	127,904	80,871	52,227	0.41	0.65	0.57
Grand Totals and Averages	1991	436	206,732	103,740	31,830	0.15	0.31	0.26
	1990	446	213,152	109,547	39,874	0.19	0.36	0.34
	1989	449	212,474	109,990	39,078	0.18	0.36	0.34
	1988	427	215,662	105,841	42,886	0.20	0.41	0.38
	1987	455	227,997	108,994	42,838	0.19	0.39	0.37
	1986	482	213,017	107,727	45,316	0.21	0.42	0.43
	1985	480	202,556	107,989	47,474	0.23	0.44	0.46
	1984	506	189,782	108,748	59,421	0.31	0.55	0.56
	1983	470	163,238	96,878	60,880	0.37	0.63	0.59
	1982	482	153,118	94,946	57,008	0.37	0.60	0.56

+ These categories consist only of NRC licensees. Agreement State licensed organizations do not report occupational exposure data to the NRC. (see Section 2 for categories)

* CR is the ratio of the annual collective dose delivered at annual doses exceeding 1.5 rems to the total annual collective dose. (see Section 3.1.8)

** Includes all LWRs in commercial operation, although some of them may not have been in operation for a full year. All reactor data are adjusted to account for the multiple counting of transient reactor workers (see Section 5).

TABLE 3.2
DISTRIBUTION OF ANNUAL WHOLE BODY DOSES BY LICENSE CATEGORY
1991

LICENSE CATEGORY (# reporting)	*Number of Individuals with Whole Body Doses in the Ranges (rems or cSv)																TOTAL NUMBER MONI-TORED	NUMBER WITH MEAS. EXPOSURE	TOTAL COLLECTIVE DOSE (Person-rem)
	No Mea-surable	Meas. <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.00	1.00-2.00	2.00-3.00	3.00-4.00	4.00-5.00	5.00-6.00	6.00-7.00	7.00-8.00	8.00-9.00	9.00-12.00	>12.0			
INDUSTRIAL RADIOGRAPHY																			
Single Location (56)	484	255	47	21	9	2	2	2									822	338	44
Multiple Locations (192)	1,687	1,640	749	601	402	278	462	135	37	5	1	1					5,998	4,311	2,116
Total (248)	2,171	1,895	796	622	411	280	464	137	37	5	1	1					6,820	4,649	2,160
MANUFACTURING AND DISTRIBUTION																			
"A"-Broad (12)	2,289	816	219	114	45	30	105	73	27	14							3,732	1,443	674
Limited (46)	685	417	65	20	7	2	1	1									1,198	513	47
Total (58)	2,974	1,233	284	134	52	32	106	74	27	14							4,930	1,956	721
LOW-LEVEL WASTE DISPOSAL																			
Total (2)	758	83	26	14	10	6	6	2									905	147	39
INDEPENDENT SPENT FUEL STORAGE																			
Total (2)	17	7	11	6													41	24	4
FUEL FABRICATION																			
Total (11)	7,773	3,113	559	185	47	18	7										11,702	3,929	378
**COMMERCIAL POWER REACTORS																			
Boiling Water (38)	38,089	17,397	7,077	5,732	3,409	1,975	2,602	299	14	1							76,595	38,506	12,006
Pressurized Water (77)	57,961	28,520	11,876	9,387	4,657	2,462	2,972	371	30								118,236	60,275	16,522
GRAND TOTALS	109,743	52,248	20,629	16,080	8,586	4,773	6,157	883	108	20	1	1					219,229	109,486	31,830

*Dose values exactly equal to the values separating ranges are reported in the next higher range.

**Includes all reactors in commercial operation during 1991, although some of them may not have been in operation for a full year. These values have not been adjusted for the multiple counting of transient reactor workers (see Section 5).

a whole body dose of 3 rem (cSv) per calendar quarter [up to 12 rem (cSv) annually]. The conditions are that the licensee must have determined and recorded the worker's prior accumulated occupational dose to the whole body and that the worker's whole body dose when added to his accumulated occupational dose does not exceed 5(N - 18) rem (cSv), where N equals the individual's age in years. Although there is currently no annual limit, annual exposures that exceed 12 rem (cSv) indicate that an exposure in excess of regulatory limits has occurred.

A summary of the annual whole body exposures reported to the Commission by certain categories of NRC licensees required to submit reports pursuant to 10 CFR § 20.407 is presented in Table 3.3, which shows that about 95% of the exposures have consistently remained less than 2 rem (cSv) between 1968 and 1984. For the past 6 years the percentage of workers with less than 2 rem (cSv) has been greater than or equal to 98%. The number of individuals receiving an annual exposure in excess of 5 rem (cSv) has been less than 0.01% since 1985.

3.2.1 Log Probability Plots

Since personnel monitoring data have been found to have log-normal distributions [Ref. 11], trends in the data reported by licensees may be observed from log probability plots[8] of data. Figure 3.1 displays such a plot of the doses incurred by workers monitored by certain NRC licensees (see Section 3.1.1) for the year 1991. There are a few characteristics of these distributions readers should keep in mind. First, each single plotted point represents the total cumulative percent of all workers with measurable doses up to the plotted value. All measurable doses up to 0.1 rem are included in the value plotted at 0.1 rem, and the values shown on the "Annual Dose" axis are derived from the dose ranges specified in 10 CFR § 20.407(b). Second, because it is not possible to plot 100% on these figures, the data for the highest dose group are plotted at 99.99% and can be said to account for all of the workers.

Another feature of these types of graphs is that several comparisons of various dose distributions can be made quickly. For example, one can easily see in Figure 3.1 that in 1991 about 75% of the workers monitored by firms licensed for independent spent fuel storage received doses that were less than 0.25 rem (cSv), while all of the workers monitored at fuel-fabrication

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8 If the data have a log-normal distribution, the data points will form a straight line when plotted on log probability paper on which cumulative probabilities are laid off on the vertical axis at distances proportional to the corresponding number of standard deviations above or below the median and the dose is plotted on the horizontal axis with a logarithmic scale.

TABLE 3.3
SUMMARY OF ANNUAL DOSE DISTRIBUTIONS FOR CERTAIN NRC LICENSEES

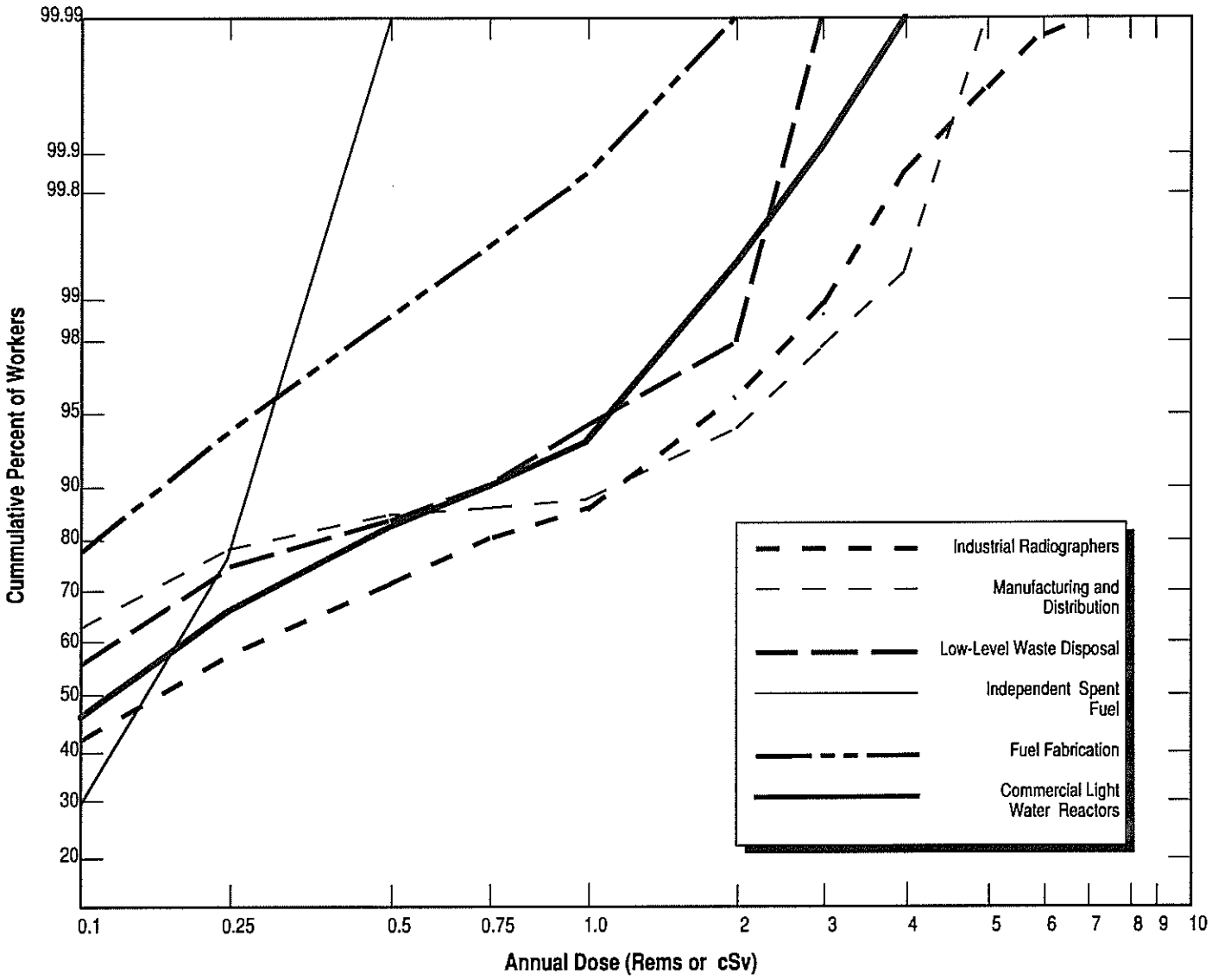
1968-1991

Year	Total Number of Monitored Persons: Reported Number	Total Number of Monitored Persons: Corrected Number*	Percent of Individuals With Doses <2 rems*	Percent of Individuals With Doses <5 rems*	Number of Individuals With Doses >12 rems*
1968	36,836		97.2%	99.5%	3
1969	31,176		96.5%	99.5%	7
1970	36,164		96.1%	99.4%	0
1971	36,311		96.3%	99.3%	1
1972	44,690		95.7%	99.5%	8
1973	67,862		95.0%	99.5%	1
1974	85,097		96.4%	99.7%	1
1975	78,713		94.8%	99.5%	1
1976	92,773		95.0%	99.6%	3
1977	98,212	93,438	93.8%	99.6%	1
1978	105,893	100,818	94.6%	99.8%	3
1979	131,027	125,316	95.2%	99.8%	1
1980	159,177	150,675	94.6%	99.7%	0
1981	157,874	149,314	94.6%	99.8%	1
1982	162,456	154,117	94.9%	99.9%	0
1983	172,927	164,239	94.6%	99.9%	0
1984	181,627	168,899	95.1%	99.9%	0
1985	212,217	201,339	97.5%	>99.99% (15)	2
1986	225,582	213,017	98.0%	>99.99% (8)	0
1987	243,562	227,997	98.7%	>99.99% (4)	1
1988	231,234	215,662	98.6%	>99.99% (8)	0
1989	229,353	212,474	98.9%	>99.99% (7)	1
1990	231,849	212,585	98.9%	>99.99% (3)	0
1991	219,229	206,732	99.4%	>99.99% (2)	0

* Data for 1977-1991 are based on the distribution of individual doses after adjusting for the multiple counting of transient reactor workers (see Section 5). The number of people exceeding 5 rem is shown in parentheses from 1985-1991.

facilities received doses less than 2.00 rem (cSv). One should also note that the doses at which the 50 percentile line crosses the plot corresponds to the median dose, i.e. the dose below which half of the dose fell and above which half fell.

Figure 3.1
Annual Dose Distribution of Workers at Certain NRC Licensees 1991



License Category	Average Meas. Dose (Rem or cSv)	CR*
Industrial Radiographers	0.46	0.40
Manufacturing and Distribution	0.37	0.59
Low-Level Waste Disposal	0.27	0.24
Independent Spent Fuel	0.17	0.00
Fuel Fabrication	0.10	0.01
Commercial Light Water Reactors	0.29	0.21

*CR is the ratio of the dose delivered at individual doses exceeding 1.5 rems to the annual collective dose.

Note: Each point on the curves represents the cumulative percentage of workers with measurable doses who received doses less than the indicated annual dose.

The relative positions and curvature of the graphs are indicative of certain characteristics of the dose distributions. The positions of the 1991 plots of the dose distribution of workers at fuel fabrication facilities and independent fuel storage facilities above that of the other plots indicate smaller values of the average doses and CR (as shown in the chart at the bottom of the graph). This is due to the lower number of workers with doses that exceeded 1.5 rem (cSv) in 1991 as compared to other licensed activities. The tendency of the plots to curve upward for doses greater than one rem (cSv) is typical of distributions having several workers with doses in the higher dose ranges [Refs. 10, 11], and indicates that the entire distribution is not a log-normal one. Another theoretical analysis of occupational dose distributions [Ref. 12] has found that these data may be fitted by a hybrid log-normal distribution. At low doses, this distribution is log-normal, but at higher doses, where radiation control programs very closely monitor each worker's total dose so that the frequency of doses approaching the dose limits is reduced, the distribution is normal.

An example of this "feedback" mechanism which reduces exposures reported at higher doses can be seen in the plot for independent spent fuel storage and low-level waste disposal facilities. The relatively low points on the curve between 0.10 and 0.25 rem (cSv) indicate a large percentage of individuals receiving dose in this range, while the curve takes a steep upwards turn at 0.50 rem (cSv) indicating tighter controls limiting exposure above this level. This distribution characteristic is further demonstrated for the independent spent fuel facilities where the average measurable dose is 0.17 rem (cSv), but the CR value is zero.

3.3 Summary of Occupational Exposure Data by License Category

3.3.1 Industrial Radiography Licenses, Single and Multiple Locations

These licenses are issued to allow the use of sealed radioactive materials, usually in exposure devices or "cameras," that primarily emit gamma rays for nondestructive testing of pipeline weld joints, steel structures, boilers, air craft and ship parts, and other high-stress alloy parts. Some firms are licensed to conduct such activities in one location, usually in a permanent facility which was designed and shielded for radiography, and others perform radiography at multiple, temporary sites in the field. The radioisotopes most commonly used are cobalt-60 and iridium-192. As shown in Table 3.1, annual reports were received for 248 radiography licensees in 1991, which is 10 less than those reporting in 1990. Table 3.4 summarizes the reported data for the two types of radiography licenses for 1991 and for the previous two years for comparison purposes.

TABLE 3.4
ANNUAL EXPOSURE INFORMATION FOR INDUSTRIAL RADIOGRAPHERS

1989-1991

Year	Type of License	Number of Licenses	Number of Monitored Individuals	Workers with Measurable Doses	Collective Dose (person-rems or person-cSv)	Average Measurable Dose (rems or cSv)
1991	Single location	56	822	338	44	0.13
	Multiple locations	192	5,998	4,311	2,116	0.49
	Total	248	6,820	4,649	2,160	0.46
1990	Single location	66	832	304	41	0.13
	Multiple locations	192	5,691	4,154	2,079	0.50
	Total	258	6,523	4,458	2,120	0.48
1989	Single location	72	989	324	38	0.12
	Multiple locations	204	5,756	4,028	1,990	0.50
	Total	276	6,745	4,352	2,028	0.47

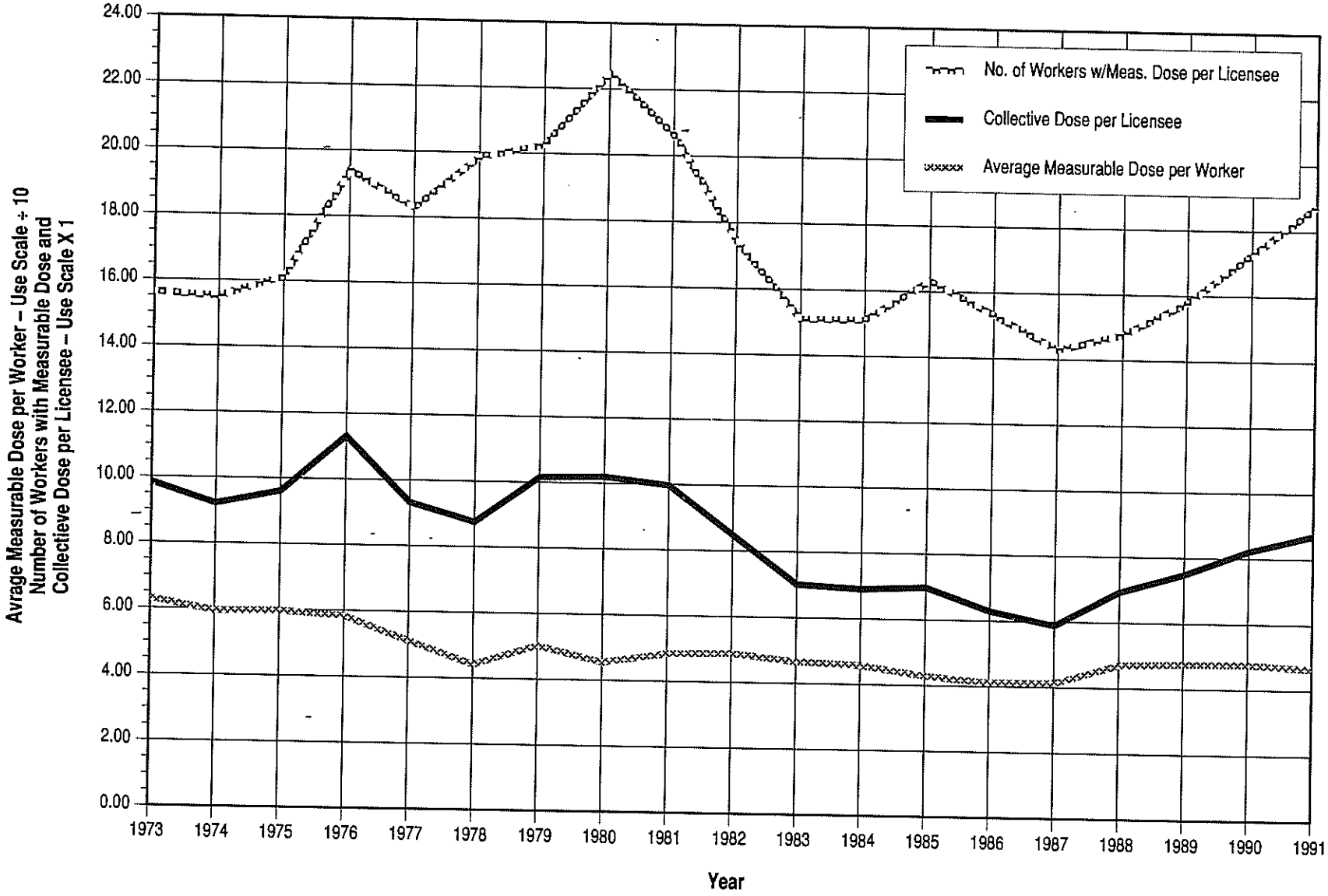
For each of the years shown, the average measurable dose for workers performing radiography at a single location was approximately one-fourth the average measurable dose of workers at multiple location facilities. This is probably due to the fact that it is more difficult for workers to avoid exposure to radiation in the field, where conditions are not the best and may change every day. In order to see the contribution that each radiography licensee made to the total collective dose, a summary of the information reported by each of these licensees in 1991 is presented in Appendix A in descending order of average measurable dose.

Figure 3.2 shows the number of personnel with measurable dose per licensee, the total collective dose per licensee, and the average measurable dose for both types of industrial radiography facilities from 1973 through 1991.

3.3.2 Manufacturer and Distributor Licenses, Type "A" Broad and Limited

Manufacturer and distributor licenses are issued to allow the manufacture and distribution of radionuclides in various forms for a number of diverse purposes. The products are usually distributed to persons specifically licensed by the NRC or an Agreement State. Type "A" Broad licenses are issued

Figure 3.2
Average Annual Values at Industrial Radiography Facilities 1973 – 1991



to larger organizations who may use many different radionuclides in many different ways and who have a comprehensive radiation protection program. The Limited licenses are usually issued to smaller firms requiring a more restrictive license. Some firms are medical suppliers that process, package, or distribute such products as diagnostic test kits, radioactive surgical implants, and tagged radiochemicals for use in medical research, diagnosis, and therapy. Limited firms are suppliers of industrial radionuclides and are involved in the processing, encapsulation, packaging, and distribution of the radionuclides that they have purchased in bulk quantities from production reactors and cyclotrons. Major products include gamma radiography sources, cobalt irradiation sources, well-logging sources, sealed sources for gauges and smoke detectors, and radiochemicals for non-medical research. However, only those NRC licensees that possess or use at any one time specified quantities of the nuclides listed in paragraph 20.408(a)(6) are required to submit annual (10 CFR § 20.407) and termination (10 CFR § 20.408) reports.

Table 3.5 presents the annual data that were reported by the two types of licensees for 1991 and the previous two years. Looking at the information shown separately for the Type "A" Broad and Limited licensees, one can see that the values of all of the parameters remain higher for the Broad

TABLE 3.5
ANNUAL EXPOSURE INFORMATION FOR MANUFACTURERS AND DISTRIBUTORS

1989-1991

Year	Type of License	Number of Licenses	Number of Monitored Individuals	Workers with Measurable Doses	Collective Dose (person-rems or person-cSv)	Average Measurable Dose (rems or cSv)
1991	M & D-"A"-Broad	12	3,732	1,443	674	0.47
	M & D-Limited	46	1,198	513	47	0.09
	Total	58	4,930	1,956	721	0.37
1990	M & D-"A"-Broad	10	3,091	1,862	655	0.35
	M & D-Limited	47	1,112	417	38	0.09
	Total	57	4,203	2,279	693	0.30
1989	M & D-"A"-Broad	11	3,617	1,956	721	0.37
	M & D-Limited	37	937	389	49	0.13
	Total	48	4,554	2,345	770	0.33

licensees. However, when attempting to examine trends in the data presented for this category of licensees, one should note that the types and quantities of radionuclides may fluctuate from year to year, and even during the year, so that some licensees may report dose data one year and not the next and may be included as a Broad licensee one year and a Limited licensee at other times. Since the number of reporting licensees is quite small, these fluctuations may have a significant impact on the values of the parameters.

Figure 3.3 shows the number of personnel with measurable dose per licensee, the total collective dose per licensee, and the average measurable dose for both Type "A" Broad and Limited manufacturing and distribution facilities.

In order to see the contribution that each of these licensees made toward the total values of the number of persons monitored, number of workers, and collective dose, Appendix A lists the values of these parameters for each licensee in descending order of average measurable dose for 1991.

3.3.3 Low-Level Waste Disposal Licenses

These licenses are issued to allow the receipt, possession, and disposal of low-level radioactive wastes at a land disposal facility. The licensee has the appropriate facilities to receive wastes from such places as hospitals and laboratories, store them for a short time, and dispose of them in a properly prepared burial ground. The licensees in this category are located in and licensed by Agreement States that have primary regulatory authority over its activity. However, they also have an NRC license that covers certain special nuclear material they might receive. The annual dose reports submitted by these licensees include all doses received during the year regardless of whether they were due to NRC or Agreement State licensed material.

The requirement for this category of NRC licensee to file annual reports became effective in January 1983. While in 1982 and 1983 there was only one licensee in this category, there have been two licensees in this category since 1984. Table 3.1 summarizes the data reported for 1982 through 1991. Appendix A summarizes the exposure information reported by these two licensees in 1991.

Figure 3.4 shows the number of personnel with measurable dose per licensee, the total collective dose per licensee, and the average measurable dose for low-level waste disposal facilities from 1982 through 1991. As one would expect, since only two licensees have been involved in this activity over the past eight years, the numbers have remained fairly stable from 1984 through 1991.

Figure 3.3
Average Annual Values at Manufacturing and Distribution Facilities 1973 – 1991

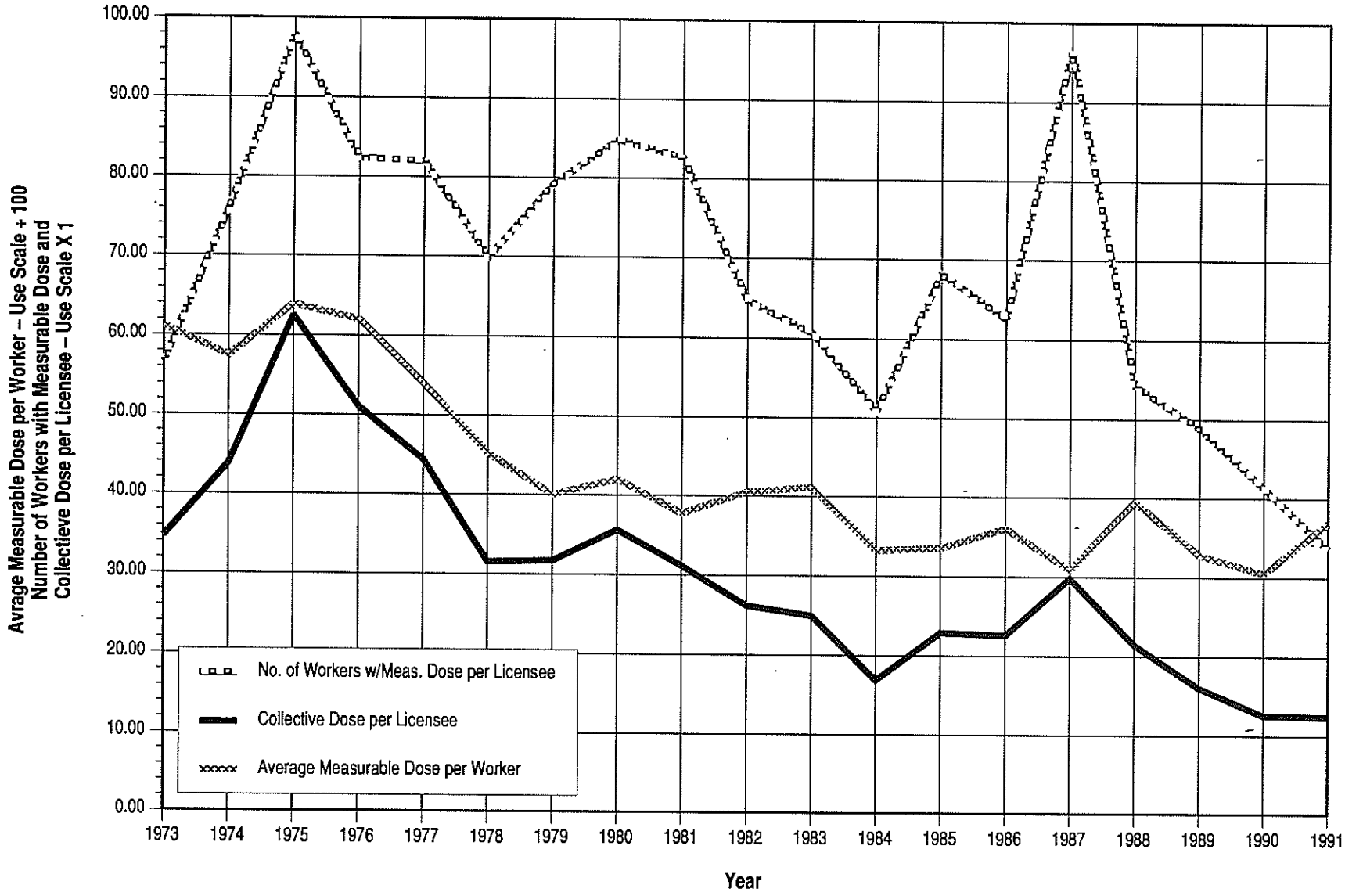
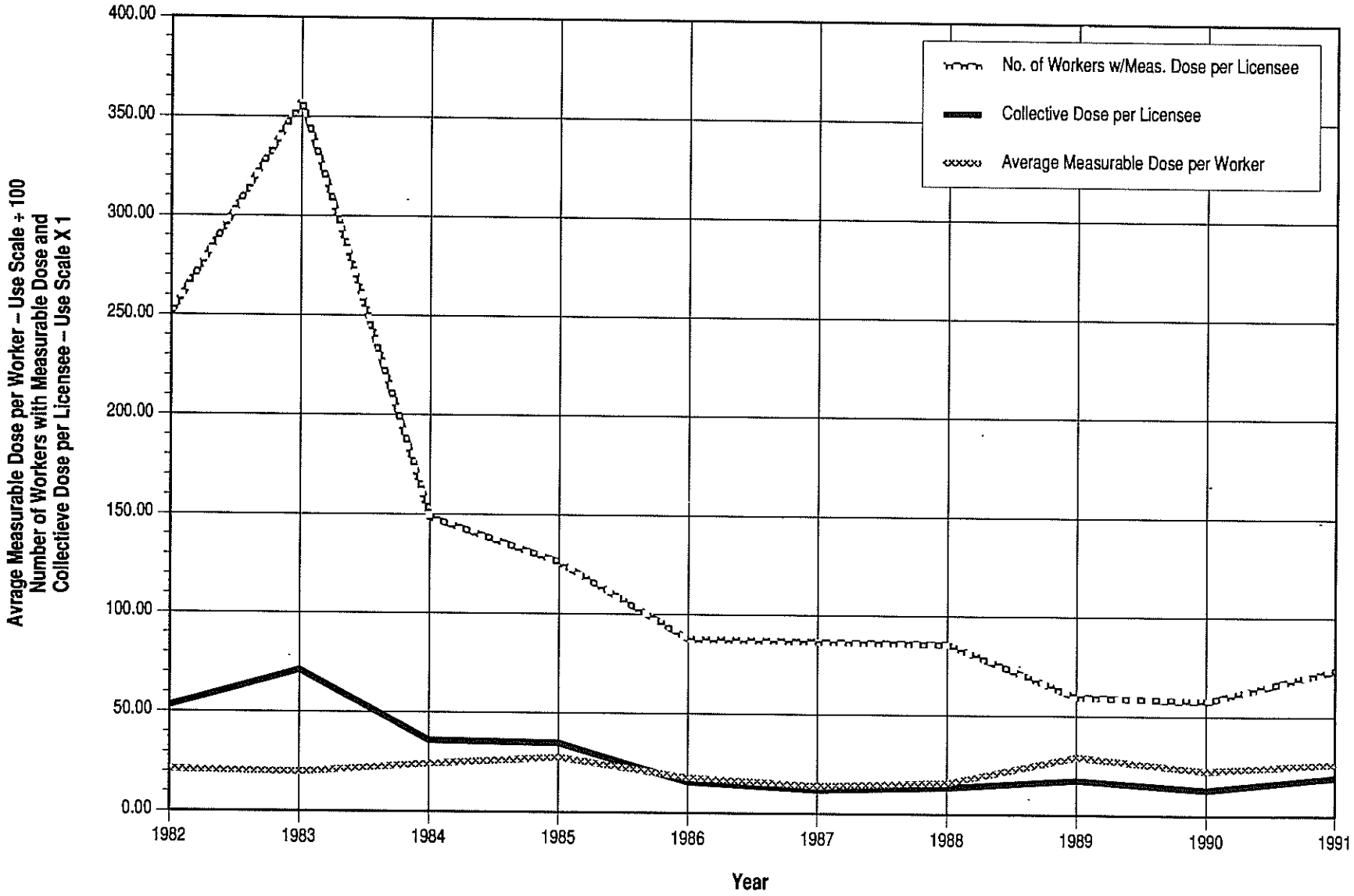


Figure 3.4
Average Annual Values at Low-Level Waste Disposal Facilities 1982 – 1991



3.3.4 Independent Spent Fuel Storage Installation Licenses

These licenses are issued to allow the possession of power reactor spent fuel and other associated radioactive materials for the purpose of storage of such fuel in an independent spent fuel storage installation (ISFSI). Here, the spent fuel, which has undergone at least one year of decay since being used as a source of energy in a power reactor, is provided interim storage, protection, and safeguarding for a limited time pending its ultimate disposal. There have been three licenses issued for these activities, two at nuclear power plants and one at an independent facility. In 1987, one reactor licensee began reporting the dose distribution information for the spent fuel storage activities separately, while the other reactor licensee combined the data with the report for all activities at the site. Only those two licensees (one reactor and one independent) that reported dose distribution information separately are included in this analysis of independent spent fuel storage installation facilities for 1991.

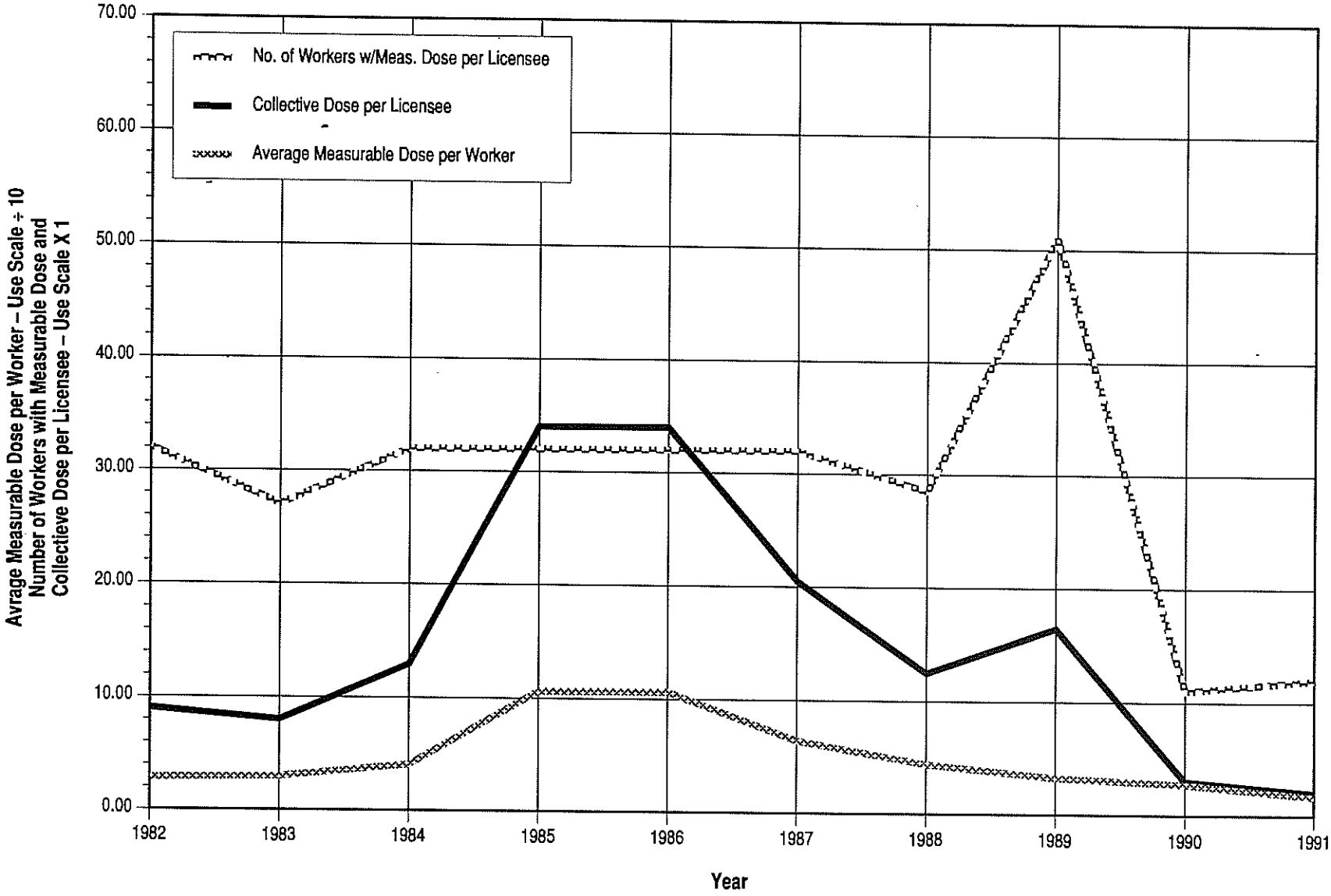
For 1982 through 1986, Table 3.1 summarizes the data submitted by the only ISFSI that is separate from a nuclear power plant. For 1987 through 1991 this table also includes data from the ISFSI located at the Surry power plant. A contributing factor to the relatively high average dose reported for the years prior to 1987 was that the licensees reported the doses of only those workers required to be monitored for exposure to radiation, unlike most other licensees which report the doses of all individuals for whom monitoring was provided. This had a tendency to result in the calculation of a higher average dose.

Figure 3.5 shows the number of personnel with measurable dose per licensee, the total collective dose per licensee, and the average measurable dose per worker for independent spent fuel storage facilities. Appendix A summarizes the exposure information reported by the two installations that reported in 1991.

3.3.5 Fuel Fabrication and Reprocessing Licenses

The fuel fabrication licenses are issued to allow the processing and fabrication of reactor fuels. In most uranium facilities where light water reactor fuels are processed, uranium hexafluoride enriched in the isotope U-235 is converted to solid uranium dioxide pellets and inserted into zirconium alloy tubes. The tubes are fabricated into fuel assemblies which are shipped to nuclear power plants. Some facilities also perform chemical operations to recover the uranium from scrap and other off-specification materials. On a much smaller scale, fuel assemblies containing plutonium

Figure 3.5
Average Annual Values at Independent Spent Fuel Storage Facilities 1982 – 1991



oxide pellets can be similarly fabricated and used in reactors for experimental purposes. However, there are no NRC licensees engaged in this activity at this time.

Table 3.6 shows that there were 11 fuel fabrication facilities in 1991. A number of licensees were involved in decontamination and decommissioning of their plutonium facilities, and for several years the data for these licensees were shown in the "Decommissioning" category in Table 3.1. Since these facilities have ceased to fabricate plutonium fuel, they are not required to file annual reports and are no longer shown in the tables.

Figure 3.6 shows the number of personnel with measurable dose per licensee, the total collective dose per licensee, and the average measurable dose for fuel fabrication licensees. Appendix A lists each of the licensees reporting in 1991, with the number of persons monitored, the number of workers receiving measurable external doses, and the collective dose for each licensee in descending order of average measurable dose.

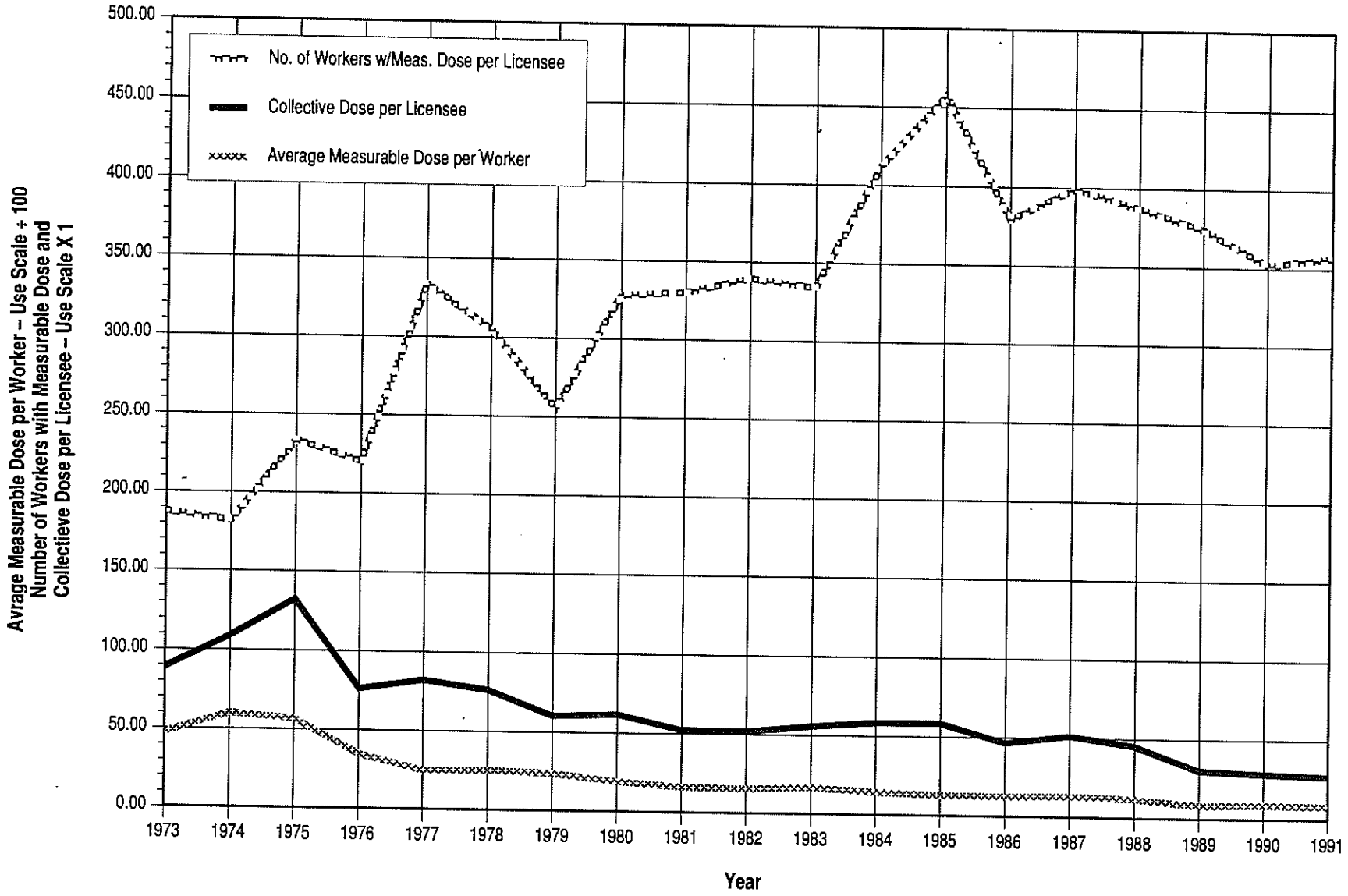
Fuel reprocessing licenses are issued to allow the separation of usable uranium and plutonium from spent nuclear fuel. There was only one commercial facility that was ever licensed to reprocess fuel, and it has been shut down since 1972. However, the licensee did some decontamination work and stored radioactive waste at the facility for several years, and the annual report that was submitted each year was usually grouped with those of the fuel

TABLE 3.6
ANNUAL EXPOSURE INFORMATION FOR FUEL FABRICATORS

1989-1991

Year	Type of License	Number of Licenses	Number of Monitored Individuals	Workers with Measurable Doses	Collective Dose (person-rems or person-cSv)	Average Measurable Dose (rems or cSv)
1991	Uranium Fuel Fab	11	11,702	3,929	378	0.10
1990	Uranium Fuel Fab	11	14,505	3,871	422	0.11
1989	Uranium Fuel Fab	8	11,583	2,992	243	0.08

Figure 3.6
Average Annual Values at Fuel Fabrication and Processing Facilities 1973 – 1991



fabricators. In February 1982, the Department of Energy assumed possession and control of the reprocessing facility to conduct waste solidification activities necessary for final decommissioning. During this period, the NRC license will, in effect, be suspended, and no reports will be filed with the NRC.

3.3.6 Light Water-Cooled Power Reactor (LWR) Licenses

These licenses are issued to utilities to allow them to use special nuclear material in a reactor which produces heat and generates electricity to be sold to consumers. There are two major types of commercial LWRs in the United States - pressurized water reactors (PWRs) and boiling water reactors (BWRs) - each of which uses water as the primary coolant.

Table 3.1 shows the number of licensees, total number of monitored individuals, the number of workers with measurable dose, the total collective dose, and average dose for all reports received from reactor facilities that were in commercial operation for the years 1982 through 1991. This includes reactors that may not have been in commercial operation for a full year. Data for 1982 through 1988 included all reactors that reported, even though some of them were shut down. Data for 1989 through 1991 do not include reactors that have been shut down. It is important to note that these figures have been adjusted for the multiple counting of transient reactors workers (see Section 5). The reported dose distribution of workers monitored at each plant site is presented in alphabetical order by site name in Appendix B.

More detailed presentations and analyses of the annual exposure information reported by nuclear power facilities can be found in Sections 4 and 5.

3.3.7 High-Temperature Gas-Cooled Power Reactor (HTGR) Licenses

A license to operate a power reactor is issued to utilities to allow them to use special nuclear material in a reactor to produce heat to generate electricity to be sold to consumers. In the HTGR, a gas, usually helium, is used as the primary coolant. Fort St. Vrain near Greeley, Colorado, was the only such reactor in operation in the U.S. but has not been in commercial operation since 1989. As shown in Table 3.7, annual whole body doses incurred by workers at the plant have been minimal.

TABLE 3.7
ANNUAL EXPOSURE INFORMATION FOR FORT ST. VRAIN

1974-1991

Year	No. of Individuals with Annual Doses in Ranges (rems or cSv)				Total No. of Individuals Monitored	Annual Collective Dose (person-rems or person-cSv)	Gross Electricity Generated (MW-yr)	Average Measurable Dose per Worker (rem or cSv)
	No Meas'ble Dose	Meas'ble Dose <0.10	0.10-0.25	0.25-2.00				
1974	1,597	63	1	0	1,661	3.3	0.0	0.05
1975	1,263	0	0	0	1,263	0.0	0.0	0.00
1976	1,362	25	0	0	1,387	1.3	2.8	0.05
1977	946	55	1	0	1,002	2.9	29.8	0.05
1978	896	34	0	0	930	1.7	75.7	0.05
1979	1,149	120	2	0	1,271	6.4	28.6	0.05
1980	902	57	1	0	960	3.0	83.2	0.05
1981	1,096	31	0	0	1,127	1.0	93.6	D.03
1982	978	22	0	0	1,000	0.4	72.6	0.02
1983	965	48	0	0	1,013	1.0	94.4	0.02
1984	1,616	62	8	0	1,686	3.0	10.9	0.04
1985	1,929	370	40	33	2,372	35.0	3.8	0.08
1986	221	66	4	0	291	1.8	9.7	0.03
1987	155	52	2	0	209	1.2	23.8	0.02
1988	238	24	0	0	262	0.7	81.8	0.03
1989	316	47	6	2	371	2.7	0.0	0.05
1990	226	30	0	0	256	0.6	0.0	0.02
1991	525	63	9	4	601	5.4	0.0	0.07

4 COMMERCIAL LIGHT WATER REACTORS - FURTHER ANALYSIS

4.1 Introduction

General trends in occupational radiation exposures at nuclear power reactors are best evaluated within the context of other pertinent information. In this chapter, some of the tables and appendices that summarize exposure data also show the type, capacity, and age of the reactor; the amount of electricity generated; the types of workers being exposed; and the sort of tasks being performed. Exposure data is then presented as a function of these data.

4.2 Definition of Terms and Sources of Data

4.2.1 Number of Reactors

The *number of reactors* shown in Tables 4.1, 4.2, and 4.3 is the number of BWRs, PWRs, and LWRs, respectively, that had been in commercial operation for at least one full year as of December 31 of each of the indicated years. This is the number of reactors on which the *average number of workers with measurable dose* and *average collective dose per reactor* is based. Excluded are those reactors that had been in commercial operation for less than twelve months during the first year and reactors that have been permanently defueled. This yields conservative values for many of the averages shown in the tables. The date that each reactor was declared to be in commercial operation was found in Reference 14.

Three Mile Island 2 had been included in the compilation of data for commercially operating reactors through 1988 even though the reactor has been shut down since the 1979 accident and has been in the process of defueling and decommissioning since that time. Three Mile Island 2 has <u>not</u> been included in the data analysis since 1988 and will no longer be included in the operational data analysis presented in this report. Data for this reactor, however, will be listed in Appendices B, C, D and E for reference purposes.

4.2.2 Electric Energy Generated

The electric energy generated in gross megawatt-years (MW-yr) each year by each facility is shown in Appendix C and graphically represented in Appendix E. This number was obtained by dividing the gross megawatt-hours of electricity annually produced by each facility by 8,760, the number of hours in the year, except for leap years when the number is 8,784 hours. The gross megawatt-years of generated electricity that are presented in Tables 4.1, 4.2, and 4.3 are the sums of that produced by the number of reactors included in

TABLE 4.1

SUMMARY OF ANNUAL INFORMATION REPORTED BY COMMERCIAL BOILING WATER REACTORS*

1973-1991

Year	Number of Reactors Included	Annual Collective Doses (person-rems or person-cSv)	No. of Workers With Measurable Doses	Gross Electricity Generated (MW-yr)	Average Dose Per Worker (rems or cSv)	Average Collective Dose Per Reactor (person-rems or person-cSv)	Average No. Personnel With Measurable Doses Per Reactor	Average Collective Dose per MW-yr (person-rem /MW-yr)	Average Electricity Generated Per Reactor (MW-yr)	Average Maximum Dependable Capacity Net (MWe)
1973	12	4,564	5,340	3,393.9	0.85	380	445	1.34	283	438
1974	14	7,095	8,769	4,060.2	0.81	507	626	1.75	290	485
1975	18	12,611	14,607	5,786.4	0.86	701	812	2.18	321	595
1976	22	12,300	16,604	8,137.9	0.74	559	755	1.51	370	630
1977	23	19,041	21,388	9,102.5	0.89	828	930	2.09	396	637
1978	25	15,273	20,278	11,856.0	0.75	611	811	1.29	474	660
1979	25	18,325	25,245	11,671.0	0.73	733	1,010	1.57	467	660
1980	26	29,530	34,094	10,868.2	0.87	1,136	1,311	2.72	418	663
1981	26	25,471	34,755	10,899.2	0.73	980	1,337	2.34	419	663
1982	26	24,437	32,235	10,614.6	0.76	940	1,240	2.30	408	663
1983	26	27,455	33,473	9,730.1	0.82	1,056	1,287	2.82	374	663
1984	27	27,097	41,105	10,019.2	0.66	1,004	1,522	2.70	371	754
1985	29	20,573	38,237	12,284.0	0.54	709	1,319	1.67	424	775
1986	30	19,349	37,928	12,102.1	0.51	645	1,264	1.60	403	786
1987	32	16,717	41,737	15,109.0	0.40	522	1,304	1.11	472	832
1988	34	17,983	40,305	16,665.4	0.45	529	1,185	1.08	490	845
1989	36	15,549	44,360	17,543.5	0.35	432	1,232	0.89	487	857
1990	37	15,780	41,577	21,336.1	0.38	426	1,124	0.74	577	862
1991	37	12,005	38,492	21,505.8	0.31	324	1,040	0.56	581	860

*Includes only those reactors that had been in commercial operation for at lease one full year as of December 31 of each of the indicated years, and all figures are uncorrected for multiple reporting of transient individuals.

TABLE 4.2

SUMMARY OF ANNUAL INFORMATION REPORTED BY COMMERCIAL PRESSURIZED WATER REACTORS*

1973-1991

Year	Number of Reactors Included	Annual Collective Doses (person-rems or person-cSv)	No. of Workers With Measurable Doses	Gross Electricity Generated (MW-yr)	Average Dose Per Worker (rems or cSv)	Average Collective Dose Per Reactor (person-rems or person-cSv)	Average No. Personnel With Measurable Doses Per Reactor	Average Collective Dose per MW-yr (person-rem /MW-yr)	Average Electricity Generated Per Reactor (MW-yr)	Average Maximum Dependable Capacity Net (MWe)
1973	12	9,398	9,440	3,770.2	1.00	783	787	2.49	314	544
1974	19	6,555	9,370	6,530.7	0.70	345	493	1.00	344	591
1975	26	8,268	10,884	11,982.5	0.76	318	419	0.69	461	647
1976	30	13,807	17,588	13,325.0	0.79	460	586	1.04	444	701
1977	34	13,467	20,878	17,345.8	0.65	396	614	0.78	510	688
1978	39	16,528	25,700	19,840.5	0.64	424	659	0.83	509	706
1979	42	21,657	38,828	18,255.0	0.56	516	924	1.19	435	746
1980	42	24,265	46,237	18,289.3	0.52	578	1,101	1.33	435	746
1981	44	28,673	47,351	20,553.7	0.61	652	1,076	1.40	467	752
1982	48	27,753	52,146	22,140.6	0.53	578	1,086	1.25	461	777
1983	49	29,017	52,173	23,195.5	0.56	592	1,065	1.25	473	785
1984	51	28,138	56,994	26,478.4	0.49	552	1,118	1.06	519	809
1985	53	22,469	54,633	29,470.7	0.41	424	1,031	0.76	556	820
1986	60	23,032	62,995	33,593.0	0.37	384	1,050	0.69	560	878
1987	64	23,684	62,597	37,007.3	0.38	370	978	0.64	578	900
1988	68	22,786	62,921	42,929.7	0.36	335	925	0.53	631	885
1989	71	20,381	63,894	44,679.5	0.32	287	900	0.46	629	897
1990	73	20,812	67,081	46,955.6	0.31	285	919	0.44	643	907
1991	74	16,522	60,269	51,942.6	0.27	223	814	0.32	702	913

*Includes only those reactors that had been in commercial operation for at least one full year as of December 31 of each of the indicated years, and all figures are uncorrected for multiple reporting of transient individuals.

TABLE 4.3

SUMMARY OF ANNUAL INFORMATION REPORTED BY COMMERCIAL LIGHT WATER COOLED REACTORS*

1973-1991

Year	Number of Reactors Included	Annual Collective Doses (person-rems or person-cSv)	No. of Workers With Measurable Doses	Gross Electricity Generated (MW-yr)	Average Dose Per Worker (rems or cSv)	Average Collective Dose Per Reactor (person-rems or person-cSv)	Average No. Personnel With Measurable Doses Per Reactor	Average Collective Dose per MW-yr (person-rem /MW-yr)	Average Electricity Generated Per Reactor (MW-yr)	Average Maximum Dependable Capacity Net (MWe)
1973	24	13,962	14,780	7,164.1	0.94	582	616	1.95	299	491
1974	33	13,650	18,139	10,590.9	0.75	414	550	1.29	321	546
1975	44	20,879	25,491	17,768.9	0.82	475	579	1.18	404	626
1976	52	26,107	34,192	21,462.9	0.76	502	658	1.22	413	671
1977	57	32,508	42,266	26,448.3	0.77	570	742	1.23	464	667
1978	64	31,801	45,978	31,696.5	0.69	497	718	1.00	495	688
1979	67	39,982	64,073	29,926.0	0.62	597	956	1.34	447	714
1980	68	53,795	80,331	29,157.5	0.67	791	1,181	1.84	429	714
1981	70	54,144	82,106	31,452.9	0.66	773	1,173	1.72	449	719
1982	74	52,190	84,381	32,755.2	0.62	705	1,140	1.59	443	737
1983	75	56,472	85,646	32,925.6	0.66	753	1,142	1.72	439	743
1984	78	55,235	98,099	36,497.6	0.56	708	1,258	1.51	468	790
1985	82	43,042	92,870	41,754.7	0.46	525	1,133	1.03	509	804
1986	90	42,381	100,923	45,695.1	0.42	471	1,121	0.93	508	847
1987	96	40,401	104,334	52,116.3	0.39	421	1,087	0.78	543	877
1988	102	40,769	103,226	59,595.1	0.39	400	1,012	0.68	584	871
1989	107	35,930	108,254	62,223.0	0.33	336	1,012	0.58	582	883
1990	110	36,592	108,658	68,291.7	0.34	333	988	0.54	621	892
1991	111	28,527	98,761	73,448.4	0.29	257	890	0.39	662	895

*Includes only those reactors that had been in commercial operation for at least one full year as of December 31 of each of the indicated years, and all figures are uncorrected for multiple reporting of transient individuals.

each year. These sums are divided by the number of those reactors included in each year to yield the average amount of electric energy generated (MW-yr) per reactor, which is also shown in Tables 4.1, 4.2, and 4.3. The number of gross megawatt-hours of electricity produced each year was found in Reference 14.

4.2.3 Collective Dose per Megawatt-Year

The number of megawatt-years of electricity generated was used in determining the ratio of the average value of the annual collective dose to the number of megawatt-years of electricity generated. The ratio was calculated by dividing the total collective dose in person-rem (person-cSv) by the gross electric energy generated in megawatt-years and is a measure of the dose incurred by workers at power plants in relation to the gross electric energy produced. This ratio was also calculated for each reactor site and is presented in Tables 4.1, 4.2, and 4.3 and Appendix C.

4.2.4 Average Maximum Dependable Capacity

Average maximum dependable capacity, shown in Tables 4.1, 4.2, and 4.3, was found by dividing the sum of the net maximum dependable capacities of the reactors in megawatts (net MWe) by the number of reactors included each year. The net maximum dependable capacity is defined as the gross electrical output as measured at the output terminals of the turbine generator during the most restrictive seasonal conditions, less the normal station service loads. This "capacity" of each plant was found in Reference 14, and it is shown for each site in Appendix C.

4.3 Annual Whole Body Dose Distributions

Table 4.4 summarizes the distribution of the annual whole body doses received by workers at all commercial LWRs during each of the years 1977 through 1991. This distribution is the sum of the annual dose distributions reported by each licensed LWR each year. As previously mentioned, the distribution reported by each LWR site for 1991 is shown in Appendix B. Table 4.4 shows the reported dose distributions corrected for the number of transient workers that were reported by more than one site (see Section 5). The table shows that the total number of individuals monitored increased every year since 1981 to a value of 181,606 in 1991. The number of individuals with measurable dose decreased to a value of 93,015 in 1991. The total collective dose decreased by 22% to a value of 28,527 person-rem (person-cSv) in 1991. The value of CR (see Section 3.1.8) also decreased to a value of 0.25. This is the seventh year in a row that the value of CR has been less than 0.50.

TABLE 4.4

SUMMARY DISTRIBUTION OF ANNUAL WHOLE BODY DOSES AT COMMERCIAL LIGHT WATER REACTORS*

1977 - 1991

		Number of Individuals with Whole Body Doses in the Ranges (rems or cSv)																			
Year	No Meas'ble Exposure	Meas'ble <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	5.0-6.0	6.0-7.0	7.0-8.0	8.0-9.0	9.0-10.0	10.0-12.0	>12.0	Total Number Monitored	Number with Measurable Exposure	Collective Dose** (person-rems or cSv)	CR***
1977	23,562	12,395	6,030	4,518	2,890	2,220	5,649	2,856	1,288	661	186	89	47	23	6			62,420	38,858	32,508	0.65
1978	28,372	15,101	6,342	4,998	3,088	2,247	5,995	3,034	1,197	514	109	37	9	0	1	0	2	71,046	42,674	31,801	0.61
1979	43,330	22,508	8,985	7,469	4,797	3,259	7,572	3,404	1,400	545	117	42	17	3	1			103,449	60,119	39,982	0.57
1980	50,873	26,903	10,676	8,904	5,570	4,134	10,671	4,607	1,816	831	235	119	29	7	1			125,376	74,503	53,795	0.59
1981	39,265	26,836	11,226	9,330	6,042	4,497	11,170	4,811	1,999	533	103	93	9	3	1	0	1	115,919	76,654	54,144	0.57
1982	41,713	29,225	11,713	9,903	6,229	4,420	10,220	4,716	2,066	596	97	31	5	0	1	1		120,936	79,223	52,190	0.58
1983	47,048	29,107	11,195	9,344	5,851	4,276	11,345	5,332	2,269	716	121	38	8	2				126,652	79,604	56,472	0.60
1984	54,670	36,296	13,427	10,275	6,336	4,804	11,283	5,206	2,122	487	52	22						144,980	90,310	55,235	0.57
1985	59,634	36,831	13,008	11,041	6,627	4,547	10,040	3,575	1,001	157	1							146,462	86,828	43,042	0.48
1986	67,701	41,467	14,570	11,842	7,016	4,693	10,241	3,062	868	146								161,606	93,905	42,381	0.45
1987	85,181	41,222	15,834	12,839	7,586	5,332	10,611	2,192	477	69								181,343	96,162	40,401	0.38
1988	87,254	40,225	15,913	13,153	7,903	5,461	10,310	2,442	511	26		1						183,199	95,945	40,769	0.39
1989	83,947	45,282	17,267	13,777	7,945	5,137	8,634	1,614	370	34								184,007	100,060	35,930	0.33
1990	83,873	42,607	17,529	14,192	8,226	5,260	8,594	1,794	335	21								182,431	98,558	36,592	0.33
1991	88,591	43,289	17,298	13,701	7,477	4,321	5,928	852	135	14								181,606	93,015	28,527	0.25

*Summary of reports submitted in accordance with 10 CFR 20.407 by only those plants that had been in commercial operation for at least one full year as of December 31 of each of the indicated years. Figures shown have been adjusted for the muliple reporting of transient individuals (see Section 5).

**The collective dose, when not reported by the utilities, was calculated by the NRC staff using methods described in this document.

***CR is the ratio of annual collective dose delivered at individual doses exceeding 1.5 rems (cSv) to the total annual collective dose.

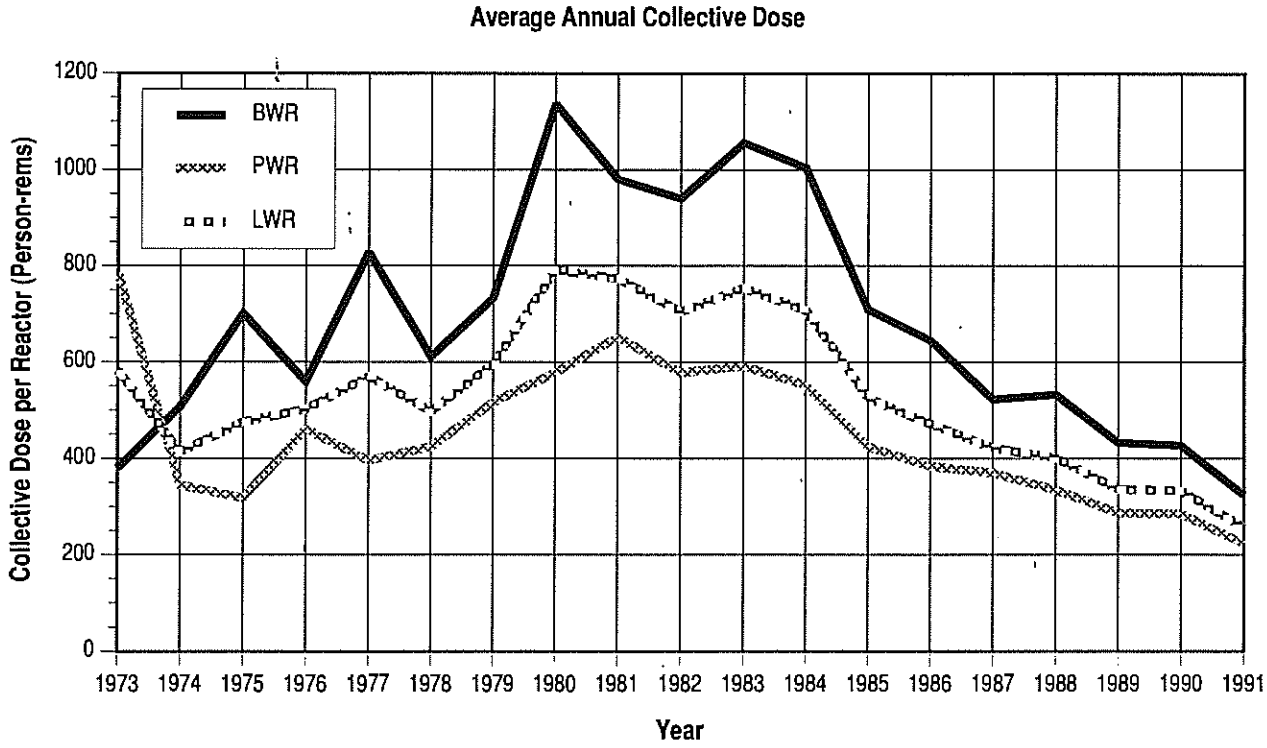
4.4 Average Annual Whole Body Doses

Some of the data presented in Tables 4.1, 4.2, and 4.3 are graphically displayed in Figure 4.1, where it can be seen that the average collective dose and average number of workers per BWR have been higher than those for PWRs since 1974 and that the values of both parameters, in general, continued to rise at both types of facilities until 1983. Between 1983 and 1991, the average collective dose per reactor dropped by 66%. In 1991, the collective dose per reactor for PWRs decreased by 22% from 285 person-rem (person-cSv) in 1990 to 223 person-rem (person-cSv) in 1991. The collective dose per reactor for BWRs decreased by 24%, from 426 person-rem (person-cSv) in 1990, to 324 person-rem (person-cSv) in 1991. The overall collective dose per reactor for LWRs dropped to 257 person-rem (person-cSv) in 1991. The number of workers with measurable dose per reactor has decreased to 1,040 for BWRs and decreased to 814 for PWRs in 1991.

Figures 4.2 and 4.3 are plots of most of the other information that is given in Tables 4.1, 4.2, and 4.3. The value for the total collective dose for all LWRs decreased by 22% from a value of 36,592 person-rem (person-cSv) in 1990 to 28,527 person-rem (person-cSv) in 1991. Together with the decrease in the number of workers with measurable dose, this resulted in the average measurable dose per worker decreasing to 0.29 rem (cSv) in 1991. Power generation indicators such as gross electricity and average maximum dependable capacity net continued to increase for the eleventh straight year, while the average collective dose per megawatt-year dropped to nearly one fifth of the 1980 value during the same time period.

The fluctuations in the parameters for the years following the accident at the Three Mile Island plant in 1979 may reflect some of the impact that this incident had on the nuclear power industry. The decrease seen in dose trends since 1983 may be attributable to several factors. Utilities have completed most of the tasks initiated as a result of the lessons learned from the Three Mile Island accident, and they are increasing efforts to avoid and reduce exposure. The importance of exposure control and the concept of keeping exposures as low as reasonably achievable (ALARA) is continually being stressed, and most utilities have established programs to collect and share information relative to tasks, techniques, and exposures.

Figure 4.1
Average Collective Dose and Number of Workers per Reactor 1973 – 1991



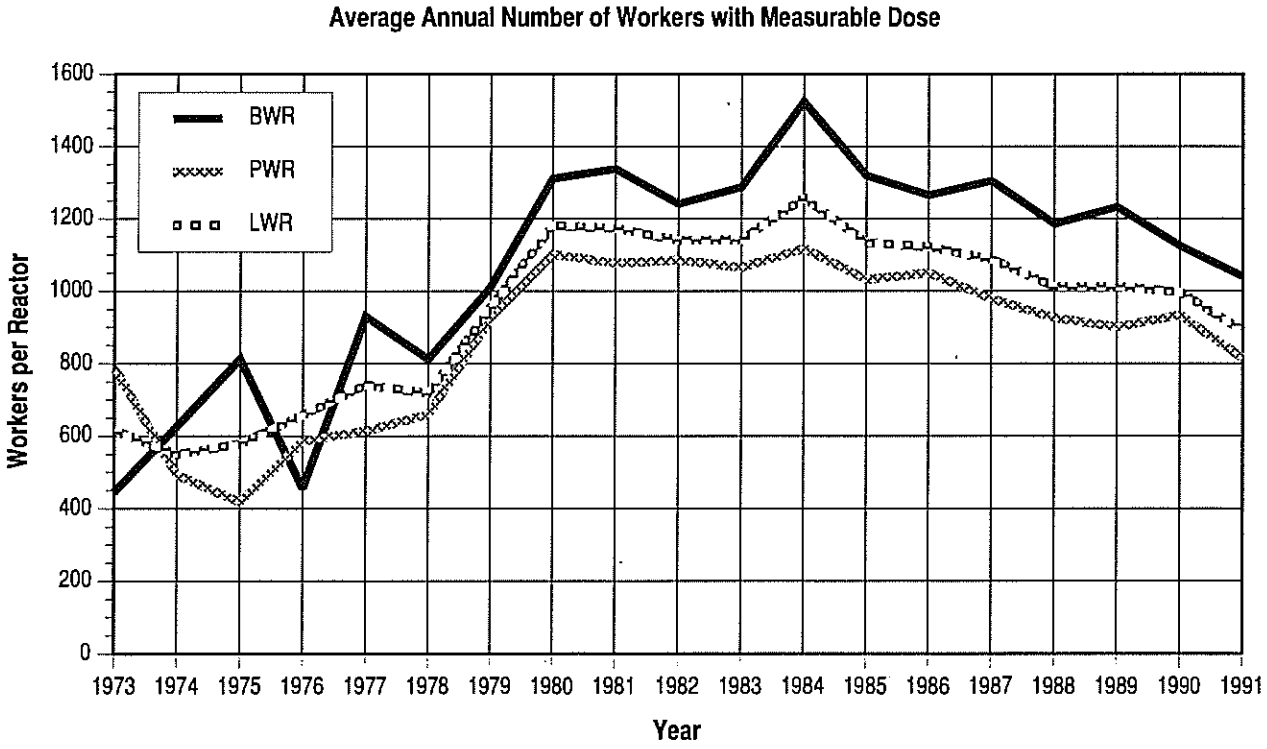
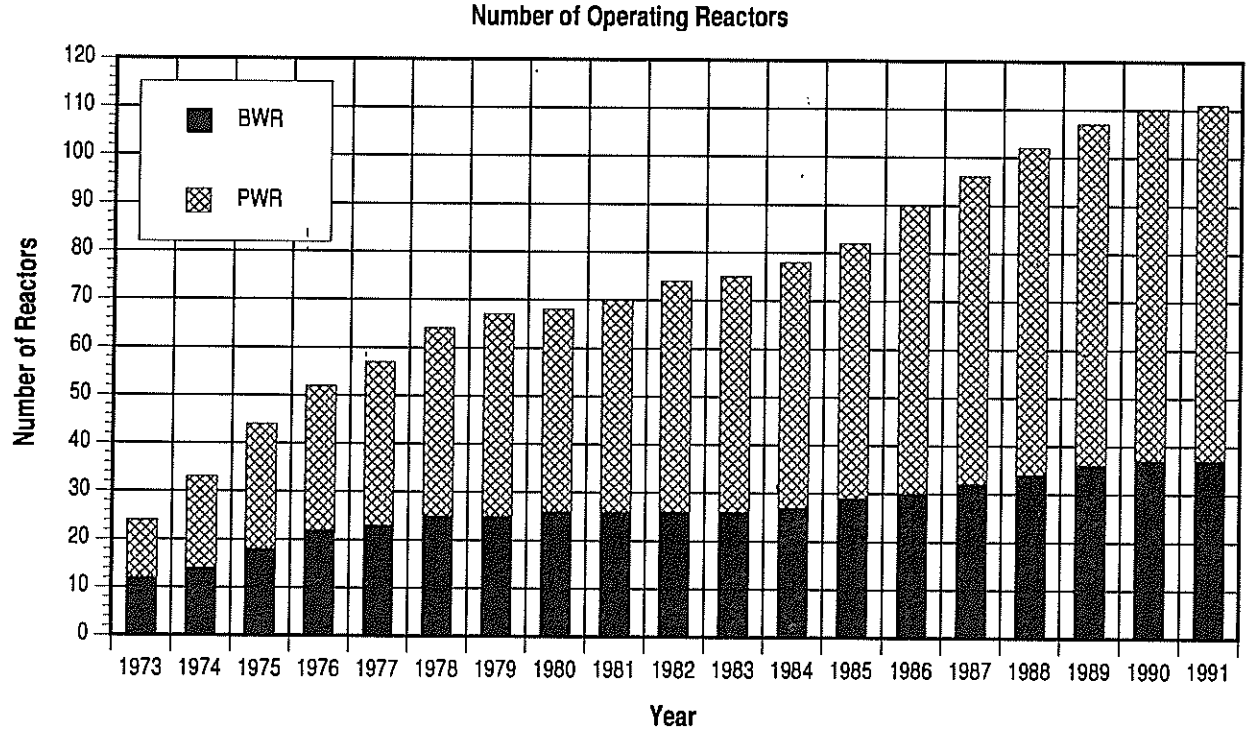


Figure 4.2
Number of Operating Reactors and Gross Electricity Generated 1973 – 1991



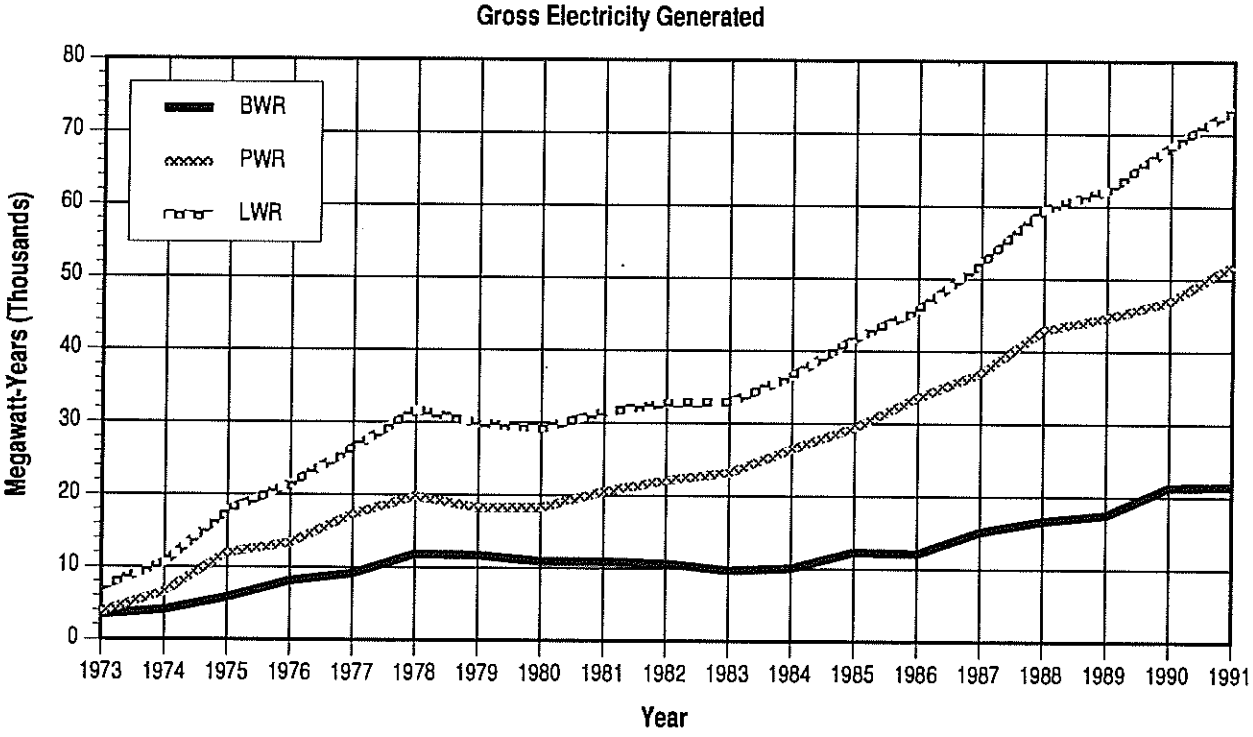
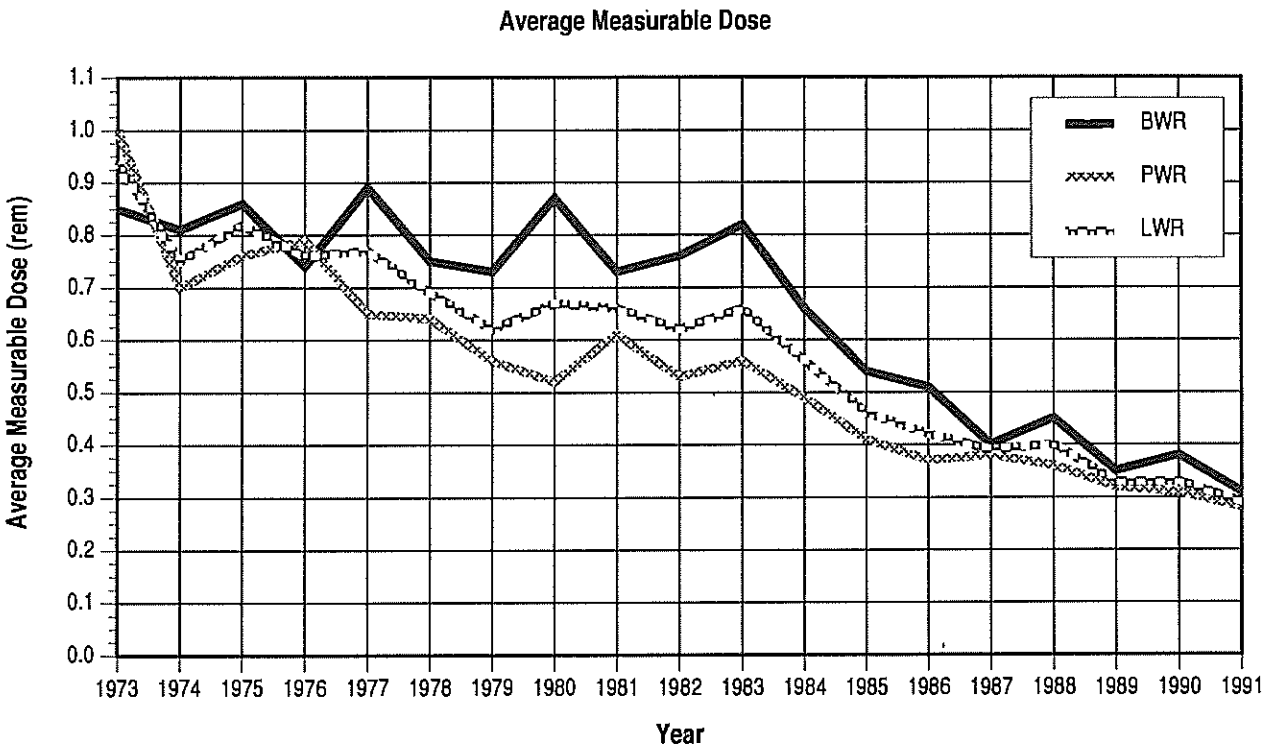
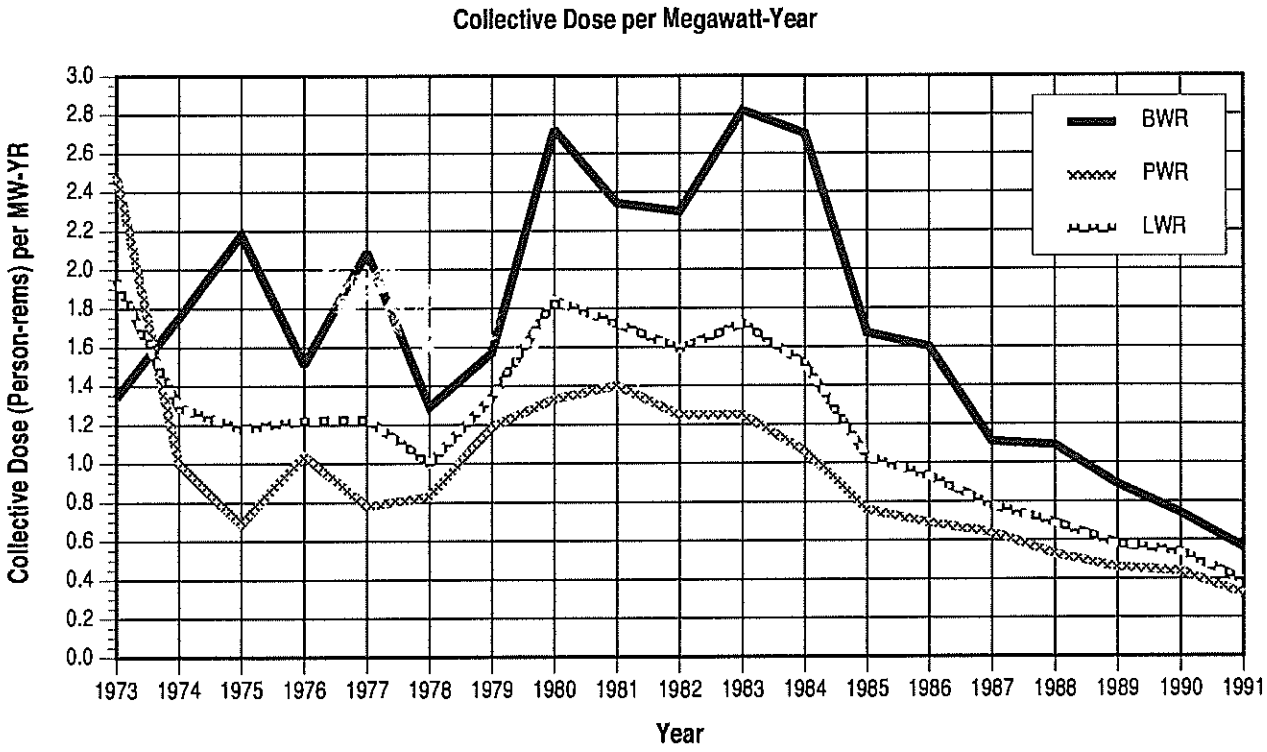


Figure 4.3
Average Measurable Dose and Collective Dose per Megawatt-Year 1973 – 1991





To further assist in the identification of any trends that might exist, Figure 4.4 displays the average and median[9] values of the collective dose per reactor for BWRs and for PWRs for the years 1973 through 1991. The ranges of the values reported each year are shown by the vertical lines with a small bar at each end marking the two extreme values. The rectangles indicate the range of values of the collective dose exhibited by those plants ranked in the twenty-fifth through the seventy-fifth percentiles. Since the median values usually are not as greatly affected by the extreme values of the collective doses, they do not normally fluctuate as much from year to year as do the average values. The median collective dose for PWRs experienced a decrease from 288 person-rem (person-cSv) in 1990 to 198 person-rem (person-cSv) in 1991. At BWRs the median fluctuates more from year to year, and in 1991 the median collective dose decreased to 255 person-rem (person-cSv). Figure 4.4 also shows that, in 1991, 50% of the PWRs reported collective doses between 133 and 273 person-rem (person-cSv) while 50% of the BWRs reported collective doses between 146 and 409 person-rem (person-cSv). Nearly every year, the median collective dose is less than the average, which indicates that the collective dose for most plants is less than the average collective dose per reactor (the value that is widely quoted).

4.5 Plant Rankings by Collective Dose per Reactor

The number of reactors from which data have been collected is still rather small, and the information reported by a few reactors where unusual conditions or problems may have occurred could have a large impact on some of the statistics presented in this report. In an effort to identify those plants, Tables 4.5 and 4.6 list the BWRs and PWRs in ascending order of collective dose per reactor for each of the five years from 1987 through 1991. The total collective dose per site is listed in the tables even though the dose per reactor was used for all ranking. Two other parameters, average measurable dose per worker and collective dose per megawatt-year, are also given for each plant. Also shown is a parameter CR, which is defined as the ratio of the annual collective dose delivered at individual doses exceeding 1.5 rem (cSv) to the total annual collective dose. The value of CR has continued to decline for most plants, and in 1991, the CR for all but one of the U.S. LWRs, a BWR, fell between 0.05 and 0.50, the range recommended by the UNSCEAR [Ref. 10].

In 1991, the five BWR sites with the highest collective doses all exceeded 467 person-rem (person-cSv) per reactor (Table 4.5). Although the eight

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9 The value at which 50% of the reactors reported greater collective doses and the other 50% reported smaller collective doses.

Figure 4.4

Average, Median and Extreme Values of the Collective Dose Per Reactor 1973 – 1991

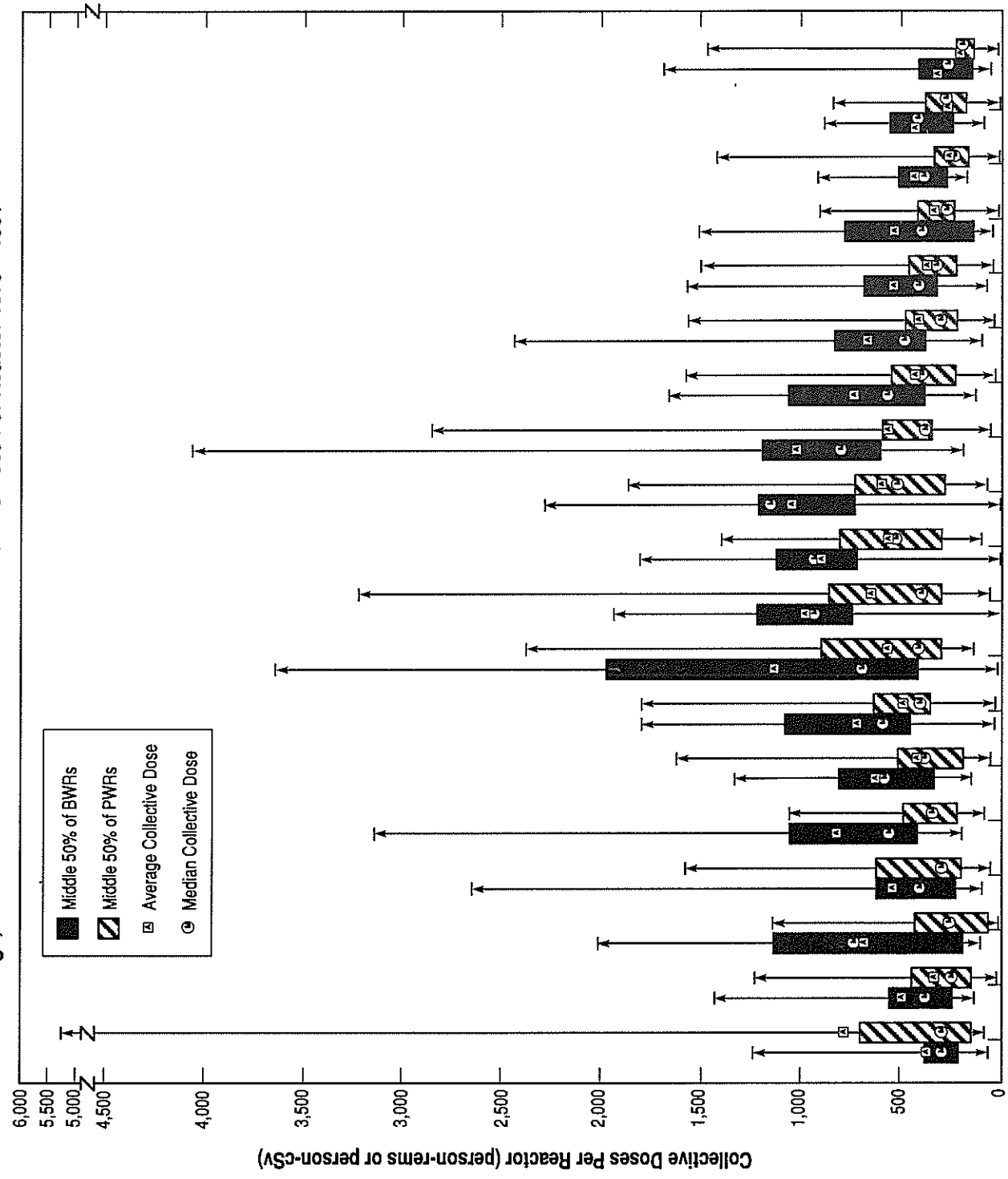

TABLE 4.5
BOILING WATER REACTORS LISTED IN ASCENDING ORDER OF COLLECTIVE DOSE PER REACTOR
1987-1991

1987

Site Name	Coll. Dose per Site*	Dose per Worker (rems or cSv)	Col. Dose per MW-Yr	CR**
Cooper Station	103	0.19	0.2	0.17
Hope Creek 1	117	0.20	0.1	0.31
Nine Mile Point 1	141	0.12	0.3	0.04
Limerick 1	174	0.08	0.3	0.00
Big Rock Point	222	0.88	4.9	0.57
Vermont Yankee	303	0.37	0.7	0.17
Susquehanna 1,2	621	0.24	0.4	0.07
Quad Cities 1,2	720	0.50	0.6	0.34
River Bend 1	378	0.30	0.6	0.17
Browns Ferry 1,2,3	1,181	0.38	–	0.31
Washington Nuclear 2	406	0.34	0.6	0.25
Hatch 1,2	816	0.37	0.6	0.30
Grand Gulf	420	0.31	0.5	0.14
Oyster Creek	522	0.27	1.4	0.31
Monticello	568	0.60	1.3	0.32
Dresden 2,3	1,145	0.56	1.2	0.38
Duane Arnold	667	0.61	2.2	0.37
Millstone Point 1	684	0.43	1.3	0.28
La Salle 1,2	1,396	0.80	1.4	0.54
Brunswick 1,2	1,419	0.46	1.2	0.43
Fitzpatrick	940	0.60	1.9	0.50
Peach Bottom 2,3	2,195	0.50	6.0	0.35
Pilgrim	1,579	0.34	–	0.34

1988

Site Name	Coll. Dose per Site*	Dose per Worker (rems or cSv)	Col. Dose per MW-Yr	CR**
Limerick 1	52	0.05	0.1	0.00
Perry	105	0.13	0.1	0.02
River Bend 1	107	0.21	0.1	0.08
Monticello	110	0.29	0.2	0.27
Vermont Yankee	124	0.33	0.3	0.15
Clinton	130	0.17	0.2	0.14
Millstone Point 1	144	0.44	0.2	0.36
Grand Gulf	147	0.21	0.1	0.28
Big Rock Point	170	0.56	3.7	0.45
Cooper Station	251	0.27	0.5	0.17
Susquehanna 1,2	516	0.27	0.2	0.06
Hope Creek	287	0.17	0.3	0.08
Washington Nuclear 2	353	0.34	0.5	0.29
Browns Ferry 1,2,3	1,155	0.35	–	0.26
Pilgrim	392	0.19	–	0.16
Quad Cities 1,2	827	0.56	0.4	0.34
Duane Arnold	614	0.54	1.6	0.29
Hatch 1,2	1,401	0.56	0.7	0.41
Dresden 2,3	1,409	0.58	0.7	0.40
Fitzpatrick	786	0.51	1.5	0.44
Nine Mile Point	854	0.33	–	0.48
Brunswick 1,2	1,747	0.66	0.9	0.51
Peach Bottom 2,3	2,327	0.55	–	0.44
Lasalle 1,2	2,471	0.90	0.9	0.58
Oyster Creek	1,504	0.52	3.6	0.49

1989

Site Name	Coll. Dose per Site*	Dose per Worker (rems or cSv)	Col. Dose per MW-Yr	CR**
Big Rock Point	177	0.42	3.5	0.41
Duane Arnold	194	0.46	0.5	0.25
Pilgrim	207	0.12	1.0	0.05
Browns Ferry 1,2,3	656	0.24	–	0.15
Fermi 2	255	0.20	0.4	0.04
Limerick 1	266	0.15	0.4	0.04
Hatch 1,2	556	0.41	0.4	0.23
Nine Mile Point 1,2	564	0.21	1.1	0.27
Vermont Yankee	288	0.35	0.7	0.10
Cooper Station	343	0.29	0.6	0.19
Susquehanna 1,2	704	0.34	0.4	0.17
Peach Bottom 2, 3	728	0.32	1.5	0.18
Clinton	372	0.31	1.1	0.18
Fitzpatrick	377	0.37	0.5	0.28
Quad Cities 1, 2	900	0.52	0.8	0.34
Millstone Point 1	462	0.54	0.8	0.39
Hope Creek 1	465	0.25	0.6	0.21
Washington Nuclear 2	492	0.38	0.7	0.27
Grand Gulf	498	0.25	0.5	0.17
Monticello	507	0.46	1.6	0.31
River Bend 1	558	0.36	1.0	0.15
Dresden 2,3	1,131	0.50	1.0	0.34
Lasalle 1,2	1,386	0.56	0.9	0.41
Perry	767	0.41	1.2	0.18
Brunswick 1,2	1,786	0.46	1.8	0.45
Oyster Creek	910	0.38	3.2	0.43

1990

Site Name	Coll. Dose per Site*	Dose per Worker (rems or cSv)	Col. Dose per MW-Yr	CR**
Fermi 2	83	0.18	0.1	0.01
Limerick 1, 2	175	0.12	0.1	0.01
Monticello	94	0.28	0.2	0.19
Millstone Point 1	131	0.36	0.2	0.24
Peach Bottom 2, 3	377	0.24	0.2	0.11
Hope Creek 1	196	0.14	0.2	0.10
Susquehanna 1, 2	440	0.26	0.3	0.08
Pilgrim	225	0.12	0.4	0.07
Big Rock Point	232	0.66	4.5	0.62
Vermont Yankee	307	0.36	0.7	0.13
Oyster Creek	310	0.16	0.6	0.17
Nine Mile Point 1, 2	699	0.29	1.1	0.22
Cooper Station	379	0.32	0.6	0.20
Browns Ferry 1, 2, 3	1,310	0.48	–	0.40
Lasalle 1, 2	948	0.52	0.5	0.36
Grand Gulf	482	0.27	0.5	0.15
River Bend 1	489	0.30	0.7	0.11
Quad Cities 1, 2	1,028	0.47	0.9	0.29
Washington Nuclear 2	536	0.40	0.8	0.30
Clinton	553	0.40	1.3	0.22
Perry	638	0.42	0.8	0.18
Dresden 2, 3	1,400	0.63	1.3	0.46
Hatch 1,2	1,455	0.50	1.1	0.30
Brunswick 1, 2	1,548	0.49	1.6	0.49
Duane Arnold	861	0.59	2.3	0.31
Fitzpatrick	884	0.58	1.6	0.47

1991

Site Name	Coll. Dose per Site*	Dose per Worker (rems or cSv)	Col. Dose per MW-Yr	CR**
Limerick 1, 2	106	0.09	0.1	0.04
Grand Gulf	94	0.13	0.1	0.11
Browns Ferry 1, 2, 3	354	0.20	0.8	0.01
Vermont Yankee	118	0.38	0.2	0.13
River Bend 1	144	0.18	0.2	0.02
Perry	146	0.24	0.1	0.10
Nine Mile Point 1, 2	292	0.19	0.2	0.10
Duane Arnold	202	0.60	0.4	0.56
Big Rock Point	226	0.52	3.8	0.48
Fermi 2	228	0.19	0.3	0.00
Clinton	233	0.23	0.3	0.01
Susquehanna 1, 2	507	0.27	0.3	0.07
Quad Cities 1, 2	509	0.30	0.5	0.18
Fitzpatrick	333	0.26	0.8	0.23
Hope Creek 1	373	0.22	0.4	0.16
Washington Nuclear 2	387	0.36	0.8	0.21
Brunswick 1, 2	778	0.30	0.8	0.23
Lasalle 1, 2	806	0.41	0.4	0.25
Cooper Station	405	0.37	0.7	0.20
Millstone Point 1	409	0.35	1.9	0.18
Monticello	465	0.48	1.1	0.29
Peach Bottom 2, 3	934	0.35	0.8	0.20
Dresden 2, 3	1,005	0.49	1.5	0.40
Hatch 1, 2	1,161	0.46	1.0	0.30
Pilgrim	605	0.21	1.5	0.14
Oyster Creek	1,185	0.38	3.4	0.34

* For sites with more than one operating reactor, the collective dose per reactor is obtained by dividing the collective dose for the site by the number of reactors.

** CR is the ratio of the annual collective dose delivered at individual doses exceeding 1.5 rems (cSv) to the total collective dose.

TABLE 4.6

PRESSURIZED WATER REACTORS LISTED IN ASCENDING ORDER OF COLLECTIVE DOSE PER REACTOR

1987-1991

1987

Site Name	Coll. Dose per Site*	Dose per Worker (rems or cSv)	Col. Dose per MW-Yr	CR**
Davis-Besse	47	0.08	0.1	0.00
Prairie Island 1,2	135	0.23	0.1	0.09
Wolf Creek 1	136	0.20	0.2	0.07
Three Mile Island 1	149	0.12	0.2	0.05
Waterford 3	156	0.16	0.2	0.05
Diablo Canyon 1,2	336	0.29	0.2	0.15
Arkansas 1,2	382	0.34	0.3	0.23
Calvert Cliffs 1,2	412	0.30	0.3	0.22
Beaver Valley	210	0.16	0.3	0.04
Sequoyah 1,2	420	0.20	--	0.12
Yankee Rowe	217	0.37	1.6	0.22
Catawba 1,2	449	0.24	0.3	0.10
Kewaunee	226	0.30	0.5	0.17
San Onofre 1,2,3	696	0.33	0.4	0.21
Millstone Point 2,3	505	0.35	0.3	0.34
Point Beach 1,2	554	0.77	0.6	0.46
Farley 1,2	598	0.32	0.4	0.23
Rancho Seco	300	0.20	--	0.10
Salem 1,2	600	0.24	0.4	0.25
Zion 1,2	653	0.62	0.5	0.39
Cook 1,2	666	0.39	0.6	0.21
Palo Verde 1,2	869	0.37	0.4	0.41
Ginna	344	0.45	0.7	0.29
Surry 1,2	712	0.27	0.8	0.38
Trojan	363	0.30	0.7	0.13
Oconee 1,2,3	1,142	0.43	0.6	0.29
Fort Calhoun	388	0.31	1.1	0.35
Callaway 1	393	0.36	0.5	0.22
Palisades	456	0.41	1.4	0.24
St. Lucie 1,2	951	0.47	0.7	0.35
Crystal River 3	488	0.35	1.1	0.21
Robinson 2	499	0.36	1.0	0.29
Indian Point 3	500	0.38	0.9	0.20
McGuire 1,2	1,043	0.36	0.6	0.31
Summer 1	560	0.52	0.9	0.42
Turkey Point 3,4	1,371	0.69	3.2	0.42
Maine Yankee	722	0.66	1.5	0.39
Haddam Neck	750	0.43	2.5	0.38
North Anna 1,2	1,521	0.58	1.4	0.54
Byron 1	769	0.42	1.2	0.33
Three Mile Island 2	977	0.71	--	0.59
Indian Point 2	1,217	0.61	2.0	0.37

1988

Site Name	Coll. Dose per Site*	Dose per Worker (rems or cSv)	Col. Dose per MW-Yr	CR**
Callaway 1	27	0.08	0.0	0.00
North Anna 1,2	112	0.11	0.1	0.05
Crystal River 3	64	0.11	0.1	0.00
Rancho Seco	78	0.11	0.2	0.03
Indian Point 3	93	0.21	0.1	0.10
Prairie Island 1,2	199	0.27	0.2	0.16
Vogtle 1	138	0.12	0.2	0.01
Calvert Cliffs 1,2	291	0.22	0.2	0.14
Harris	169	0.23	0.3	0.08
Point Beach 1,2	410	0.56	0.5	0.31
Kewaunee	210	0.30	0.4	0.17
Three Mile Island 1	210	0.21	0.3	0.11
Yankee-Rowe	227	0.31	1.7	0.20
Byron 1,2	459	0.38	0.3	0.17
Indian Point 2	235	0.26	0.3	0.19
Haddam Neck	237	0.32	0.6	0.28
Salem 1,2	503	0.31	0.3	0.02
Waterford 3	259	0.21	0.3	0.06
San Onofre 1,2,3	781	0.34	0.4	0.28
Beaver Valley 1,2	530	0.30	0.4	0.21
Fort Calhoun	272	0.17	0.9	0.12
Farley 1,2	552	0.30	0.4	0.24
Catawba 1,2	556	0.28	0.3	0.15
Oconee 1,2,3	871	0.33	0.4	0.16
Ginna	295	0.33	0.7	0.18
Wolf Creek 1	297	0.29	0.4	0.19
St. Lucie 1,2	611	0.42	0.4	0.20
Davis-Besse	307	0.26	2.1	0.14
Sequoyah 1,2	678	0.28	1.4	0.14
Palo Verde 1,2	688	0.32	0.4	0.29
Turkey Point 3,4	738	0.40	0.9	0.17
Trojan	401	0.28	0.5	0.14
Millstone Point 2,3	804	0.44	0.5	0.36
Cook 1,2	867	0.38	0.7	0.33
Diablo Canyon 1,2	877	0.48	0.6	0.33
Summer 1	511	0.45	0.8	0.26
Mcguire 1,2	1,104	0.39	0.6	0.28
Robinson 2	564	0.42	1.5	0.25
Zion 1,2	1,260	0.65	0.8	0.40
Arkansas 1,2	1,387	0.57	1.3	0.48
Maine Yankee	725	0.69	1.2	0.40
Palisades	730	0.50	1.8	0.44
Surry 1,2	1,542	0.48	2.1	0.50
Three Mile Island 2	917	0.74	--	0.66

1989

Site Name	Coll. Dose per Site*	Dose per Worker (rems or cSv)	Col. Dose per MW-Yr	CR**
Wolf Creek 1	18	0.10	0.0	0.00
Vogtle 1	32	0.07	0.0	0.00
Davis-Besse	38	0.09	0.0	0.04
Prairie Island 1,2	99	0.21	0.1	0.04
Summer 1	52	0.14	0.1	0.01
Three Mile Island 1	54	0.08	0.1	0.10
Yankee-Rowe	62	0.13	0.4	0.11
Rancho Seco	81	0.13	0.5	0.06
Byron 1,2	172	0.16	0.1	0.03
Fort Calhoun	93	0.08	0.2	0.02
Maine Yankee	99	0.26	0.1	0.13
Braidwood 1,2	296	0.20	0.2	0.04
Harris	156	0.17	0.2	0.10
South Texas 1	161	0.16	0.2	0.02
Catawba 1,2	334	0.20	0.2	0.04
Salem 1,2	338	0.11	0.2	0.17
Calvert Cliffs 1,2	346	0.19	1.0	0.13
San Onofre 1,2,3	567	0.25	0.3	0.20
Robinson 2	195	0.18	0.6	0.10
Turkey Point 3,4	433	0.27	0.6	0.14
Oconee 1,2,3	684	0.31	0.3	0.19
Diablo Canyon 1,2	465	0.28	0.2	0.07
Crystal River 3	234	0.27	0.7	0.15
Kewaunee	239	0.42	0.5	0.21
Palo Verde 1,2,3	720	0.26	0.7	0.14
Cook 1,2	493	0.31	0.3	0.18
St. Lucie 1,2	495	0.35	0.3	0.19
Point Beach 1,2	504	0.68	0.6	0.47
Waterford 3	265	0.20	0.3	0.05
Callaway 1	283	0.27	0.3	0.09
McGuire 1,2	620	0.31	0.3	0.22
Zion 1,2	624	0.53	0.5	0.33
Palisades	314	0.31	0.7	0.15
Sequoyah 1,2	657	0.33	0.4	0.23
Arkansas 1,2	711	0.34	0.7	0.17
Farley 1,2	749	0.34	0.5	0.25
Surry 1,2	836	0.27	1.7	0.37
Trojan	421	0.31	0.6	0.23
Millstone Point 2,3	1,079	0.54	0.8	0.39
Haddam Neck	596	0.41	1.7	0.32
Ginna	605	0.48	1.6	0.33
Beaver Valley 1,2	1,378	0.59	1.4	0.47
North Anna 1,2	1,471	0.51	1.2	0.47
Indian Point 3	876	0.49	1.5	0.31
Indian Point 2	1,436	0.69	2.7	0.44

1990

Site Name	Coll. Dose per Site*	Dose per Worker (rems or cSv)	Col. Dose per MW-Yr	CR**
Rancho Seco	13	0.12	---	0.00
Waterford 3	47	0.11	0.0	0.00
Harris	85	0.19	0.1	0.09
Braidwood 1,2	186	0.17	0.1	0.01
Prairie Island 1,2	188	0.26	0.2	0.07
South Texas 1,2	206	0.18	0.1	0.02
Oconee 1,2,3	404	0.21	0.2	0.07
Salem 1,2	272	0.07	0.2	0.22
Kewaunee	145	0.30	0.3	0.12
Calvert Cliffs 1,2	304	0.15	1.9	0.12
Diablo Canyon 1,2	323	0.22	0.2	0.04
Palo Verde 1,2,3	499	0.22	0.2	0.15
Beaver Valley 1,2	348	0.21	0.3	0.07
Point Beach 1,2	378	0.61	0.4	0.43
Wolf Creek 1	195	0.24	0.2	0.05
Byron 1,2	434	0.31	0.3	0.21
Farley 1,2	457	0.27	0.3	0.25
Vogtle 1,2	466	0.29	0.3	0.12
Yankee-Rowe	246	0.35	2.4	0.19
Trojan	258	0.22	0.4	0.09
Three Mile Island 1	264	0.20	0.4	0.12
Surry 1,2	575	0.30	0.5	0.21
Cook 1,2	580	0.31	0.4	0.15
Fort Calhoun	290	0.38	1.0	0.21
North Anna 1,2	590	0.27	0.4	0.37
San Onofre 1,2,3	885	0.40	0.4	0.26
Millstone Point 2,3	593	0.36	0.4	0.24
Ginna	347	0.35	0.8	0.17
Zion 1,2	696	0.50	0.8	0.31
Indian Point 3	358	0.34	0.6	0.16
McGuire 1,2	727	0.32	0.5	0.20
Turkey Point 3,4	730	0.35	0.8	0.19
Summer 1	376	0.34	0.5	0.13
Arkansas 1,2	762	0.31	0.6	0.16
St. Lucie 1,2	777	0.41	0.7	0.27
Catawba 1,2	809	0.37	0.5	0.24
Haddam Neck	421	0.43	3.0	0.36
Robinson 2	437	0.27	1.1	0.14
Callaway 1	442	0.39	0.5	0.23
Crystal River 3	476	0.33	1.0	0.20
Davis-Besse	489	0.36	1.0	0.23
Indian Point 2	608	0.57	1.0	0.51
Maine Yankee	602	0.50	1.2	0.29
Palisades	766	0.32	2.1	0.28
Sequoyah 1,2	1,678	0.57	1.0	0.44

1991

Site Name	Coll. Dose per Site*	Dose per Worker (rems or cSv)	Col. Dose per MW-Yr	CR**
Callaway 1	21	0.07	0.0	0.00
Cook 1, 2	69	0.08	0.0	0.00
Indian Point 3	40	0.13	0.0	0.00
Yankee-Rowe	40	0.25	0.3	0.07
Prairie Island 1, 2	98	0.17	0.1	0.03
Fort Calhoun	57	0.20	0.1	0.07
Calvert Cliffs 1, 2	132	0.07	0.1	0.02
Zion 1, 2	173	0.19	0.2	0.03
Seabrook	92	0.13	0.1	0.00
Maine Yankee	105	0.25	0.1	0.09
Crystal River 3	116	0.14	0.2	0.01
South Texas 1, 2	257	0.22	0.1	0.06
Point Beach 1, 2	265	0.37	0.3	0.22
Byron 1, 2	268	0.25	0.1	0.07
San Onofre 1, 2, 3	412	0.23	0.2	0.07
Comanche Peak	148	0.15	0.2	0.02
Arkansas 1, 2	351	0.17	0.2	0.06
McGuire 1, 2	361	0.21	0.2	0.06
Vogtle 1, 2	362	0.27	0.2	0.07
Oconee 1, 2, 3	551	0.28	0.2	0.16
Millstone Point 2, 3	381	0.35	0.5	0.16
Robinson 2	193	0.22	0.3	0.10
Three Mile Island 1	198	0.13	0.3	0.02
Palo Verde 1, 2, 3	605	0.27	0.2	0.15
Palisades	211	0.16	0.4	0.01
Davis-Besse	218	0.22	0.3	0.11
Kewaunee	221	0.45	0.5	0.46
Harris	226	0.26	0.3	0.09
Salem 1, 2	458	0.11	0.3	0.23
Catawba 1, 2	462	0.25	0.3	0.10
St. Lucie 1, 2	479	0.37	0.3	0.18
Beaver Valley 1, 2	495	0.29	0.4	0.19
Surry 1, 2	510	0.33	0.4	0.18
Diablo Canyon 1, 2	546	0.27	0.3	0.10
Braidwood 1, 2	550	0.34	0.4	0.15
Summer 1	291	0.30	0.5	0.14
North Anna 1, 2	629	0.30	0.4	0.35
Farley 1, 2	648	0.39	0.4	0.35
Ginna	328	0.35	0.8	0.14
Wolf Creek 1	331	0.33	0.5	0.10
Sequoyah 1, 2	698	0.36	0.4	0.25
Waterford 3	364	0.28	0.4	0.11
Turkey Point 3, 4	939	0.45	3.6	0.30
Trojan	567	0.38	3.1	0.31
Haddam Neck	590	0.51	1.3	0.36
Indian Point 2	1,468	0.81	3.2	0.41

* For sites with more than one operating reactor, the collective dose per reactor is obtained by dividing the collective dose for the site by the number of reactors.

** CR is the ratio of the annual collective dose delivered at individual doses exceeding 1.5 rems (cSv) to the total collective dose.

reactors at these five sites represented only 22% of the 37 BWRs, they contributed 41% of the total collective dose incurred at BWRs in 1991. Some of the activities which contributed to the collective dose accumulated at the BWR site with the highest collective dose per reactor [1,185 person-rem (person-cSv)] were valve maintenance and repair, pipe replacement, control rod drive work, and weld-crown reduction work.

At PWRs, the five sites with the highest collective doses all exceeded 364 person-rem (person-cSv) per reactor (Table 4.6). Although representing 8% of the 74 PWRs included in 1991, they contributed 24% of the total collective dose at PWRs. Much of the collective dose accumulated at the plant with the highest dose per reactor [1,468 person-rem (person-cSv)] in 1991 was attributed to steam generator maintenance (including girth weld repair, tube plugging, eddy current testing, and sludge lancing), valve maintenance, plant modifications, in-service inspection, and outage support work.

Tables 4.7a&b list the sites that had been in commercial operation for at least five years as of December 31, 1991, and show the values of several parameters for each of the sites. They also give a number of averages for the two types of reactors. Based on the 165 reactor-years of operation accumulated by the 34 BWRs listed, the average annual collective dose per reactor was found to be 452 person-rem (person-cSv), the average measurable dose was 0.38 rem (cSv), and the average collective dose per megawatt-year was 0.9.

Based on the 327 reactor-years of operation at the 67 PWRs listed, the average annual collective dose per reactor, average measurable dose, and average collective dose per megawatt-year were found to be 304 person-rem (person-cSv), 0.33 rem (cSv), and 0.5 person-rem/megawatt-year, respectively. All of these values, at both types of facilities, are lower than those found for the five year period ending in 1990.

In some cases, the plants having the lower values for most of the parameters shown in Tables 4.7a&b are the newer plants. Some of the older, smaller plants, such as Big Rock Point and Yankee-Rowe, also appear near the top of the listings since they report small collective doses. However, the ratio of collective dose to megawatt-years is generally higher for these plants due to their limited power generation capability. In 1991, there was one notable exception to these generalizations. Susquehanna, a BWR, has a capacity greater than 500 MWe, has been in operation over 15 years, and is among the top four sites with the lowest dose for this five-year summary. For PWRs that fall into this category of size and age, Prairie Island, Calvert Cliffs, and Three Mile Island 1 are among the top five sites in the five-year summary.

TABLE 4.7a
FIVE-YEAR TOTALS AND AVERAGES LISTED IN ASCENDING ORDER OF COLLECTIVE DOSE PER BWR

1987 - 1991

*Site Name	Total Collective Dose per Reactor	Total Coll. Dose per Site	Workers with Meas. Doses	Avg. Meas. Dose (rem)	Total Mega-watt-years	Average Collective Dose per MW-Yr
LIMERICK 1,2	110	773	7,497	0.10	5,398.0	0.1
BIG ROCK POINT	205	1,027	1,758	0.58	252.0	4.1
VERMONT YANKEE	228	1,140	3,197	0.36	2,273.9	0.5
SUSQUEHANNA 1,2	279	2,788	10,050	0.28	8,637.9	0.3
HOPE CREEK 1	288	1,438	7,290	0.20	4,341.9	0.3
COOPER STATION	296	1,481	4,966	0.30	2,878.3	0.5
BROWNS FERRY 1,2,3	310	4,656	13,654	0.34	445.0	10.5
NINE MILE POINT 1,2	319	2,550	10,501	0.24	2,977.1	0.9
GRAND GULF	328	1,641	6,486	0.25	4,958.6	0.3
RIVER BEND 1	335	1,676	5,743	0.29	3,567.3	0.5
MONTICELLO	349	1,744	3,718	0.47	2,248.6	0.8
MILLSTONE POINT 1	366	1,830	4,286	0.43	2,558.2	0.7
QUAD CITIES 1,2	398	3,984	8,544	0.47	5,690.0	0.7
WASHINGTON NUCLEAR 2	435	2,174	5,986	0.36	3,267.1	0.7
DUANE ARNOLD	508	2,538	4,451	0.57	1,954.5	1.3
HATCH 1,2	539	5,389	11,471	0.47	5,988.3	0.9
PILGRIM	602	3,008	13,314	0.23	1,114.4	2.7
DRESDEN 2,3	609	6,089	11,004	0.55	4,915.8	1.2
PEACH BOTTOM 2,3	656	6,561	15,155	0.43	3,751.6	1.7
FITZPATRICK	664	3,320	6,963	0.48	2,681.2	1.2
LASALLE 1,2	701	7,007	10,771	0.65	7,442.4	0.9
BRUNSWICK 1,2	728	7,278	15,312	0.48	5,078.5	1.4
OYSTER CREEK	886	4,431	12,232	0.36	1,941.5	2.3
Totals and Averages		74,523	194,349	0.38	84,362.1	0.9
Averages per Reactor-Year		452	1,178		511.3	

*Sites where not all reactors had completed five full years of commercial operation as of 12/31/91 are not included.

TABLE 4.7b
FIVE-YEAR TOTALS AND AVERAGES LISTED IN ASCENDING ORDER OF COLLECTIVE DOSE PER PWR

1987 - 1991

*Site Name	Total Collective Dose per Reactor	Total Coll. Dose per Site	Workers with Meas. Doses	Avg. Meas. Dose (rem)	Total Mega-watt-years	Average Collective Dose per MW-Yr
PRAIRIE ISLAND 1,2	72	719	3,124	0.23	4,852.1	0.1
CALVERT CLIFFS 1,2	149	1,485	8,459	0.18	4,184.7	0.4
YANKEE-ROWE	158	792	2,691	0.29	656.8	1.2
BRAIDWOOD 1,2	172	1,032	4,182	0.25	4,499.2	0.2
THREE MILE ISLAND 1	175	875	5,802	0.15	3,477.2	0.3
WOLF CREEK 1	196	979	3,679	0.27	4,329.7	0.2
KEWAUNEE	208	1,041	3,015	0.35	2,307.2	0.5
POINT BEACH 1,2	211	2,111	3,531	0.60	4,354.9	0.5
SALEM 1,2	217	2,171	14,933	0.15	7,834.2	0.3
WATERFORD 3	218	1,091	5,244	0.21	4,484.4	0.2
DAVIS-BESSE	219	1,097	4,589	0.24	2,845.7	0.4
FORT CALHOUN	220	1,100	5,095	0.22	1,758.3	0.6
SAN ONOFRE 1,2,3	223	3,341	10,737	0.31	9,774.2	0.3
CALLAWAY 1	233	1,166	3,904	0.30	4,982.3	0.2
BYRON 1,2	234	2,102	6,630	0.32	7,381.8	0.3
OCONEE 1,2,3	243	3,652	11,463	0.32	11,060.3	0.3
PALO VERDE 1,2,3	245	3,181	11,058	0.29	9,849.1	0.3
DIABLO CANYON 1,2	255	2,547	8,123	0.31	8,735.9	0.3
CATAWBA 1,2	261	2,610	9,579	0.27	8,367.8	0.3
COOK 1,2	268	2,675	8,203	0.33	6,948.9	0.4
CRYSTAL RIVER 3	276	1,378	5,095	0.27	2,631.4	0.5
FARLEY 1,2	300	3,004	9,262	0.32	7,268.3	0.4
BEAVER VALLEY 1,2	329	2,961	8,759	0.34	5,626.1	0.5
ST. LUCIE 1,2	331	3,313	8,032	0.41	7,321.9	0.5
MILLSTONE POINT 2,3	336	3,362	7,988	0.42	7,082.0	0.5
ZION 1,2	341	3,406	6,541	0.52	6,386.3	0.5
SUMMER 1	358	1,790	4,650	0.38	3,248.9	0.6
ARKANSAS 1,2	359	3,593	10,164	0.35	6,370.4	0.6
INDIAN POINT 3	373	1,867	4,924	0.38	3,413.0	0.5
ROBINSON 2	378	1,888	6,339	0.30	2,207.1	0.9
GINNA	384	1,919	4,862	0.39	2,084.2	0.9
MCGUIRE 1,2	386	3,855	11,679	0.33	8,701.0	0.4
TROJAN	402	2,010	6,642	0.30	2,864.9	0.7
SEQUOYAH 1,2	413	4,131	11,388	0.36	5,970.5	0.7
SURRY 1,2	418	4,175	12,453	0.34	4,920.7	0.8
TURKEY POINT 3,4	421	4,211	9,632	0.44	3,122.3	1.3
NORTH ANNA 1,2	432	4,323	10,723	0.40	7,300.0	0.6
MAINE YANKEE	467	2,333	4,318	0.54	3,200.3	0.7
PALISADES	495	2,477	7,349	0.34	2,129.1	1.2
HADDAM NECK	519	2,594	6,100	0.43	1,645.5	1.6
INDIAN POINT 2	993	4,964	7,834	0.63	2,942.4	1.7
Totals and Averages		99,321	298,775	0.33	209,121.0	0.5
Averages per Reactor-Yr		304	914		639.5	

*Sites where not all reactors had completed five full years of commercial operation as of 12/31/91 are not included.

Usually, the combination of a large annual collective dose and a large collective dose to megawatt-year ratio for a plant indicates that extensive maintenance or modifications were undertaken during the year. For example, maintenance jobs that were large contributors to BWR doses in 1991 included valve maintenance and repair, in-service inspection work, control rod drive (CRD) replacement and repair, installation and removal of scaffolding and insulation, and refueling activities. At PWR facilities, the major contributors to the collective dose were steam generator-related work, valve maintenance and repair, installation and removal of scaffolding and insulation, and in-service inspection work.

Even with the use of better techniques and robotics, these tasks continue to be responsible for a major percentage of the collective dose. It should be noted that the differences in nuclear plant designs and the ages of the plants, even between plants of a given type, affect the nature of these parameters [Ref. 15]. Therefore, care should be exercised when attempting to draw conclusions from these data.

4.6 Collective Dose by Work Function and Employee Type

A second type of annual statistical report that is required by each plant's technical specifications provides the collective dose of workers monitored at each plant site by employee type (plant, utility, or contractor) and by work and job functions. A copy of the report submitted for each reactor site is provided in Appendix D, and much of the data are graphically represented for each site in Appendix E. Tables 4.8 through 4.13 summarize the 1991 data for BWRs, PWRs, and LWRs. Table 4.8 shows that, at both BWRs and PWRs, about 65-70% of the collective dose is incurred during routine and special maintenance activities. Also, the portion of the collective dose incurred during most of the other activities is similar at the two types of plants.

One should note that the collective doses obtained from these reports are not used in any other tables in this document. The reasons for this are that the technical specification of each plant requires only 80% of the plant's collective dose be accounted for, and some utilities may use the results of self-reading pocket dosimeters instead of the results of the official dosimeter (usually thermoluminescent dosimeters) in compiling the data. Also, when examining the number of personnel shown on these reports, it should be kept in mind that individuals who perform tasks in more than one category may be counted more than once.

TABLE 4.8
ANNUAL COLLECTIVE DOSE
BY WORK FUNCTION AND PERSONNEL TYPE
1991

WORK AND JOB FUNCTION	STATION EMPLOYEES PERSON-REM	% OF TOTAL	UTILITY EMPLOYEES PERSON-REM	% OF TOTAL	CONTRACT WORKERS PERSON-REM	% OF TOTAL	TOTAL PER WORK FUNCTION PERSON-REM	% OF TOTAL
BOILING WATER REACTORS								
REACTOR OPS & SURV	1,379	11.5%	60	0.5%	743	6.2%	2,183	18.2%
ROUTINE MAINTENANCE	2,029	16.9%	304	2.5%	2,581	21.5%	4,913	40.9%
IN-SERVICE INSPECTION	74	0.6%	81	0.7%	717	6.0%	872	7.3%
SPECIAL MAINTENANCE	610	5.1%	294	2.4%	1,890	15.7%	2,794	23.3%
WASTE PROCESSING	192	1.6%	4	0.0%	200	1.7%	396	3.3%
REFUELING	244	2.0%	40	0.3%	561	4.7%	845	7.0%
TOTAL	4,528	37.7%	782	6.5%	6,692	55.8%	12,002	100.0%
PRESSURIZED WATER REACTORS								
REACTOR OPS & SURV	1,022	6.1%	48	0.3%	791	4.7%	1,861	11.1%
ROUTINE MAINTENANCE	1,868	11.1%	521	3.1%	3,108	18.5%	5,497	32.7%
IN-SERVICE INSPECTION	180	1.1%	179	1.1%	1,322	7.9%	1,681	10.0%
SPECIAL MAINTENANCE	787	4.7%	541	3.2%	3,996	23.8%	5,323	31.6%
WASTE PROCESSING	210	1.3%	7	0.0%	291	1.7%	508	3.0%
REFUELING	555	3.3%	108	0.6%	1,289	7.7%	1,951	11.6%
TOTAL	4,621	27.5%	1,404	8.3%	10,797	64.2%	16,822	100.0%
ALL LIGHT WATER REACTORS								
REACTOR OPS & SURV	2,401	8.3%	108	0.4%	1,534	5.3%	4,043	14.0%
ROUTINE MAINTENANCE	3,897	13.5%	825	2.9%	5,689	19.7%	10,410	36.1%
IN-SERVICE INSPECTION	254	0.9%	260	0.9%	2,039	7.1%	2,553	8.9%
SPECIAL MAINTENANCE	1,397	4.8%	834	2.9%	5,886	20.4%	8,117	28.2%
WASTE PROCESSING	403	1.4%	11	0.0%	491	1.7%	904	3.1%
REFUELING	799	2.8%	147	0.5%	1,850	6.4%	2,797	9.7%
TOTAL	9,150	31.7%	2,186	7.6%	17,489	60.7%	28,824	100.0%

Table 4.9 shows that workers performing special maintenance have historically incurred the largest portion (35%-45%) of the collective dose and that workers performing routine maintenance activities usually incurred between 30% and 35% of the total each year since 1979. However, for the past five years in a row, the percentage of collective dose attributed to routine maintenance has been greater than that of special maintenance. This may be indicative of a trend showing a reduction in TMI-related activities and a greater emphasis on steady-state routine maintenance. Overall, figures have been fairly stable over the years with these two categories, special maintenance and routine maintenance, always accounting for the majority of the collective dose. Some of the fluctuations shown in the percentage of the dose incurred during refueling activities (particularly in 1987, 1988, and 1991, when it increased to over 8%) is due to the fact that some sites include doses other than those directly associated with fuel movement in this category.

Figure 4.5 graphically shows the trends in the collective dose by work function and type of personnel for the years 1987 through 1991 for BWRs and PWRs separately. Contractor personnel still incur most of the collective dose during special maintenance and in-service inspection, but in recent years, the collective dose is more equally divided between contractor and plant and utility personnel during routine maintenance, reactor operations, waste processing, and refueling activities. The general decrease in collective dose is also apparent among most of these activities.

Table 4.10 presents the distribution of the collective dose for 199I at all LWRs among five occupational categories. As in past years, maintenance personnel incurred the majority (66%) of the collective dose with contractor maintenance personnel receiving about twice as much as the station and utility maintenance employees combined. None of the values listed changed significantly from those found for 1986 through 1990. The collective doses shown in Tables 4.8 and 4.10 do not equal those shown in other tables in the report because they are the sum of the doses taken from the type of annual reports shown in Appendix D rather than the collective dose that was obtained or calculated from the annual reports required to be submitted pursuant to 10 CFR Part 20.407.

Another use made of the reports given in Appendix D is in proportioning the collective dose obtained from the § 20.407 annual reports into the work functions and personnel types shown in Appendix C. This was done in the following way:

(1) The collective dose incurred by workers in the work function "Reactor Operations and Surveillance" on each plant's annual report submitted

TABLE 4.9

PERCENTAGES OF ANNUAL COLLECTIVE
DOSE AT LWRs BY WORK FUNCTION
1981 - 1991

WORK FUNCTION	PERCENTAGE OF COLLECTIVE DOSE EACH YEAR										
	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
REACTOR OPERATIONS AND SURVEILLANCE	8.9%	9.4%	10.1%	11.4%	12.8%	12.8%	11.9%	11.0%	12.2%	12.3%	14.0%
ROUTINE MAINTENANCE	36.1%	27.9%	29.7%	26.9%	34.6%	33.2%	35.0%	37.7%	36.2%	36.5%	36.1%
INSERVICE INSPECTION	5.3%	6.5%	7.6%	6.3%	8.6%	8.3%	8.0%	8.7%	9.5%	8.8%	8.9%
SPECIAL MAINTENANCE	40.5%	46.8%	43.9%	45.4%	32.5%	35.5%	33.2%	30.1%	31.3%	31.6%	28.2%
WASTE PROCESSING	4.2%	5.0%	4.6%	3.6%	5.1%	4.0%	3.9%	3.6%	3.4%	3.0%	3.1%
REFUELING	5.0%	4.4%	4.1%	6.4%	6.5%	6.2%	8.1%	8.8%	7.3%	7.7%	9.7%

pursuant to their technical specifications (the first number in the last column in Appendix D) was determined.

(2) The ratio of this dose to the total collective dose (the last number in the last column in Appendix D) was calculated and multiplied by the total collective dose that had been calculated or obtained from the 10 CFR 20.407 annual report. This product is the collective dose shown in the column headed "Operations" in Appendix C.

(3) The collective dose shown in the column headed "Maintenance and Others" in Appendix C was determined by first summing the collective doses incurred by workers in the five remaining functions given in Appendix D and then calculating the fraction that this dose is of the total collective dose. This fraction was multiplied by the total collective dose calculated from the § 20.407 annual reports to yield the collective dose shown in this column of Appendix C.

(4) A similar procedure was followed in determining the collective dose for the columns headed "Contractor" and "Station & Utility" in Appendix C.

4.7 Number of Personnel by Work Function and Employee Type

Half of the information presented in the statistical annual reports shown in Appendix D concerns the number of various types of personnel that performed certain work functions. Tables 4.11 and 4.12 sum this information to show the percentage of personnel by work function and occupation. The major problem in interpreting the figures shown in these tables is the fact that the same person may perform several work functions during the year so that the total number of personnel obtained by summing those shown in the various work functions would be inflated. However, Table 4.11 is still useful in showing the percentage of personnel associated with each of the six work functions shown. About 56% of the personnel performed routine or special maintenance functions, about 22% were involved with reactor operations and surveillance, and the remaining 22% were divided among the other three work functions.

Table 4.12 shows the percentage of personnel in each of five occupational categories at BWRs, PWRs, and LWRs. The workers were similarly distributed at BWRs and PWRs, the largest difference occurred in the health physics category with 9.9% at BWRs and 16.3% at PWRs. Overall, 53% of the personnel were contractors, 35% were station employees, and 12% were utility employees in 1991.

TABLE 4.11
NUMBER OF PERSONNEL*
BY WORK FUNCTION AND PERSONNEL TYPE
1991

WORK AND JOB FUNCTION	STATION EMPLOYEES NUMBER	STATION EMPLOYEES % OF TOTAL	UTILITY EMPLOYEES NUMBER	UTILITY EMPLOYEES % OF TOTAL	CONTRACT WORKERS NUMBER	CONTRACT WORKERS % OF TOTAL	TOTAL PER WORK FUNCTION NUMBER	TOTAL PER WORK FUNCTION % OF TOTAL
BOILING WATER REACTORS								
REACTOR OPS & SURV	9,027	13.7%	1,138	1.7%	5,523	8.4%	15,688	23.8%
ROUTINE MAINTENANCE	12,100	18.3%	1,834	2.8%	12,933	19.6%	26,867	40.7%
IN-SERVICE INSPECTION	830	1.3%	406	0.6%	2,797	4.2%	4,033	6.1%
SPECIAL MAINTENANCE	2,338	3.5%	1,183	1.8%	6,913	10.5%	10,434	15.8%
WASTE PROCESSING	2,744	4.2%	125	0.2%	1,547	2.3%	4,416	6.7%
REFUELING	1,344	2.0%	408	0.6%	2,804	4.2%	4,556	6.9%
TOTAL	28,383	43.0%	5,094	7.7%	32,517	49.3%	65,994	100.0%
PRESSURIZED WATER REACTORS**								
REACTOR OPS & SURV	6,717	9.7%	1,949	2.8%	5,214	7.5%	13,880	20.1%
ROUTINE MAINTENANCE	8,234	11.9%	2,377	3.4%	11,578	16.7%	22,189	32.1%
IN-SERVICE INSPECTION	1,355	2.0%	1,068	1.5%	4,024	5.8%	6,447	9.3%
SPECIAL MAINTENANCE	3,963	5.7%	1,783	2.6%	10,185	14.7%	15,931	23.0%
WASTE PROCESSING	1,663	2.4%	187	0.3%	1,677	2.4%	3,527	5.1%
REFUELING	2,896	4.2%	553	0.8%	3,803	5.5%	7,252	10.5%
TOTAL	24,828	35.9%	7,917	11.4%	36,481	52.7%	69,226	100.0%
ALL LIGHT WATER REACTORS**								
REACTOR OPS & SURV	15,744	11.6%	3,087	2.3%	10,737	7.9%	29,568	21.9%
ROUTINE MAINTENANCE	20,334	15.0%	4,211	3.1%	24,511	18.1%	49,056	36.3%
IN-SERVICE INSPECTION	2,185	1.6%	1,474	1.1%	6,821	5.0%	10,480	7.8%
SPECIAL MAINTENANCE	6,301	4.7%	2,966	2.2%	17,098	12.6%	26,365	19.5%
WASTE PROCESSING	4,407	3.3%	312	0.2%	3,224	2.4%	7,943	5.9%
REFUELING	4,240	3.1%	961	0.7%	6,607	4.9%	11,808	8.7%
TOTAL	53,211	39.4%	13,011	9.6%	68,998	51.0%	135,220	100.0%

* Workers may be counted in more than one category. The number of personnel in Table 4.12 should be considered to be more accurate than Table 4.11, because the actual total number of individuals in each profession was provided by some plants in an attempt to correct for the multiple counting of individuals.

** Table 4.11 does not include the number of personnel from the PWRs at Point Beach 1,2 (458 people), because the data were not submitted in the suggested format.

TABLE 4.12
NUMBER OF PERSONNEL*
BY OCCUPATION AND PERSONNEL TYPE
1991

OCCUPATION	STATION EMPLOYEES NUMBER	% OF TOTAL	UTILITY EMPLOYEES NUMBER	% OF TOTAL	CONTRACT WORKERS NUMBER	% OF TOTAL	TOTAL PER WORK FUNCTION NUMBER	% OF TOTAL
BOILING WATER REACTORS								
MAINTENANCE	5,872	13.4%	3,808	8.7%	14,671	33.4%	24,351	55.4%
OPERATIONS	3,904	8.9%	718	1.6%	1,848	4.2%	6,470	14.7%
HEALTH PHYSICS	2,111	4.8%	107	0.2%	2,158	4.9%	4,376	9.9%
SUPERVISORY	1,491	3.4%	481	1.1%	1,031	2.3%	3,003	6.8%
ENGINEERING	1,652	3.8%	1,656	3.8%	2,476	5.6%	5,784	13.2%
TOTAL	15,030	34.2%	6,770	15.4%	22,184	50.4%	43,984	100.0%
PRESSURIZED WATER REACTORS								
MAINTENANCE	6,945	13.9%	2,362	4.7%	17,620	35.2%	26,927	53.7%
OPERATIONS	3,866	7.7%	440	0.9%	1,471	2.9%	5,777	11.5%
HEALTH PHYSICS	2,940	5.9%	158	0.3%	5,091	10.2%	8,189	16.3%
SUPERVISORY	2,107	4.2%	725	1.4%	1,036	2.1%	3,868	7.7%
ENGINEERING	1,656	3.3%	1,048	2.1%	2,648	5.3%	5,352	10.7%
TOTAL	17,514	34.9%	4,733	9.4%	27,866	55.6%	50,113	100.0%
ALL LIGHT WATER REACTORS								
MAINTENANCE	12,817	13.6%	6,170	6.6%	32,291	34.3%	51,278	54.5%
OPERATIONS	7,770	8.3%	1,158	1.2%	3,319	3.5%	12,247	13.0%
HEALTH PHYSICS	5,051	5.4%	265	0.3%	7,249	7.7%	12,565	13.4%
SUPERVISORY	3,598	3.8%	1,206	1.3%	2,067	2.2%	6,871	7.3%
ENGINEERING	3,308	3.5%	2,704	2.9%	5,124	5.4%	11,136	11.8%
TOTAL	32,544	34.6%	11,503	12.2%	50,050	53.2%	94,097	100.0%

* Workers may be counted in more than one category. The number of personnel in this table is considered to be more accurate than Table 4.11 because the actual total number of individuals in each category was provided by some plants in an attempt to correct for the multiple counting of individuals. This table does include the number of personnel from Point Beach 1,2.

Table 4.13 presents the average annual dose incurred by workers in the five occupational categories in 1991. These averages were calculated by dividing the collective dose reported for these groups (see Table 4.10) by the number of individuals shown in Table 4.12. It shows that in most instances, the maintenance and health physics personnel incur the highest average doses. When examining the values of the averages that are given in Table 4.13, one should bear in mind the several sources of error to which they are subject: (1) the number of individuals may be inflated because the same plant contractor employee may work at several plants so that the employee would be counted more than once in a summary such as Table 4.13; (2) the occupations are not clearly defined so that workers performing certain tasks in one plant may be classified as being in one occupation and be included in a different one at another plant; (3) some plants count only those workers whose doses exceed 0.10 rem (cSv) while other plants count all workers regardless of the dose received. It is because of these reasons that the usefulness of the numbers of individuals obtained from the reports provided in Appendix D is rather limited, and they are not used to develop any other statistics in this document.

4.8 Graphical Representation of Dose Trends in Appendix E

Appendix E is a recent addition to this report series. Each page of Appendix E presents two types of graphs for one site. One graph plots certain dose-performance indicators from 1973 through 1991, and the other indicates the collective dose by job function for 1978 through 1991. The dose and performance indicators shown in the top graph illustrate the history of the collective dose for the site, the rolling three-year average collective dose per reactor, and the gross electricity generated at the site. These data are plotted, beginning with the plant's first full year of commercial operation, and continuing through 1991. However, any data reported prior to 1973 are not included. The three-year average collective dose per reactor data is included because it appears to provide a better overall indication of the plant's general trend in collective dose. This average is determined by summing the collective dose for the current year and the previous two years and then dividing this sum by the number of reactors in operation during those years. This reduces the sporadic effects on annual doses of refueling operations (usually a three-year cycle) and occasional high-dose maintenance activities, and gives a better idea of collective dose trends over the life of the plant. One should note that for sites with more than one reactor, the plot of the three-year rolling average will lie below that of the plot of the annual collective dose for the site because it is calculated on a per-reactor basis.

TABLE 4.13
AVERAGE DOSES BY OCCUPATION AND PERSONNEL TYPE*
1991

OCCUPATION	STATION			UTILITY			CONTRACT			TOTAL		
	COLL. DOSE	NUMBER OF EMPLOYEES	AVERAGE DOSE	COLL. DOSE	NUMBER OF EMPLOYEES	AVERAGE DOSE	COLL. DOSE	NUMBER OF EMPLOYEES	AVERAGE DOSE	COLL. DOSE	NUMBER OF EMPLOYEES	AVERAGE DOSE
BOILING WATER REACTORS												
MAINTENANCE	2,303	5,872	0.39	664	3,808	0.17	5,170	14,671	0.35	8,137	24,351	0.33
OPERATIONS	969	3,904	0.25	13	718	0.02	257	1,848	0.14	1,239	6,470	0.19
HEALTH PHYSICS	760	2,111	0.36	5	107	0.05	705	2,158	0.33	1,470	4,376	0.34
SUPERVISORY	275	1,491	0.18	18	481	0.04	144	1,031	0.14	436	3,003	0.15
ENGINEERING	222	1,652	0.13	83	1,656	0.05	416	2,476	0.17	721	5,784	0.12
TOTAL	4,528	15,030	0.30	782	6,770	0.12	6,692	22,184	0.30	12,002	43,984	0.27
PRESSURIZED WATER REACTORS												
MAINTENANCE	2,453	6,945	0.35	1,256	2,362	0.53	7,208	17,620	0.41	10,917	26,927	0.41
OPERATIONS	745	3,866	0.19	19	440	0.04	331	1,471	0.23	1,096	5,777	0.19
HEALTH PHYSICS	934	2,940	0.32	19	158	0.12	1,795	5,091	0.35	2,748	8,189	0.34
SUPERVISORY	182	2,107	0.09	23	725	0.03	211	1,036	0.20	417	3,868	0.11
ENGINEERING	307	1,656	0.19	86	1,048	0.08	1,251	2,648	0.47	1,644	5,352	0.31
TOTAL	4,621	17,514	0.26	1,404	4,733	0.30	10,797	27,866	0.39	16,822	50,113	0.34
ALL LIGHT WATER REACTORS												
MAINTENANCE	4,755	12,817	0.37	1,920	6,170	0.31	12,379	32,291	0.38	19,054	51,278	0.37
OPERATIONS	1,714	7,770	0.22	32	1,158	0.03	588	3,319	0.18	2,334	12,247	0.19
HEALTH PHYSICS	1,694	5,051	0.34	24	265	0.09	2,500	7,249	0.34	4,218	12,565	0.34
SUPERVISORY	457	3,598	0.13	40	1,206	0.03	355	2,067	0.17	853	6,871	0.12
ENGINEERING	529	3,308	0.16	170	2,704	0.06	1,667	5,124	0.33	2,365	11,136	0.21
TOTAL	9,150	32,544	0.28	2,186	11,503	0.19	17,489	50,050	0.35	28,824	94,097	0.31

* Workers may be counted in more than one category, but the actual total number of individuals in each category was used when it was provided by the plant.

The second type of graph at the bottom of each page in Appendix E displays the breakdown of collective dose by job function and employee type for the years 1978 through 1991. The horizontal axis lists the six job functions of reactor operations, routine maintenance, in-service inspection, special maintenance, waste management and refueling operations, and the vertical axis indicates collective dose at each site. This representation quickly shows the job functions where most of the dose was accumulated as well as the division of the collective dose among plant and contract workers. The data are taken from the submittals presented in Appendix D and therefore represent at least 80% of the collective dose at each site. Only those reactors that have completed at least one full year of commercial operation are presented in Appendix E.

4.9 Health Implications of Average Annual Doses

Studies of populations chronically exposed to low levels of radiation delivered over protracted periods have not shown consistent or conclusive evidence of an associated increase in the risk of cancer. Thus, there is no evidence that the doses to workers recorded here cause harm.

The risk estimates presented below are based on extensive studies of Japanese A-bomb survivors and other populations exposed to large doses of radiation delivered in short periods of time. This information is supplemented by animal and *in vitro* studies, such as irradiation of cell cultures. These studies have confirmed that human cells have mechanisms that repair damaged chromosomes. The existence of this repair helps to explain the finding that lower doses of radiation delivered at lower dose rates produce less of an effect on a cell per unit dose than high-dose, high-dose-rate irradiations. Thus the estimates of risks to radiation workers are likely to be conservative.

Health effects due to radiation exposure fall into three groups: carcinogenic effects, genetic effects, and mental retardation. Mental retardation has been observed only in Japanese A-bomb survivors exposed at 8-15 weeks gestational age, and is consequently not applicable to the workplace except in the case of a pregnant female worker. Genetic effects have never been observed in man, though they have been observed in mice.

Risk of cancer induction is known to increase with increasing dose, but is hard to quantify as the risk varies with the site of the cancer, the age and sex of the exposed individual, the energy and nature of the radiation, the magnitude and duration of the dose, and exposure to other carcinogens. Since nearly 20% of all deaths in the United States occur from cancer, the estimated number of cancers attributable to occupational radiation exposure is a small

fraction of the total number that occur. (Those who do not succumb to cancer will perforce succumb to some other cause and in essentially the same time frame.)

The Committee on the Biological Effects of Ionizing Radiations (BEIR) of the National Academy of Sciences (NAS) National Research Council has been conducting an ongoing study of the health effects of ionizing radiation. Its latest report, BEIR V, was published in 1991. Based on this report, the 103,740 workers receiving the average dose of 0.31 rem (cSv) or the maximum accidental dose of 3 rem (cSv) to the whole body during 1991 (see Section 6) might expect an increased cancer death risk of about 9 chances in a thousand for the average dose and 2 chances per thousand for the maximum dose.[10] Should a worker receive 0.31 rem (cSv) continuously during an entire working career (working from age 18 until age 65), his/her lifetime risk of dying from cancer is estimated to increase by approximately 4%. Since the American Cancer Society estimates that an individual's risk of dying of cancer is about 20% (one in five), the risk to an individual receiving 0.31 rem (cSv) would be approximately 21%.

The potential genetic effects from a worker population receiving 31,830 person-rem (person-cSv) (Table 3.1) are small compared to genetic damages that normally occur spontaneously in a population of this size. Approximately 110,204 serious genetic defects occur normally in one million live births, i.e., an average of about one serious defect in every ten live births. Theoretically, the total genetic damage in the first generation children of the 103,740 exposed workers would, according to the report NUREG/CR-4214 [Ref. 17], be an increase of about 1 case (approximately 0.01%) compared to the expected 10,000 cases that occur normally.[11] No significant increase in the number of genetic defects has been observed in the children of individuals exposed to much higher levels of ionizing radiation at Hiroshima and Nagasaki, Japan.

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These estimates were calculated from Table 4-2 of Ref. 16. The average dose risk estimate assumes continuous lifetime exposure (ages 18-65), while the acute dose risk estimate assumes a one-time, instantaneous exposure. Note that these estimates are based on observations of individuals exposed to high doses of radiation over short periods of time. The BEIR committee, in its report, cautions that dose rate reduction factors (DREFs) will need to be applied to low-dose and low-dose-rate exposures. (see Ref. 16, pp. 171 and 174)

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Assuming that, on the average, each exposed person will have one live-born child in the future, i.e., 103,740 children born to this worker population.

5 TERMINATION DATA SUBMITTED PURSUANT TO 10 CFR § 20.408

5.1 Termination Reports, 1969-1991

In 1969, the Atomic Energy Commission (predecessor of the NRC) began requiring certain categories of licensees[12] to submit personal identification and exposure information upon the termination of each monitored person's employment or work assignment at their facilities. The appropriate information on each report has been manually coded and entered into the Commission's computerized Radiation Exposure Information Reporting System (REIRS) for permanent retention. The data are retrievable by several criteria - social security number, name, facility, etc. - which allow statistical analysis of the data as well as the tracing of individual dose histories. During the years that this information has been collected, over 1.7 million reports have been received for the 686,587 individuals who have been reported as having terminated their employment at facilities in one or more of the categories of covered licensees. The figures given for the number of reports and the number of individuals are different because thousands of individuals have worked at more than one facility over the years and a termination report was submitted to the NRC each time they left a facility.

Table 5.1 provides a breakdown of this information for individuals terminating during each of these 23 years and, since the majority of termination reports are submitted by nuclear power facilities, the number of individuals terminating from power reactors is displayed separately. The 1991 data are subject to revision as more termination reports covering this period are received and processed into REIRS. For this reason, each year that this report is produced, the previous year's termination data are revised to reflect all of the reports that have been processed to date.

5.2 Limitations of Termination Data

When examining or using the statistics that are based on the termination data, one should keep in mind that these data have various limitations: (1) some licensees submit a termination report for each monitoring period rather than waiting until the individual actually completes a work assignment at the facility; (2) the reports contain no indication of the tasks the workers may have performed nor of the type of employees (contractor, plant part-time,

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12 Commercial nuclear power reactors; industrial radiographers; fuel processors, fabricators, and reprocessors; and manufacturers and distributors of specified quantities of by-product material. Three other types of NRC licensees are now required to submit reports pursuant to 10 CFR § 20.407 and § 20.408: geologic repositories for high-level radioactive waste; receivers of radioactive waste from other persons for land disposal; and independent installations for the storage of spent fuel.

etc.) they were while monitored by the licensee; (3) the period(s) of exposure that is reported for terminating individuals usually indicate the monitoring period during which they may have been exposed to radiation rather than the actual dates of exposure; (4) most licensees report cumulative periods of exposure and doses rather than the actual periods and dose incurred during each period; and (5) licensees having more than one licensed facility sometimes include in the termination report, submitted when individuals leave the second facility, the dose that they incurred at the first facility, which may already have been reported. Although the REIR System corrects for most of these problems, they are still a source of error in any statistics developed from the termination data.

TABLE 5.1
TERMINATION REPORTS SUBMITTED TO THE NRC

1969 - 1991

YEAR	All Covered Categories*		Power Reactor Licensees	
	Number of Reports Submitted	Number of Terminating Individuals	Number of Reports Submitted	Number of Terminating Individuals
1969	4,194	3,917	576	531
1970	6,520	5,828	1,995	1,807
1971	8,872	8,181	2,070	1,938
1972	10,633	9,599	4,051	3,364
1973	17,366	15,240	9,533	7,860
1974	26,347	21,729	19,963	15,727
1975	36,154	27,680	30,632	22,680
1976	52,865	39,274	47,623	34,630
1977	56,516	41,885	50,807	37,209
1978	61,121	44,020	55,063	38,570
1979	78,176	57,903	71,802	52,432
1980	100,344	72,475	93,515	66,816
1981	107,592	74,510	101,656	69,115
1982	108,309	68,809	103,810	64,779
1983	114,997	78,089	110,982	74,510
1984	113,745	80,958	121,474	77,708
1985	117,264	81,605	112,831	77,742
1986	113,745	83,459	109,548	79,736
1987	127,842	92,492	124,592	89,636
1988	116,697	83,558	113,398	80,832
1989	115,729	80,468	112,050	77,446
1990	115,967	79,003	111,977	75,814
1991	96,231	68,115	91,882	64,665

* Commercial nuclear power reactors; industrial radiographers; fuel processors, fabricators, and reprocessors; manufacturers and distributors of specified quantities of byproduct materials; low-level waste disposal facilities; and independent spent fuel storage installations.

5.3 Transient Workers per Calendar Quarter

One use of the information contained in the termination reports is the examination of the doses being received by short-term workers. Since a large number of the termination reports indicated periods of exposure that were less than 90 days, it is possible that several thousand individuals could have been employed by two or more licensees during the same calendar quarter. Thus, in this report, a "quarterly transient" worker is defined as an individual who began and terminated employment at two or more different licensed facilities within one calendar quarter. This allows one to examine the doses of those workers who move rapidly between facilities.

Table 5.2 displays some of the information gathered from these termination reports that were submitted by all covered licensees and by licensed nuclear power facilities, separately. One can quickly see that the vast majority of these individuals are monitored by nuclear power facilities.

The bottom half of the table separates the information shown for power reactor licensees into that for reactor workers employed by two, three, and four or more different reactor licensees. The table shows that most of these transients were reported by two different licensees during a quarter and that their average quarterly dose has decreased from 0.39 rem (Csv) in 1982 to a value of 0.19 rem (cSv) in 1991. The average dose for each category of transient worker is considerably less than that incurred 10 years ago. This is believed to be a reflection of the industry's continuing efforts to reduce the exposure of all individuals working at their facilities and their efforts to limit the workers' annual doses to less than 5 rem regardless of the number of facilities at which they work during the year.

Examination of these records also revealed that some individuals have worked for as many as six different NRC licensees during one calendar quarter, and examination of their doses revealed **no instances during the last ten years in which a worker exceeded the quarterly limit of 3 rem (cSv) as a result of working at two or more different licensed facilities within one calendar quarter.** However, because some facilities do not report the workers' doses in quarterly increments in the termination reports that are submitted to the NRC, it is not always possible to determine, from the data in REIRS, the portion of the dose received during each quarter. This inability could have allowed any of these doses that exceeded 3 rem to go undetected by the analyses presented in this document. Regulations require that each licensee take measures to ensure that such exposures do not occur, and if they do occur, they are reported to the Commission separately (see Section 6). The inspection of licensees by the NRC regional inspectors serve to enforce these regulations.

TABLE 5.2
TRANSIENT WORKERS PER CALENDAR QUARTER
1982 - 1991

All Covered Licensees				Power Reactor Facilities			
Year	No. of Persons Terminated by Two or more Licensees Within One Quarter	Collective Dose (person-rems person-cSv)	Average Individual Dose (rem or cSv)	Year	No. of Persons Terminated by Two or more Licensees Within One Quarter	Collective Dose (person-rems person-cSv)	Average Individual Dose (rem or cSv)
1982	2,428	935	0.39	1982	2,396	914	0.38
1983	2,774	913	0.33	1983	2,728	886	0.32
1984	3,414	1,123	0.33	1984	3,356	1,083	0.32
1985	2,791	700	0.25	1985	2,746	674	0.25
1986	3,069	921	0.30	1986	3,033	910	0.30
1987	3,543	1,022	0.29	1987	3,517	1,011	0.29
1988	3,840	1,019	0.27	1988	3,799	1,011	0.27
1989	3,649	768	0.21	1989	3,604	762	0.21
1990	3,986	833	0.21	1990	3,909	810	0.21
1991	2,912	552	0.19	1991	2,805	513	0.18

Power Reactor Facilities

Year	No. of Persons Terminated by Two Licensees	Collective Dose	Average Dose	No. of Persons Terminated by Three Licensees	Collective Dose	Average Dose	No. of Persons Terminated by >Three Licensees	Collective Dose	Average Dose
1982	2,047	789	0.39	288	113	0.39	61	12	0.20
1983	2,276	767	0.34	362	101	0.28	90	18	0.20
1984	2,782	901	0.32	431	147	0.34	143	35	0.24
1985	2,340	597	0.26	335	67	0.20	71	10	0.14
1986	2,612	785	0.30	362	115	0.32	59	10	0.17
1987	2,992	875	0.29	425	121	0.28	100	16	0.16
1988	3,081	826	0.27	573	162	0.28	145	23	0.16
1989	2,967	620	0.21	504	109	0.22	133	33	0.25
1990	3,227	707	0.22	530	82	0.15	152	22	0.14
1991	2,323	454	0.20	379	50	0.13	103	9	0.09

5.4 Transient Workers per Calendar Year at Nuclear Power Facilities

Since the number of transient workers per calendar quarter comprises only a small percentage of the total number of individuals terminating each year, it is useful to examine the data reported for workers who began and terminated two or more periods of employment with two or more different reactor facilities within one calendar year. An examination of these data would allow one to determine the number and average dose for these "annual transients." Since more than 95% of these transients are reported by nuclear power facilities, only the termination records of these individuals were examined in detail.

Table 5.3 summarizes the number and doses of the transients found among the individuals terminating during the ten years from 1982 through 1991. The lower portion of Table 5.3 shows the number and doses of workers who were terminated by two, three, and four or more different licensees during each calendar year. The table shows the general decreasing trend in the average measurable dose for each category of transient reactor worker.

Another way in which the distribution of the doses received by transient workers can be useful is in the determination of the impact that the inclusion of these individuals in each of two or more licensees' annual reports had on the annual summary (as reported in Appendices B and F) for all nuclear power facilities (one of the problems mentioned in Section 2). Table 5.4a shows the correct distribution of transient worker doses as determined from the above-mentioned termination reports and compares it with the distribution of the doses of these workers as they would have appeared in a summation of the annual statistical reports submitted by each of the nuclear power facilities. The corrected dose distribution is also shown in Table 4.4. During each of the years shown, each of the transient workers was counted an average of 2.6 times so that in 1991, the 7,763 transients would have been reported as 20,260 individuals. This was not surprising because some individuals were reported by as many as 24 different facilities.

Table 5.4b illustrates the impact that the multiple reporting of these transient individuals had on the staff's summation of the annual statistical reports for the years 1985 through 1991. Since each nuclear power facility reports the distribution of the doses received by workers while monitored by the particular facility during the year, one would expect that a summation of these reports would result in individuals being counted several times in dose ranges lower than the range in which their total accumulated dose (the sum of the personnel monitoring results incurred at each facility during the year) would actually place them. Thus, while the total collective dose would remain

TABLE 5.3

TRANSIENT WORKERS PER CALENDAR YEAR AT NUCLEAR POWER FACILITIES

1982 - 1991

Year	No. of Commercial Reactors	No. of Persons Terminated by Two or More Licensees	Collective Dose (person-rems person-cSv)	Average Dose (rems or cSv)
1982	75	5,303	5,610	1.06
1983	76	6,340	6,675	1.05
1984	79	7,760	8,045	1.04
1985	83	6,871	5,319	0.77
1986	90	7,816	5,954	0.76
1987	97	9,469	6,712	0.71
1988	103	9,295	5,875	0.63
1989	107	10,509	6,776	0.64
1990	110	11,376	7,641	0.67
1991	111	7,763	4,066	0.52

Year	No. of Persons Terminated by Two Licensees	Collective Dose	Average Dose	No. of Persons Terminated by Three Licensees	Collective Dose	Average Dose	No. of Persons Terminated by >Three Licensees	Collective Dose	Average Dose
1982	3,645	3,349	0.92	913	1,131	1.24	745	1,130	1.52
1983	4,203	3,624	0.86	1,256	1,694	1.39	881	1,357	1.53
1984	5,118	4,224	0.83	1,461	1,945	1.33	1,181	1,875	1.59
1985	4,584	3,000	0.65	1,357	1,400	1.03	930	920	0.99
1986	5,079	2,907	0.57	1,490	1,508	1.01	1,247	1,539	1.23
1987	6,107	3,339	0.55	1,852	1,693	0.91	1,510	1,680	1.11
1988	5,889	2,880	0.49	1,899	1,529	0.81	1,507	1,465	0.97
1989	6,721	3,362	0.50	2,111	1,738	0.82	1,677	1,676	1.00
1990	6,958	3,553	0.51	2,480	2,064	0.83	1,938	2,023	1.04
1991	5,078	2,193	0.43	1,563	1,064	0.68	1,122	810	0.72

TABLE 5.4a
REPORTED AND CORRECT DOSE OF TRANSIENT WORKERS FOR CALENDAR YEAR AT POWER REACTORS*

Type of Distribution and Year	Number of Individuals with Whole Body Doses in the Ranges (rems or cSv)																**Collective Dose (Person-rem or -cSv)	Avg. Dose (rem or cSv)	Avg. Meas. Dose (rem or cSv)
	Less than Measurable	Meas'ble <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.00	1.00-2.00	2.00-3.00	3.00-4.00	4.00-5.00	5.0-6.0	6.0-7.0	7.0-8.0	8.0-9.0	9.0-10.0	>10	Total Individuals			
Reported Distribution of Transients - 1985	6,037	5,014	1,625	1,459	1,042	664	1,484	371	51	1							17,748	5,319	0.30	0.45
Correct Distribution of Transients - 1985	1,201	1,854	518	521	455	314	967	629	336	74	1						6,870	5,319	0.77	0.94
Reported Distribution of Transients - 1986	6,866	5,372	2,071	1,935	1,236	856	1,685	299	50	1							20,371	5,954	0.29	0.44
Correct Distribution of Transients - 1986	1,319	2,006	648	656	472	369	1,248	691	325	72							7,806	5,954	0.76	0.92
Reported Distribution of Transients - 1987	9,369	5,276	2,762	2,650	1,780	1,125	1,835	189	30	1							25,017	6,712	0.26	0.42
Correct Distribution of Transients - 1987	1,992	1,717	773	922	767	632	1,681	670	266	48							9,468	6,712	0.70	0.88
Reported Distribution of Transients - 1988	10,892	4,272	2,703	2,616	1,650	1,087	1,498	144	5								24,867	5,875	0.24	0.42
Correct Distribution of Transients - 1988	2,601	1,276	866	900	679	610	1,544	628	174	17							9,295	5,875	0.63	0.88
Reported Distribution of Transients - 1989	11,249	5,120	3,220	3,010	1,802	1,069	1,688	234	7	1							27,400	6,776	0.25	0.42
Correct Distribution of Transients - 1989	2,544	1,640	1,009	1,128	933	665	1,621	659	278	24							10,501	6,776	0.65	0.85
Reported Distribution of Transients - 1990	11,643	5,875	3,930	3,691	2,103	1,323	1,896	171	8								30,640	7,641	0.25	0.40
Correct Distribution of Transients - 1990	2,479	1,603	1,166	1,300	1,011	823	1,965	750	259	20							11,376	7,641	0.67	0.86
Reported Distribution of Transients - 1991	8,832	3,771	2,462	2,387	1,270	678	742	107	11								20,260	4,066	0.20	0.36
Correct Distribution of Transients - 1991	2,081	1,162	808	969	681	562	1,096	289	102	13							7,763	4,066	0.52	0.72

*Includes data from Fort St. Vrain.
**Collective dose found by summing the actual doses reported for those workers in their termination reports.

TABLE 5.4b
EFFECTS OF TRANSIENT WORKERS ON ANNUAL STATISTICAL COMPILATIONS*

Type of Distribution and Year	Number of Individuals with Whole Body Doses in the Ranges (rems or cSv)																Total Individuals	**Collective Dose (Person-rem or -cSv)	Avg. Dose (rem or cSv)	Avg. Meas. Dose (rem or cSv)
	Less than Measurable	Meas'ble <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.00	1.00-2.00	2.00-3.00	3.00-4.00	4.00-5.00	5.0-6.0	6.0-7.0	7.0-8.0	8.0-9.0	9.0-10.0	>10				
Reported Statistical Distribution - 1985	66,399	40,361	14,155	12,012	7,214	4,897	10,557	3,317	716	84							159,712	43,077	0.27	0.46
**Correct Statistical Distribution - 1985	61,563	37,201	13,048	11,074	6,627	4,547	10,040	3,575	1001	157	1						148,834	43,077	0.29	0.49
Reported Statistical Distribution - 1986	73,469	44,899	15,997	13,121	7,780	5,180	10,678	2,670	593	75							174,462	42,383	0.24	0.42
**Correct Statistical Distribution - 1986	67,922	41,533	14,574	11,842	7,016	4,693	10,241	3,062	868	146							161,897	42,383	0.26	0.45
Reported Statistical Distribution - 1987	92,559	44,782	17,823	14,567	8,599	5,825	10,765	1,711	241	22							196,894	40,402	0.21	0.39
**Correct Statistical Distribution - 1987	85,182	41,223	15,834	12,839	7,586	5,332	10,611	2,192	477	69							181,345	40,402	0.22	0.42
Reported Statistical Distribution - 1988	95,783	43,245	17,750	14,869	8,874	5,938	10,264	1,958	342	9		1					199,033	40,879	0.21	0.40
**Correct Statistical Distribution - 1988	87,492	40,249	15,913	13,153	7,903	5,461	10,310	2,442	511	26		1					183,461	40,879	0.22	0.43
Reported Statistical Distribution - 1989	92,968	48,809	19,484	15,661	8,814	5,541	8,701	1,189	99	11							201,277	35,932	0.18	0.33
**Correct Statistical Distribution - 1989	84,263	45,329	17,273	13,779	7,945	5,137	8,634	1,614	370	34							184,378	35,932	0.19	0.36
Reported Statistical Distribution - 1990	93,037	46,879	20,293	16,583	9,318	5,760	8,525	1,215	84	1							201,695	36,592	0.18	0.34
**Correct Statistical Distribution - 1990	83,873	42,607	17,529	14,192	8,226	5,260	8,594	1,794	335	21							182,431	36,592	0.20	0.37
Reported Statistical Distribution - 1991	95,342	45,898	18,952	15,119	8,066	4,437	5,574	670	44	1							194,103	28,527	0.15	0.29
**Correct Statistical Distribution - 1991	88,591	43,289	17,298	13,701	7,477	4,321	5,928	852	135	14							181,606	28,527	0.16	0.31

*Includes data from Fort St. Vrain for the years 1985 through 1989.
**Distribution found by subtracting the correct from the reported distribution shown in Table 5.4a and then subtracting this difference from the reported statistical distribution shown in Table 5.4b.

the same, the number of workers, their dose distribution, and average dose would be affected by this multiple reporting. This was found to be true because too few workers were reported in the higher dose ranges. For example, in 1991, Table 5.4b shows that the summation of annual reports indicated that 98,761 workers received a measurable dose (194,103 monitored minus 95,342 with no measurable exposure), 715 of whom received doses greater than 2 rem (cSv). After accounting for those individuals who were reported more than once, the corrected distribution indicated that there were really only 93,015 workers who received a measurable dose and that 1,001 of them received doses greater than 2 rem (cSv). Thus, 1.1% of the workers with measurable dose received an annual dose greater than 2 rem rather than 0.7% that would have been computed from the "Reported Statistical Distribution" shown in the first row of Table 5.4b for 1991.

Since the number of transient workers receiving measurable doses and the collective dose they receive are only about 5% and 11% of the total number of workers and of the total collective dose, respectively, for 1991, their impact on most of the statistics derived from compilations of the annual summary reports is not very great. However, when examining the number of annual doses in the higher dose ranges (Table 5.4b), one finds that the correct statistical distribution indicates that the number of workers who received doses greater than 4 rem (cSv) is usually considerably higher than the number found in the reported statistical distribution. But there is still a clear trend for the number of higher doses to decrease; in 1991, there were only 149 annual doses that exceeded 3 rem, which is less than the number for 1990 (356). Table 5.5 shows that no doses greater than 5 rem were reported in 1991 and that **since 1985, there have been no additional transient workers identified as having received a dose of greater than 5 rem that would not have appeared on the annual reports received by the Commission.** This reflects the industry's continuing concerted efforts to keep the total annual doses of all workers under 5 rem and shows that such reductions can be accomplished without increasing the collective dose since the collective dose has decreased during this same time period.

5.5 Temporary Workers per Calendar Year at Nuclear Power Facilities

To complete the examination of the doses received by the short-term workers employed at nuclear power facilities, Table 5.6 summarizes the data compiled on "temporary workers." For purposes of this report, temporary workers were defined to be those individuals who began and ended a period of employment or work assignment at only one nuclear power facility during the calendar year.

TABLE 5.5

ANNUAL WHOLE BODY DOSES EXCEEDING 5 REMS (cSv)
AT NUCLEAR POWER FACILITIES

Year	Reported Number >5 Rems (cSv)	Corrected Number >5 Rems (cSv)	Difference
1977	270	351	81
1978	103	158	55
1979	130	180	50
1980	311	391	80
1981	189	235	46
1982	74	135	61
1983	85	169	84
1984	0	74	74
1985	0	1	1
1986	0	0	0
1987	0	0	0
1988	1	1	0
1989	0	0	0
1990	0	0	0
1991	0	0	0

One apparent discrepancy in the above analysis of termination data is that not all of the individuals who terminated during each of the calendar years are included. When one compares the total number of persons terminating during a year (Table 5.1) to the sum of workers terminating from one facility (temporary workers, Table 5.6) and the number of individuals terminating from two or more facilities (transient workers, Table 5.3), one finds a considerable difference in these figures. This is because of the criteria that are used to determine which individuals should be included in the "temporary" and "transient" worker groups. To be included in either of these groups in this analysis, the individuals' periods of employment must begin and end during the same calendar year. Any individual whose beginning or ending dates of employment overlap the beginning and ending dates of the calendar year are not included in these analyses. In 1991, for example, one finds that the number of individuals not included in these analyses is approximately 17,000. However, there is no indication that the exclusion of these individuals significantly impacts the statistics presented here.

TABLE 5.6

TEMPORARY WORKERS PER CALENDAR YEAR
AT NUCLEAR POWER FACILITIES
(Individuals Terminated by Only One Employer)

Year	No. of Reactors	Number of Temps. Monitored	Number with Measurable Doses	Collective Dose (person-rems person-cSv)	Average Dose (rem or cSv)	Average Measurable Dose (rem or cSv)
1978	64	28,864	17,110	9,821	0.34	0.57
1979	67	38,347	21,491	9,488	0.25	0.44
1980	68	48,383	28,305	16,168	0.33	0.57
1981	70	48,265	28,675	16,755	0.35	0.58
1982	74	44,503	25,646	14,266	0.32	0.56
1983	75	50,903	26,682	16,007	0.31	0.60
1984	78	53,438	29,988	15,856	0.30	0.52
1985	82	48,678	24,991	10,418	0.21	0.42
1986	90	47,108	22,911	8,014	0.17	0.35
1987	96	51,365	22,433	8,303	0.16	0.37
1988	102	44,812	20,575	7,618	0.17	0.37
1989	107	47,041	22,252	7,134	0.15	0.32
1990	110	46,742	23,062	8,296	0.18	0.36
1991	111	39,663	21,201	5,309	0.13	0.25

6 EXPOSURES TO PERSONNEL IN EXCESS OF REGULATORY LIMITS

6.1 Control Levels

10 CFR 20.101 and 20.104, and 20.103, limit the external and internal exposure, respectively, of workers to ionizing radiation from licensed material and other sources of radiation within the licensee's control.[13] Section 20.101 sets limits on whole body, skin, and extremity exposures. Section 20.104 sets limits on exposures to minors. Whole-body dose is generally limited to 1.25 rem per calendar quarter. Licensees are permitted to allow workers to be exposed to doses not exceeding 3 rem per calendar quarter if they can show that the worker's cumulative dose since age 18 will not exceed 5 rem multiplied by the worker's age since his/her eighteenth birthday. [Cumulative dose <5(N-18) where N is the worker's age.] Form NRC-4 or its equivalent is used to record determinations of prior dose.

Exposures in excess of regulatory limits are sometimes referred to as "overexposures." The phrase "exposures in excess of regulatory limits" is preferred to "overexposures" because the latter suggests that a worker has been subjected to an unacceptable biological risk, which may not be the case.

10 CFR 20.103 places a regulatory limit on the amount of internal exposure to radioactive material a worker may sustain in a calendar quarter. It is based on the intake a worker would experience if he/she breathed air containing the maximum permissible concentration (MPC) of a radionuclide for 13 40-hour work weeks, using the breathing rate for moderate activity. (Note that the rule refers to the quantity of material taken in, not the amount retained.) The MPCs are listed in Appendix B, Table I, Column 1, of 10 CFR Part 20. Because there are 520 hours in 13 40-hour work weeks, the limit is frequently expressed in terms of an intake of 520 MPC-hours. If more than one radionuclide is taken in, the sum of the MPC-hours for all radionuclides must be less than 520. This rule applies regardless of the route of intake (inhalation, ingestion, trans-dermal, wound, etc.).

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[13] These are the section numbers before they were changed by the revision of Part 20, 56 FR 23360, May 21, 1991. The "old" version of 10 CFR Part 20 remained in effect throughout 1991.

10 CFR 20.403 and 20.405 require that all persons licensed by the NRC submit reports of all occurrences involving personnel radiation exposures that exceed certain control levels, thus providing for investigations and corrective actions as necessary. Based on the magnitude of the exposure, the occurrence may be placed into one of three categories:

(1) Category A

10 CFR § 20.403(a)(1) - Exposure of the whole body of any individual to 25 rem (cSv) or more; exposure to the skin of the whole body of any individual to 150 rem (cSv) or more; or exposure of the extremities (feet, ankles, hands or forearms) of any individual to 375 rem (cSv) or more. The Commission must be notified immediately of these events.

(2) Category B

10 CFR § 20.403(b)(1) - Exposure of the whole body of any individual to 5 rem (cSv) or more; exposure of the skin of the whole body of any individual to 30 rem (cSv) or more; or exposure of the extremities to 75 rem (cSv) or more. The Commission must be notified within 24 hours of these events.

(3) Category C

10 CFR § 20.405 - Exposure of any individual to radiation or concentrations of radioactive material that exceeds any applicable quarterly limit in Part 20 [§§ 20.101, 20.104(b), 20.103(a)(1), or 20.103(a)(2)] or in the licensee's license, but is less than the values given above. This includes reports of whole body exposures that exceed 1.25 rem (cSv), or that exceed 3 rem (cSv), as discussed in § 3.2 of this document. Reports of skin exposures that exceed 7.5 rem (cSv) and extremity exposures that exceed 18.75 rem (cSv) are included, and reports of exposures of individuals to concentrations in excess of the levels given in 10 CFR § 20.103 and Appendix B (internal exposures) usually fall into this category as well. These reports must be submitted to the Commission in writing within thirty days of the occurrence. Written reports of events required to be reported under Category A or B must also be submitted within 30 days.

6.2 Summary of Exposures in Excess of Regulatory Limits

Table 6.1 summarizes all of the occupational exposures in excess of regulatory limits to external sources of radiation as reported by Commission licensees pursuant to §§ 20.403 and 20.405 during the years 1983 through 1991. For 1988 through 1991 it shows the number of individuals who exceeded various limits while employed by one of several types of licensees. For the years 1983 through 1987, only the exposures in excess of regulatory limits reported by licensed industrial radiography firms are shown separately. Most of the occurrences included in the "Others" category come from research facilities, universities, and measuring and well-logging activities. In 1991, six individuals received external doses that exceeded applicable quarterly limits with the highest external whole body dose being 3.02 rem (cSv). In each of the years from 1987 through 1991, the highest external whole body dose was 7.5, 14, 93, 24, and 3 rem (cSv), respectively.

In 1991 there were no incidents in which individuals received external exposures of the magnitude described as Category A or B.

TABLE 6.1
OCCUPATIONAL EXPOSURES IN EXCESS OF REGULATORY LIMITS
1983 - 1991

YEAR	LICENSE CATEGORY	PERSONS AND DOSES (REM)	TYPES OF EXPOSURES AND DOSES								
			WHOLE BODY (REM)			SKIN (REMS)			EXTREMITY (REMS)		
			(<5)	(>5<25)	(>25)	(>7.5<30)	(>30<150)	(>150)	(>18.75<75)	(>75<375)	(>375)
1991	NDUSTRIAL RADIOGRAPHY	NO. OF PERSONS	2								
		SUM OF DOSES	5.6								
	POWER REACTORS	NO. OF PERSONS									
		SUM OF DOSES									
	MEDICAL FACILITIES	NO. OF PERSONS	2								
		SUM OF DOSES	3.8								
	MARKETING & MANUFACT.	NO. OF PERSONS							1		
		SUM OF DOSES							22.3		
	OTHER	NO. OF PERSONS	1								
		SUM OF DOSES	2.4								
1990	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS	3	3[a,b]				1[a]		1	2[b]
		SUM OF DOSES	7.2	49.9				6000		111	3962
	POWER REACTORS	NO. OF PERSONS							1		
		SUM OF DOSES							48.8		
	MEDICAL FACILITIES	NO. OF PERSONS	3[c]								
		SUM OF DOSES	8.9								
	MARKETING & MANUFACT.	NO. OF PERSONS									
		SUM OF DOSES									
	OTHER	NO. OF PERSONS	1								
		SUM OF DOSES	2.3								
1989	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS	3		1				1		
		SUM OF DOSES	8.1		93				72		
	POWER REACTORS	NO. OF PERSONS							1		
		SUM OF DOSES							55		
	MEDICAL FACILITIES	NO. OF PERSONS	3						1		
		SUM OF DOSES	5.3						50		
	MARKETING & MANUFACT.	NO. OF PERSONS									
		SUM OF DOSES									
	OTHER	NO. OF PERSONS	1			1				1	
		SUM OF DOSES	1.3			9.2				178	
1988	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS	3	1						1	
		SUM OF DOSES	8.1	6.1						118	
	POWER REACTORS	NO. OF PERSONS	6			3	1	1			
		SUM OF DOSES	15.7			52.8	61	278			
	MEDICAL FACILITIES	NO. OF PERSONS				1				1	
		SUM OF DOSES				14.0				127	
	MARKETING & MANUFACT.	NO. OF PERSONS	1						1		
		SUM OF DOSES	3.64						58		
	OTHER	NO. OF PERSONS									
		SUM OF DOSES									
1987	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS	1							1	
		SUM OF DOSES	3.1							180	
	ALL OTHER	NO. OF PERSONS	2	1		5			3		1
		SUM OF DOSES	2.8	7.5		128.4			72.0		650
1986	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS	2								
		SUM OF DOSES	4.4								
	ALL OTHER	NO. OF PERSONS	3						1	1	2
		SUM OF DOSES	9.6						41.2	115	930
1985	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS	6	3	1					1	
		SUM OF DOSES	16.7	32.6	27.0					288	
	ALL OTHER	NO. OF PERSONS	7						3	1	
		SUM OF DOSES	11.8						60.2	93	
1984	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS	3	1		1	1		3		
		SUM OF DOSES	12.5	8.2		10.8	38.0		127.9		
	ALL OTHER	NO. OF PERSONS	6	1					5		
		SUM OF DOSES	15.0	5.2					110.7		
1983	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS	1								1
		SUM OF DOSES	4.7								650
	ALL OTHER	NO. OF PERSONS	11	1[d]					27	2	
		SUM OF DOSES	20.1	25					887	228	

[a]This individual received a whole-body dose of 24 rem in addition to a 6000 rem skin dose.

[b]One of these individuals received a 9 rem whole-body dose in addition to a 1070 rem extremity dose.

[c]One of these persons exceeded the quarterly whole-body dose limits three times in one calendar year.

[d]This person simultaneously received an extremity exposure of 61 rems (cSv) that is not shown.

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* Report is available for purchase from the National Technical Information Service, Springfield, Virginia, 22161, and/or the NRC/GPO Sales Program, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

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APPENDIX A

Listing of Annual Exposure Data Compiled for Certain NRC Licensees in Descending Order of Average Measurable Dose

1991

APPENDIX A

INDUSTRIAL RADIOGRAPHERS Single Location - 1991

Licensee Name	Program Code - 03310	License Number	Total Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-rem)	Average Meas'ble Dose (rems or cSv)
COPES-VULCAN		37-19530-01	1	1	0.625	0.63
WISCONSIN CENTRIFUGAL, INC.		48-11641-01	5	5	2.600	0.52
MAYNARD ELECTRIC STEEL CASTING CO.		48-07080-01	5	4	1.975	0.49
TRINITY INDUSTRIES, INC.		34-21480-01	4	3	1.300	0.43
INDUSTRIAL NDT CO., INC.		39-24888-01	37	31	11.650	0.38
DURIRON CO., INC.		34-06398-01	3	3	0.925	0.31
CARONDELET FOUNDRY COMPANY		24-26136-01	7	3	0.725	0.24
LUCIUS PITKIN, INC.		29-27816-01	16	5	1.150	0.23
MINNESOTA VALLEY ENGINEERING, INC.		22-24393-01	7	7	1.500	0.21
AMERICAN FOUNDRY		35-26893-01	5	1	0.175	0.18
CONNEX PIPE SYSTEMS, INC.		34-00850-02	5	4	0.650	0.16
MANOIR - ELECTRO ALLOYS, INC.		34-24346-01	15	7	1.100	0.16
NAVY, DEPT. OF THE		28-00102-A1NP	44	42	5.925	0.14
DURALOY CO.		37-02279-02	9	8	0.900	0.11
P. X. ENGINEERING COMPANY, INC.		20-15102-01	5	2	0.225	0.11
HARRISON STEEL CASTINGS CO.		13-02141-01	5	3	0.275	0.09
NAVY, DEPT. OF THE, PHILADELPHIA NAVAL SHIPYD.		37-00151-A1NP	71	52	3.925	0.08
ATLANTIC RESEARCH CORPORATION		45-02808-04	21	21	1.430	0.07
NAVY, DEPT. OF THE, USS HUNLEY (AS-31)		59-45249-A1NP	16	14	0.825	0.06
ABEX CORPORATION		48-13776-01	10	1	0.050	0.05
ARMY, DEPARTMENT OF THE		13-18235-01	72	3	0.150	0.05
BABCOCK & WILCOX CO.		34-02160-03	46	15	0.750	0.05
BUCKEYE STEEL CASTINGS		34-06627-01	2	1	0.050	0.05
CMI-QUAKER ALLOY, INC.		37-03671-01	11	8	0.400	0.05
EMPIRE STEEL CASTINGS, INC.		37-02448-01	6	4	0.200	0.05
HIGH STEEL STRUCTURES, INC.		37-17534-01	18	10	0.500	0.05
INGERSOLL-RAND CO.		29-02015-02	2	2	0.100	0.05
IONICS, INC.		37-20757-02	21	8	0.400	0.05
IRONTON IRON, INC.		34-24800-02	2	1	0.050	0.05
LYNCHBURG FOUNDRY CO.		45-17464-01	10	2	0.100	0.05
MASON & HANGER-SILAS MASON CO., INC		14-24479-01	7	3	0.150	0.05
MISSOURI STEEL CASTINGS CO.		25-15152-01	6	2	0.100	0.05
NATIONAL AERONAUTICS & SPACE ADM.		34-00507-04	26	4	0.200	0.05
NAVY, DEPT. OF THE, LONG BEACH NAVAL SHIPYARD		04-60258-A1NP	14	7	0.350	0.05
NAVY, DEPT. OF THE, NAVAL UNDERSEA WARFARE		46-00253-A1NP	4	2	0.100	0.05
NAVY, DEPT. OF THE, SHORE INTERMED. MTN.		39-52903-A1NP	10	2	0.100	0.05
NAVY, DEPT. OF THE, SHORE INTERMED. MTN.		45-32732-A1NP	11	2	0.100	0.05
NAVY, DEPT. OF, USS FRANK CABLE (AS-40)		59-45255-A1NP	7	2	0.100	0.05
NORTHWEST AIRLINES, INC.		22-12080-01	58	1	0.050	0.05
SHAFER VALVE CO.		34-21198-01	4	1	0.050	0.05
ST. LOUIS STEEL CASTING, INC.		24-01587-01	6	6	0.300	0.05
THIOKOL CORPORATION		17-16380-01	52	29	1.450	0.05

APPENDIX A (cont.)

INDUSTRIAL RADIOGRAPHERS Single Location - 1991

Licensee Name	Program Code - 03310	License Number	Total Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-rem)	Average Meas'ble Dose (rems or cSv)
TRANS WORLD AIRLINES, INC.		24-05151-05	55	5	0.250	0.05
NILES STEEL TANK CO.		21-04741-01	1	1	0.010	0.01
DRESSER INDUSTIRES, INC.		29-02210-02	3	0	0.000	0.00
E. I. DU PONT DE NEMOURS & CO., INC		07-00455-30	0	0	0.000	0.00
GENERAL ELECTRIC COMPANY		45-24957-01	3	0	0.000	0.00
GENERAL MOTORS CORPORATION		34-15315-02	28	0	0.000	0.00
GENERAL MOTORS CORPORATION		21-02392-01	3	0	0.000	0.00
NAVY, DEPT. OF THE, NAVAL EXPLOSIVE ORD. FAC.		19-0464A-A1NP	5	0	0.000	0.00
PELTON CASTEEL, INC.		48-02669-02	4	0	0.000	0.00
PRYOR FOUNDRY, INC.		35-18099-01	2	0	0.000	0.00
SAWYER RES. PRODUCTS, INC.		34-02044-01	5	0	0.000	0.00
STRUTHERS WELLS CORP.		37-11152-01	12	0	0.000	0.00
THE WILLIAM POWELL CO.		34-02963-01	3	0	0.000	0.00
WESTINGHOUSE ELECTRIC CORP.		37-05809-02	12	0	0.000	0.00
			822	338	43.940	0.13

APPENDIX A (cont.)

INDUSTRIAL RADIOGRAPHERS Multiple Location - 1991

Licensee Name	Program Code - 03320	License Number	Total Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-rem)	Average Meas'ble Dose (rems or cSv)
TRI STATE INSPECTION & CONSULTANTS		37-19640-01	3	2	6.000	3.00
QUALITY ENERGY SERV. & TESTS		35-26815-01	15	9	22.925	2.55
H & H X-RAY SERV., INC.		17-19236-01	8	8	14.625	1.83
TULSA GAMMA RAY, INC.		35-17178-01	31	27	41.300	1.53
INDEPENDENT INSPECTION CORP. INC.		35-26824-02	7	7	9.800	1.40
HOUSTON INSPECTION, INC.		42-26962-01	2	2	2.675	1.34
ARROW NDE CO., INC.		35-23198-01	2	2	2.375	1.19
CLEVELAND X-RAY INSPECTION, INC.		35-15205-01	156	156	184.100	1.18
MIDWEST INSPECTION SERVICES		35-27005-01	30	30	35.100	1.17
GLOBE X-RAY SERV., INC.		35-15194-01	47	46	50.250	1.09
COLBY & THIELMEIER TESTING CO.		24-13737-01	11	11	11.925	1.08
TESTMASTER INSPECTION CO.,INC.		34-24872-01	22	21	22.675	1.08
BARNETT INDUSTRIAL X-RAY		35-26953-01	5	5	5.375	1.08
SIERRA TESTING, INC.		35-26950-01	60	52	55.075	1.06
H&G INSP. CO., INC.		42-26838-01	15	15	15.175	1.01
D & S TESTING, INC.		34-21458-01	11	8	7.975	1.00
NON DESTRUCTIVE INSPECTION SERV.		47-11883-01	5	5	4.925	0.99
WESTERN X-RAY COMPANY		35-19993-01	23	23	21.350	0.93
MID AMERICAN INSPECTION SERIVES,INC		21-26060-01	10	10	9.050	0.91
EASTERN TESTING & INSPECTION, INC.		29-09814-01	18	15	13.325	0.89
AKRON INDUSTRIAL SERV., INC.		34-24673-01	3	3	2.620	0.87
ANR PIPELINE CO.		21-24502-01	6	2	1.675	0.84
INTERMOUNTAIN TESTING CO.		05-07872-01	22	22	18.325	0.83
HIGH MOUNTAIN INSP. SERV., INC.		49-26808-01	116	63	51.850	0.82
PENN INSPECTION CO.		35-21144-01	30	30	24.475	0.82
BILL MILLER, INC.		35-19048-01	62	59	47.700	0.81
EDWARDS PIPELINE TESTING, INC.		35-23193-01	115	111	87.350	0.79
COTTON HOUSTON SERVICES, INC.		42-26823-01	65	61	47.075	0.77
NORTH AMERICAN INSPECTION, INC.		37-23370-01	68	67	51.700	0.77
AMERICAN INSPECTION CO.		12-24801-01	109	97	73.450	0.76
MET-CHEM TESTING LABS. OF UTAH,INC.		IDA-282	39	32	24.175	0.76
ALLEGHENY LABS.		37-20734-01	10	6	4.490	0.75
ST. LOUIS TESTING LABS., INC.		24-00188-02	15	12	8.950	0.75
CALUMET TESTING SERV., INC.		13-16347-01	37	28	20.770	0.74
ALLIED INSPECTION SERV., INC.		21-18428-01	9	5	3.675	0.74
CONSOLIDATED NDE, INC.		29-21452-01	126	125	91.450	0.73
MONTANA X-RAY, INC.		25-21134-01	4	4	2.925	0.73
CONNELL LIMITED PARTNERSHIP		35-13735-01	3	3	2.180	0.73
N. V. ENTERPRISES		49-26888-01	10	6	4.300	0.72
NDT SPECIALISTS, INC.		48-25917-01	6	6	4.300	0.72
TEI ANALYTICAL SERVICES, INC.		37-28004-01	80	72	50.025	0.69
QUALITY SYSTEMS NDE, LTD.		37-28085-01	38	34	23.500	0.69

APPENDIX A (cont.)

INDUSTRIAL RADIOGRAPHERS Multiple Location - 1991

Licensee Name	Program Code - 03320	License Number	Total Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-rem)	Average Meas'ble Dose (rems or cSv)
LEHIGH TESTING LABS., INC.		07-01173-03	6	5	3.350	0.67
QUALITEST, INC.		29-28605-01	8	7	4.600	0.66
TWIN PORTS TESTING, INC.		48-23476-01	37	30	19.375	0.65
INDUSTRIAL NDT SERVICES DIVISION		13-06147-04	13	10	6.325	0.63
JAN X-RAY SERV., INC.		21-16560-01	40	35	21.975	0.63
CTL ENGINEERING, INC.		34-08331-01	2	2	1.250	0.63
VALLEY INSPECTION SERVICE, INC.		37-28385-01	7	5	3.110	0.62
H. R. INSPECTION SERV., INC.		15-06209-01	6	6	3.650	0.61
WISCONSIN INDUSTRIAL TESTING, INC.		48-17480-01	88	83	50.425	0.61
TESTING INST. OF AK, INC.		50-17446-01	15	13	7.875	0.61
ARCTIC SLOPE INSP. SERVICES, INC.		50-29015-01	8	8	4.795	0.60
CTI, INC.		50-19202-01	120	87	51.600	0.59
SCIENTIFIC TECHNICAL, INC.		45-24882-01	6	6	3.475	0.58
HUNTINGTON TESTING & TECHNOLOGY		47-23076-01	31	31	17.500	0.56
TWIN CITY TESTING CORP.		22-01376-02	27	21	11.775	0.56
SPACE SCIENCE SERVICES, INC.		09-07550-01	93	74	41.390	0.56
MATTINGLY TESTING SERVICES, INC.		25-21479-01	8	6	3.275	0.55
COMO TECH INSPECTION		15-26978-01	7	7	3.775	0.54
ACCU-TECH EVALUATION SERVICES, INC		29-28358-01	25	22	11.775	0.54
CENTURY INSPECTION, INC.		42-08456-02	97	92	49.225	0.54
SENIOR ENGINEERING CO.		24-19500-01	5	5	2.650	0.53
GLITSCH FIELD SERVICES/NDE,INC.		34-14071-01	48	40	21.125	0.53
PROFESSIONAL SERV. INDUSTRIES, INC.		37-00276-25	14	13	6.850	0.53
X-RAY, INC.		46-03414-03	27	25	13.075	0.52
TESTING TECHNOLOGIES, INC.		45-25007-01	14	14	7.075	0.51
LABARGE PIPE & STEEL CO.		35-26836-01	4	2	1.000	0.50
QUALITY ASSURANCE LABS., INC.		18-19078-01	8	5	2.425	0.49
MQS INSPECTION, INC.		12-00622-07	658	501	238.325	0.48
Q. C. LABS., INC.		09-11579-03	28	22	10.275	0.47
S. K. MCBRYDE, INC.		32-25137-01	6	4	1.850	0.46
ALASKA INDUSTRIAL X-RAY		50-16084-01	10	10	4.575	0.46
ADVEX CORPORATION		45-16452-01	12	10	4.525	0.45
DIAMOND H TESTING COMPANY**		IDA-191	21	20	8.897	0.44
GENERAL TESTING & INSPECTION CO.		34-09037-01	5	2	0.800	0.40
RELIANCE TESTING COMPANY		19-17176-01	29	28	11.150	0.40
VENEGAS INDUSTRIAL TESTING LAB.		28-14847-02	4	3	1.175	0.39
CRAMER & LINDELL ENGINEERS, INC.		06-20794-01	26	26	10.100	0.39
SAM-SON INSPECTION & TECH.SERV.INC.		34-25898-01	21	17	6.375	0.38
SPEC CONSULTANTS, INC.		37-27891-01	11	11	4.100	0.37
SCIENTIFIC INSPECTION TECH., INC.		41-25027-01	50	43	15.775	0.37
CERTIFIED TESTING LABS., INC.		29-14150-01	45	21	7.675	0.37
CONAM INSPECTION, INC.		12-16559-01	103	72	25.875	0.36

APPENDIX A (cont.)

INDUSTRIAL RADIOGRAPHERS Multiple Location - 1991

Licensee Name	Program Code - 03320	License Number	Total Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-rem)	Average Meas'ble Dose (rems or cSv)
CONSTRUCTION ENGINEERING CONSULTANT, QUALITY CON		37-18456-01	36	22	7.725	0.35
OLD DOMINION FABRICATORS		45-15581-01	6	6	2.100	0.35
TRI STATE ASSOCIATES, INC.		45-24967-01	9	7	2.400	0.34
PROGRESS SERV., INC.		34-19592-01	14	10	3.175	0.32
WOS TESTING COMPANY, INC.		12-24959-01	5	4	1.210	0.30
PITT-DES MOINES, INC.		37-27878-01	18	16	4.800	0.30
NAVY, DEPT. OF THE, USS EMORY LAND		59-20635-A1NP	16	16	4.375	0.27
FROEHLING & ROBERTSON, INC.		45-08890-01	15	12	3.200	0.27
BRANCH RADIOGRAPHIC LABS., INC.		29-03405-02	23	21	5.550	0.26
PROFESSIONAL WELDING ASSOC.,INC.		48-25806-01	10	10	2.550	0.26
MAGNA CHEK, INC.		21-19111-02	32	8	2.000	0.25
UNIVERSAL TECH. TESTING LAB., INC.		37-00453-03	13	11	2.600	0.24
ALONSO & CARUS IRON WORKS, INC.		52-21350-01	9	4	0.900	0.23
GENERAL DYNAMICS CORPORATION		06-01781-08	55	53	11.650	0.22
MATERIAL TESTING LABORATORIES, INC.		45-17151-01	19	15	3.275	0.22
WESTERN STRESS, INC.		42-26900-01	32	25	5.450	0.22
DAYTON X-RAY CO.		34-06943-01	8	7	1.500	0.21
AMERICON, INC.		34-02160-04	27	17	3.600	0.21
NDT SERVICES, INC.		52-19438-01	7	6	1.250	0.21
CENTERIOR SERVICE COMPANY		34-23406-01	4	3	0.600	0.20
LAW ENGINEERING		10-00346-03	6	4	0.775	0.19
X-R-I TESTING		21-05472-01	167	64	11.875	0.19
NOVA DATA TESTING LABS, INC.		45-24872-01	11	11	2.025	0.18
NEWPORT NEWS SHIPBUILDING & DRYDOCK		45-09428-02	67	67	12.150	0.18
CBI IND., INC.		42-13553-02	209	145	25.825	0.18
ABC TESTING, INC.		20-19778-01	14	10	1.725	0.17
NON-DESTRUCTIVE TESTING CORP.		29-19742-01	17	10	1.725	0.17
NAVY, DEPT. OF THE, CHARLESTON NAVAL SHPYD.		39-00191-A1NP	53	47	8.025	0.17
CONSUMERS POWER CO.		21-08606-03	17	15	2.550	0.17
NDE SERV., INC.		05-19821-01	9	7	1.175	0.17
ANCHOR/DARLING VALVE COMPANY		37-15476-01	7	5	0.825	0.17
NAVY, DEPT. OF THE		59-04697-A1NP	14	12	1.950	0.16
NAVY, DEPT. OF THE, USS L. Y. SPEAR (AS-37)		59-05851-A1NP	10	7	1.125	0.16
NAVY, DEPT. OF THE, PEARL HARBOR NAVAL SHIPYARD		53-00311-A1NP	35	33	4.975	0.15
ASTROTECH, INC.		37-09928-01	9	8	1.100	0.14
UNITED STATES TESTING CO.		04-23240-01	10	3	0.400	0.13
NAVY, DEPT. OF THE, SHORE INTERM. MTN.		04-65918-A1NP	29	23	2.975	0.13
TENNESSEE VALLEY AUTHORITY		41-06832-06	42	29	3.671	0.13
INDESERV, INC.		45-25074-01	5	5	0.625	0.13
POWER PIPING CO.		37-09945-01	7	5	0.625	0.13
STANDARD TESTING & ENGINEERING CO.		37-17054-01	23	7	0.800	0.11
WALASHEK ENTERPRISES, INC.		53-23225-01	7	7	0.800	0.11

APPENDIX A (cont.)

INDUSTRIAL RADIOGRAPHERS Multiple Location - 1991

Licensee Name	Program Code - 03320	License Number	Total Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-rem)	Average Meas'ble Dose (rems or cSv)
NAVY, DEPT. OF THE, NORFOLK NAVAL SHPYD.		45-00181-A1NP	69	59	6.275	0.11
ATEC ASSOCIATES OF VIRGINIA, INC.		45-16546-03	7	6	0.625	0.10
HERRON TESTING LAB., INC.		34-00681-03	13	9	0.900	0.10
DEPT. OF NAVY, MARE ISLAND NAVAL SHIPYARD		04-00221-A1NP	37	29	2.825	0.10
INDUSTRIAL METAL TREATING CORP.		07-28478-01	18	18	1.675	0.09
BAKER TESTING SERV., INC.		20-19067-01	12	9	0.825	0.09
BATH IRON WORKS CORP.		18-00828-04	19	6	0.550	0.09
WESTERN IND. X-RAY INSPECTION CO.		49-27356-01	6	3	0.275	0.09
NOOTER CORP.		24-03783-01	18	14	1.150	0.08
PRECISION COMPONENTS CORP.		37-16280-01	71	28	2.100	0.08
NAVY, DEPT. OF THE		46-00251-A1NP	97	88	6.525	0.07
TENNECO GAS		42-09073-02	20	13	0.900	0.07
AMOCO OIL CO.		13-00155-10	30	21	1.425	0.07
PLANT INSPECTION CO.,		04-21032-01	18	14	0.950	0.07
BRIGGS ASSOC., INC.		20-16401-01	31	17	0.975	0.06
NORFOLK SHIPBUILDING & DRYDOCK CO.		45-12042-01	19	19	1.075	0.06
EG&G FLORIDA, INC.		09-21233-01	48	20	1.125	0.06
NAVY, DEPT. OF THE, NAVAL SUBMARINE SUP.		06-68316-A1NP	25	20	1.125	0.06
HUTCHINSON TECHNICAL COLLEGE		22-15554-01	338	55	2.875	0.05
AMERICAN AIRLINES, INC.		35-13964-01	45	6	0.300	0.05
AMOCO OIL CO.		45-01378-02	15	1	0.050	0.05
ARMY, DEPARTMENT OF THE		30-02405-05	4	2	0.100	0.05
C & R LABS.		53-19179-01	3	3	0.150	0.05
CANSPEC GROUP INC.		29-28659-01	2	2	0.100	0.05
CARROLL ENGINEERS, INC.		20-13042-02	4	1	0.050	0.05
COLUMBIA GAS TRANSMISSION CORP.		47-16060-01	4	2	0.100	0.05
CONTINENTAL AIRLINES - QUALITY CTRL		29-28508-01	11	5	0.250	0.05
EBASCO SERVICES INCORPORATED		29-07056-03	18	6	0.300	0.05
FACTORY MUTUAL RES. CORP.		20-04007-02	5	2	0.100	0.05
FOSTER WHEELER ENERGY CORP.		31-01776-05	15	4	0.200	0.05
INDUSTRIAL TESTING LABORATORY SERVICES CORPORATI		37-16406-01	11	1	0.050	0.05
MASSACHUSETTS MATERIALS RES., INC.		20-19130-01	7	4	0.200	0.05
NATIONAL INSPECTION & CONSULTANTS		09-21289-01	5	3	0.150	0.05
NAVY, DEPT. OF THE, (USS CANOPUS)		59-04720-A1NP	16	16	0.800	0.05
NAVY, DEPT. OF THE, COMMANDING OFFICER (NRMF) NE		38-68829-A1NP	12	7	0.350	0.05
NAVY, DEPT. OF THE, COMMANDING OFFICER, U.S. NAV		82-62770-A1NP	10	7	0.350	0.05
NAVY, DEPT. OF THE, NAVAL SUB BASE, DEPT 705		53-00314-A1NP	24	9	0.450	0.05
NAVY, DEPT. OF THE, NONDESTRUCTIVE TESTING LAB.		04-68828-A1NP	10	1	0.050	0.05
NAVY, DEPT. OF THE, SERVICE SCHOOLS COMMAND		04-0581A-A1NP	94	42	2.100	0.05
NAVY, DEPT. OF THE, SHORE INT. MTN.		53-68251-A1NP	14	11	0.550	0.05
NAVY, DEPT. OF THE, SHORE INTERMED. MTN.		45-32770-A1NP	28	5	0.250	0.05
NAVY, DEPT. OF THE, TRIDENT REFIT FAC. BANGOR		46-68438-A1NP	41	28	1.400	0.05

APPENDIX A (cont.)

INDUSTRIAL RADIOGRAPHERS Multiple Location - 1991

Licensee Name	Program Code - 03320	License Number	Total Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-rem)	Average Meas'ble Dose (rems or cSv)
NAVY, DEPT. OF THE, USS CAPE COD (AD-43)		59-21063-A1NP	22	9	0.450	0.05
NAVY, DEPT. OF THE, USS DIXON (AS-37)		59-20132-A1NP	24	13	0.650	0.05
NAVY, DEPT. OF THE, USS HOLLAND (AS-32)		59-04696-A1NP	21	17	0.850	0.05
NAVY, DEPT. OF THE, USS JASON (AR-8)		59-08810-A1NP	14	13	0.650	0.05
NAVY, DEPT. OF THE, USS MCKEE (AS-41)		59-68780-A1NP	15	13	0.650	0.05
NAVY, DEPT. OF THE, USS PRAIRIE (AD-15)		59-04620-A1NP	15	10	0.500	0.05
NAVY, DEPT. OF THE, USS PROTEUS (AS-19)		59-04629-A1NP	15	5	0.250	0.05
NAVY, DEPT. OF THE, USS PUGET SOUND (AD-38)		59-05837-A1NP	14	11	0.550	0.05
NAVY, DEPT. OF THE, USS SAMUEL GOMPERS(AD-37)		59-04648-A1NP	24	16	0.800	0.05
NAVY, DEPT. OF THE, USS SHENANDOAH (AD-44)		59-21098-A1NP	15	3	0.150	0.05
NAVY, DEPT. OF THE, USS SIERRA (AD-18)		59-04638-A1NP	7	2	0.100	0.05
NAVY, DEPT. OF THE, USS VULCAN (AR-5)		59-08808-A1NP	8	3	0.150	0.05
NAVY, DEPT. OF THE, USS YELLOWSTONE (AD-41)		59-21046-A1NP	10	4	0.200	0.05
NAVY, DEPT. OF, USS YOSEMITE (AD-18)		59-04639-A1NP	11	5	0.250	0.05
PSI ENERGY, INC.		13-15544-06	5	2	0.100	0.05
QUALITY INSPECTION & TESTING		50-29038-01	1	1	0.050	0.05
SIEMENS NUCLEAR POWER SERVICES, INC		41-25097-01	14	1	0.050	0.05
VERMONT NONDESTRUCTIVE TESTING INC.		44-28509-01	6	1	0.050	0.05
VOITH HYDRO, INC.		37-16280-03	28	3	0.150	0.05
INSPECTION SERVICES AND TESTING		50-23257-01	39	20	0.197	0.01
ANVIL CORP		46-23236-01	0	0	0.000	0.00
FOSTER WHEELER CONSTRUCTORS, INC.		29-28016-01	2	0	0.000	0.00
INTERNATIONAL TESTING LABS., INC.		29-14027-01	7	0	0.000	0.00
NAVY, DEPT. OF THE, USS ACADIA		59-21047-A1NP	14	0	0.000	0.00
			5,998	4,311	2,116.155	0.49

APPENDIX A (cont.)

MANUFACTURERS AND DISTRIBUTORS - 1991

Licensee Name	Program Type	Program Code	License Number	Total Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-rem)	Average Meas'ble Dose (rems or cSv)
MALLINCKRODT, INC.	A-BROAD	03211	24-04206-01	321	185	217.900	1.18
MINNESOTA MINING & MFG. CO.	A-BROAD	03211	22-00057-06	112	73	55.575	0.76
ADVANCED MEDICAL SYS., INC.	A-BROAD	03211	34-19089-01	7	7	3.850	0.55
DU PONT MERCK PHARMACEUTICAL CO.	A-BROAD	03211	20-28598-01	960	642	331.225	0.52
TN TECHNOLOGIES, INC.	A-BROAD	03211	42-01485-04	124	60	22.950	0.38
AMERSHAM CORPORATION	A-BROAD	03211	20-12836-01	55	43	13.375	0.31
E. R. SQUIBB & SONS, INC.	A-BROAD	03211	29-00139-02	910	115	9.975	0.09
ABB PROCESS AUTOMATION, INC.	A-BROAD	03211	34-00255-03	373	172	10.850	0.06
E. I. DU PONT DE NEMOURS & CO., INC.	A-BROAD	03211	20-00320-21	137	70	4.250	0.06
NUCLEAR RESEARCH CORP.	A-BROAD	03211	29-04236-01	44	8	0.400	0.05
SOLON TECHNOLOGIES, INC./HARSHAW	A-BROAD	03211	34-06558-05	36	16	0.800	0.05
UPJOHN CO.	A-BROAD	03211	21-00182-03	653	52	2.600	0.05
				3,732	1,443	673.750	0.47
FRONTIER TECHNOLOGY CORP.	B-BROAD	03212	SNM-1957	34	5	0.950	0.19
BEST INDUSTRIES, INC.	B-BROAD	03212	45-19757-01	72	17	3.100	0.18
OHMART CORP.	B-BROAD	03212	34-00639-01	83	58	7.400	0.13
REUTER-STOKES INSTRUMENTS, INC.	B-BROAD	03212	34-18233-01	38	27	2.300	0.09
NORLAND CORP.	B-BROAD	03212	48-13403-01	40	12	0.600	0.05
FISCHER TECHNOLOGY, INC.	B-BROAD	03212	06-19165-01	10	0	0.000	0.00
				277	119	14.350	0.12
RTS TECHNOLOGY, INC.	OTHER	03214	20-27966-01	4	3	2.780	0.93
SEAMAN NUCLEAR CORP.	OTHER	03214	48-12016-01	14	11	3.350	0.30
DU PONT MERCK PHARMACEUTICALS CO.	OTHER	03214	20-00320-19	8	7	2.000	0.29
VARIAN/CROSSED FLD & RCVR PRTR PROD	OTHER	03214	20-02237-04	15	15	2.225	0.15
BUDD CO.	OTHER	03214	37-05680-04	12	11	1.500	0.14
SCAN TECHNOLOGIES, INC.	OTHER	03214	37-20807-01	4	4	0.575	0.14
NORDION INTERNATIONAL INC.	OTHER	03214	54-28275-01	8	6	0.750	0.13
GENERAL NUCLEONICS, INC.	OTHER	03214	04-12071-02	11	1	0.100	0.10
NUCLEAR RESEARCH CORPORATION	OTHER	03214	37-02401-01	49	49	4.725	0.10
THERATRONICS INTERNATIONAL LIMITED	OTHER	03214	54-28315-01	42	23	1.850	0.08
BINAX, INC.	OTHER	03214	18-28167-01	32	32	1.850	0.06
SMH (US) INC.	OTHER	03214	37-03572-06	108	107	5.850	0.05
M/A-COM MICROWAVE COMPONENTS, INC.	OTHER	03214	20-02079-01	9	3	0.155	0.05
BRISTOL-MYERS SQUIBB USPNG (T-6)	OTHER	03214	13-00772-02	37	1	0.050	0.05
CANBERRA INDUSTRIES, INC.	OTHER	03214	06-15099-01	45	6	0.300	0.05
DIAMED, INC.	OTHER	03214	18-20907-01	5	5	0.250	0.05
HARREL, INCORPORATED	OTHER	03214	06-16699-01	3	3	0.150	0.05
INTERGRATED INDUSTRIAL SYS., INC.	OTHER	03214	06-21253-01	28	2	0.100	0.05
KIDDE-FENWAL INCORPORATED	OTHER	03214	20-15285-01	19	1	0.050	0.05
LASERMIKE, INC.	OTHER	03214	34-25899-01	19	2	0.100	0.05

APPENDIX A (cont.)

MANUFACTURERS AND DISTRIBUTORS - 1991

Licensee Name	Program Type	Program Code	License Number	Total Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-rem)	Average Meas'ble Dose (rems or cSv)
MICRO-DYNAMICS, INC.	OTHER	03214	20-13270-01	17	4	0.200	0.05
PYROTRONICS	OTHER	03214	29-08864-03	6	1	0.050	0.05
QUAL-X	OTHER	03214	34-16907-02	7	1	0.050	0.05
RADIATION MONITORING DEVICES, INC.	OTHER	03214	20-16325-01	25	4	0.200	0.05
CENTOCOR, INC.	OTHER	03214	37-19413-01	226	40	0.910	0.02
DISPLAYS, INC.	OTHER	03214	37-19629-04	4	0	0.000	0.00
DRG INTL., INC.	OTHER	03214	29-17621-01	3	0	0.000	0.00
ENSECO INCORPORATED	OTHER	03214	29-09801-02	2	0	0.000	0.00
HNU SYSTEMS, INC.	OTHER	03214	20-27938-02	22	0	0.000	0.00
MOLINS RICHMOND, INC.	OTHER	03214	45-02429-01	12	0	0.000	0.00
WING CORPORATION	OTHER	03214	29-13180-01	15	0	0.000	0.00
				811	342	30.120	0.09
SYNCOR CORP.	PHARMACIES	02500	35-19583-01MD	13	5	0.375	0.08
SYNCOR CORP.	PHARMACIES	02500	34-16654-01MD	31	21	1.300	0.06
GAMMA-MED	PHARMACIES	02500	34-26334-01	2	2	0.100	0.05
MID-AMERICA ISOTOPES, INC.	PHARMACIES	02500	24-26241-01	10	7	0.350	0.05
MPI PHARMACY SERVICES, INC.	PHARMACIES	02500	34-26239-01MD	12	1	0.050	0.05
PACIFIC RADIOPHARMACY LTD.	PHARMACIES	02500	53-16991-01MD	6	4	0.200	0.05
SYNCOR CORPORATION	PHARMACIES	02500	45-17769-01MD	12	4	0.200	0.05
SYNCOR INTERNATIONAL CORPORATION	PHARMACIES	02500	20-21227-01MD	22	8	0.400	0.05
NUCLEAR PHARMACY OF IDAHO, INC.	PHARMACIES	02500	11-27398-01MD	2	0	0.000	0.00
				110	52	2.975	0.06

APPENDIX A (cont.)

FUEL FABRICATORS AND PROCESSORS - 1991

Licensee Name	Program Code - 21210	License Number	Total Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-rem)	Average Meas'ble Dose (rems or cSv)
B&W FUEL CO.		SNM-1168	298	163	36.700	0.23
ROCKETDYNE DIVISION		SNM-0021	42	21	4.075	0.19
WESTINGHOUSE ELECTRIC CORP.		SNM-1107	618	468	89.200	0.19
COMBUSTION ENGINEERING, INC.		SNM-0033	111	74	10.150	0.14
SIEMENS NUCLEAR POWER CORP.		SNM-1227	580	428	46.050	0.11
GENERAL ATOMICS		SNM-0696	948	157	16.500	0.11
GENERAL ELECTRIC CO.		SNM-1097	1,085	427	42.900	0.10
COMBUSTION ENGINEERING, INC.		SNM-1067	245	58	4.025	0.07
BABCOCK & WILCOX CO.		SNM-0042	3,165	1,202	69.175	0.06
NUCLEAR FUEL SERVICES, INC.		SNM-0124	4,347	830	41.750	0.05
UNITED NUCLEAR CORPORATION, INC.		SNM-0368	195	8	0.400	0.05
			11,634	3,836	360.925	0.09

INDEPENDENT SPENT FUEL STORAGE INSTALLATION - 1991

Licensee Name	Program Code - 23200	License Number	Total Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-rem)	Average Meas'ble Dose (rems or cSv)
GENERAL ELECTRIC CO.		SNM-2500	26	22	4.425	0.20
CAROLINA POWER & LIGHT CO.		SNM-2502	15	2	0.015	0.01
VIRGINIA ELECTRIC POWER*		SNM-2501	0	0	0.000	0.00
			41	24	4.440	0.19

*Reported with Surry 1,2 DPR-32,37

LOW LEVEL WASTE DISPOSAL FACILITIES - 1991

Licensee Name	Program Code - 03231	License Number	Total Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-rem)	Average Meas'ble Dose (rems or cSv)
CHEM-NUCLEAR SYSTEMS		12-13536-01	520	119	35.875	0.30
U. S. ECOLOGY, INC.		16-19204-01	385	28	3.575	0.13
			905	147	39.450	0.27

APPENDIX B

Annual Whole Body Doses at Licensed Nuclear Power Facilities

1991

APPENDIX B
ANNUAL WHOLE BODY DOSES AT LICENSED NUCLEAR POWER FACILITIES
CY 1991

PLANT NAME	TYPE	Number of Individuals with Whole Body Doses in the Ranges (rems or cSv)													TOTAL NUMBER MONI-TORED	NUMBER WITH MEAS. EXPOSURE	TOTAL COLLECTIVE DOSE (Person-rem,cSv)
		No Mea-surable	Meas. <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.00	1.00-2.00	2.00-3.00	3.00-4.00	4.00-5.00	5.00-6.00	6.00-7.00	7.00-12.00	>12.0			
ARKANSAS 1,2	PWR	1,547	1,164	425	288	114	43	30								3,611	2,064	3S1 **
BEAVER VALLEY 1,2	PWR	1,171	700	350	314	144	86	82	13							2,86D	1,689	495 **
BIG ROCK POINT	BWR	30	231	25	36	41	20	5B	19	4	1					465	435	226
BRAIDWOOD 1,2	PWR	1,428	504	354	426	172	91	87	7							3,069	1,641	550 **
BROWNS FERRY 1,2,3	BWR	2,563	822	482	330	136	38	7								4,378	1,815	354 **
BRUNSWICK 1,2	BWR	1,652	1,220	462	362	186	136	213	7							4,238	2,586	778 **
BYRON 1,2	PWR	1,488	446	269	189	87	60	26								2,565	1,077	268 **
CALLAWAY 1	PWR	972	209	55	15	1										1,252	280	21 **
CALVERT CLIFFS 1,2	PWR	1,167	1,561	261	119	23	6	4								3,141	1,974	132 **
CATAW8A 1,2	PWR	1,540	792	388	415	154	68	52	2							3,411	1,871	462 **
CLINTON	8WR	1,542	412	267	195	115	18	3								2,552	1,010	233
COMANCHE PEAK *	PWR	3,401	584	248	107	31	11	4								4,386	985	148
COOK 1,2	PWR	1,326	598	149	58	7	3									2,141	815	69 **
COOPER STATION	BWR	2,382	400	190	183	128	90	108								3,481	1,099	405 **
CRYSTAL RIVER 3	PWR	904	520	18D	83	27	10	1								1,725	821	116
DAVIS-BESSE	PWR	973	487	255	122	56	47	33								1,973	1,000	216 **
DIA8LO CANYON 1,2	PWR	2,080	773	531	379	196	89	71	1							4,120	2,040	546 **
DRESDEN 2,3	BWR	1,600	667	378	325	171	155	267	78	3						3,644	2,044	1,005 **
DUANE ARNOLD	BWR	1,721	125	57	46	20	14	41	33							2,057	336	202
FARLEY 1,2	PWR	591	616	345	250	195	81	106	32	20						2,236	1,645	648 **
FERMI 2	BWR	1,965	539	358	269	50	6	1								3,188	1,223	228
FITZPATRICK	BWR	1,242	796	155	112	69	47	85	5							2,511	1,269	333
FORT CALHDUN	PWR	766	162	52	42	13	10	5								1,050	284	57
GINNA	PWR	889	320	182	198	113	71	63								1,836	947	328 **
GRAND GULF	8WR	1,396	425	126	99	32	10	4	3							2,095	699	94 **
HADDAM NECK	PWR	786	371	195	178	123	81	193	27							1,954	1,168	590 **
HARRIS	PWR	912	384	180	148	85	48	27								1,784	872	226 **
HATCH 1,2	8WR	1,167	792	438	395	302	202	343	34	2						3,675	2,508	1,161 **
HOPE CREEK 1	BWR	952	922	281	237	122	66	69	3							2,652	1,700	373 **
INDIAN POINT 2	PWR	882	401	210	271	185	167	476	99	1						2,692	1,810	1,468 **
INDIAN POINT 3	PWR	759	191	56	46	6										1,058	299	40
KEWAUNEE	PWR	408	189	107	88	37	10	35	26	3						903	495	221
LASALLE 1,2	BWR	1,316	732	313	312	239	144	235	10							3,301	1,985	806 **
LIMERICK 1,2	BWR	2,143	830	243	63	8	1	6								3,294	1,151	106 **
MAINE YANKEE	PWR	637	220	74	66	37	16	13								1,063	426	105

* Indicates plants counted for the first time in 1991 after completing their first full year of operation.
** Indicates actual collective dose reported by facility, otherwise calculated by staff.

APPENDIX B (Continued)
ANNUAL WHOLE BODY DOSES AT LICENSED NUCLEAR POWER FACILITIES
CY 1991

PLANT NAME	TYPE	Number of Individuals with Whole Body Doses in the Ranges (rems or cSv)													TOTAL NUMBER MONI-TORED	NUMBER WITH MEAS. EXPOSURE	TOTAL COLLECTIVE DOSE (Person-rem,cSv)
		No Mea-surable	Meas. <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.00	1.00-2.00	2.00-3.00	3.00-4.00	4.00-5.00	5.00-6.00	6.00-7.00	7.00-12.00	>12.0			
MCGUIRE 1,2	PWR	1,639	818	401	302	123	51	28								3,362	1,723	361 **
MILLSTONE POINT 1	BWR	828	502	202	157	113	87	90	3							1,982	1,154	409
MILLSTONE POINT 2,3	PWR	780	472	190	148	107	81	84	2							1,864	1,084	381
MONTICELLO	BWR	277	299	137	165	124	97	127	15							1,241	964	465 **
NINE MILE POINT 1,2	BWR	1,656	882	294	180	97	51	39								3,199	1,543	292 **
NORTH ANNA 1,2	PWR	1,168	1,139	245	276	149	91	140	45							3,253	2,085	629 **
OCONEE 1,2,3	PWR	1,398	778	451	383	182	81	81	10							3,364	1,966	551 **
OYSTER CREEK	BWR	205	1,439	393	407	282	180	324	62	2						3,294	3,089	1,185 **
PALISADES	PWR	729	789	263	180	64	17	2								2,044	1,315	211
PALO VERDE 1,2,3	PWR	2,621	980	442	414	201	91	112	2							4,863	2,242	605 **
PEACH BOTTOM 2,3	BWR	2,334	899	659	497	281	155	195	16							5,036	2,702	934 **
PERRY	BWR	958	255	148	102	48	28	19								1,558	600	146 **
PILGRIM	BWR	1,608	1,753	328	271	250	121	113								4,444	2,836	605 **
POINT BEACH 1,2	PWR	469	266	129	124	76	57	70	2							1,193	724	265 **
PRAIRIE ISLAND 1,2	PWR	714	301	151	96	24	10	4								1,300	586	98 **
QUAD CITIES 1,2	BWR	1,770	753	337	273	173	83	95	6	2						3,492	1,722	509 **
RIVER BEND 1	BWR	1,377	475	133	85	56	27	4								2,157	780	144
ROBINSON 2	PWR	890	436	189	135	69	30	26								1,775	885	193 **
SALEM 1,2	PWR	2,118	3,299	448	215	91	66	58	24							6,319	4,201	458 **
SAN ONOFRE 1,2,3	PWR	2,215	881	371	272	180	72	37	1							4,029	1,814	412 **
SEABROOK *	PWR	1,283	426	184	73	13	3									1,982	699	92
SEQUOYAH 1,2	PWR	2,085	762	380	292	182	108	190	14							4,013	1,928	698 **
SOUTH TEXAS 1,2	PWR	1,691	515	257	218	94	38	22								2,835	1,144	257 **
ST. LUCIE 1,2	PWR	1,231	502	230	206	138	103	98	4	1						2,513	1,282	-479
SUMMER 1	PWR	856	367	255	185	79	43	55								1,840	984	291 **
SURRY 1,2	PWR	1,780	599	291	284	178	88	102	4	1						3,327	1,547	510 **
SUSQUEHANNA 1,2	BWR	2,015	701	413	375	202	105	47	1							3,859	1,844	507 **
THREE MILE ISLAND 1	PWR	549	951	319	197	47	22	6								2,091	1,542	198 **
TROJAN	PWR	1,280	587	313	219	131	82	135	25	4						2,776	1,496	567 **
TURKEY POINT 3,4	PWR	2,072	664	333	352	266	162	282	28							4,159	2,087	939 **
VERMONT YANKEE	BWR	902	82	76	65	50	17	20								1,212	310	118
VOGTLE 1,2	PWR	1,227	509	310	294	156	53	35								2,584	1,357	362 **
WASHINGTON NUCLEAR 2	BWR	1,926	431	181	191	114	77	89	4	1						3,014	1,088	387 **
WATERFORD 3	PWR	1,147	486	347	279	92	51	43	3							2,448	1,301	364
WOLF CREEK 1	PWR	787	326	228	235	133	46	42								1,797	1,010	331

* Indicates plants counted for the first time in 1991 after completing their first full year of operation.
** Indicates actual collective dose reported by facility, otherwise calculated by staff.

APPENDIX B (Continued)
ANNUAL WHOLE BODY DOSES AT LICENSED NUCLEAR POWER FACILITIES
CY 1991

PLANT NAME	TYPE	Number of Individuals with Whole Body Doses in the Ranges (rems or cSv)														TOTAL NUMBER MONI-TORED	NUMBER WITH MEAS. EXPOSURE	TOTAL COLLECTIVE DOSE (Person-rem,cSv)
		No Mea-surable	Meas. <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.00	1.00-2.00	2.00-3.00	3.00-4.00	4.00-5.00	5.00-6.00	6.00-7.00	7.00-12.00	>12.0			
YANKEE-ROWE	PWR	618	59	46	34	15	4	4								780	162	40 **
ZION 1,2	PWR	1,841	410	237	172	61	14	8								2,743	902	173 **
TOTALS: 74 PWRs		57,815	28,514	11,876	9,387	4,657	2,462	2,972	371	30						118,084	60,269	16,522
TOTALS: 37 BWRs		37,527	17,384	7,076	5,732	3,409	1,975	2,602	299	14	1					76,019	38,492	12,005
TOTALS: 111 LWRs		95,342	45,898	18,952	15,119	8,066	4,437	5,574	670	44	1					194,103	98,761	28,527

* Indicates plants counted for the first time in 1991 after completing their first full year of operation.
** Indicates actual collective dose reported by facility, otherwise calculated by staff.

APPENDIX B (Continued)
ANNUAL WHOLE BODY DOSES AT LICENSED NUCLEAR POWER FACILITIES
FACILITIES NOT IN OPERATION OR IN OPERATION LESS THAN ONE YEAR
CY 1991

PLANT NAME	TYPE	Number of Individuals with Whole Body Doses in the Ranges (rems or cSv)													TOTAL NUMBER MONI-TORED	NUMBER WITH MEAS. EXPOSURE	TOTAL COLLECTIVE DOSE (Person-rem,cSv)
		No Mea-surable	Meas. <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.00	1.00-2.00	2.00-3.00	3.00-4.00	4.00-5.00	5.00-6.00	6.00-7.00	7.00-12.00	>12.0			
BELLEFONTE	PWR	9														9	0	0
FORT ST. VRAIN *	HTGR	525	63	9	2		1	1								601	76	5 **
LACROSSE *	BWR	344	19	10	11	2										386	42	8
RANCHO SECO *	PWR	286	86	6	9											387	101	9
SHOREHAM	BWR	562	13	1												576	14	1
THREE MILE ISLAND 2*	PWR	57	99	14	9	8	16	7								210	153	37 **
WATTS BAR 1,2	PWR	137	6													143	6	0
TOTALS: 9		1,920	286	40	31	10	17	8								2,312	392	60

* Indicates plants that are no longer in commercial operation.
** Indicates actual collective dose reported by facility, otherwise calculated by staff.

APPENDIX C*

Personnel, Dose, and Power Generation Summary

1969-1991

* A discussion of the methods used to collect and calculate the information contained in this Appendix is given in Section 2.1.

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
ARKANSAS 1,2	1975	588.0	76.5	147	21					0.14	0.0
Docket 50-313, 50-368; DPR-51; NPF-6	1976	464.6	56.6	476	289	27	262	100	189	0.61	0.6
1st commercial operation 12/74	1977	610.3	76.8	601	256	28	228	111	145	0.43	0.4
Type - PWRs	1978	627.2	77.5	722	189	32	157	109	80	0.26	0.3
Capacity - 836, 858 MWe	1979	397.0	55.3	1,321	369	54	315	252	117	0.28	0.9
	1980	452.8	63.7	1,233	342	81	261	213	129	0.28	0.8
	1981	1,104.7	68.3	2,225	1,102	130	972	843	259	0.50	1.0
	1982	905.4	58.6	1,608	803	97	706	505	298	0.50	0.9
	1983	915.0	54.7	2,109	1,397	96	1,301	1,145	252	0.66	1.5
	1984	1,289.1	77.4	1,742	806	89	717	533	273	0.46	0.6
	1985	1,192.3	73.6	1,262	286	62	224	148	138	0.23	0.2
	1986	1,070.3	66.9	2,135	1,141	194	947	881	260	0.53	1.1
	1987	1,366.1	88.9	1,123	382	92	290	205	177	0.34	0.3
	1988	1,070.3	69.4	2,421	1,387	138	1,249	1,094	293	0.57	1.3
	1989	1,066.3	72.0	2,063	711	36	675	522	189	0.34	0.7
	1990	1,351.9	84.2	2,493	762	32	730	625	137	0.31	0.6
	1991	1,515.8	88.4	2,064	351	35	316	242	109	0.17	0.2
BEAVER VALLEY 1,2	1977	355.6	57.0	331	87	8	79	58	29	0.26	0.2
Docket 50-334, 50-412; DPR-66, NPF-73	1978	304.2	40.8	646	190	11	179	151	39	0.29	0.6
1st commercial operation 10/76, 11/87	1979	221.0	40.0	704	132	22	110	67	65	0.19	0.6
Type - PWRs	1980	39.8	6.8	1,817	553	76	477	477	76	0.30	13.9
Capacity - 810, 820	1981	573.4	73.6	1,237	229	38	191	142	87	0.19	0.4
	1982	326.7	41.6	1,755	599	126	473	481	118	0.34	1.8
	1983	561.2	68.2	1,485	772	158	614	615	157	0.52	1.4
	1984	576.7	71.8	1,393	504	124	380	302	202	0.36	0.9
	1985	717.7	91.9	619	60	17	43	12	48	0.10	0.1
	1986	581.3	70.7	1,575	627	82	545	456	171	0.40	1.1
	1987	684.1	83.8	1,282	210	43	167	137	73	0.16	0.3
	1988	1,386.1	87.4	1,764	530	90	440	438	92	0.30	0.4
	1989	1,017.4	69.6	2,349	1,378	197	1,181	1,151	227	0.59	1.4
	1990	1,271.0	85.3	1,675	348	33	315	268	80	0.21	0.3
	1991	1,267.5	78.6	1,689	495	62	433	325	170	0.29	0.4
BIG ROCK POINT	1969	48.1		165	136					0.82	2.8
Docket 50-155; DPR-6	1970	43.5		290	194					0.67	4.5
1st commercial operation 3/63	1971	44.4		260	184					0.71	4.1
Type - BWR	1972	43.5		195	181					0.93	4.2
Capacity - 67 MWe	1973	50.9		241	285			119	166	1.18	5.6
	1974	40.7	70.3	281	276	54	222	42	234	0.98	6.8
	1975	35.1	59.8	300	180	58	122	20	160	0.60	5.1

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
BIG ROCK POINT (Continued)	1976	29.5	50.1	488	289	82	207	105	184	0.59	9.8
	1977	43.6	73.4	465	334	94	240	60	274	0.72	7.7
	1978	48.5	77.9	285	175	93	82	9	166	0.61	3.6
	1979	13.0	23.5	623	455	89	366	102	353	0.73	35.0
	1980	48.9	79.0	599	354	91	263	91	263	0.59	7.2
	1981	56.9	90.6	479	160	58	102	38	122	0.33	2.8
	1982	43.6	70.8	521	328	129	199	67	261	0.63	7.5
	1983	42.3	71.0	493	263	32	231	55	208	0.53	6.2
	1984	50.3	78.6	297	155	37	118	21	134	0.52	3.1
	1985	43.8	73.5	435	291	54	237	60	231	0.67	6.6
	1986	61.0	95.5	202	84	34	50	17	67	0.42	1.4
	1987	45.3	71.0	251	222	45	177	35	187	0.88	4.9
	1988	46.1	72.8	303	170	34	136	25	145	0.56	3.7
	1989	50.2	79.0	418	177	38	139	32	145	0.42	3.5
	1990	51.3	77.2	351	232	33	199	45	187	0.66	4.5
	1991	59.1	85.2	435	226	31	195	42	184	0.52	3.8
BRAIDWOOD 1,2	1989	1,381.8	75.4	1,460	296	7	289	198	98	0.20	0.2
Docket 50-456, 50-457; NPF-72, NPF-77	1990	1,740.2	84.1	1,081	186	9	177	107	79	0.17	0.1
1st commercial operation 7/88, 10/88	1991	1,377.2	68.9	1,641	550	101	449	387	163	0.34	0.4
Type - PWRs											
Capacity - 1120, 1120 MWe											
BROWNS FERRY 1,2,3	1975	161.7	17.8	2,380	325					0.14	2.0
Docket 50-259, 50-260, 50-296	1976	337.6	26.9	2,207	234					0.11	0.7
DPR - 33, - 52, - 68	1977	1,327.5	73.7	1,858	863	60	803	249	614	0.46	0.7
1st commercial operation 8/74, 3/75, 3/77	1978	1,992.1	73.5	2,376	1,792	4	1,788	261	1,531	0.75	0.9
Type - BWRs	1979	2,393.0	79.1	2,689	1,667	0	1,667	289	1,378	0.62	0.7
Capacity - 1065,1065,1065 MWe	1980	2,182.1	73.6	2,712	1,826	4	1,822	50	1,776	0.67	0.8
	1981	2,132.9	69.5	3,379	2,380	100	2,280	404	1,976	0.70	1.1
	1982	2,025.4	67.6	3,277	2,220	181	2,039	317	1,903	0.68	1.1
	1983	1,641.0	54.3	3,302	3,363	276	3,087	909	2,454	1.02	2.0
	1984	1,431.9	54.2	2,962	1,940	229	1,711	541	1,399	0.65	1.4
	1985	368.2	11.9	2,755	1,159	201	958	306	853	0.42	3.1
	1986	0.0	0.0	3,003	1,050	196	854	343	707	0.35	---
	1987	0.0	0.0	3,115	1,181	187	994	222	959	0.38	---
	1988	0.0	0.0	3,324	1,155	234	921	109	1,046	0.35	---
	1989	0.0	0.0	2,683	656	97	559	131	525	0.24	---
	1990	0.0	0.0	2,717	1,310	64	1,246	68	1,242	0.48	---
	1991	445.0	17.7	1,815	354	134	220	121	233	0.20	0.8

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
BRUNSWICK 1,2	1976	297.2	56.0	1,265	326	15	311	222	104	0.26	1.1
Docket 50-324, 50-325; DPR-62, -71	1977	291.1	55.7	1,512	1,120	48	1,071	782	337	0.74	3.8
1st commercial operation 3/77, 11/75	1978	1,173.1	83.7	1,458	1,004	99	905	695	309	0.69	0.9
Type - BWRs	1979	810.0	60.1	2,891	2,602	97	2,505	2,074	528	0.90	3.2
Capacity - 790, 790 MWe	1980	687.2	52.2	3,788	3,870	111	3,759	3,098	772	1.02	5.6
	1981	925.2	56.9	3,854	2,638	159	2,479	1,890	748	0.68	2.9
	1982	540.3	50.3	4,957	3,792	162	3,630	2,841	951	0.76	7.0
	1983	636.7	44.3	5,602	3,475	152	3,323	2,428	1,047	0.62	5.5
	1984	761.3	51.5	5,046	3,260	143	3,117	2,363	897	0.65	4.3
	1985	822.2	58.4	4,057	2,804	120	2,684	2,077	727	0.69	3.4
	1986	1,051.3	69.1	3,370	1,909	97	1,812	1,273	636	0.57	1.8
	1987	1,152.4	80.6	3,052	1,419	144	1,275	861	558	0.46	1.2
	1988	990.8	70.1	2,648	1,747	219	1,528	1,051	696	0.66	1.8
	1989	990.9	65.8	3,844	1,786	181	1,605	1,295	491	0.46	1.8
	1990	991.6	67.8	3,182	1,548	152	1,396	1,156	392	0.49	1.6
	1991	952.8	64.5	2,586	778	120	658	451	327	0.30	0.8
BYRON 1,2	1986	894.5	88.6	1,081	76	12	64	47	29	.07	0.1
Docket 50-454, 50-455; NPF-37, NPF-66	1987	650.9	70.9	1,826	769	11	758	667	102	0.42	1.2
1st commercial operation 9/85,8/87	1988	1,534.7	86.3	1,222	459	0	459	333	126	0.38	0.3
Type - PWRS	1989	1,812.6	90.2	1,109	172	21	151	105	67	0.16	0.1
Capacity - 1105, 1105	1990	1,567.3	78.8	1,396	434	38	396	266	168	0.31	0.3
	1991	1,816.3	89.9	1,077	268	42	226	158	110	0.25	0.1
CALLAWAY 1	1985	967.4	90.0	964	36	16	20	7	29	0.04	0.0
Docket 50-483; NPF-30	1986	865.2	81.3	1,052	225	53	172	129	96	0.21	0.3
1st commercial operation 12/84	1987	759.0	71.1	1,082	393	89	304	249	144	0.36	0.5
Type - PWR	1988	1,069.2	93.4	353	27	12	15	2	25	0.08	0.0
Capacity - 1125 MWe	1989	1,000.3	85.4	1,055	283	46	237	191	92	0.27	0.3
	1990	960.7	84.1	1,134	442	50	392	332	110	0.39	0.5
	1991	1,193.1	99.7	280	21	9	12	2	19	0.07	0.0
CALVERT CLIFFS 1,2	1976	753.4	95.2	507	74	28	46	8	66	0.15	0.1
Docket 50-317, 50-318; DPR-53, -69	1977	583.0	72.1	2,265	547	36	511	224	323	0.24	0.9
1st commercial operation 5/75, 4/77	1978	1,188.5	75.8	1,391	500	13	487	143	357	0.36	0.4
Type - PWRs	1979	1,161.0	74.0	1,428	805	32	773	426	379	0.56	0.7
Capacity - 825, 825 MWe	1980	1,309.9	84.1	1,496	677	15	662	402	275	0.45	0.5
	1981	1,379.7	83.1	1,555	607	29	578	378	229	0.39	0.4
	1982	1,238.3	73.7	1,805	1,057	84	973	402	655	0.59	0.9
	1983	1,397.2	81.6	1,915	668	5	663	143	525	0.35	0.5
	1984	1,389.4	79.3	1,369	479	61	418	79	400	0.35	0.3
	1985	1,189.8	68.4	1,598	694	69	625	144	550	0.43	0.6

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
CALVERT CLIFFS 1,2 (Continued)	1986	1,530.0	87.2	1,296	347	2	345	101	246	0.27	0.2
	1987	1,207.3	71.8	1,384	412	29	383	110	302	0.30	0.3
	1988	1,397.7	81.0	1,296	291	30	261	90	201	0.22	0.2
	1989	333.6	20.1	1,786	346	11	335	216	130	0.19	1.0
	1990	161.1	11.0	2,019	304	12	292	203	101	0.15	1.9
	1991	1,085.0	64.7	1,974	132	25	107	70	62	0.07	0.1
CATAWBA 1,2	1986	638.9	49.9	1,724	286	27	259	68	218	0.17	0.4
Docket 50-413, 50-414; NPF-35, NPF-52	1987	1,651.2	75.9	1,865	449	32	417	161	288	0.24	0.3
1st commercial operation 6/85, 8/86	1988	1,675.2	77.2	2,009	556	71	485	200	356	0.28	0.3
Type - PWR	1989	1,733.6	79.5	1,660	334	48	286	110	224	0.20	0.2
Capacity - 1129, 1129 MWe	1990	1,616.3	70.8	2,174	809	58	751	292	517	0.37	0.5
	1991	1,691.5	74.6	1,871	462	50	412	141	321	0.25	0.3
CLINTON	1988	701.3	84.2	769	130	48	82	64	66	0.17	0.2
Docket 50-461; NPF-62	1989	348.3	48.5	1,196	372	91	281	261	111	0.31	1.1
1st commercial operation 11/87	1990	435.8	55.1	1,390	553	407	146	438	115	0.40	1.3
Type - BWR	1991	722.7	80.8	1,010	233	222	11	143	90	0.23	0.3
Capacity - 930 MWe											
COMANCHE PEAK	1991	644.4	82.2	985	148	13	135	111	37	0.15	0.2
Docket 50-445; NPF-87											
1st commercial operation 8/90											
Type - PWR											
Capacity - 1150 MWe											
COOK 1,2	1976	807.4	83.1	395	116	13	103	71	45	0.29	0.1
Docket 5-315; DPR-58, -74	1977	573.0	76.1	802	300	21	278	138	161	0.37	0.5
1st commercial operation 8/75, 7/78	1978	744.8	73.6	778	336	49	287	139	197	0.43	0.5
Type - PWRs	1979	1,373.0	65.3	1,445	718	45	673	454	264	0.50	0.5
Capacity - 1020, 1060 MWe	1980	1,552.4	74.1	1,345	493	46	447	323	170	0.37	0.3
	1981	1,557.3	73.4	1,341	656	48	608	443	213	0.49	0.4
	1982	1,461.6	69.8	1,527	699	67	632	472	227	0.46	0.5
	1983	1,456.5	71.2	1,418	658	50	608	467	191	0.46	0.5
	1984	1,526.0	75.3	1,559	762	43	719	597	165	0.49	0.5
	1985	925.4	47.6	1,984	945	92	853	758	187	0.48	1.0
	1986	1,307.1	73.4	1,774	745	64	681	585	160	0.42	0.6
	1987	1,199.5	70.2	1,696	666	79	587	525	141	0.39	0.6
	1988	1,160.4	63.5	2,266	867	52	815	762	105	0.38	0.7
	1989	1,433.1	72.8	1,575	493	50	443	421	72	0.31	0.3
	1990	1,318.5	67.9	1,851	580	87	493	504	76	0.31	0.4
	1991	1,837.4	90.2	815	69	28	41	48	21	0.08	0.0

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
COOPER STATION	1975	456.4	83.6	579	117	30	87	19	98	0.20	0.3
Docket 50-298; DPR-46	1976	433.3	75.5	763	350	39	311	210	140	0.46	0.8
1st commercial operation 7/74	1977	538.2	86.2	315	198	50	147	66	131	0.63	0.4
Type - BWR	1978	576.0	91.0	297	158	40	118	58	100	0.53	0.3
Capacity - 764 MWe	1979	591.0	87.6	426	221	50	171	90	131	0.52	0.4
	1980	448.3	71.2	785	859	71	788	644	215	1.09	1.9
	1981	457.1	71.2	935	579	63	516	382	197	0.62	1.3
	1982	622.3	84.6	743	542	66	476	361	181	0.73	0.9
	1983	396.6	63.3	1,383	1,293	57	1,236	1,081	212	0.93	3.3
	1984	411.9	67.2	1,598	799	46	753	635	164	0.50	1.9
	1985	127.3	21.5	1,980	1,333	49	1,284	1,104	229	0.67	10.5
	1986	480.0	74.7	895	320	49	271	115	205	0.36	0.7
	1987	652.3	96.2	549	103	26	77	11	92	0.19	0.2
	1988	493.4	67.9	942	251	40	211	118	133	0.27	0.5
	1989	564.3	76.2	1,202	343	40	303	228	115	0.29	0.6
	1990	602.0	79.4	1,174	379	34	345	265	114	0.32	0.6
	1991	566.3	78.8	1,099	405	50	355	255	150	0.37	0.7
CRYSTAL RIVER 3	1978	311.5	41.4	643	321	8	313	244	77	0.50	1.0
Docket 50-302; DPR-72	1979	453.0	58.9	1,150	495	29	466	346	149	0.43	1.1
1st commercial operation 3/77	1980	404.1	53.2	1,053	625	24	601	382	243	0.59	1.5
Type - PWR	1981	490.4	62.2	1,120	408	18	390	236	172	0.36	0.8
Capacity - 821 MWe	1982	589.8	76.0	780	177	9	168	116	61	0.23	0.3
	1983	452.1	58.8	1,720	552	71	481	353	199	0.32	1.2
	1984	774.2	94.5	549	49	10	39	22	27	0.09	0.1
	1985	344.2	47.6	1,976	689	44	645	424	265	0.35	2.0
	1986	319.5	41.8	1,057	472	25	447	298	174	0.45	1.5
	1987	436.0	60.9	1,384	488	49	439	302	186	0.35	1.1
	1988	690.2	84.0	569	64	2	62	17	47	0.11	0.1
	1989	352.8	48.8	880	234	5	229	128	106	0.27	0.7
	1990	497.8	63.8	1,441	476	8	468	318	158	0.33	1.0
	1991	654.6	82.0	821	116	8	108	59	57	0.14	0.2
DAVIS-BESSE 1	1978	326.4	48.7	421	48	13	35	14	34	0.11	0.1
Docket 50-346; NPF-3	1979	381.0	67.0	304	30	8	22	5	25	0.10	0.1
1st commercial operation 7/78	1980	256.4	36.2	1,283	154	4	150	121	33	0.12	0.6
Type - PWR	1981	531.4	67.4	578	58	1	57	32	26	0.10	0.1
Capacity - 874 MWe	1982	390.8	51.5	1,350	164	12	152	139	25	0.12	0.4
	1983	592.1	73.0	718	80	6	74	46	34	0.11	0.1
	1984	518.5	62.5	1,088	177	10	167	122	55	0.16	0.3
	1985	238.3	31.2	718	71	5	66	44	27	0.10	0.3
	1986	3.3	1.3	981	124	22	102	103	21	0.13	37.6

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization -	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
DAVIS-BESSE 1 (Continued)	1987	618.0	89.6	625	47	11	36	27	20	0.08	0.1
	1988	144.1	27.1	1,183	307	36	271	255	52	0.26	2.1
	1989	880.0	98.6	404	38	5	33	5	33	0.09	0.0
	1990	500.0	56.7	1,377	489	14	475	414	75	0.36	1.0
	1991	703.6	81.8	1,000	216	38	178	159	57	0.22	0.3
DIABLO CANYON 1,2	1986	641.5	80.6	1,260	304	4	300	206	98	0.24	0.5
Docket 50-275, 50-323; DPR-80, DPR-82	1987	1,688.6	83.0	1,170	336	5	331	226	110	0.29	0.2
1st commercial operation 5/85, 3/86	1988	1,386.1	67.6	1,826	877	4	873	593	284	0.48	0.6
Type - PWRs	1989	1,899.0	87.5	1,646	465	3	462	329	136	0.28	0.2
Capacity - 1073, 1087 MWe	1990	1,952.6	91.0	1,441	323	1	322	220	103	0.22	0.2
	1991	1,809.6	83.8	2,040	546	1	545	377	169	0.27	0.3
DRESDEN 1*,2,3	1969	99.7			286						2.9
Docket 50-010, 50-237, 50-249;	1970	163.1			143						0.9
DPR-2, -19, -25	1971	394.5			715						1.8
1st commercial operation 7/60, 6/70,	1972	1,243.7			728						0.6
11/71	1973	1,112.2		1,341	939	143	796	344	595	0.70	0.8
Type - BWRs	1974	842.5	54.9	1,594	1,662			57	1,605	1.04	2.0
Capacity - 197, 772, 773 MWe	1975	708.1	54.6	2,310	3,423	271	3,152	2,252	1,171	1.48	4.8
	1976	1,127.2	80.8	1,746	1,680	228	1,452	749	931	0.96	1.5
	1977	1,132.9	77.0	1,862	1,694	316	1,377	693	1,000	0.91	1.5
	1978	1,242.2	79.5	1,946	1,529	359	1,170	619	1,529	0.79	1.2
	1979	1,013.0	74.7	2,407	1,800	191	1,609	641	1,159	0.75	1.8
	1980	1,074.4	55.0	2,717	2,105	236	1,869	1,093	1,012	0.77	2.0
	1981	1,035.7	51.5	2,331	2,802	120	2,682	1,850	952	1.20	2.7
	1982	1,085.3	77.9	2,572	2,923	136	2,787	1,731	1,192	1.14	2.7
	1983	913.6	65.6	2,854	3,582	176	3,406	2,127	1,455	1.26	3.9
	1984	789.8	55.3	2,261	1,774	153	1,621	815	959	0.78	2.2
	1985	903.0	64.5	2,817	1,686	474	1,212	879	807	0.60	1.9
	1986	740.5	52.6	3,111	2,668	268	2,400	2,009	659	0.86	3.6
	1987	933.9	74.0	2,052	1,145	241	904	593	552	0.56	1.2
	1988	1,014.7	75.8	2,414	1,409	215	1,194	808	601	0.58	1.4
	1989	1,184.2	83.1	2,259	1,131	154	976	641	489	0.50	1.0
	1990	1,107.8	76.6	2,235	1,400	176	1,224	753	647	0.63	1.3
	1991	675.2	60.7	2,044	1,005	166	839	433	572	0.49	1.5

*Dresden 1 has been shut down since 1978, and in 1985 it was decided that it would not be put in commercial operation again. Therefore, it is no longer included in the count of commercial reactors.

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
DUANE ARNOLD	1976	305.2	78.0	350	105	14	91	62	43	0.30	0.3
Docket 50-331; DPR-49	1977	353.6	78.9	538	299	36	263	220	79	0.56	0.8
1st commercial operation 2/75	1978	149.2	33.2	1,112	974	59	915	932	42	0.88	6.5
Type - BWR	1979	352.0	78.0	757	275	35	240	219	56	0.36	0.8
Capacity - 538 MWe	1980	339.1	73.3	1,108	671	32	639	570	101	0.61	2.0
	1981	277.7	69.8	1,286	790	56	734	598	192	0.61	2.8
	1982	278.5	74.7	524	229	18	211	175	54	0.44	0.8
	1983	283.0	62.9	1,468	1,135	42	1,093	1,016	119	0.77	4.0
	1984	329.4	72.9	611	189	28	161	117	72	0.31	0.6
	1985	236.2	53.8	1,414	1,112	49	1,063	954	158	0.79	4.7
	1986	365.5	82.0	476	187	49	138	94	93	0.39	0.5
	1987	308.4	64.7	1,094	667	241	426	478	189	0.61	2.2
	1988	386.5	75.2	1,136	614	71	543	416	198	0.54	1.6
	1989	388.5	79.0	425	194	49	145	58	136	0.46	0.5
	1990	367.4	75.8	1,460	861	126	735	644	217	0.59	2.3
	1991	503.7	94.5	336	202	34	168	43	159	0.60	0.4
FARLEY 1,2	1978	713.8	86.5	527	108	39	69	34	74	0.20	0.2
Docket 50-348, 50-364; NPF-2, -8	1979	211.0	28.6	1,227	643	108	535	460	183	0.52	3.0
1st commercial operation 12/77, 7/81	1980	557.3	69.3	1,330	435	106	329	185	250	0.33	0.8
Type - PWR	1981	310.2	41.4	1,331	512	96	416	270	242	0.38	1.7
Capacity - 824, 828 MWe	1982	1,271.5	79.2	1,453	484	155	329	196	288	0.33	0.4
	1983	1,356.5	83.0	1,938	1,021	241	780	479	542	0.53	0.8
	1984	1,447.0	86.6	2,046	902	178	724	505	397	0.44	0.6
	1985	1,368.2	81.1	2,551	799	158	641	442	357	0.31	0.6
	1986	1,409.4	83.8	2,314	858	148	710	464	394	0.37	0.6
	1987	1,369.7	84.7	1,871	598	105	493	347	251	0.32	0.4
	1988	1,567.7	92.3	1,840	552	74	478	340	212	0.30	0.4
	1989	1,402.9	84.6	2,206	749	88	661	516	233	0.34	0.5
	1990	1,464.0	86.7	1,700	457	47	410	342	115	0.27	0.3
	1991	1,464.0	88.1	1,645	648	106	542	498	150	0.39	0.4
FERMI 2	1989	624.0	68.5	1,270	255	35	220	182	73	0.20	0.4
Docket 50-341; NPF-43	1990	848.2	84.7	462	83	31	52	14	69	0.18	0.1
1st commercial operation 1/88	1991	739.0	77.0	1,223	228	53	175	151	77	0.19	0.3
Type - BWR											
Capacity - 1047 MWe											

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
FITZPATRICK	1976	489.0	71.6	600	202					0.34	0.4
Docket 50-333; DPR-59	1977	460.5	68.4	1,380	1,080	14	1,066	937	143	0.78	2.3
1st commercial operation 7/75	1978	497.0	72.1	904	909	166	743	597	312	1.01	1.8
Type - BWR	1979	349.0	50.8	850	859	169	690	538	321	1.01	2.5
Capacity - 782 MWe	1980	509.5	70.3	2,056	2,040	118	1,922	1,808	232	0.99	4.0
	1981	562.9	74.7	2,490	1,425	187	1,238	1,072	353	0.57	2.5
	1982	583.6	75.0	2,322	1,190	136	1,054	863	327	0.51	2.0
	1983	546.2	70.6	1,715	1,090	158	932	667	423	0.64	2.0
	1984	576.2	76.8	1,610	971	82	889	467	504	0.60	1.7
	1985	492.3	63.7	1,845	1,051	85	966	718	333	0.57	2.1
	1986	711.2	90.6	1,185	411	81	330	168	243	0.35	0.6
	1987	496.2	70.3	1,578	940	164	776	616	324	0.60	1.9
	1988	514.0	69.0	1,553	786	162	624	506	280	0.51	1.5
	1989	727.5	92.3	1,027	377	58	319	191	186	0.37	0.5
	1990	543.8	72.6	1,536	884	92	792	557	327	0.58	1.6
	1991	399.7	53.4	1,269	333	48	285	127	206	0.26	0.8
FORT CALHOUN	1975	252.3	67.4	469	294			92	202	0.63	1.2
Docket 50-285; DPR-40	1976	265.9	69.5	516	313	28	285	38	275	0.61	1.2
1st commercial operation 6/74	1977	351.8	79.4	535	297	33	264	72	225	0.56	0.8
Type - PWR	1978	342.3	75.1	596	410	59	351	151	259	0.69	1.2
Capacity - 478 MWe	1979	440.0	95.7	451	126	19	107	47	79	0.28	0.3
	1980	242.3	60.4	891	668	38	630	426	242	0.75	2.8
	1981	260.9	72.3	822	458	61	397	254	204	0.56	1.8
	1982	418.0	89.7	604	217	45	172	102	115	0.36	0.5
	1983	330.4	73.1	860	433	66	367	205	228	0.50	1.3
	1984	279.2	59.9	913	563	91	472	313	250	0.62	2.0
	1985	367.0	73.7	982	373	54	319	231	142	0.38	1.0
	1986	431.8	94.3	756	74	26	48	30	44	0.10	0.2
	1987	366.0	75.4	1,247	388	78	310	226	162	0.31	1.1
	1988	315.5	74.1	1,594	272	74	198	173	99	0.17	0.9
	1989	395.7	89.2	1,210	93	31	62	50	43	0.08	0.2
	1990	290.0	64.2	760	290	30	260	160	130	0.38	1.0
	1991	391.1	91.7	284	57	14	43	25	32	0.20	0.1
GINNA	1971	327.8		340	430	69	361	108	322	1.26	1.3
Docket 50-244; DPR-18	1972	293.6		677	1,032	71	961	278	754	1.52	3.5
1st commercial operation 7/70	1973	409.5		319	224	55	169	84	140	0.70	0.5
Type - PWR	1974	253.7	62.4	884	1,225					1.39	4.8
Capacity - 470 MWe	1975	365.2	76.7	685	538					0.79	1.5

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
GINNA (Continued)	1976	248.8	58.2	758	636	29	607	210	426	0.84	2.6
	1977	365.6	85.5	530	401	15	386	120	281	0.76	1.1
	1978	386.5	80.6	657	450	20	430	98	352	0.68	1.2
	1979	355.0	72.8	878	592	68	524	206	386	0.67	1.7
	1980	370.5	76.0	1,073	708	64	644	302	406	0.66	1.9
	1981	399.0	82.1	925	655	49	606	321	334	0.71	1.6
	1982	289.0	58.8	1,117	1,140	80	1,060	471	669	1.02	3.9
	1983	365.0	74.6	969	855	42	813	378	477	0.88	2.3
	1984	378.1	77.2	713	395	58	337	195	200	0.55	1.0
	1985	436.7	87.9	845	426	89	337	183	243	0.50	1.0
	1986	433.3	87.4	901	357	45	312	107	250	0.40	0.8
	1987	459.0	91.5	773	344	35	309	151	193	0.45	0.7
	1988	423.1	87.4	897	295	37	258	114	181	0.33	0.7
	1989	369.2	75.9	1,254	605	57	548	172	433	0.48	1.6
	1990	414.3	84.4	991	347	38	309	207	140	0.35	0.8
	1991	418.6	86.7	947	328	36	292	201	127	0.35	0.8
GRAND GULF	1986	494.7	60.9	1,486	436	68	368	329	107	0.29	0.9
Docket 50-416; NPF-29	1987	920.7	82.2	1,358	420	106	314	303	117	0.31	0.5
1st commercial operation 7/85	1988	1,136.6	96.7	692	147	57	90	52	95	0.21	0.1
Type - BWR	1989	932.6	80.0	1,972	498	93	405	333	165	0.25	0.5
Capacity - 1142 MWe	1990	883.5	78.9	1,765	482	52	430	321	161	0.27	0.5
	1991	1,085.2	94.0	699	94	22	72	25	69	0.13	0.1
HADDAM NECK	1969	438.5		138	106			27	79	0.77	0.2
Docket 50-213; DPR-61	1970	424.7		734	689			463	226	0.94	1.6
1st commercial operation 1/68	1971	502.2		289	342			166	176	1.18	0.7
Type -PWR	1972	515.6		355	325			181	144	0.91	0.6
Capacity - 565 MWe	1973	293.1		951	697			544	153	0.73	2.4
	1974	521.4	91.2	550	201					0.37	0.4
	1975	494.3	89.9	795	703	20	683			0.88	1.4
	1976	482.9	82.5	644	449	5	444	253	196	0.70	0.9
	1977	480.7	83.9	894	641	59	582	440	201	0.72	1.3
	1978	563.4	98.6	216	117	25	92	18	99	0.54	0.2
	1979	493.0	87.5	1,226	1,162	74	1,088	783	379	0.95	2.4
	1980	426.8	75.0	1,860	1,353	175	1,178	1,076	277	0.73	3.2
	1981	487.5	84.3	1,554	1,036	174	862	809	227	0.67	2.1
	1982	543.9	93.4	559	126	46	80	22	104	0.23	0.2
	1983	453.7	77.8	1,645	1,384	107	1,277	1,022	362	0.84	3.1
	1984	404.0	71.7	1,430	1,216	154	1,062	803	413	0.85	3.0

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
HADDAM NECK (Continued)	1985	556.1	98.4	384	101	21	80	22	79	0.26	0.2
	1986	294.8	53.6	1,945	1,567	179	1,388	1,274	293	0.81	5.3
	1987	304.6	54.0	1,763	750	99	651	553	197	0.43	0.5
	1988	397.4	70.3	735	237	43	194	107	130	0.32	0.6
	1989	356.4	67.2	1,455	596	68	528	472	124	0.41	1.7
	1990	142.7	32.2	979	421	75	346	268	153	0.43	3.0
	1991	444.4	76.4	1,168	590	80	510	463	127	0.51	1.3
HARRIS 1	1988	652.9	75.0	721	169	29	140	118	51	0.23	0.3
Docket 50-400; NPF-63	1989	690.6	79.5	929	156	32	124	85	71	0.17	0.2
1st commercial operation 5/87	1990	776.4	89.6	453	85	13	72	47	38	0.19	0.1
Type - PWR	1991	724.8	81.5	872	226	27	199	150	76	0.26	0.3
Capacity - 860 MWe											
HATCH 1,2	1976	496.3	83.8	630	134	79	55	4	130	0.21	0.3
Docket 50-321, 50-366; DPR-57;	1977	446.8	66.3	1,303	465	96	369	220	245	0.36	1.0
NPF-05	1978	513.0	72.8	1,304	248	88	160	52	196	0.19	0.5
1st commercial operation 12/75, 9/79	1979	401.0	54.6	2,131	582	85	497	381	201	0.27	1.5
Type - BWRs	1980	1,008.7	70.9	1,930	449	143	306	163	286	0.23	0.4
Capacity - 753, 766 MWe	1981	870.9	64.3	2,899	1,337	200	1,137	792	545	0.46	1.5
	1982	768.0	56.6	3,418	1,460	218	1,242	1,064	396	0.43	1.9
	1983	934.7	68.6	3,428	1,299	253	1,046	851	448	0.38	1.4
	1984	658.6	47.3	4,110	2,218	311	1,907	1,861	357	0.54	3.4
	1985	1,211.0	79.6	2,841	818	182	636	508	310	0.29	0.7
	1986	872.0	64.8	3,486	1,497	347	1,150	1,107	390	0.43	1.7
	1987	1,295.4	89.7	2,202	816	207	609	435	381	0.37	0.6
	1988	1,001.4	70.4	2,509	1,401	275	1,126	927	474	0.56	1.4
	1989	1,271.1	87.1	1,350	556	154	402	305	251	0.41	0.4
	1990	1,268.0	83.5	2,902	1,455	224	1,231	1,074	381	0.50	1.1
	1991	1,152.4	77.4	2,508	1,161	196	965	798	363	0.46	1.0
HOPE CREEK 1	1987	869.2	86.4	589	117	21	96	40	77	0.20	0.1
Docket 50-354; NPF-57	1988	832.7	80.7	1,734	287	38	249	163	124	0.17	0.3
1st commercial operation 12/86	1989	791.1	77.8	1,873	465	40	425	292	173	0.25	0.6
Type - BWR	1990	966.4	91.6	1,394	196	26	170	89	107	0.14	0.2
Capacity - 1031 MWe	1991	882.5	84.2	1,700	373	11	362	249	124	0.22	0.4

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
HUMBOLDT BAY*	1969	44.6		125	164	69	95	12	152	1.31	3.7
Docket 50-133; DPR-7	1970	49.3		115	209	130	79	37	172	1.82	4.2
1st commercial operation 8/63	1971	39.6		140	292	114	178	65	227	2.09	7.4
Type - BWR	1972	43.1		127	253	81	172	57	196	1.99	5.9
Capacity - 63 MWe	1973	50.1		210	266	60	206			1.27	5.3
	1974	43.4	83.8	296	318	103	215			1.07	7.3
	1975	45.3	83.9	265	339	131	208	112	227	1.28	7.5
	1976	23.5	46.4	523	683	37	646	50	633	1.31	29.1
	1977	0.0	0.0	1,063	1,905	24	1,880	973	931	1.79	---
	1978	0.0	0.0	320	335	13	322	145	190	1.05	---
	1979	0.0	0.0	135	31	11	20	2	29	0.23	---
	1980	0.0	0.0	142	22	10	12	3	19	0.15	---
	1981	0.0	0.0	75	9	3	6	3	6	0.12	---
	1982	0.0	0.0	71	19	5	14	0	19	0.27	---
	1983	0.0	0.0	84	17	4	13	0	17	0.20	---
INDIAN POINT 1**,2,3***	1969	206.2			298						1.4
Docket 50-3, 50-247, 50-286;	1970	43.3			1,639						37.8
DPR-5, -26, -64	1971	154.0			768						5.0
1st commercial operation 10/62, 8/74,	1972	142.3			967						6.8
8/76	1973	0.0		2,998	5,262	709	4,553	2,847	2,415	1.76	---
Type - PWR	1974	556.1	59.4	1,019	910					0.89	1.6
Capacity - 0, 939, 965	1975	584.4	74.8	891	705	166	539	47	658	0.79	1.2
	1976	273.9	34.8	1,590	1,950	154	1,796	172	1,778	1.23	7.1
	1977	1,278.3	75.3	1,391	1,070	189	881	383	687	0.77	0.8
	1978	1,172.3	67.8	1,909	2,006	260	1,746	759	1,247	1.05	1.7

* Humboldt Bay has been shutdown since 1976 and in 1984, it was decided that it would not be placed in operation again. Therefore, it it no longer included in the count of commercial reactors.

** Indian Point 1 was defueled in 1975 and in 1984 it was decided that it would not be placed in operation again. Therefore, it is no longer included in the count of commercial reactors.

***Indian Point 3 was purchased by a different utility and now reports separately.

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
INDIAN POINT 1**,2	1979	574.0	71.4	1,349	1,279	209	1,070	612	667	0.95	2.2
	1980	510.8	64.8	1,577	971	304	667	6	965	0.62	1.9
	1981	367.5	46.0	2,595	2,731	237	2,494	1,595	1,136	1.05	7.4
	1982	532.4	65.4	2,144	1,635	343	1,292	883	752	0.76	3.1
	1983	702.6	84.0	1,057	486	202	284	219	267	0.46	0.7
INDIAN POINT 2	1984	416.7	51.9	2,919	2,644	650	1,994	1,863	781	0.91	6.3
Docket 50-247; DPR-26	1985	791.4	95.7	708	192	123	69	95	97	0.27	0.2
1st commercial operation 8/74	1986	457.5	56.2	1,926	1,250	350	900	349	901	0.65	2.7
Type - PWR	1987	611.4	73.4	1,980	1,217	128	1,089	805	412	0.61	2.0
Capacity - 939 MWe	1988	719.3	86.9	890	235	51	184	117	118	0.26	0.3
	1989	532.5	64.6	2,093	1,436	208	1,228	813	623	0.69	2.7
	1990	618.0	66.6	1,061	608	66	542	450	158	0.57	1.0
	1991	461.2	55.7	1,810	1,468	179	1,289	927	541	0.81	3.2
INDIAN POINT 3***	1979	574.0	66.5	808	636	63	573	482	154	0.79	1.1
Docket 50-286; DPR-64	1980	367.3	53.2	977	308	47	261	210	98	0.32	0.8
1st commercial operation 8/76	1981	367.5	59.8	677	364	46	318	255	109	0.54	1.0
Type - PWR	1982	171.5	22.5	1,477	1,226	42	1,184	1,093	133	0.83	7.1
Capacity - 965 MWe	1983	7.8	2.6	941	607	38	569	494	113	0.65	77.8
	1984	714.4	76.3	658	230	48	182	127	103	0.35	0.3
	1985	566.5	66.0	1,093	570	35	535	455	115	0.52	1.0
	1986	655.3	73.4	588	202	34	168	123	79	0.34	0.3
	1987	574.6	62.7	1,308	500	84	416	365	135	0.38	0.9
	1988	792.5	83.3	451	93	41	52	39	54	0.21	0.1
	1989	587.8	61.1	1,800	876	130	746	776	100	0.49	1.5
	1990	595.3	62.9	1,066	358	69	289	230	128	0.34	0.6
	1991	862.8	87.5	299	40	23	17	5	35	0.13	0.0
KEWAUNEE	1975	401.9	88.2	104	28	1	27	12	16	0.27	0.1
Docket 50-305; DPR-43	1976	405.9	78.9	381	270	16	254	193	77	0.71	0.7
1st commercial operation 6/74	1977	425.0	79.9	312	140	8	131	76	63	0.45	0.3
Type - PWR	1978	466.6	89.5	335	154	11	143	89	65	0.46	0.3
Capacity - 503 MWe	1979	412.0	79.0	343	127	6	121	79	48	0.37	0.3
	1980	433.8	82.1	401	165	7	158	103	62	0.41	0.4
	1981	451.8	86.7	383	141	7	134	94	47	0.37	0.3
	1982	458.4	87.6	353	101	5	96	51	50	0.29	0.2
	1983	444.1	83.7	445	165	10	155	119	46	0.37	0.4
	1984	455.3	85.7	482	139	7	132	89	50	0.29	0.3

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
KEWAUNEE (Continued)	1985	443.1	82.4	519	176	9	167	114	62	0.34	0.4
	1986	461.7	85.8	502	169	8	161	111	58	0.34	0.4
	1987	480.0	89.7	755	226	8	218	173	53	0.30	0.5
	1988	467.5	88.3	705	210	6	204	165	45	0.30	0.4
	1989	449.1	84.9	570	239	10	229	179	60	0.42	0.5
	1990	468.8	87.9	490	145	5	140	112	33	0.30	0.3
	1991	441.8	83.4	495	221	4	217	188	33	0.45	0.5
LACROSSE*	1970	15.3			111			40	71		7.2
Docket 50-409; DPR-45	1971	323.1		218	158					0.72	4.8
1st commercial operation 11/69	1972	29.2		151	172					1.14	5.9
Type - BWR	1973	24.4		157	221					1.41	9.1
Capacity - 48 MWe	1974	37.9	81.0	115	139	89	50	6	133	1.21	3.7
	1975	32.0	69.6	165	234					1.42	7.3
	1976	21.2	47.6	118	110	40	71	6	105	0.93	5.2
	1977	11.3	33.7	141	225	60	164	8	216	1.60	19.9
	1978	21.6	62.0	182	164	69	95	6	158	0.90	7.6
	1979	24.0	71.8	153	186	65	121	21	165	1.22	7.8
	1980	26.4	68.5	124	218	63	155	11	207	1.76	8.3
	1981	29.6	76.0	187	123	62	61	3	120	0.66	4.2
	1982	17.2	44.6	148	205	65	140	16	189	1.39	11.9
	1983	24.8	59.7	160	313	103	210	31	282	1.96	12.6
	1984	38.5	80.5	288	252	141	111	5	247	0.88	6.5
	1985	39.2	86.7	373	173	76	97	22	151	0.46	4.4
	1986	19.6	46.1	260	290					1.12	14.8
	1987	0.0	0.0	127	68	42	26	2	66	0.54	---
LASALLE 1,2	1984	677.8	77.8	1,245	252	29	223	88	164	0.20	0.4
Docket 50-373, -374; NPF-11, -18	1985	987.9	53.0	1,635	685	88	597	420	265	0.42	0.7
1st commercial operation 1/84, 6/84	1986	929.5	50.6	1,614	898	143	755	527	371	0.56	1.0
Type - BWR	1987	1,030.0	59.3	1,744	1,396	217	1,179	989	407	0.80	1.4
Capacity - 1036, 1036 MWe	1988	1,317.6	71.6	2,737	2,471	253	2,218	1,978	493	0.90	1.9
	1989	1,503.5	73.1	2,475	1,386	138	1,248	853	533	0.56	0.9
	1990	1,754.3	84.6	1,830	948	130	818	503	445	0.52	0.5
	1991	1,837.0	86.7	1,985	806	161	645	427	379	0.41	0.4

* LACROSSE ended commercial operation in 1987 and will not be put in commercial operation again. Therefore it is no longer included in the count of commercial reactors.

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
LIMERICK 1, 2	1987	636.1	70.2	2,156	174	7	167	114	60	0.08	0.3
Docket 50-352, 50-353; NPF-39,-85	1988	794.9	96.5	950	52	20	32	23	29	0.05	0.1
1st commercial operation 2/86, 1/90	1989	628.4	66.0	1,818	266	70	196	156	110	0.15	0.4
Type - BWRs	1990	1,527.7	78.2	1,422	175	37	138	78	97	0.12	0.1
Capacity - 1055, 1055 MWe	1991	1,810.9	86.8	1,151	106	24	82	52	54	0.09	0.1
MAINE YANKEE	1973	408.7		782	117			59	58	0.15	0.3
Docket 50-309; DPR-36	1974	432.6	68.7	619	420	64	356	188	232	0.68	1.0
1st commercial operation 12/72	1975	542.9	79.9	440	319	15	304	181	138	0.72	0.6
Type - PWR	1976	712.2	95.0	244	85	27	58	26	59	0.35	0.1
Capacity - 830 MWe	1977	617.6	82.2	508	245	46	199	112	133	0.48	0.4
	1978	642.7	84.1	638	420	54	366	262	158	0.66	0.7
	1979	537.0	68.4	393	154	70	84	26	128	0.39	0.3
	1980	527.0	72.2	735	462	117	345	277	185	0.63	0.9
	1981	624.2	78.2	868	424	11	413	308	116	0.49	0.7
	1982	542.5	69.1	1,295	619	33	586	462	157	0.48	1.1
	1983	677.1	83.6	592	165	41	124	72	93	0.28	0.2
	1984	605.7	74.4	1,262	884	9	875	702	182	0.70	1.5
	1985	635.4	79.2	1,009	700	54	646	529	171	0.69	1.1
	1986	737.6	87.8	495	100	34	66	14	86	0.20	0.1
	1987	478.1	65.3	1,100	722	39	683	531	191	0.66	1.5
	1988	591.9	79.1	1,058	725	52	673	576	149	0.69	1.2
	1989	819.2	93.7	375	99	38	61	25	74	0.26	0.1
	1990	573.0	71.0	1,359	682	146	536	547	135	0.50	1.2
	1991	738.1	86.6	426	105	27	78	46	59	0.25	0.1
MCGUIRE 1,2	1982	524.9	80.4	1,560	169	26	143	29	140	0.11	0.3
Docket 50-369, -370; NPF-9, -17	1983	558.3	55.4	1,751	521	35	486	123	398	0.30	0.9
1st commercial operation 12/81, 3/84	1984	764.1	68.5	1,663	507	35	472	106	401	0.30	0.7
Type - PWRS	1985	808.4	77.0	2,217	771	92	679	277	494	0.35	1.0
Capacity - 1129, 1129 MWe	1986	1,360.0	60.1	2,326	1,015	47	968	389	626	0.44	0.7
	1987	1,774.7	79.2	2,865	1,043	38	1,005	510	533	0.36	0.6
	1988	1,830.7	80.2	2,808	1,104	65	1,039	592	512	0.39	0.6
	1989	1,810.2	80.8	1,994	620	44	576	252	368	0.31	0.3
	1990	1,340.3	61.3	2,289	727	63	664	288	439	0.32	0.5
	1991	1,945.1	85.0	1,723	361	18	343	111	250	0.21	0.2

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
MILLSTONE POINT 1	1972	377.6		612	596	50	546	340	256	0.97	1.6
Docket 50-245; DPR-21	1973	225.1		1,184	663	125	538	422	241	0.56	2.9
1st commercial operation 3/71	1974	430.3	79.1	2,477	1,430					0.58	3.3
Type - BWR	1975	465.4	75.6	2,587	2,022					0.78	4.3
Capacity - 654 MWe	1976	449.8	76.1	1,387	1,194	54	1,140	955	239	0.86	2.7
	1977	575.7	89.6	1,075	394	118	274	159	233	0.37	0.7
	1978	556.6	87.6	1,391	1,416	160	1,256	1,036	380	1.02	2.5
	1979	505.0	77.3	2,001	1,795	198	1,597	1,327	468	0.90	3.6
	1980	405.8	69.0	3,024	2,157	100	2,057	1,863	294	0.71	5.3
	1981	304.3	51.6	2,506	1,496	96	1,400	1,201	295	0.60	4.9
	1982	490.2	79.9	1,370	929	78	851	587	342	0.68	1.9
	1983	640.1	95.6	309	244	63	181	74	170	0.79	0.4
	1984	516.1	78.8	1,992	836	80	756	531	305	0.42	1.6
	1985	548.5	83.6	732	608	65	543	369	239	0.83	1.1
	1986	626.8	95.4	389	150	47	103	53	97	0.39	0.2
	1987	523.4	79.6	1,588	684	56	628	523	161	0.43	1.3
	1988	658.8	98.6	327	144	31	113	60	84	0.44	0.2
	1989	554.6	84.2	852	462	40	422	334	128	0.54	0.8
	1990	608.3	91.6	365	131	42	89	58	73	0.36	0.2
	1991	213.1	35.4	1,154	409	60	349	311	98	0.35	1.9
MILLSTONE POINT 2,3	1976	545.7	78.7	620	168	26	142	73	95	0.27	0.3
Docket 50-336, 50-423; DPR-65, NPF-49	1977	518.7	65.7	667	242	38	204	153	89	0.36	0.5
1st commercial operation 12/75, 4/86	1978	536.6	67.3	1,420	1,444	65	1,379	1,366	78	1.02	2.7
Type - PWR	1979	520.0	62.8	525	471	81	390	304	167	0.90	0.9
Capacity - 863, 1137 MWe	1980	579.3	69.2	893	637	76	561	515	122	0.71	1.1
	1981	722.4	82.6	890	531	44	487	393	138	0.60	0.7
	1982	595.9	70.6	2,083	1,413	27	1,386	1,219	194	0.68	2.4
	1983	294.0	34.2	2,383	1,881	170	1,711	1,548	333	0.79	6.4
	1984	782.7	93.5	285	120	11	109	63	57	0.42	0.2
	1985	417.8	49.4	1,905	1,581	60	1,521	1,256	325	0.83	3.8
	1986	1,313.8	80.4	2,393	993	27	966	784	209	0.41	0.8
	1987	1,624.5	84.1	1,441	505	19	486	370	135	0.35	0.3
	1988	1,594.8	83.2	1,827	804	31	773	523	281	0.44	0.5
	1989	1,428.3	72.9	1,984	1,079	44	1,035	877	202	0.54	0.8
	1990	1,614.9	87.1	1,652	593	35	558	491	102	0.36	0.4
	1991	819.5	69.7	1,084	381	21	360	256	125	0.35	0.5

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
MONTICELLO	1972	424.4		99	61	40	21	1	60	0.62	0.1
Docket 50-263; DPR-22	1973	389.5		401	176	48	128	67	109	0.44	0.5
1st commercial operation 6/71	1974	349.3	74.9	842	349			91	258	0.41	1.0
Type - BWR	1975	344.8	72.2	1,353	1,353					1.00	3.9
Capacity - 536 MWe	1976	476.4	91.5	325	263	59	204	52	212	0.81	0.6
	1977	425.6	79.9	860	1,000	135	865	661	339	1.16	2.3
	1978	459.4	87.2	679	375	62	313	165	210	0.55	0.8
	1979	522.0	97.6	372	157	62	95	52	105	0.42	0.3
	1980	411.8	78.2	1,114	531	82	449	248	283	0.48	1.3
	1981	389.3	72.6	1,446	1,004	101	903	756	248	0.69	2.6
	1982	291.1	63.3	1,307	993	130	863	760	233	0.76	3.4
	1983	494.6	96.3	416	121	57	64	23	98	0.29	0.2
	1984	33.7	9.2	1,872	2,462	208	2,254	927	1,535	1.32	73.1
	1985	509.8	91.7	586	327	87	240	47	280	0.56	0.6
	1986	402.7	79.1	895	596	94	502	114	482	0.67	1.5
	1987	422.5	81.9	941	568	102	466	115	453	0.60	1.3
	1988	542.5	99.8	375	110	40	70	10	100	0.29	0.2
	1989	318.2	76.2	1,102	507	99	408	113	394	0.46	1.6
	1990	536.0	96.9	336	94	42	52	11	83	0.28	0.2
	1991	429.4	80.8	964	465	102	363	101	364	0.48	1.1
NINE MILE POINT 1,2	1970	227.0		821	44	12	32	17	27	0.05	0.2
Docket 50-220, 50-410; DPR-63, NPF-69	1971	346.5		1,006	195	43	152	63	132	0.19	0.6
1st commercial operation 12/69, 4/88	1972	381.8		735	285	59	226	28	257	0.39	0.7
Type - BWR	1973	411.0		550	567	139	428	118	449	1.03	1.4
Capacity - 615, 1090 MWe	1974	385.9	70.5	740	824	42	782	279	545	1.11	2.1
	1975	359.0	72.1	649	681	68	613	203	478	1.05	1.9
	1976	484.6	88.2	392	428	52	376	229	199	1.09	0.9
	1977	347.4	59.2	1,093	1,383	41	1,342	883	500	1.27	4.0
	1978	527.7	95.1	561	314	59	255	26	288	0.56	0.6
	1979	354.0	66.1	1,326	1,497	106	1,391	940	557	1.13	4.2
	1980	533.9	92.3	1,174	591	75	516	251	340	0.50	1.1
	1981	385.2	66.0	2,029	1,592	144	1,448	1,064	528	0.78	4.1
	1982	133.5	21.4	1,352	1,264	63	1,201	944	320	0.93	9.5
	1983	329.8	56.2	1,405	860	50	810	576	284	0.61	2.6
	1984	426.8	71.9	1,530	890	163	727	372	518	0.58	2.1
	1985	580.9	96.4	1,007	265	61	204	43	222	0.26	0.5
	1986	371.0	65.3	1,878	1,275	38	1,237	730	545	0.68	3.4
	1987	542.6	93.3	1,190	141	35	106	39	102	0.12	0.3

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
NINE MILE POINT 1,2 (Continued)	1988	0.0	0.0	2,626	854	33	821	509	345	0.33	---
	1989	527.5	29.7	2,737	564	53	511	382	182	0.21	1.1
	1990	656.2	46.6	2,405	699	85	614	467	232	0.29	1.1
	1991	1,250.8	79.7	1,543	292	72	220	94	198	0.19	0.2
NORTH ANNA 1,2	1979	507.0	61.7	2,025	449	78	371	190	259	0.22	0.9
Docket 50-338; NPF-04, -09	1980	681.8	86.5	2,086	218	128	90	85	133	0.10	0.3
1st commercial operation 6/78, 12/80	1981	1,241.9	71.5	2,416	680	188	492	343	337	0.28	0.5
Type - PWRs	1982	777.7	45.8	2,872	1,915	78	1,837	1,207	708	0.67	2.5
Capacity - 911, 909 MWe	1983	1,338.4	76.1	2,228	665	129	536	296	369	0.30	0.5
	1984	1,021.3	58.8	3,062	1,945	155	1,790	1,417	528	0.64	1.9
	1985	1,516.9	86.1	2,436	838	141	697	501	337	0.34	0.6
	1986	1,484.5	83.0	2,831	722	111	611	343	379	0.26	0.5
	1987	1,112.6	67.8	2,624	1,521	60	1,461	1,075	446	0.58	1.4
	1988	1,772.7	96.7	992	112	28	84	19	93	0.11	0.1
	1989	1,226.8	72.5	2,861	1,471	36	1,435	1,159	312	0.51	1.2
	1990	1,590.4	90.5	2,161	590	12	578	433	157	0.27	0.4
	1991	1,597.5	88.6	2,085	629	19	610	461	168	0.30	0.4
OCONEE 1,2,3	1974	650.6	60.1	844	517	18	499	144	373	0.61	0.8
Docket 50-269, 50-270, 50-287;	1975	1,838.3	75.5	829	497	72	425	90	407	0.60	0.3
DPR-38, -47, -55	1976	1,561.4	63.0	1,215	1,026	65	961	219	807	0.84	0.7
1st commercial operation 7/73, 9/74,	1977	1,566.4	65.9	1,595	1,329	244	1,084	294	1,034	0.83	0.8
12/74	1978	1,909.0	75.8	1,636	1,393	179	1,214	340	1,053	0.85	0.7
Type - PWRs	1979	1,708.0	67.7	2,100	1,001	123	878	181	820	0.48	0.6
Capacity - 846, 846, 846 MWe	1980	1,703.7	70.1	2,124	1,055	117	938	162	893	0.50	0.6
	1981	1,661.5	66.8	2,445	1,211	113	1,098	275	936	0.50	0.7
	1982	1,293.1	52.5	2,445	1,792	97	1,695	364	1,428	0.73	1.4
	1983	2,141.5	82.2	1,902	1,207	88	1,119	316	891	0.63	0.6
	1984	2,242.9	85.7	2,085	1,106	63	1,043	260	846	0.53	0.5
	1985	2,036.3	80.5	2,729	1,304	144	1,160	378	926	0.48	0.6
	1986	1,995.6	79.0	2,499	949	36	913	261	688	0.38	0.5
	1987	1,962.6	82.4	2,672	1,142	51	1,091	376	766	0.43	0.6
	1988	2,228.9	87.2	2,672	871	51	820	317	554	0.33	0.4
	1989	2,188.6	85.4	2,205	684	53	631	200	484	0.31	0.3
	1990	2,405.2	91.4	1,948	404	36	368	132	272	0.21	0.2
	1991	2,275.0	86.7	1,966	551	46	505	143	408	0.28	0.2

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Drganization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
OYSTER CREEK	1970	413.6		95	63	21	42	11	52	0.66	0.1
Docket 50-219; DPR-16	1971	448.9		249	240	50	190	92	148	0.96	0.5
1st commercial operation 12/69	1972	515.0		339	582	150	432	167	415	1.72	1.1
Type - BWR	1973	424.6		782	1,236	195	1,041	683	553	1.58	2.9
Capacity - 620 MWe	1974	434.5	70.4	935	984	166	818	162	822	1.05	2.3
	1975	373.6	73.3	1,210	1,140	169	971	271	869	0.94	3.1
	1976	456.5	79.3	1,582	1,078	70	1,008	587	491	0.68	2.4
	1977	385.7	70.1	1,673	1,614	76	1,538	1,048	566	0.96	4.2
	1978	431.8	74.3	1,411	1,279	134	1,145	696	583	0.91	3.0
	1979	541.0	85.9	842	467	95	372	135	332	0.55	0.9
	1980	232.9	41.4	1,966	1,733	97	1,636	1,183	550	0.88	7.4
	1981	314.8	59.8	1,689	917	48	869	479	438	0.54	2.9
	1982	242.7	62.5	1,270	865	33	832	491	374	0.68	3.6
	1983	27.9	11.5	2,303	2,257	65	2,192	1,863	394	0.98	80.9
	1984	37.1	9.6	2,369	2,054	134	1,920	1,537	517	0.87	55.4
	1985	446.1	89.4	2,342	748	116	632	318	430	0.32	1.7
	1986	157.3	31.5	3,740	2,436	288	2,148	1,924	512	0.65	15.5
	1987	371.0	64.2	1,932	522	112	410	211	311	0.27	1.4
	1988	419.6	65.9	2,875	1,504	135	1,369	1,232	272	0.52	3.6
	1989	287.5	57.3	2,395	910	138	772	566	344	0.38	3.2
	1990	511.8	89.1	1,941	310	76	234	131	179	0.16	0.6
	1991	351.6	60.5	3,089	1,185	151	1,034	938	247	0.38	3.4
PALISADES	1972	216.8			78						0.4
Docket 50-255; DPR-20	1973	286.8		975	1,133	16	1,117	661	472	1.16	4.0
1st commercial operation 12/71	1974	10.7	5.5	774	627					0.81	58.6
Type - PWR	1975	302.0	64.5	495	306					0.62	1.0
Capacity - 730 MWe	1976	346.9	55.2	742	696	23	673	109	587	0.94	2.0
	1977	616.6	91.4	332	100	13	87	23	77	0.30	0.2
	1978	320.2	49.7	849	764	52	712	173	591	0.90	2.4
	1979	415.0	59.9	1,599	854	99	755	360	494	0.53	2.1
	1980	288.3	42.9	1,307	424	57	367	312	112	0.32	1.5
	1981	418.2	57.2	2,151	902	167	735	737	165	0.42	2.2
	1982	404.3	54.7	1,554	330	73	257	203	127	0.21	0.8
	1983	454.4	60.3	2,167	977	145	832	494	483	0.45	2.2
	1984	98.7	15.2	1,344	573	79	494	239	334	0.43	5.8
	1985	639.2	83.8	1,355	507	105	402	239	268	0.37	0.8
	1986	102.3	15.1	1,438	672	148	524	204	468	0.47	6.6
	1987	319.2	48.2	1,122	456	85	371	216	240	0.41	1.4

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
PALISADES (Continued)	1988	413.4	56.8	1,472	730	138	592	466	264	0.50	1.8
	1989	442.8	69.1	1,026	314	70	244	190	124	0.31	0.7
	1990	366.7	58.7	2,414	766	109	657	629	137	0.32	2.1
	1991	587.0	78.1	1,315	211	42	169	133	78	0.16	0.4
PALO VERDE 1,2,3	1987	1,638.1	66.1	1,792	669	101	568	437	232	0.37	0.4
Docket 50-528, 50-529; 50-530; NPF-41, NPF-51, NPF-74	1988	1,700.9	65.5	2,173	688	77	611	472	216	0.32	0.4
	1989	965.3	26.5	2,615	720	87	633	559	161	0.28	0.7
1st commercial operation 1/86, 9/86, 1/88	1990	2,500.9	67.5	2,236	499	68	431	373	126	0.22	0.2
Type - PWRs	1991	3,043.9	78.9	2,242	605	79	526	422	183	0.27	0.2
Capacity - 1221, 1221, 1221 MWe											
PEACH BOTTOM 2,3	1975	1,234.3	80.9	971	228					0.23	0.2
Docket 50-277, 50-278; DPR-44, -56	1976	1,379.2	73.0	2,136	840	180	660	434	406	0.39	0.6
1st commercial operation 7/74, 12/74	1977	1,052.4	58.7	2,827	2,036	223	1,813	1,374	662	0.72	1.9
Type - BWR	1978	1,636.3	84.0	2,244	1,317	162	1,155	709	608	0.59	0.8
Capacity - 1055, 1035 MWe	1979	1,740.0	84.5	2,276	1,388	245	1,143	717	671	0.61	0.8
	1980	1,374.2	66.3	2,774	2,302	311	1,991	1,596	706	0.83	1.7
	1981	1,161.8	58.0	2,857	2,506	273	2,233	1,880	626	0.88	2.2
	1982	1,583.3	76.9	2,734	1,977	313	1,664	1,348	629	0.72	1.2
	1983	824.7	41.0	3,107	2,963	331	2,632	2,422	541	0.95	3.6
	1984	1,165.8	57.5	3,313	2,450	225	2,225	2,045	405	0.74	2.1
	1985	682.7	37.5	4,209	3,354	395	2,959	2,727	627	0.80	4.9
	1986	1,395.0	71.7	2,454	1,080	294	786	671	409	0.44	0.8
	1987	365.7	20.3	4,363	2,195	178	2,017	1,712	483	0.50	6.0
	1988	0.0	0.0	4,204	2,327	114	2,213	2,025	302	0.55	---
	1989	491.0	35.0	2,301	728	243	485	357	371	0.32	1.5
	1990	1,684.0	85.7	1,585	377	99	278	179	198	0.24	0.2
	1991	1,210.9	62.3	2,702	934	137	797	610	324	0.35	0.8
PERRY	1988	869.3	79.0	782	105	34	71	36	69	0.13	0.1
Docket 50-440; NPF-58	1989	642.2	57.0	1,883	767	113	654	604	163	0.41	1.2
1st commercial operation 11/87	1990	792.7	67.1	1,537	638	51	587	494	144	0.42	0.8
Type - BWR	1991	1,074.2	91.9	600	146	24	122	50	96	0.24	0.1
Capacity - 1141 MWe											

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
PILGRIM 1	1973	484.0		230	126	49	77			0.55	0.3
Docket 50-293; DPR-35	1974	234.1	39.2	454	415					0.91	1.8
1st commercial operation 12/72	1975	308.1	71.3	473	798	142	656	412	386	1.69	2.6
Type - BWR	1976	287.8	60.7	1,317	2,648	66	2,582	2,270	378	2.01	9.2
Capacity - 670 MWe	1977	316.6	61.4	1,875	3,142	146	2,996	2,176	966	1.68	9.9
	1978	519.5	83.1	1,667	1,327	157	1,170	895	432	0.80	2.6
	1979	574.0	89.4	2,458	1,015	130	885	516	499	0.41	1.8
	1980	360.3	56.2	3,549	3,626	207	3,419	3,076	550	1.02	10.1
	1981	408.9	65.9	2,803	1,836	70	1,766	1,418	418	0.66	4.5
	1982	389.9	63.9	2,854	1,539	314	1,225	1,094	445	0.54	3.9
	1983	559.5	87.2	2,326	1,162	296	866	776	386	0.50	2.1
	1984	1.4	0.4	4,542	4,082	647	3,435	3,767	315	0.90	15.7
	1985	587.3	91.5	2,209	893	13	880	739	154	0.40	1.5
	1986	121.9	18.8	2,635	874	110	764	718	156	0.33	7.2
	1987	0.0	0.0	4,710	1,579	99	1,480	1,485	94	0.34	---
	1988	0.0	0.0	2,073	392	58	334	218	174	0.19	---
	1989	204.6	64.1	1,797	207	137	70	40	167	0.12	1.0
	1990	503.5	82.1	1,898	225	112	113	68	157	0.12	0.4
	1991	406.3	65.8	2,836	605	113	492	410	195	0.21	1.5
POINT BEACH 1,2	1971	393.4			164						0.4
Docket 50-266, 50-301; DPR-24, -27	1972	378.3			580						1.5
1st commercial operation 12/70, 10/72	1973	693.7		501	588	72	516			1.17	0.8
Type - PWRs	1974	760.2	81.3	400	295	70	225	81	214	0.74	0.4
Capacity - 485, 485 MWe	1975	801.2	82.9	339	459					1.35	0.6
	1976	857.3	86.7	313	370	58	312	107	263	1.18	0.4
	1977	873.9	87.3	417	430	63	366	212	217	1.03	0.5
	1978	914.4	90.9	336	320	71	249	111	209	0.95	0.3
	1979	808.0	80.8	610	644	65	579	448	196	1.06	0.8
	1980	727.2	82.5	561	598	60	538	420	178	1.07	0.8
	1981	760.4	83.6	773	596	83	513	364	232	0.77	0.8
	1982	757.2	84.3	767	609	72	537	375	234	0.79	0.8
	1983	648.2	72.7	1,702	1,403	81	1,322	1,184	219	0.82	2.2
	1984	788.9	78.6	1,372	789	121	668	457	332	0.58	1.0
	1985	831.3	82.5	671	482	71	411	242	240	0.72	0.6
	1986	858.9	85.7	664	402	50	352	219	183	0.61	0.5
	1987	857.5	85.5	720	554	55	499	369	185	0.77	0.6
	1988	899.3	88.6	734	410	64	346	235	175	0.56	0.5
	1989	847.8	85.5	736	504	77	427	284	220	0.68	0.6
	1990	875.5	86.5	617	378	53	325	161	217	0.61	0.4
	1991	874.8	87.1	724	265	42	223	134	131	0.37	0.3

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
PRAIRIE ISLAND 1,2	1974	181.9	43.9	150	18			5	13	0.12	0.1
Docket 50-282, 50-306; DPR-42, -60	1975	836.0	83.3	477	123					0.26	0.1
1st commercial operation 12/73, 12/74	1976	725.2	76.6	818	447	68	379	235	212	0.55	0.6
Type - PWRs	1977	922.9	87.2	718	300	73	227	60	240	0.42	0.3
Capacity - 503, 500 MWe	1978	941.1	92.2	546	221	43	178	48	173	0.40	0.2
	1979	865.0	86.0	594	180	29	151	49	131	0.30	0.2
	1980	800.7	79.9	983	353	40	313	141	212	0.36	0.4
	1981	844.9	80.5	836	329	37	292	128	201	0.39	0.4
	1982	944.9	90.4	645	229	30	199	68	161	0.36	0.2
	1983	921.1	86.8	654	233	14	219	73	160	0.36	0.3
	1984	972.4	91.7	546	147	18	129	52	95	0.27	0.2
	1985	882.6	84.0	1,082	416	31	385	136	280	0.38	0.5
	1986	930.6	90.3	818	255	18	237	80	175	0.31	0.3
	1987	969.6	91.6	593	135	9	126	51	84	0.23	0.1
	1988	932.0	89.1	732	199	17	182	62	137	0.27	0.2
	1989	1,001.8	94.7	476	99	10	89	28	71	0.21	0.1
	1990	925.4	89.2	737	188	8	180	74	114	0.26	0.2
	1991	1,023.3	95.6	586	98	10	88	26	72	0.17	0.1
QUAD CITIES 1,2	1974	958.1	72.3	678	482			36	446	0.71	0.5
Docket 50-254, 50-265; DPR-29, -30	1975	833.6	68.4	1,083	1,618	114	1,504	692	926	1.49	1.9
1st commercial operation 2/73, 3/73	1976	951.2	73.1	1,225	1,651	269	1,382	648	1,003	1.35	1.7
Type - BWRs	1977	970.1	84.0	907	1,031	108	923	373	658	1.14	1.1
Capacity - 769, 769 MWe	1978	1,124.5	88.6	1,207	1,618	358	1,260	722	1,618	1.34	1.4
	1979	1,075.0	84.6	1,688	2,158	215	1,943	1,250	908	1.28	2.0
	1980	866.9	64.4	3,089	4,838	291	4,547	3,657	1,181	1.57	5.6
	1981	1,156.9	81.1	2,246	3,146	100	3,046	2,623	523	1.40	2.7
	1982	1,018.7	76.0	2,314	3,757	177	3,580	2,653	1,104	1.62	3.7
	1983	1,088.5	79.2	1,802	2,491	168	2,323	1,898	593	1.38	2.3
	1984	994.6	65.7	1,678	1,579	122	1,457	1,075	504	0.94	1.6
	1985	1,268.0	82.7	1,184	990	172	818	27	963	0.84	0.8
	1986	1,093.2	71.0	1,451	950	128	822	568	382	0.65	0.9
	1987	1,126.6	75.3	1,429	720	79	641	435	285	0.50	0.6
	1988	1,173.7	84.1	1,486	827	136	691	545	282	0.56	0.7
	1989	1,196.3	85.9	1,721	900	143	757	616	284	0.52	0.8
	1990	1,148.9	77.8	2,186	1,028	183	845	713	315	0.47	0.9
	1991	1,044.5	73.2	1,722	509	107	402	292	217	0.30	0.5

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
RANCHO SECO	1976	268.1	30.4	297	58	6	52	17	41	0.20	0.2
Docket 50-312; DPR-54	1977	706.4	77.1	515	391	61	329	248	142	0.76	0.6
1st commercial operation 4/75	1978	607.7	80.5	508	323	76	247	176	147	0.64	0.5
Type - PWR	1979	687.0	91.1	287	126	27	99	64	62	0.44	0.2
Capacity - 873 MWe	1980	530.9	60.4	890	412	110	302	281	131	0.46	0.8
	1981	321.2	40.2	772	402	83	319	266	136	0.52	1.3
	1982	409.5	53.3	766	337	49	288	217	120	0.44	0.8
	1983	347.9	46.8	1,338	787	158	629	604	183	0.59	2.3
	1984	460.0	58.3	802	222	73	149	115	107	0.28	0.5
	1985	238.7	30.8	1,764	756	183	573	583	173	0.43	3.2
	1986	0.0	0.0	1,513	402	36	366	277	125	0.27	---
	1987	0.0	0.0	1,533	300	52	248	216	84	0.20	---
	1988	355.8	63.1	693	78	13	65	33	45	0.11	0.2
	1989	179.9	54.7	603	81	9	72	19	62	0.13	0.5
	1990	0.0	0.0	111	13	4	9	2	11	0.12	---
	1991	0.0	0.0	101	9	5	4	1	8	0.09	---
RIVER BEND 1	1987	605.2	68.4	1,268	378	70	308	249	129	0.30	0.6
Docket 50-458; NPF-47	1988	880.7	94.3	513	107	30	77	34	73	0.21	0.1
1st commercial operation 6/86	1989	584.5	69.1	1,566	558	44	514	412	146	0.36	1.0
Type - BWR	1990	682.2	78.0	1,616	489	49	440	348	141	0.30	0.7
Capacity - 936 MWe	1991	814.7	87.2	780	144	38	106	54	90	0.18	0.2
ROBINSON 2	1972	580.0		245	215	42	173	137	78	0.88	0.4
Docket 50-261; DPR-23	1973	455.1		831	695					0.84	1.5
1st commercial operation 3/71	1974	578.1	83.3	853	672	185	487			0.79	1.2
Type - PWR	1975	501.8	72.7	849	1,142					1.35	2.3
Capacity - 665 MWe	1976	585.5	84.7	597	715	30	685	457	758	1.20	1.2
	1977	511.5	85.2	634	455	52	403	223	232	0.72	0.9
	1978	480.5	72.0	943	963	63	900	529	434	1.02	2.0
	1979	482.0	70.8	1,454	1,188	60	1,128	794	394	0.82	2.5
	1980	387.3	62.2	2,009	1,852	79	1,773	1,379	473	0.92	4.8
	1981	426.6	73.0	1,462	733	45	688	513	220	0.50	1.7
	1982	277.5	48.9	2,011	1,426	128	1,298	945	481	0.71	5.1
	1983	409.8	75.5	2,244	923	96	827	628	295	0.41	2.3
	1984	28.0	7.0	4,127	2,880	196	2,684	2,549	331	0.70	102.9
	1985	629.5	87.9	1,378	311	52	259	164	147	0.23	0.5
	1986	577.1	80.3	1,571	539	46	493	340	199	0.34	0.9
	1987	510.1	72.5	1,379	499	54	445	313	186	0.36	1.0

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
ROBINSON 2 (Continued)	1988	385.0	65.9	1,351	564	44	520	370	194	0.42	1.5
	1989	336.6	48.7	1,098	195	31	164	88	107	0.18	0.6
	1990	400.3	64.8	1,626	437	33	404	356	81	0.27	1.1
	1991	575.1	81.4	885	193	31	162	139	54	0.22	0.3
SALEM 1,2	1978	546.4	55.6	574	122	28	94	32	90	0.21	0.2
Docket 50-272, -311; DPR-70, -75	1979	250.0	25.5	1,488	584	100	484	359	225	0.39	2.3
1st commercial operation 6/77	1980	680.6	69.2	1,704	449	55	394	281	168	0.26	0.7
Type - PWRs	1981	743.0	78.1	1,652	254	4	250	152	102	0.15	0.3
Capacity - 1106, 1106 MWe	1982	1,440.4	72.6	3,228	1,203	66	1,137	846	357	0.37	0.8
	1983	742.0	30.5	2,383	581	10	571	463	118	0.24	0.8
	1984	650.1	31.8	1,395	681	10	671	469	212	0.49	1.0
	1985	1,657.7	75.8	1,112	204	59	145	54	150	0.18	0.1
	1986	1,484.3	70.4	3,554	599	10	589	459	140	0.17	0.4
	1987	1,478.2	73.3	2,543	600	8	592	433	167	0.24	0.4
	1988	1,591.6	73.6	1,609	503	1	502	329	174	0.31	0.3
	1989	1,675.4	79.5	2,944	338	4	334	209	129	0.11	0.2
	1990	1,362.6	65.1	3,636	272	6	266	188	84	0.07	0.2
	1991	1,726.4	79.3	4,201	458	15	443	366	92	0.11	0.3
SAN ONOFRE 1,2,3	1969	314.1		123	42	10	32	5	37	0.34	0.1
Docket 50-206, -361, -362;	1970	365.9		251	155	13	142	59	96	0.62	0.4
DPR-13, NPF-10, NPF-15	1971	362.1		121	50	12	38	3	47	0.41	0.1
1st commercial operation 1/68, 8/83, 4/84	1972	338.5		326	256	29	227	117	139	0.79	0.8
Type - PWR	1973	273.7		570	353	40	313	168	185	0.62	1.3
Capacity - 436, 1070, 1080 MWe	1974	377.8	86.1	219	71					0.32	0.2
	1975	389.0	87.4	424	292					0.69	0.8
	1976	297.9	70.2	1,330	880	147	733	629	251	0.66	3.0
	1977	281.2	63.7	985	847	77	770	451	396	0.86	3.0
	1978	323.2	80.2	764	401	25	376	234	167	0.52	1.2
	1979	401.0	90.2	521	139	23	116	65	74	0.27	0.3
	1980	97.3	22.3	3,063	2,386	219	2,167	2,017	369	0.78	24.5
	1981	95.9	26.7	2,902	3,223	100	3,123	3,104	119	1.11	33.6
	1982	61.6	15.7	3,055	832	81	751	730	102	0.27	13.5
	1983	0.0	0.0	1,701	155	31	124	113	42	0.09	---
	1984	670.4	68.30	7,514	986	105	881	831	155	0.27	1.5
	1985	1,381.8	132.90	5,742	722	16	173	151	38	0.24	15.50
	1986	1,698.2	61.1	3,594	824	86	738	574	250	0.24	1.10
	1987	1,983.0	78.8	2,138	696	113	583	408	288	0.33	0.4
	1988	1,982.3	68.4	2,324	781	99	682	518	263	0.34	0.4

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
SAN ONOFRE 1,2,3 (Continued)	1989	1,840.8	64.9	2,237	567	23	544	357	210	0.25	0.3
	1990	1,980.5	69.1	2,224	885	109	776	693	192	0.40	0.4
	1991	1,987.6	75.3	1,814	412	43	369	289	123	0.23	0.2
SEABROOK Docket 50-443; NPF-86 1st commercial operation 8/90 Type - PWR Capacity - 1150 MWe	1991	810.4	75.9	699	92	2	90	43	49	0.13	0.1
SEQUOYAH 1,2 Docket 50-327, -328; DPR-77, -79 1st commercial operation 7/81, 6/82 Type - PWR Capacity - 1148, 1148 MWe	1982	583.5	52.8	1,965	570	73	497	61	509	0.29	1.0
	1983	1,663.7	75.1	1,772	491	74	417	46	445	0.28	0.3
	1984	1,481.9	69.0	2,373	1,117	152	965	111	1,006	0.47	0.8
	1985	1,151.3	51.3	1,854	1,071	118	953	243	828	0.58	0.9
	1986	0.0	0.0	1,735	526	101	425	70	456	0.30	---
	1987	0.0	0.0	2,080	420	55	365	101	319	0.20	---
	1988	490.8	31.8	2,439	678	73	605	115	563	0.28	1.4
	1989	1,851.7	85.7	2,007	657	71	586	140	517	0.33	0.4
	1990	1,662.6	77.2	2,934	1,678	102	1,576	352	1,326	0.57	1.0
	1991	1,965.4	88.0	1,928	698	39	659	299	399	0.36	0.4
SOUTH TEXAS 1, 2 Docket 50-498, 50-499; NPF -76,-80 1st commercial operation 8/88, 6/89 Type - PWRs Capacity - 1251, 1251 MWe	1989	769.3	65.6	989	161	10	151	114	47	0.16	0.2
	1990	1,504.1	65.9	1,136	206	18	188	126	80	0.18	0.1
	1991	1,741.5	72.4	1,144	257	38	219	172	85	0.22	0.1
ST. LUCIE 1,2 Docket 50-335, -389; DPR-67; NPF-16 1st commercial operation 12/76, 8/83 Type - PWRs Capacity - 839, 839 MWe	1977	649.1	84.7	445	152	26	126	92	60	0.34	0.2
	1978	606.4	76.5	797	337	15	322	140	197	0.42	0.6
	1979	592.0	74.0	907	438	25	413	209	229	0.48	0.7
	1980	627.9	77.5	1,074	532	82	450	195	337	0.50	0.8
	1981	599.1	72.7	1,473	929	20	909	556	373	0.63	1.6
	1982	816.8	94.0	1,045	272	17	255	105	167	0.26	0.3
	1983	290.3	15.4	2,211	1,204	5	1,199	924	280	0.54	4.1
	1984	1,183.0	69.6	2,090	1,263	40	1,223	807	456	0.60	1.1
	1985	1,445.8	82.5	1,971	1,344	294	1,050	810	534	0.68	0.9
	1986	1,588.6	89.1	1,279	491	81	410	322	169	0.38	0.3
	1987	1,407.9	81.9	2,012	951	1	950	560	391	0.47	0.7
	1988	1,639.7	93.0	1,448	611	54	557	371	240	0.42	0.4
	1989	1,493.1	85.1	1,414	495	24	471	298	197	0.35	0.3
	1990	1,188.4	70.0	1,876	777	83	694	482	295	0.41	0.7
	1991	1,592.8	90.8	1,282	479	38	441	303	176	0.37	0.3

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
SUMMER 1	1984	504.6	61.1	1,120	295	29	266	202	93	0.26	0.6
Docket 50-395; NPF-12	1985	627.7	71.6	1,201	379	74	305	241	138	0.32	0.6
1st commercial operation 1/84	1986	853.7	95.3	392	23	5	18	12	11	0.06	0.03
Type - PWR	1987	618.7	71.0	1,075	560	34	526	454	106	0.52	0.9
Capacity - 885 MWe	1988	605.3	69.1	1,127	511	35	476	403	108	0.45	0.8
	1989	652.4	83.1	374	52	11	41	27	25	0.14	0.1
	1990	730.0	83.9	1,090	376	29	347	322	54	0.34	0.5
	1991	642.5	82.9	984	291	21	270	253	38	0.30	0.5
SURRY 1,2	1973	420.6		936	152					0.16	0.4
Docket 50-280, 50-281; DPR-32, -37	1974	717.4	49.8	1,715	884	72	812			0.52	1.2
1st commercial operation 12/72, 5/73	1975	1,079.0	70.8	1,948	1,649	27	1,622	1,065	584	0.85	1.5
Type - PWRs	1976	930.7	60.4	2,753	3,165	444	2,721	1,873	1,292	1.15	3.4
Capacity - 781, 781 MWe	1977	1,139.0	72.2	1,860	2,307	348	1,959	1,380	927	1.24	2.0
	1978	1,210.6	77.2	2,203	1,837	530	1,307	1,248	589	0.83	1.5
	1979	343.0	42.3	5,065	3,584	173	3,411	2,975	609	0.71	10.4
	1980	568.2	40.3	5,317	3,836	353	3,483	3,117	719	0.72	6.8
	1981	907.6	59.3	3,753	4,244	428	3,816	3,040	1,204	1.13	4.7
	1982	1,323.3	88.5	1,878	1,490	399	1,091	506	984	0.79	1.1
	1983	916.2	61.3	2,754	3,220	571	2,649	1,786	1,434	1.17	3.5
	1984	1,026.7	71.0	3,198	2,247	536	1,711	1,575	672	0.70	2.2
	1985	1,166.4	78.2	3,206	1,815	509	1,306	1,232	583	0.57	1.6
	1986	1,080.5	69.0	3,763	2,356	430	1,926	1,677	679	0.63	2.2
	1987	1,132.7	72.7	2,675	712	192	520	325	387	0.27	0.6
	1988	750.4	50.0	3,184	1,542	68	1,474	1,117	425	0.48	2.1
	1989	489.3	33.0	3,100	836	27	809	530	306	0.27	1.7
	1990	1,276.4	83.9	1,947	575	53	522	389	186	0.30	0.5
	1991	1,271.9	84.5	1,547	510	45	465	311	199	0.33	0.4
SUSQUEHANNA 1,2	1984	719.9	72.6	2,827	308	74	234	127	181	0.11	0.4
Docket 50-387, 50-388; NPF-14; NPF-22	1985	1,452.2	76.4	3,669	1,106	78	1,028	790	316	0.30	0.8
1st commercial operation 6/83, 2/85	1986	1,344.8	67.0	2,996	828	50	778	402	426	0.28	0.6
Type - BWR	1987	1,749.5	85.3	2,548	621	36	585	341	280	0.24	0.4
Capacity - 1033, 1039 MWe	1988	1,691.0	83.5	1,904	516	52	464	281	235	0.27	0.3
	1989	1,572.5	77.1	2,063	704	32	672	332	372	0.34	0.4
	1990	1,746.9	85.4	1,691	440	30	410	179	261	0.26	0.3
	1991	1,878.0	89.8	1,844	507	44	463	251	256	0.27	0.3

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
THREE MILE ISLAND 1,2	1975	675.9	82.2	131	73						
Docket 50-289, -320; DPR-50, -73	1976	530.0	65.4	819	286	23	263	18	55	0.56	0.1
1st commercial operation 9/74, 12/78	1977	664.5	80.9	1,122	360	15	344	69	217	0.35	0.5
Type - PWRs	1978	690.0	85.1	1,929	504	32	472	128	231	0.32	0.5
Capacity - 808, 880 MWe	1979	266.0	21.9	3,975	1,392	197	1,195	235	269	0.26	0.7
	1980	0.0	0.0	2,328	394	29	365	907	485	0.35	5.2
	1981	0.0	0.0	2,103	376	50	326	239	155	0.17	---
	1982	0.0	0.0	2,123	1,004	62	942	190	186	0.18	---
	1983	0.0	0.0	1,592	1,159	85	1,074	433	571	0.47	---
	1984	0.0	0.0	1,079	688	50	638	633	526	0.73	---
	1985	103.6	10.6	1,890	857	230	627	330	358	0.64	---
								266	591	0.45	8.3
THREE MILE ISLAND 1*	1986	585.2	70.9	1,360	213	44	169	89	124	0.16	0.4
Docket 50-289; DPR-50	1987	610.7	73.6	1,259	149	40	109	50	99	0.12	0.2
1st commercial operation 9/74	1988	661.0	77.8	1,012	210	40	170	88	122	0.21	0.3
Type - PWR	1989	871.3	100.0	670	54	22	32	3	51	0.08	0.1
Capacity - 808 MWe	1990	645.5	84.6	1,319	264	53	211	121	143	0.20	0.4
	1991	688.7	86.4	1,542	198	47	151	99	99	0.13	0.3
THREE MILE ISLAND 2**	1986	0.0	0.0	1,497	915	97	818	615	300	0.61	---
Docket 50-320; DPR-73	1987	0.0	0.0	1,378	977	90	887	687	290	0.71	---
1st commercial operation 12/78	1988	0.0	0.0	1,247	917	26	891	691	226	0.74	---
Type - PWR	1989	0.0	0.0	1,014	639	88	551	382	257	0.63	---
Capacity - 880 MWE	1990	0.0	0.0	484	136	25	111	50	86	0.28	---
	1991	0.0	0.0	153	37	1	36	3	34	0.24	---
TRDJAN	1977	792.0	92.6	591	174	30	144	105	69	0.29	0.2
Docket 50-344; NPF-1	1978	205.5	20.6	711	319	83	236	125	194	0.45	1.6
1st commercial operation 5/76	1979	631.0	58.1	736	258	74	184	113	145	0.35	0.4
Type - PWR	1980	727.5	72.5	1,159	421	77	344	305	116	0.36	0.6
Capacity - 1095 MWe	1981	775.6	74.1	1,311	609	113	496	363	246	0.46	0.8

* Three Mile Island 1 resumed commercial power generation 10/85 after being under regulatory restraint since 1979.

**Three Mile Island 2 has been shut down since the 1979 accident, but was still included in the count of reactors through 1988 since dose was still being accumulated to defuel and decontaminate the unit during this time period.

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
TROJAN (Continued)	1982	579.5	60.8	977	419	76	343	168	251	0.43	0.7
	1983	494.2	62.4	969	307	35	272	129	178	0.32	0.6
	1984	567.0	54.4	1,042	433	41	392	230	203	0.42	0.8
	1985	829.1	76.7	852	363	31	332	210	153	0.43	0.4
	1986	852.4	79.7	1,321	381	46	335	274	107	0.29	0.4
	1987	525.5	54.0	1,209	363	66	297	266	97	0.30	0.7
	1988	758.6	67.5	1,408	401	108	293	311	90	0.28	0.5
	1989	666.8	61.9	1,360	421	37	384	317	104	0.31	0.6
	1990	732.4	66.3	1,169	258	9	249	185	73	0.22	0.4
	1991	181.6	16.1	1,496	567	17	550	475	92	0.38	3.1
TURKEY POINT 3,4	1973	401.9		444	78					0.18	0.2
Docket 50-250, 50-251; DPR-31, -41	1974	953.6		794	454	88	366	202	252	0.57	0.5
1st commercial operation 12/72, 9/73	1975	1,003.7	74.9	1,176	876	270	606	559	317	0.74	0.9
Type - PWRs	1976	974.2	71.2	1,647	1,184	89	1,095	868	316	0.72	1.2
Capacity - 666, 666 MWe	1977	979.5	72.1	1,319	1,036	94	942	522	514	0.79	1.1
	1978	1,000.2	78.8	1,336	1,032	90	942	546	486	0.77	1.0
	1979	811.0	62.4	2,002	1,680	299	1,381	997	683	0.84	2.1
	1980	990.6	73.6	1,803	1,651	232	1,419	1,218	433	0.92	1.7
	1981	654.0	46.8	2,932	2,251	274	1,977	1,854	397	0.77	3.4
	1982	915.7	65.2	2,956	2,119	197	1,922	1,656	463	0.72	2.3
	1983	878.4	62.8	2,930	2,681	272	2,409	2,119	562	0.92	3.1
	1984	946.7	68.5	2,010	1,255	217	1,038	876	379	0.62	1.3
	1985	1,034.9	74.7	1,905	1,253	91	1,162	817	436	0.66	1.2
	1986	754.1	54.9	1,808	946	71	875	716	230	0.52	1.3
	1987	431.3	36.6	1,980	1,371	79	1,292	987	384	0.69	3.2
	1988	809.8	59.5	1,841	738	18	720	523	215	0.40	0.9
	1989	689.9	56.8	1,625	433	25	408	281	152	0.27	0.6
	1990	933.1	69.0	2,099	730	140	590	475	255	0.35	0.8
	1991	258.2	21.0	2,087	939	105	834	685	254	0.45	3.6
VERMONT YANKEE	1973	222.1		244	85					0.35	0.4
Docket 50-271; DPR-28	1974	303.5		357	216	24	192	103	113	0.61	0.7
1st commercial operation 11/72	1975	429.0	87.8	282	153	70	83	63	90	0.54	0.4
Type - BWR	1976	389.6	77.1	815	411	36	375	246	165	0.50	1.1
Capacity - 504 MWe	1977	423.5	85.1	641	258	83	175	90	168	0.40	0.6
	1978	387.5	75.9	934	339	78	261	158	181	0.36	0.9
	1979	414.0	82.1	1,220	1,170	546	624	642	528	0.96	2.8
	1980	357.8	71.5	1,443	1,338	141	1,197	926	412	0.93	3.7
	1981	429.1	84.6	1,264	731	121	610	408	323	0.58	1.7

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Dthers	Contrac-tor	Station & Utility		
VERMONT YANKEE (Continued)	1982	501.0	96.0	481	205	60	145	80	125	0.43	0.4
	1983	346.1	69.3	1,316	1,527	215	1,312	787	740	1.16	4.4
	1984	398.1	79.0	954	626	83	543	318	308	0.66	1.6
	1985	361.4	71.8	1,392	1,051	163	888	898	153	0.76	2.9
	1986	248.1	48.9	1,389	1,188	44	1,144	1,091	97	0.86	4.8
	1987	423.6	84.2	827	303	37	266	226	77	0.37	0.7
	1988	492.1	95.7	379	124	27	97	67	57	0.33	0.3
	1989	432.8	84.7	832	288	43	245	220	68	0.35	0.7
	1990	433.1	85.9	849	307	37	270	236	71	0.36	0.7
	1991	492.3	94.3	310	118	19	99	66	52	0.38	0.2
VOGTLE 1,2	1988	820.4	77.7	1,108	138	13	125	107	31	0.12	0.2
Docket 50-424, 50-425; NPF-68, -81	1989	1,045.8	96.0	427	32	7	25	14	18	0.07	0.0
1st commercial operation 6/87, 5/89	1990	1,710.9	82.7	1,602	466	89	377	323	143	0.29	0.3
Type - PWRs	1991	1,966.5	89.2	1,357	362	50	312	296	66	0.27	0.2
Capacity - 1079, 1110 MWe											
WASHINGTON NUCLEAR 2	1985	616.0	87.6	755	119	42	77	42	77	0.16	0.2
Docket 50-397; NPF-21	1986	616.0	74.4	1,013	222	56	166	70	152	0.22	0.4
1st commercial operation 12/84	1987	639.0	70.8	1,201	406	95	311	143	263	0.34	0.6
Type - BWR	1988	707.7	71.8	1,050	353	81	272	93	260	0.34	0.5
Capacity - 1095 MWe	1989	727.2	78.3	1,299	492	161	331	216	276	0.38	0.7
	1990	684.7	67.5	1,348	536	121	415	209	327	0.40	0.8
	1991	508.5	50.3	1,088	387	88	299	143	244	0.36	0.8
WATERFORD 3	1986	875.7	79.1	1,244	223	62	161	178	45	0.18	0.3
Docket 50-382; NPF-38	1987	891.8	82.5	959	156	33	123	106	50	0.16	0.2
1st commercial operation 9/85	1988	784.3	75.4	1,246	259	79	180	207	52	0.21	0.3
Type - PWR	1989	909.8	82.6	1,306	265	70	195	231	34	0.20	0.3
Capacity - 1075 MWe	1990	1,027.9	92.8	432	47	0	47	24	23	0.11	0.0
	1991	870.6	79.8	1,301	364	101	263	307	57	0.28	0.4
WOLF CREEK 1	1986	832.8	73.3	682	143	27	116	78	65	0.21	0.2
Docket 50-482; NPF-42	1987	778.8	71.1	675	138	26	112	82	56	0.20	0.2
1st commercial operation 9/85	1988	794.7	70.7	1,010	297	62	235	177	120	0.29	0.4
Type - PWR	1989	1,108.4	99.5	186	18	4	14	8	10	0.10	0.0
Capacity - 1135 MWe	1990	940.2	81.0	798	195	29	166	130	65	0.24	0.2
	1991	707.6	71.9	1,010	331	37	294	244	87	0.33	0.5

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
YANKEE ROWE	1969	138.3		193	215	83	132	78	133	1.11	1.6
Docket 50-29; DPR-3	1970	146.1		355	255	90	165	158	97	0.72	1.7
1st commercial operation 7/61	1971	173.5		155	90	46	44	19	71	0.58	0.5
Type - PWR	1972	78.7		282	255	63	192	146	109	0.90	3.2
Capacity - 167 MWe	1973	127.1		133	99			47	52	0.74	0.8
	1974	111.3		243	205			99	106	0.84	1.8
	1975	145.1	82.4	249	116	52	64	66	50	0.47	0.8
	1976	152.2	89.8	152	59	17	42	4	55	0.39	0.4
	1977	124.6	73.9	725	356	28	328	174	182	0.49	2.9
	1978	145.0	81.0	565	282	24	258	95	187	0.50	1.9
	1979	149.0	81.6	441	127	16	111	52	75	0.29	0.9
	1980	35.6	22.0	502	213	6	207	90	123	0.42	6.0
	1981	109.0	74.4	515	302	8	294	136	166	0.59	2.8
	1982	108.6	73.4	814	474	7	467	215	259	0.58	4.4
	1983	163.5	91.4	395	68	18	50	7	61	0.17	0.4
	1984	124.8	71.4	654	348	15	333	141	207	0.53	2.8
	1985	144.3	85.3	653	211	17	194	81	130	0.32	1.5
	1986	169.7	95.0	384	45	20	25	2	43	0.12	0.3
	1987	138.7	82.7	593	217	37	180	126	91	0.37	1.6
	1988	136.4	85.2	738	227	35	192	148	79	0.31	1.7
	1989	159.4	92.9	496	62	20	42	19	43	0.12	0.4
	1990	101.1	61.5	702	246	32	214	170	76	0.35	2.4
	1991	121.2	72.3	162	40	11	29	16	24	0.25	0.3
ZION 1,2	1974	425.3	71.1	306	56			13	43	0.18	0.1
Docket 50-295, 50-304; DPR-39, -48	1975	1,181.5	74.9	436	127	17	110	49	78	0.29	0.1
1st commercial operation 12/73, 9/74	1976	1,134.9	61.9	774	571	64	507	257	314	0.74	0.5
Type - PWRs	1977	1,358.6	75.0	784	1,003	43	960	561	442	1.28	0.7
Capacity - 1040, 1040 MWe	1978	1,613.5	80.2	1,104	1,017	294	723	418	1,017	0.92	0.6
	1979	1,238.0	67.6	1,472	1,274	168	1,106	747	527	0.87	1.0
	1980	1,411.2	74.1	1,363	920	107	813	560	360	0.67	0.7
	1981	1,366.9	72.3	1,754	1,720	50	1,670	1,155	565	0.98	1.3
	1982	1,186.4	64.3	1,575	2,103	42	2,061	1,688	415	1.34	1.8
	1983	1,222.3	69.4	1,285	1,311	118	1,193	905	406	1.02	1.1
	1984	1,389.9	69.6	1,110	786	23	763	556	230	0.71	0.6
	1985	1,187.9	62.9	1,498	1,166	39	1,127	787	379	0.78	1.0
	1986	1,462.0	73.2	967	474	21	453	330	144	0.49	0.3

APPENDIX C
PERSONNEL, DOSE AND POWER GENERATION SUMMARY (Continued)

Reporting Organization	Year	Mega-watt-Years (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Collective Dose (person-rems or cSv)	Person-rems (-cSv) per Work Function		Person-rems (-cSv) per Personnel Type		Average Meas'ble Dose (rems or cSv)	Person rems (-cSv)/ MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
ZION 1,2 (Continued)	1987	1,337.0	71.0	1,046	653	38	615	432	221	0.62	0.5
	1988	1,549.1	78.3	1,926	1,260	38	1,222	1,045	215	0.65	0.8
	1989	1,514.1	77.6	1,282	624	21	603	392	232	0.49	0.4
	1990	860.4	46.9	1,385	696	19	677	492	204	0.50	0.8
	1991	1,125.7	58.2	902	173	26	147	90	83	0.19	0.2

APPENDIX D

Number of Personnel and Person-rem by Work and Job Function

1991

APPENDIX D

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *ARKANSAS 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	3	0	12	15	0.954	0.000	2.377	3.331
OPERATIONS PERSONNEL	41	0	0	41	8.537	0.000	0.000	8.537
HEALTH PHYSICS PERSONNEL	48	0	16	64	9.011	0.000	2.969	11.980
SUPERVISORY PERSONNEL	1	0	0	1	0.235	0.000	0.000	0.235
ENGINEERING PERSONNEL	2	0	6	8	0.671	0.000	1.397	2.068
TOTAL	95	0	34	129	19.408	0.000	6.743	26.151
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	78	0	167	245	14.245	0.000	34.107	48.352
OPERATIONS PERSONNEL	11	0	0	11	1.791	0.000	0.000	1.791
HEALTH PHYSICS PERSONNEL	19	0	56	75	3.040	0.000	12.419	15.459
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	3	4	0.112	0.000	0.725	0.837
TOTAL	109	0	226	335	19.188	0.000	47.251	66.439
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	37	38	0.165	0.000	8.618	8.783
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	1	0	3	4	0.105	0.000	0.395	0.500
SUPERVISORY PERSONNEL	0	0	1	1	0.000	0.000	0.400	0.400
ENGINEERING PERSONNEL	2	0	14	16	0.433	0.000	6.470	6.903
TOTAL	4	0	55	59	0.703	0.000	15.883	16.586
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	69	2	187	258	18.727	0.385	55.542	74.654
OPERATIONS PERSONNEL	2	0	1	3	0.275	0.000	0.215	0.490
HEALTH PHYSICS PERSONNEL	31	0	54	85	9.910	0.000	17.658	27.568
SUPERVISORY PERSONNEL	6	0	3	9	1.334	0.000	1.625	2.959
ENGINEERING PERSONNEL	3	0	17	20	0.420	0.000	3.939	4.359
TOTAL	111	2	262	375	30.666	0.385	78.979	110.030
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	1	1	0.000	0.000	0.273	0.273
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	18	0	18	36	5.410	0.000	3.292	8.702
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	18	0	19	37	5.410	0.000	3.565	8.975
REFUELING								
MAINTENANCE PERSONNEL	9	0	71	80	1.954	0.000	21.299	23.253
OPERATIONS PERSONNEL	2	0	0	2	0.290	0.000	0.000	0.290
HEALTH PHYSICS PERSONNEL	18	0	31	49	3.680	0.000	5.920	9.600
SUPERVISORY PERSONNEL	1	0	2	3	0.135	0.000	1.080	1.215
ENGINEERING PERSONNEL	0	0	3	3	0.000	0.000	0.905	0.905
TOTAL	30	0	107	137	6.059	0.000	29.204	35.263
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	160 (114)	2 (2)	475 (362)	637 (478)	36.045	0.385	122.216	158.646
OPERATIONS PERSONNEL	56 (46)	0 (0)	1 (1)	57 (47)	10.893	0.000	0.215	11.108
HEALTH PHYSICS PERSONNEL	135 (68)	0 (0)	178 (108)	313 (176)	31.156	0.000	42.653	73.809
SUPERVISORY PERSONNEL	8 (7)	0 (0)	6 (4)	14 (11)	1.704	0.000	3.105	4.809
ENGINEERING PERSONNEL	8 (6)	0 (0)	43 (34)	51 (40)	1.636	0.000	13.436	15.072
GRAND TOTALS	367 (241)	2 (2)	703 (509)	1072 (752)	81.434	0.385	181.625	263.444

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *BEAVER VALLEY 1,2

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	8	0	17	25	2.495	0.000	6.160	8.655
OPERATIONS PERSONNEL	44	0	1	45	12.060	0.000	0.160	12.220
HEALTH PHYSICS PERSONNEL	24	0	25	49	6.535	0.000	10.425	16.960
SUPERVISORY PERSONNEL	29	0	12	41	8.315	0.000	4.180	12.495
ENGINEERING PERSONNEL	9	0	0	9	2.075	0.000	0.000	2.075
TOTAL	114	0	55	169	31.480	0.000	20.925	52.405
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	175	0	172	347	78.205	0.000	65.350	143.555
OPERATIONS PERSONNEL	8	0	0	8	1.740	0.000	0.000	1.740
HEALTH PHYSICS PERSONNEL	18	0	50	68	5.220	0.000	22.685	27.905
SUPERVISORY PERSONNEL	13	0	24	37	3.670	0.000	8.830	12.500
ENGINEERING PERSONNEL	5	0	0	5	1.120	0.000	0.000	1.120
TOTAL	219	0	246	465	89.955	0.000	96.865	186.820
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	155	155	0.050	0.000	98.990	99.040
OPERATIONS PERSONNEL	0	0	0	0	0.100	0.000	0.000	0.100
HEALTH PHYSICS PERSONNEL	1	0	45	46	0.180	0.000	20.585	20.765
SUPERVISORY PERSONNEL	2	0	13	15	0.895	0.000	7.375	8.270
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	3	0	213	216	1.225	0.000	126.950	128.175
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	13	13	0.090	0.000	3.770	3.860
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.030	0.000	0.330	0.360
SUPERVISORY PERSONNEL	0	0	2	2	0.025	0.000	0.285	0.310
ENGINEERING PERSONNEL	0	0	0	0	0.040	0.000	0.000	0.040
TOTAL	0	0	16	16	0.185	0.000	4.385	4.570
WASTE PROCESSING								
MAINTENANCE PERSONNEL	7	0	0	7	1.540	0.000	0.145	1.685
OPERATIONS PERSONNEL	9	0	0	9	3.325	0.000	0.000	3.325
HEALTH PHYSICS PERSONNEL	2	0	14	16	0.960	0.000	3.250	4.210
SUPERVISORY PERSONNEL	2	0	0	2	0.440	0.000	0.000	0.440
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	20	0	14	34	6.265	0.000	3.395	9.660
REFUELING								
MAINTENANCE PERSONNEL	21	0	19	40	12.270	0.000	12.955	25.225
OPERATIONS PERSONNEL	2	0	0	2	0.250	0.000	0.000	0.250
HEALTH PHYSICS PERSONNEL	0	0	15	15	0.000	0.000	5.515	5.515
SUPERVISORY PERSONNEL	7	0	8	15	1.800	0.000	5.905	7.705
ENGINEERING PERSONNEL	1	0	0	1	0.770	0.000	0.000	0.770
TOTAL	31	0	42	73	15.090	0.000	24.375	39.465
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	211	0	376	587	94.650	0.000	187.370	282.020
OPERATIONS PERSONNEL	63	0	1	64	17.475	0.000	0.160	17.635
HEALTH PHYSICS PERSONNEL	45	0	150	195	12.925	0.000	62.790	75.715
SUPERVISORY PERSONNEL	53	0	59	112	15.145	0.000	26.575	41.720
ENGINEERING PERSONNEL	15	0	0	15	4.005	0.000	0.000	4.005
GRAND TOTALS	387	0	586	973	144.200	0.000	276.895	421.095

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *BIG ROCK POINT

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	0	0	0	0	0.091	0.001	0.000	0.092
OPERATIONS PERSONNEL	30	0	0	30	20.160	0.001	0.055	20.216
HEALTH PHYSICS PERSONNEL	12	0	1	13	7.523	0.000	0.433	7.956
SUPERVISORY PERSONNEL	3	0	0	3	0.918	0.032	0.000	0.950
ENGINEERING PERSONNEL	1	0	0	1	0.274	0.000	0.000	0.274
TOTAL	46	0	1	47	28.966	0.034	0.488	29.488
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	24	0	0	24	6.926	0.154	0.017	7.097
OPERATIONS PERSONNEL	0	0	0	0	0.210	0.012	0.014	0.236
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.360	0.000	0.293	0.653
SUPERVISORY PERSONNEL	0	0	0	0	0.030	0.000	0.000	0.030
ENGINEERING PERSONNEL	0	0	0	0	0.044	0.000	0.000	0.044
TOTAL	24	0	1	25	7.570	0.166	0.324	8.060
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	4	36	25	65	0.633	46.056	21.194	67.883
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	4	0	13	17	1.695	0.000	5.185	6.880
SUPERVISORY PERSONNEL	0	0	0	0	0.078	0.000	0.000	0.078
ENGINEERING PERSONNEL	1	0	0	1	0.773	0.000	0.000	0.773
TOTAL	9	36	38	83	3.179	46.056	26.379	75.614
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	30	30	8	68	33.360	30.198	4.708	68.266
OPERATIONS PERSONNEL	11	3	2	16	3.189	0.607	1.005	4.801
HEALTH PHYSICS PERSONNEL	8	0	11	19	8.054	0.000	5.717	13.771
SUPERVISORY PERSONNEL	5	4	0	9	2.156	1.368	0.000	3.524
ENGINEERING PERSONNEL	2	0	0	2	0.849	0.000	0.000	0.849
TOTAL	56	37	21	114	47.608	32.173	11.430	91.211
WASTE PROCESSING								
MAINTENANCE PERSONNEL	7	0	0	7	1.667	0.054	0.000	1.721
OPERATIONS PERSONNEL	5	0	0	5	1.294	0.005	0.034	1.333
HEALTH PHYSICS PERSONNEL	7	0	1	8	1.465	0.000	0.182	1.647
SUPERVISORY PERSONNEL	0	0	0	0	0.006	0.000	0.000	0.006
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	19	0	1	20	4.432	0.059	0.216	4.707
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.086	0.000	0.025	0.111
OPERATIONS PERSONNEL	12	0	0	12	3.290	0.000	0.014	3.304
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.310	0.000	0.328	0.638
SUPERVISORY PERSONNEL	1	0	0	1	0.230	0.000	0.000	0.230
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	14	0	0	14	3.916	0.000	0.367	4.283
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	65	66	33	164	42.763	76.463	25.944	145.170
OPERATIONS PERSONNEL	58	3	2	63	28.143	0.625	1.122	29.890
HEALTH PHYSICS PERSONNEL	32	0	27	59	19.407	0.000	12.138	31.545
SUPERVISORY PERSONNEL	9	4	0	13	3.418	1.400	0.000	4.818
ENGINEERING PERSONNEL	4	0	0	4	1.940	0.000	0.000	1.940
GRAND TOTALS	168	73	62	303	95.671	78.488	39.204	213.363

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *BRAIDWOOD 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	18	7	89	114	6.571	0.031	22.066	28.668
OPERATIONS PERSONNEL	121	0	118	239	16.513	0.000	1.097	17.610
HEALTH PHYSICS PERSONNEL	25	0	31	56	15.931	0.000	10.641	26.572
SUPERVISORY PERSONNEL	63	57	64	184	3.262	0.215	18.130	21.607
ENGINEERING PERSONNEL	51	72	30	153	3.740	0.849	1.579	6.168
TOTAL	278	136	332	746	46.017	1.095	53.513	100.625
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	106	11	590	707	39.414	0.051	146.595	186.060
OPERATIONS PERSONNEL	57	0	16	73	7.777	0.000	0.153	7.930
HEALTH PHYSICS PERSONNEL	6	0	74	80	3.583	0.000	25.331	28.914
SUPERVISORY PERSONNEL	86	0	15	101	4.414	0.000	4.129	8.543
ENGINEERING PERSONNEL	31	84	13	128	2.316	0.992	0.685	3.993
TOTAL	286	95	708	1089	57.504	1.043	176.893	235.440
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	164	165	0.328	0.001	40.688	41.017
OPERATIONS PERSONNEL	6	0	1	7	0.777	0.000	0.012	0.789
HEALTH PHYSICS PERSONNEL	0	0	17	17	0.070	0.000	5.987	6.057
SUPERVISORY PERSONNEL	9	8	62	79	0.442	0.032	17.649	18.123
ENGINEERING PERSONNEL	25	33	1	59	1.837	0.386	0.069	2.292
TOTAL	41	41	245	327	3.454	0.419	64.405	68.278
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	10	3	91	104	3.705	0.012	22.544	26.261
OPERATIONS PERSONNEL	5	0	0	5	0.707	0.000	0.000	0.707
HEALTH PHYSICS PERSONNEL	2	0	1	3	1.140	0.000	0.394	1.534
SUPERVISORY PERSONNEL	21	2	6	29	1.078	0.007	1.704	2.789
ENGINEERING PERSONNEL	1	15	0	16	0.069	0.176	0.015	0.260
TOTAL	39	20	98	157	6.699	0.195	24.657	31.551
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	8	8	0.000	0.000	2.114	2.114
OPERATIONS PERSONNEL	9	0	166	175	1.203	0.000	1.548	2.751
HEALTH PHYSICS PERSONNEL	1	0	1	2	0.850	0.000	0.384	1.234
SUPERVISORY PERSONNEL	2	0	0	2	0.089	0.000	0.037	0.126
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	12	0	175	187	2.142	0.000	4.083	6.225
REFUELING								
MAINTENANCE PERSONNEL	55	0	196	251	20.586	0.001	48.666	69.253
OPERATIONS PERSONNEL	73	0	5	78	9.893	0.000	0.045	9.938
HEALTH PHYSICS PERSONNEL	10	0	42	52	6.296	0.000	14.582	20.878
SUPERVISORY PERSONNEL	117	1	2	120	6.009	0.002	0.681	6.692
ENGINEERING PERSONNEL	13	47	2	62	0.931	0.555	0.083	1.569
TOTAL	268	48	247	563	43.715	0.558	64.057	108.330
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	190	21	1138	1349	70.604	0.096	282.673	353.373
OPERATIONS PERSONNEL	271	0	306	577	36.870	0.000	2.855	39.725
HEALTH PHYSICS PERSONNEL	44	0	166	210	27.870	0.000	57.319	85.189
SUPERVISORY PERSONNEL	298	68	149	515	15.294	0.256	42.330	57.880
ENGINEERING PERSONNEL	121	251	46	418	8.893	2.958	2.431	14.282
GRAND TOTALS	924	340	1805	3069	159.531	3.310	387.608	550.449

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *BROWNS FERRY 1,2,3

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	406	10	117	533	19.913	0.129	3.592	23.634
OPERATIONS PERSONNEL	71	0	2	73	9.992	0.000	0.077	10.069
HEALTH PHYSICS PERSONNEL	96	0	15	111	15.073	0.000	0.231	15.304
SUPERVISORY PERSONNEL	25	0	7	32	0.551	0.000	0.228	0.779
ENGINEERING PERSONNEL	78	9	149	236	4.709	0.148	61.308	66.165
TOTAL	676	19	290	985	50.238	0.277	65.436	115.951
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	483	13	171	667	102.021	2.734	28.440	133.195
OPERATIONS PERSONNEL	71	0	0	71	3.166	0.000	0.000	3.166
HEALTH PHYSICS PERSONNEL	97	0	7	104	10.939	0.000	0.052	10.991
SUPERVISORY PERSONNEL	24	0	6	30	1.807	0.000	0.295	2.102
ENGINEERING PERSONNEL	88	11	35	134	12.487	1.332	2.947	16.766
TOTAL	763	24	219	1006	130.420	4.066	31.734	166.220
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	16	1	14	31	0.078	0.017	0.038	0.133
OPERATIONS PERSONNEL	3	0	0	3	0.044	0.000	0.000	0.044
HEALTH PHYSICS PERSONNEL	17	0	1	18	0.121	0.000	0.000	0.121
SUPERVISORY PERSONNEL	2	0	1	3	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	11	0	1	12	0.135	0.000	0.005	0.140
TOTAL	49	1	17	67	0.378	0.017	0.043	0.438
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	5	0	0	5	0.014	0.000	0.000	0.014
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	2	0	1	3	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.025	0.025
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	7	0	1	8	0.014	0.000	0.025	0.039
WASTE PROCESSING								
MAINTENANCE PERSONNEL	45	1	24	70	0.265	0.000	1.426	1.691
OPERATIONS PERSONNEL	42	0	2	44	0.277	0.000	0.325	0.602
HEALTH PHYSICS PERSONNEL	77	0	15	92	3.931	0.000	4.282	8.213
SUPERVISORY PERSONNEL	2	0	2	4	0.011	0.000	0.008	0.019
ENGINEERING PERSONNEL	28	1	5	34	0.852	0.001	0.002	0.855
TOTAL	194	2	48	244	5.336	0.001	6.043	11.380
REFUELING								
MAINTENANCE PERSONNEL	99	1	24	124	8.080	0.000	0.857	8.937
OPERATIONS PERSONNEL	23	0	0	23	0.616	0.000	0.000	0.616
HEALTH PHYSICS PERSONNEL	28	0	0	28	1.336	0.000	0.000	1.336
SUPERVISORY PERSONNEL	8	0	4	12	0.087	0.000	0.005	0.092
ENGINEERING PERSONNEL	20	4	15	39	0.637	0.051	0.861	1.549
TOTAL	178	5	43	226	10.756	0.051	1.723	12.530
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	1054	26	350	1430	130.371	2.880	34.353	167.604
OPERATIONS PERSONNEL	210	0	4	214	14.095	0.000	0.402	14.497
HEALTH PHYSICS PERSONNEL	317	0	39	356	31.400	0.000	4.565	35.965
SUPERVISORY PERSONNEL	61	0	20	81	2.456	0.000	0.561	3.017
ENGINEERING PERSONNEL	225	25	205	455	18.820	1.532	65.123	85.475
GRAND TOTALS	1867	51	618	2536	197.142	4.412	105.004	306.558

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *BRUNSWICK 1,2 TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	19	3	9	31	6.261	1.290	3.842	11.393
OPERATIONS PERSONNEL	80	0	11	91	53.554	0.000	2.903	56.457
HEALTH PHYSICS PERSONNEL	62	0	55	117	35.157	0.130	29.597	64.884
SUPERVISORY PERSONNEL	18	0	0	18	6.353	0.055	0.080	6.488
ENGINEERING PERSONNEL	3	1	3	7	1.795	0.240	1.579	3.614
TOTAL	182	4	78	264	103.120	1.715	38.001	142.836
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	198	50	417	665	147.520	44.008	177.007	368.535
OPERATIONS PERSONNEL	21	0	10	31	6.955	0.000	5.714	12.669
HEALTH PHYSICS PERSONNEL	23	2	15	40	8.425	0.450	4.386	13.261
SUPERVISORY PERSONNEL	30	4	14	48	9.124	1.336	4.980	15.440
ENGINEERING PERSONNEL	56	4	143	203	17.768	1.977	66.755	86.500
TOTAL	328	60	599	987	189.792	47.771	258.842	496.405
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	6	11	22	39	2.335	2.656	6.987	11.978
OPERATIONS PERSONNEL	0	0	0	0	0.105	0.000	0.000	0.105
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.215	0.000	0.040	0.255
SUPERVISORY PERSONNEL	0	0	0	0	0.020	0.005	0.105	0.130
ENGINEERING PERSONNEL	6	2	19	27	1.856	0.747	6.665	9.268
TOTAL	12	13	41	66	4.531	3.408	13.797	21.736
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	33	2	320	355	11.964	0.895	162.698	175.557
OPERATIONS PERSONNEL	0	0	0	0	0.040	0.000	0.010	0.050
HEALTH PHYSICS PERSONNEL	2	0	4	6	0.765	0.085	1.175	2.025
SUPERVISORY PERSONNEL	1	0	21	22	0.399	0.005	8.045	8.449
ENGINEERING PERSONNEL	14	2	64	80	3.820	0.839	18.538	23.197
TOTAL	50	4	409	463	16.988	1.824	190.466	209.278
WASTE PROCESSING								
MAINTENANCE PERSONNEL	14	0	3	17	5.540	0.005	2.007	7.552
OPERATIONS PERSONNEL	0	0	0	0	0.040	0.000	0.000	0.040
HEALTH PHYSICS PERSONNEL	2	0	0	2	0.756	0.005	0.345	1.106
SUPERVISORY PERSONNEL	0	0	0	0	0.015	0.000	0.005	0.020
ENGINEERING PERSONNEL	0	0	0	0	0.060	0.010	0.025	0.095
TOTAL	16	0	3	19	6.411	0.020	2.382	8.813
REFUELING								
MAINTENANCE PERSONNEL	10	0	60	70	10.195	0.130	22.978	33.303
OPERATIONS PERSONNEL	1	0	0	1	0.340	0.000	0.000	0.340
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.260	0.000	0.341	0.601
SUPERVISORY PERSONNEL	3	0	0	3	0.610	0.000	0.015	0.625
ENGINEERING PERSONNEL	0	0	21	21	0.480	0.210	9.097	9.787
TOTAL	14	0	82	96	11.885	0.340	32.431	44.656
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	280	66	831	1177	183.815	48.984	375.519	608.318
OPERATIONS PERSONNEL	102	0	21	123	61.034	0.000	8.627	69.661
HEALTH PHYSICS PERSONNEL	89	2	75	166	45.578	0.670	35.884	82.132
SUPERVISORY PERSONNEL	52	4	35	91	16.521	1.401	13.230	31.152
ENGINEERING PERSONNEL	79	9	250	338	25.779	4.023	102.659	132.461
GRAND TOTALS	602	81	1212	1895	332.727	55.078	535.919	923.724

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *BYRON 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	1	0	3	4	0.251	0.000	0.540	0.791
OPERATIONS PERSONNEL	81	0	98	179	10.169	0.000	0.849	11.018
HEALTH PHYSICS PERSONNEL	49	0	72	121	12.239	0.000	11.610	23.849
SUPERVISORY PERSONNEL	88	0	10	98	2.825	0.000	0.347	3.172
ENGINEERING PERSONNEL	44	57	3	104	2.581	0.387	0.105	3.073
TOTAL	263	57	186	506	28.065	0.387	13.451	41.903
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	131	1	518	650	41.590	0.015	80.799	122.404
OPERATIONS PERSONNEL	43	0	49	92	5.343	0.000	0.423	5.766
HEALTH PHYSICS PERSONNEL	3	0	1	4	0.687	0.000	0.156	0.843
SUPERVISORY PERSONNEL	203	0	90	293	6.511	0.000	3.228	9.739
ENGINEERING PERSONNEL	25	108	31	164	1.485	0.737	1.190	3.412
TOTAL	405	109	689	1203	55.616	0.752	85.796	142.164
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	150	150	0.039	0.000	23.401	23.440
OPERATIONS PERSONNEL	0	0	0	0	0.026	0.000	0.000	0.026
HEALTH PHYSICS PERSONNEL	0	0	14	14	0.055	0.000	0.011	0.066
SUPERVISORY PERSONNEL	34	0	0	34	1.096	0.000	0.493	1.589
ENGINEERING PERSONNEL	12	17	4	33	0.694	0.117	0.136	0.947
TOTAL	46	17	168	231	1.910	0.117	24.041	26.068
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	2	18	179	199	0.766	0.243	27.956	28.965
OPERATIONS PERSONNEL	1	0	0	1	0.084	0.000	0.000	0.084
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.179	0.000	0.013	0.192
SUPERVISORY PERSONNEL	4	0	32	36	0.134	0.000	1.167	1.301
ENGINEERING PERSONNEL	1	38	7	46	0.087	0.255	0.276	0.618
TOTAL	9	56	218	283	1.250	0.498	29.412	31.160
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	2	2	0.018	0.000	0.243	0.261
OPERATIONS PERSONNEL	4	0	130	134	0.494	0.000	1.124	1.618
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.102	0.000	0.000	0.102
SUPERVISORY PERSONNEL	2	0	0	2	0.076	0.000	0.000	0.076
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	6	0	132	138	0.690	0.000	1.367	2.057
REFUELING								
MAINTENANCE PERSONNEL	40	0	22	62	12.816	0.002	3.408	16.226
OPERATIONS PERSONNEL	37	0	0	37	4.699	0.000	0.000	4.699
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.122	0.000	0.000	0.122
SUPERVISORY PERSONNEL	95	0	5	100	3.042	0.000	0.187	3.229
ENGINEERING PERSONNEL	3	1	0	4	0.188	0.009	0.018	0.215
TOTAL	176	1	27	204	20.867	0.011	3.613	24.491
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	174	19	874	1067	55.480	0.260	136.347	192.087
OPERATIONS PERSONNEL	166	0	277	443	20.815	0.000	2.396	23.211
HEALTH PHYSICS PERSONNEL	54	0	87	141	13.384	0.000	11.790	25.174
SUPERVISORY PERSONNEL	426	0	137	563	13.684	0.000	5.422	19.106
ENGINEERING PERSONNEL	85	221	45	351	5.035	1.505	1.725	8.265
GRAND TOTALS	905	240	1420	2565	108.398	1.765	157.680	267.843

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *CALLAWAY 1 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	0	0	0	0	0.345	0.000	0.024	0.369
OPERATIONS PERSONNEL	15	0	0	15	4.873	0.023	0.208	5.104
HEALTH PHYSICS PERSONNEL	13	0	0	13	2.824	0.000	0.000	2.824
SUPERVISORY PERSONNEL	0	0	0	0	0.199	0.000	0.000	0.199
ENGINEERING PERSONNEL	0	0	0	0	0.326	0.000	0.014	0.340
TOTAL	28	0	0	28	8.567	0.023	0.246	8.836
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	3	0	1	4	2.472	0.000	0.515	2.987
OPERATIONS PERSONNEL	0	0	0	0	0.546	0.000	0.005	0.551
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.302	0.000	0.000	0.302
SUPERVISORY PERSONNEL	0	0	0	0	0.014	0.000	0.000	0.014
ENGINEERING PERSONNEL	0	0	2	2	0.092	0.000	0.378	0.470
TOTAL	3	0	3	6	3.426	0.000	0.898	4.324
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.011	0.011
OPERATIONS PERSONNEL	0	0	0	0	0.002	0.000	0.000	0.002
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.014	0.000	0.000	0.014
ENGINEERING PERSONNEL	0	0	0	0	0.005	0.000	0.028	0.033
TOTAL	0	0	0	0	0.021	0.000	0.039	0.060
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	0	0	0.492	0.000	0.306	0.798
OPERATIONS PERSONNEL	0	0	0	0	0.114	0.010	0.000	0.124
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.064	0.000	0.000	0.064
SUPERVISORY PERSONNEL	0	0	0	0	0.055	0.000	0.000	0.055
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.006	0.006
TOTAL	0	0	0	0	0.725	0.010	0.312	1.047
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.065	0.000	0.033	0.098
OPERATIONS PERSONNEL	16	0	2	18	5.260	0.000	0.802	6.062
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.486	0.000	0.000	0.486
SUPERVISORY PERSONNEL	1	0	0	1	0.398	0.000	0.000	0.398
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.002	0.002
TOTAL	18	0	2	20	6.209	0.000	0.837	7.046
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.011	0.011
OPERATIONS PERSONNEL	0	0	0	0	0.002	0.000	0.000	0.002
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.014	0.000	0.000	0.014
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.002	0.002
TOTAL	0	0	0	0	0.016	0.000	0.013	0.029
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	3 (8)	0 (0)	1 (1)	4 (9)	3.374	0.000	0.900	4.274
OPERATIONS PERSONNEL	31 (39)	0 (0)	2 (2)	33 (41)	10.797	0.033	1.015	11.845
HEALTH PHYSICS PERSONNEL	14 (17)	0 (0)	0 (0)	14 (17)	3.676	0.000	0.000	3.676
SUPERVISORY PERSONNEL	1 (1)	0 (0)	0 (0)	1 (1)	0.694	0.000	0.000	0.694
ENGINEERING PERSONNEL	0 (1)	0 (0)	2 (2)	2 (3)	0.423	0.000	0.430	0.853
GRAND TOTALS	49 (66)	0 (0)	5 (5)	54 (71)	18.964	0.033	2.345	21.342

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *CALVERT CLIFFS 1,2

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	0	0	4	4	0.000	0.000	0.574	0.574
OPERATIONS PERSONNEL	40	0	0	40	7.094	0.000	0.000	7.094
HEALTH PHYSICS PERSONNEL	18	0	25	43	3.724	0.000	4.600	8.324
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	58	0	29	87	10.818	0.000	5.174	15.992
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	4	0	11	15	0.505	0.000	1.866	2.371
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	0	1	0.124	0.000	0.000	0.124
TOTAL	5	0	11	16	0.629	0.000	1.866	2.495
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	3	0	8	11	0.415	0.000	1.099	1.514
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	3	0	8	11	0.415	0.000	1.099	1.514
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	72	4	92	168	17.138	0.474	21.250	38.862
OPERATIONS PERSONNEL	4	0	3	7	0.539	0.000	0.368	0.907
HEALTH PHYSICS PERSONNEL	15	0	24	39	2.736	0.000	4.747	7.483
SUPERVISORY PERSONNEL	0	0	1	1	0.000	0.000	0.224	0.224
ENGINEERING PERSONNEL	5	0	3	8	1.123	0.000	0.393	1.516
TOTAL	96	4	123	223	21.536	0.474	26.982	48.992
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	0	2	3	0.107	0.000	0.612	0.719
OPERATIONS PERSONNEL	0	0	1	1	0.000	0.000	0.154	0.154
HEALTH PHYSICS PERSONNEL	15	0	26	41	3.914	0.000	6.151	10.065
SUPERVISORY PERSONNEL	1	0	0	1	0.343	0.000	0.000	0.343
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	17	0	29	46	4.364	0.000	6.917	11.281
REFUELING								
MAINTENANCE PERSONNEL	2	1	0	3	0.303	0.120	0.000	0.423
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	3	0	14	17	0.845	0.000	2.246	3.091
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	5	1	14	20	1.148	0.120	2.246	3.514
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	79 (106)	5 (5)	109 (110)	193 (221)	18.053	0.594	24.302	42.949
OPERATIONS PERSONNEL	44 (52)	0 (0)	4 (5)	48 (57)	7.633	0.000	0.522	8.155
HEALTH PHYSICS PERSONNEL	54 (48)	0 (0)	97 (72)	151 (120)	11.634	0.000	18.843	30.477
SUPERVISORY PERSONNEL	1 (1)	0 (0)	1 (1)	2 (2)	0.343	0.000	0.224	0.567
ENGINEERING PERSONNEL	6 (10)	0 (0)	3 (6)	9 (16)	1.247	0.000	0.393	1.640
GRAND TOTALS	184 (217)	5 (5)	214 (194)	403 (416)	38.910	0.594	44.284	83.788

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *CATAWBA 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	205	409	158	772	2.840	2.380	0.600	5.820
OPERATIONS PERSONNEL	57	8	34	99	18.415	3.950	0.005	22.370
HEALTH PHYSICS PERSONNEL	50	0	141	191	8.675	0.000	17.625	26.300
SUPERVISORY PERSONNEL	2	0	0	2	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	85	9	1	95	7.855	0.000	0.140	7.995
TOTAL	399	426	334	1159	37.785	6.330	18.370	62.485
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	209	370	109	688	54.550	68.590	17.870	141.010
OPERATIONS PERSONNEL	55	8	35	98	1.430	2.085	17.025	20.540
HEALTH PHYSICS PERSONNEL	50	0	136	186	6.310	0.000	12.580	18.890
SUPERVISORY PERSONNEL	2	0	0	2	0.280	0.000	0.000	0.280
ENGINEERING PERSONNEL	79	8	2	89	11.450	0.135	0.080	11.665
TOTAL	395	386	282	1063	74.020	70.810	47.555	192.385
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	68	266	111	445	7.365	69.855	35.950	113.170
OPERATIONS PERSONNEL	0	8	8	16	0.000	0.335	0.290	0.625
HEALTH PHYSICS PERSONNEL	17	0	90	107	2.155	0.000	16.290	18.445
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	54	9	1	64	16.865	9.725	0.275	26.865
TOTAL	139	283	210	632	26.385	79.915	52.805	159.105
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	157	355	135	647	8.890	74.985	37.000	120.875
OPERATIONS PERSONNEL	34	1	25	60	0.695	0.035	0.325	1.055
HEALTH PHYSICS PERSONNEL	33	0	98	131	3.925	0.000	13.190	17.115
SUPERVISORY PERSONNEL	1	0	0	1	0.005	0.000	0.000	0.005
ENGINEERING PERSONNEL	50	9	1	60	1.325	0.075	0.040	1.440
TOTAL	275	365	259	899	14.840	75.095	50.555	140.490
WASTE PROCESSING								
MAINTENANCE PERSONNEL	25	26	1	52	0.200	0.000	0.000	0.200
OPERATIONS PERSONNEL	2	1	35	38	0.055	0.000	1.980	2.035
HEALTH PHYSICS PERSONNEL	35	0	22	57	2.655	0.000	1.705	4.360
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	17	0	0	17	0.495	0.000	0.000	0.495
TOTAL	79	27	58	164	3.405	0.000	3.685	7.090
REFUELING								
MAINTENANCE PERSONNEL	67	87	20	174	5.860	2.515	1.535	9.910
OPERATIONS PERSONNEL	4	2	6	12	0.005	0.020	0.005	0.030
HEALTH PHYSICS PERSONNEL	19	0	41	60	0.205	0.000	0.880	1.085
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	19	0	1	20	0.550	0.000	0.005	0.555
TOTAL	109	89	68	266	6.620	2.535	2.425	11.580
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	731 (211)	1513 (415)	534 (184)	2778 (810)	79.705	218.325	92.955	390.985
OPERATIONS PERSONNEL	152 (56)	28 (11)	143 (35)	323 (102)	20.600	6.425	19.630	46.655
HEALTH PHYSICS PERSONNEL	204 (50)	0 (0)	528 (146)	732 (196)	23.925	0.000	62.270	86.195
SUPERVISORY PERSONNEL	5 (2)	0 (0)	0 (0)	5 (2)	0.285	0.000	0.000	0.285
ENGINEERING PERSONNEL	304 (86)	35 (9)	6 (2)	345 (97)	38.540	9.935	0.540	49.015
GRAND TOTALS	1396 (405)	1576 (435)	1211 (367)	4183(1207)	163.055	234.685	175.395	573.135

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *CLINTON

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	124	1	292	417	41.108	0.260	94.469	135.837
OPERATIONS PERSONNEL	27	0	10	37	12.093	0.000	1.875	13.968
HEALTH PHYSICS PERSONNEL	38	0	47	85	16.899	0.000	14.083	30.982
SUPERVISORY PERSONNEL	9	0	15	24	1.671	0.000	2.585	4.256
ENGINEERING PERSONNEL	10	0	18	28	1.983	0.000	3.889	5.872
TOTAL	208	1	382	591	73.754	0.260	116.901	190.915
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	0	0	0.296	0.000	0.072	0.368
OPERATIONS PERSONNEL	0	0	0	0	0.049	0.000	0.000	0.049
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.048	0.000	0.000	0.048
SUPERVISORY PERSONNEL	0	0	0	0	0.003	0.000	0.000	0.003
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.396	0.000	0.072	0.468
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	2	2	0.000	0.000	0.535	0.535
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.010	0.000	0.068	0.078
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.027	0.027
TOTAL	0	0	2	2	0.010	0.000	0.630	0.640
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	7	0	2	9	1.805	0.000	2.645	4.450
OPERATIONS PERSONNEL	0	0	0	0	0.067	0.000	0.076	0.143
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.426	0.000	0.439	0.865
SUPERVISORY PERSONNEL	0	0	0	0	0.022	0.000	0.061	0.083
ENGINEERING PERSONNEL	0	0	1	1	0.085	0.000	0.306	0.391
TOTAL	7	0	3	10	2.405	0.000	3.527	5.932
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	1	1	0.000	0.000	0.298	0.298
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.088	0.000	0.000	0.088
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	1	1	0.088	0.000	0.298	0.386
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.407	0.000	0.971	1.378
OPERATIONS PERSONNEL	0	0	0	0	0.118	0.000	0.062	0.180
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.063	0.000	0.282	0.345
SUPERVISORY PERSONNEL	0	0	0	0	0.070	0.000	0.216	0.286
ENGINEERING PERSONNEL	0	0	0	0	0.017	0.000	0.175	0.192
TOTAL	0	0	1	1	0.675	0.000	1.706	2.381
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	131	1	297	429	43.616	0.260	98.990	142.866
OPERATIONS PERSONNEL	27	0	10	37	12.327	0.000	2.013	14.340
HEALTH PHYSICS PERSONNEL	38	0	48	86	17.534	0.000	14.872	32.406
SUPERVISORY PERSONNEL	9	0	15	24	1.766	0.000	2.862	4.628
ENGINEERING PERSONNEL	10	0	19	29	2.085	0.000	4.397	6.482
GRAND TOTALS	215	1	389	605	77.328	0.260	123.134	200.722

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *COMANCHE PEAK TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	1	0	1	2	0.171	0.000	0.518	0.689
OPERATIONS PERSONNEL	13	1	1	15	4.386	0.178	0.957	5.521
HEALTH PHYSICS PERSONNEL	4	0	14	18	1.233	0.000	4.132	5.365
SUPERVISORY PERSONNEL	0	0	0	0	0.099	0.000	0.104	0.203
ENGINEERING PERSONNEL	0	0	0	0	0.123	0.000	0.134	0.257
TOTAL	18	1	16	35	6.012	0.178	5.845	12.035
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	22	0	110	132	8.602	0.020	31.151	39.773
OPERATIONS PERSONNEL	2	0	7	9	0.967	0.000	3.019	3.986
HEALTH PHYSICS PERSONNEL	3	0	5	8	0.900	0.000	1.749	2.649
SUPERVISORY PERSONNEL	0	0	0	0	0.223	0.000	0.017	0.240
ENGINEERING PERSONNEL	0	0	6	6	0.242	0.000	1.887	2.129
TOTAL	27	0	128	155	10.934	0.020	37.823	48.777
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	65	65	0.165	0.000	30.306	30.471
OPERATIONS PERSONNEL	0	0	5	5	0.122	0.000	1.165	1.287
HEALTH PHYSICS PERSONNEL	2	0	10	12	1.717	0.000	2.202	3.919
SUPERVISORY PERSONNEL	0	0	0	0	0.004	0.000	0.027	0.031
ENGINEERING PERSONNEL	0	0	18	18	0.021	0.000	3.525	3.546
TOTAL	2	0	98	100	2.029	0.000	37.225	39.254
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	11	11	0.066	0.000	3.784	3.850
OPERATIONS PERSONNEL	0	0	7	7	0.080	0.000	2.358	2.438
HEALTH PHYSICS PERSONNEL	6	0	10	16	1.363	0.000	3.624	4.987
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.001	0.000	0.152	0.153
TOTAL	6	0	28	34	1.510	0.000	9.918	11.428
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	2	2	0.009	0.000	0.557	0.566
OPERATIONS PERSONNEL	0	0	1	1	0.142	0.000	0.429	0.571
HEALTH PHYSICS PERSONNEL	5	0	3	8	1.973	0.000	1.370	3.343
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.056	0.056
TOTAL	5	0	6	11	2.124	0.000	2.412	4.536
REFUELING								
MAINTENANCE PERSONNEL	19	0	16	35	6.994	0.000	5.476	12.470
OPERATIONS PERSONNEL	8	0	0	8	2.253	0.000	0.201	2.454
HEALTH PHYSICS PERSONNEL	1	0	6	7	0.239	0.000	1.287	1.526
SUPERVISORY PERSONNEL	1	0	0	1	0.563	0.000	0.000	0.563
ENGINEERING PERSONNEL	3	0	0	3	0.656	0.023	0.198	0.877
TOTAL	32	0	22	54	10.705	0.023	7.162	17.890
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	42 (35)	0 (0)	205 (205)	247 (240)	16.007	0.020	71.792	87.819
OPERATIONS PERSONNEL	23 (31)	1 (1)	21 (23)	45 (55)	7.950	0.178	8.129	16.257
HEALTH PHYSICS PERSONNEL	21 (20)	0 (0)	48 (55)	69 (75)	7.425	0.000	14.364	21.789
SUPERVISORY PERSONNEL	1 (1)	0 (0)	0 (0)	1 (1)	0.889	0.000	0.148	1.037
ENGINEERING PERSONNEL	3 (3)	0 (0)	24 (27)	27 (30)	1.043	0.023	5.952	7.018
GRAND TOTALS	90 (90)	1 (1)	298 (310)	389 (401)	33.314	0.221	100.385	133.920

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *COOK 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	7	0	4	11	1.308	0.000	1.285	2.593
OPERATIONS PERSONNEL	23	1	5	29	5.594	0.336	2.001	7.931
HEALTH PHYSICS PERSONNEL	26	0	26	52	8.514	0.000	8.108	16.622
SUPERVISORY PERSONNEL	2	0	0	2	0.494	0.000	0.000	0.494
ENGINEERING PERSONNEL	1	0	0	1	0.161	0.000	0.000	0.161
TOTAL	59	1	35	95	16.071	0.336	11.394	27.801
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	14	0	31	45	2.796	0.000	8.659	11.455
OPERATIONS PERSONNEL	2	0	8	10	0.299	0.000	2.169	2.468
HEALTH PHYSICS PERSONNEL	3	0	22	25	0.763	0.000	5.704	6.467
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	0	1	0.572	0.000	0.000	0.572
TOTAL	20	0	61	81	4.430	0.000	16.532	20.962
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	44	44	0.000	0.000	17.183	17.183
OPERATIONS PERSONNEL	0	0	4	4	0.000	0.000	0.808	0.808
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	1	1	0.000	0.000	0.182	0.182
TOTAL	0	0	49	49	0.000	0.000	18.173	18.173
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	0	1	2	0.154	0.000	0.512	0.666
OPERATIONS PERSONNEL	0	0	2	2	0.000	0.000	0.656	0.656
HEALTH PHYSICS PERSONNEL	0	0	4	4	0.000	0.000	0.830	0.830
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	1	0	7	8	0.154	0.000	1.998	2.152
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	22 (17)	0 (0)	80 (71)	102 (88)	4.258	0.000	27.639	31.897
OPERATIONS PERSONNEL	25 (25)	1 (1)	19 (15)	45 (41)	5.893	0.336	5.634	11.863
HEALTH PHYSICS PERSONNEL	29 (26)	0 (0)	52 (47)	81 (73)	9.277	0.000	14.642	23.919
SUPERVISORY PERSONNEL	2 (2)	0 (0)	0 (0)	2 (2)	0.494	0.000	0.000	0.494
ENGINEERING PERSONNEL	2 (2)	0 (0)	1 (1)	3 (3)	0.733	0.000	0.182	0.915
GRAND TOTALS	80 (72)	1 (1)	152 (134)	233 (207)	20.655	0.336	48.097	69.088

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *COOPER STATION

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)								TOTAL PERSON-REM			
	STATION		UTILITY		CONTRACT		TOTAL		STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV												
MAINTENANCE PERSONNEL	7		0		0		7		0.337	0.000	0.000	0.337
OPERATIONS PERSONNEL	53		0		0		53		18.272	0.000	0.000	18.272
HEALTH PHYSICS PERSONNEL	25		0		37		62		8.284	0.000	11.753	20.037
SUPERVISORY PERSONNEL	4		0		0		4		0.913	0.000	0.000	0.913
ENGINEERING PERSONNEL	27		1		11		39		6.238	0.060	1.893	8.191
TOTAL	116		1		48		165		34.044	0.060	13.646	47.750
ROUTINE MAINTENANCE												
MAINTENANCE PERSONNEL	90		0		335		425		66.264	0.000	184.946	251.210
OPERATIONS PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	31		0		37		68		21.135	0.000	11.693	32.828
SUPERVISORY PERSONNEL	0		1		1		2		0.000	0.340	0.203	0.543
ENGINEERING PERSONNEL	8		33		33		74		0.216	18.177	8.065	26.458
TOTAL	129		34		406		569		87.615	18.517	204.907	311.039
IN-SERVICE INSPECTION												
MAINTENANCE PERSONNEL	1		0		21		22		0.002	0.000	11.755	11.757
OPERATIONS PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0		0		2		2		0.000	0.000	0.095	0.095
SUPERVISORY PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1		0		0		1		0.001	0.000	0.000	0.001
TOTAL	2		0		23		25		0.003	0.000	11.850	11.853
SPECIAL MAINTENANCE												
MAINTENANCE PERSONNEL	1		0		20		21		0.018	0.000	13.463	13.481
OPERATIONS PERSONNEL	6		0		0		6		0.039	0.000	0.000	0.039
HEALTH PHYSICS PERSONNEL	2		0		8		10		0.184	0.000	1.592	1.776
SUPERVISORY PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	3		0		1		4		0.124	0.000	0.170	0.294
TOTAL	12		0		29		41		0.365	0.000	15.225	15.590
WASTE PROCESSING												
MAINTENANCE PERSONNEL	1		0		0		1		0.004	0.000	0.000	0.004
OPERATIONS PERSONNEL	4		0		0		4		1.625	0.000	0.000	1.625
HEALTH PHYSICS PERSONNEL	5		0		1		6		1.103	0.000	0.017	1.120
SUPERVISORY PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
TOTAL	10		0		1		11		2.732	0.000	0.017	2.749
REFUELING												
MAINTENANCE PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	31		0		0		31		1.010	0.000	0.000	1.010
HEALTH PHYSICS PERSONNEL	2		0		2		4		0.233	0.000	0.237	0.470
SUPERVISORY PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	2		0		0		2		0.089	0.000	0.000	0.089
TOTAL	35		0		2		37		1.332	0.000	0.237	1.569
TOTAL BY JOB FUNCTION												
MAINTENANCE PERSONNEL	100	(90)	0	(0)	376	(375)	476	(465)	66.625	0.000	210.164	276.789
OPERATIONS PERSONNEL	94	(55)	0	(0)	0	(0)	94	(55)	20.946	0.000	0.000	20.946
HEALTH PHYSICS PERSONNEL	65	(33)	0	(0)	87	(39)	152	(72)	30.939	0.000	25.387	56.326
SUPERVISORY PERSONNEL	4	(4)	1	(1)	1	(1)	6	(6)	0.913	0.340	0.203	1.456
ENGINEERING PERSONNEL	41	(27)	34	(33)	45	(40)	120	(100)	6.668	18.237	10.128	35.033
GRAND TOTALS	304	(209)	35	(34)	509	(455)	848	(698)	126.091	18.577	245.882	390.550

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *CRYSTAL RIVER 3 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	1	0	1	2	0.425	0.025	0.395	0.845
OPERATIONS PERSONNEL	14	0	0	14	4.045	0.023	0.012	4.080
HEALTH PHYSICS PERSONNEL	2	0	0	2	1.388	0.000	0.075	1.463
SUPERVISORY PERSONNEL	0	0	2	2	0.014	0.124	0.674	0.812
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.179	0.042	0.221
TOTAL	17	0	3	20	5.872	0.351	1.198	7.421
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	38	9	125	172	13.098	3.818	39.150	56.066
OPERATIONS PERSONNEL	0	1	0	1	0.147	0.356	0.092	0.595
HEALTH PHYSICS PERSONNEL	46	0	31	77	13.980	0.000	9.883	23.863
SUPERVISORY PERSONNEL	0	0	2	2	0.114	0.103	0.465	0.682
ENGINEERING PERSONNEL	0	0	2	2	0.000	0.641	0.741	1.382
TOTAL	84	10	160	254	27.339	4.918	50.331	82.588
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	2	0	3	0.535	0.552	0.362	1.449
OPERATIONS PERSONNEL	4	0	0	4	0.823	0.018	0.000	0.841
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.040	0.000	0.178	0.218
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.011	0.042	0.053
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.034	0.000	0.034
TOTAL	5	2	1	8	1.398	0.615	0.582	2.595
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
WASTE PROCESSING								
MAINTENANCE PERSONNEL	3	0	0	3	2.884	0.064	0.059	3.007
OPERATIONS PERSONNEL	0	0	0	0	0.118	0.000	0.000	0.118
HEALTH PHYSICS PERSONNEL	18	0	0	18	7.128	0.000	0.418	7.546
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.055	0.000	0.055
TOTAL	21	0	0	21	10.130	0.119	0.477	10.726
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.031	0.010	0.040	0.081
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.122	0.000	0.010	0.132
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.097	0.097
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.153	0.010	0.147	0.310
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	43	11	126	180	16.973	4.469	40.006	61.448
OPERATIONS PERSONNEL	18	1	0	19	5.133	0.397	0.104	5.634
HEALTH PHYSICS PERSONNEL	66	0	32	98	22.658	0.000	10.564	33.222
SUPERVISORY PERSONNEL	0	0	4	4	0.128	0.238	1.278	1.644
ENGINEERING PERSONNEL	0	0	2	2	0.000	0.909	0.783	1.692
GRAND TOTALS	127	12	164	303	44.892	6.013	52.735	103.640

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *DAVIS-BESSE

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	48	0	93	141	1.252	0.000	2.573	3.825
OPERATIONS PERSONNEL	63	0	1	64	10.277	0.000	0.115	10.392
HEALTH PHYSICS PERSONNEL	38	0	50	88	10.538	0.000	10.255	20.793
SUPERVISORY PERSONNEL	2	0	0	2	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	24	0	22	46	0.508	0.000	0.210	0.718
TOTAL	175	0	166	341	22.575	0.000	13.153	35.728
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	67	0	208	275	4.199	0.000	9.926	14.125
OPERATIONS PERSONNEL	17	0	0	17	0.123	0.000	0.000	0.123
HEALTH PHYSICS PERSONNEL	34	0	36	70	0.712	0.000	0.299	1.011
SUPERVISORY PERSONNEL	2	0	0	2	0.078	0.000	0.000	0.078
ENGINEERING PERSONNEL	21	0	35	56	1.978	0.000	0.716	2.694
TOTAL	141	0	279	420	7.090	0.000	10.941	18.031
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	24	0	170	194	0.805	0.000	23.685	24.490
OPERATIONS PERSONNEL	8	0	0	8	0.425	0.000	0.000	0.425
HEALTH PHYSICS PERSONNEL	17	0	20	37	2.466	0.000	3.028	5.494
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	6	0	37	43	0.111	0.000	19.070	19.181
TOTAL	55	0	227	282	3.807	0.000	45.783	49.590
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	66	0	169	235	4.707	0.000	10.953	15.660
OPERATIONS PERSONNEL	28	0	0	28	0.516	0.000	0.000	0.516
HEALTH PHYSICS PERSONNEL	38	0	38	76	1.984	0.000	0.881	2.865
SUPERVISORY PERSONNEL	2	0	0	2	0.121	0.000	0.000	0.121
ENGINEERING PERSONNEL	10	0	22	32	0.478	0.000	1.409	1.887
TOTAL	144	0	229	373	7.806	0.000	13.243	21.049
WASTE PROCESSING								
MAINTENANCE PERSONNEL	16	0	16	32	0.072	0.000	0.017	0.089
OPERATIONS PERSONNEL	36	0	0	36	0.163	0.000	0.000	0.163
HEALTH PHYSICS PERSONNEL	35	0	26	61	4.256	0.000	0.763	5.019
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	3	0	1	4	0.033	0.000	0.056	0.089
TOTAL	90	0	43	133	4.524	0.000	0.836	5.360
REFUELING								
MAINTENANCE PERSONNEL	30	0	145	175	2.020	0.000	55.526	57.546
OPERATIONS PERSONNEL	54	0	0	54	1.400	0.000	0.000	1.400
HEALTH PHYSICS PERSONNEL	24	0	32	56	2.387	0.000	6.110	8.497
SUPERVISORY PERSONNEL	1	0	0	1	0.236	0.000	0.000	0.236
ENGINEERING PERSONNEL	21	0	9	30	2.050	0.000	3.607	5.657
TOTAL	130	0	186	316	8.093	0.000	65.243	73.336
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	251	0	801	1052	13.055	0.000	102.680	115.735
OPERATIONS PERSONNEL	206	0	1	207	12.904	0.000	0.115	13.019
HEALTH PHYSICS PERSONNEL	186	0	202	388	22.343	0.000	21.336	43.679
SUPERVISORY PERSONNEL	7	0	0	7	0.435	0.000	0.000	0.435
ENGINEERING PERSONNEL	85	0	126	211	5.158	0.000	25.068	30.226
GRAND TOTALS	735	0	1130	1865	53.895	0.000	149.199	203.094

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *DIABLO CANYON 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	5	0	0	5	0.611	0.000	0.000	0.611
HEALTH PHYSICS PERSONNEL	2	0	0	2	0.247	0.000	0.000	0.247
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	7	0	0	7	0.858	0.000	0.000	0.858
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	2	3	12	17	0.283	0.362	1.543	2.188
OPERATIONS PERSONNEL	0	0	1	1	0.000	0.000	0.481	0.481
HEALTH PHYSICS PERSONNEL	21	5	18	44	3.967	1.050	3.137	8.154
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	1	2	3	0.000	0.128	0.258	0.386
TOTAL	23	9	33	65	4.250	1.540	5.419	11.209
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	4	16	10	30	1.427	5.379	2.811	9.617
OPERATIONS PERSONNEL	4	0	5	9	1.063	0.000	3.754	4.817
HEALTH PHYSICS PERSONNEL	0	0	2	2	0.000	0.000	0.261	0.261
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	5	6	0.275	0.000	3.230	3.505
TOTAL	9	16	22	47	2.765	5.379	10.056	18.200
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	32	29	210	271	7.943	7.240	87.096	102.279
OPERATIONS PERSONNEL	17	0	6	23	2.687	0.000	1.401	4.088
HEALTH PHYSICS PERSONNEL	42	15	91	148	14.713	5.172	30.782	50.667
SUPERVISORY PERSONNEL	1	1	1	3	0.110	0.355	0.200	0.665
ENGINEERING PERSONNEL	2	0	11	13	0.240	0.000	3.888	4.128
TOTAL	94	45	319	458	25.693	12.767	123.367	161.827
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	13	2	9	24	6.315	0.926	4.514	11.755
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	13	2	9	24	6.315	0.926	4.514	11.755
REFUELING								
MAINTENANCE PERSONNEL	89	56	407	552	43.341	19.450	142.719	205.510
OPERATIONS PERSONNEL	24	1	17	42	4.137	0.130	5.193	9.460
HEALTH PHYSICS PERSONNEL	30	16	98	144	10.349	7.364	32.638	50.351
SUPERVISORY PERSONNEL	2	2	3	7	0.355	1.360	1.560	3.275
ENGINEERING PERSONNEL	11	9	36	56	3.176	1.964	14.177	19.317
TOTAL	156	84	561	801	61.358	30.268	196.287	287.913
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	127	104	639	870	52.994	32.431	234.169	319.594
OPERATIONS PERSONNEL	50	1	29	80	8.498	0.130	10.829	19.457
HEALTH PHYSICS PERSONNEL	108	38	218	364	35.591	14.512	71.332	121.435
SUPERVISORY PERSONNEL	3	3	4	10	0.465	1.715	1.760	3.940
ENGINEERING PERSONNEL	14	10	54	78	3.691	2.092	21.553	27.336
GRAND TOTALS	302	156	944	1402	101.239	50.880	339.643	491.762

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *ORESDEN 2,3

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	30	24	24	78	33.298	2.450	5.640	41.388
OPERATIONS PERSONNEL	157	0	126	283	55.696	0.000	17.771	73.467
HEALTH PHYSICS PERSONNEL	13	0	3	16	16.511	0.000	0.804	17.315
SUPERVISORY PERSONNEL	65	61	0	126	18.532	0.472	0.000	19.004
ENGINEERING PERSONNEL	31	88	86	205	5.867	2.062	6.844	14.773
TOTAL	296	173	239	708	129.904	4.984	31.059	165.947
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	228	84	1082	1394	249.813	8.746	257.498	516.057
OPERATIONS PERSONNEL	64	0	6	70	22.653	0.000	0.850	23.503
HEALTH PHYSICS PERSONNEL	28	0	31	59	34.118	0.000	13.848	47.966
SUPERVISORY PERSONNEL	167	42	0	209	47.967	0.323	0.000	48.290
ENGINEERING PERSONNEL	75	209	189	473	14.417	4.932	15.024	34.373
TOTAL	562	335	1308	2205	368.968	14.001	287.220	670.189
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	99	99	0.027	0.000	23.492	23.519
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.285	0.000	0.156	0.441
SUPERVISORY PERSONNEL	0	13	0	13	0.014	0.100	0.000	0.114
ENGINEERING PERSONNEL	3	14	37	54	0.572	0.328	2.946	3.846
TOTAL	4	27	136	167	0.898	0.428	26.594	27.920
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	13	295	308	0.000	1.353	70.259	71.612
OPERATIONS PERSONNEL	0	0	2	2	0.013	0.000	0.334	0.347
HEALTH PHYSICS PERSONNEL	3	0	5	8	3.155	0.000	2.031	5.186
SUPERVISORY PERSONNEL	0	4	0	4	0.041	0.030	0.000	0.071
ENGINEERING PERSONNEL	0	7	13	20	0.029	0.173	1.046	1.248
TOTAL	3	24	315	342	3.238	1.556	73.670	78.464
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	0	5	6	0.740	0.005	1.074	1.819
OPERATIONS PERSONNEL	31	0	65	96	11.010	0.000	9.142	20.152
HEALTH PHYSICS PERSONNEL	8	0	1	9	9.391	0.000	0.241	9.632
SUPERVISORY PERSONNEL	37	1	0	38	10.446	0.007	0.000	10.453
ENGINEERING PERSONNEL	9	6	2	17	1.801	0.136	0.116	2.053
TOTAL	86	7	73	166	33.388	0.148	10.573	44.109
REFUELING								
MAINTENANCE PERSONNEL	8	0	10	18	8.759	0.003	2.317	11.079
OPERATIONS PERSONNEL	12	0	0	12	4.241	0.000	0.013	4.254
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.559	0.000	0.011	0.570
SUPERVISORY PERSONNEL	5	1	0	6	1.287	0.005	0.000	1.292
ENGINEERING PERSONNEL	0	4	14	18	0.050	0.095	1.127	1.272
TOTAL	26	5	24	55	14.896	0.103	3.468	18.467
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	267	121	1515	1903	292.637	12.557	360.280	665.474
OPERATIONS PERSONNEL	264	0	199	463	93.613	0.000	28.110	121.723
HEALTH PHYSICS PERSONNEL	54	0	40	94	64.019	0.000	17.091	81.110
SUPERVISORY PERSONNEL	274	122	0	396	78.287	0.937	0.000	79.224
ENGINEERING PERSONNEL	118	328	341	787	22.736	7.726	27.103	57.565
GRAND TOTALS	977	571	2095	3643	551.292	21.220	432.584	1005.096

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *DUANE ARNOLD

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)								TOTAL PERSON-REM			
	STATION		UTILITY		CONTRACT		TOTAL		STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV												
MAINTENANCE PERSONNEL	10		0		2		12		6.737	0.000	1.563	8.300
OPERATIONS PERSONNEL	8		0		0		8		13.174	0.000	0.117	13.291
HEALTH PHYSICS PERSONNEL	8		0		1		9		5.419	0.000	0.993	6.412
SUPERVISORY PERSONNEL	2		0		2		4		0.372	0.000	0.338	0.710
ENGINEERING PERSONNEL	6		0		0		6		2.121	0.000	0.084	2.205
TOTAL	34		0		5		39		27.823	0.000	3.095	30.918
ROUTINE MAINTENANCE												
MAINTENANCE PERSONNEL	51		0		20		71		102.199	0.000	24.795	126.994
OPERATIONS PERSONNEL	3		0		1		4		1.458	0.000	0.375	1.833
HEALTH PHYSICS PERSONNEL	7		0		5		12		6.608	0.000	5.715	12.323
SUPERVISORY PERSONNEL	1		0		0		1		0.172	0.000	0.015	0.187
ENGINEERING PERSONNEL	12		0		1		13		3.499	0.000	0.450	3.949
TOTAL	74		0		27		101		113.936	0.000	31.350	145.286
IN-SERVICE INSPECTION												
MAINTENANCE PERSONNEL	1		0		2		3		0.136	0.000	0.000	0.136
OPERATIONS PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0		0		1		1		0.251	0.000	0.014	0.265
SUPERVISORY PERSONNEL	0		0		2		2		0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1		0		0		1		0.000	0.000	0.000	0.000
TOTAL	2		0		5		7		0.387	0.000	0.014	0.401
SPECIAL MAINTENANCE												
MAINTENANCE PERSONNEL	0		0		20		20		0.196	0.000	3.995	4.191
OPERATIONS PERSONNEL	0		0		1		1		0.017	0.000	0.000	0.017
HEALTH PHYSICS PERSONNEL	1		0		5		6		0.657	0.000	0.028	0.685
SUPERVISORY PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0		0		1		1		0.009	0.000	0.000	0.009
TOTAL	1		0		27		28		0.879	0.000	4.023	4.902
WASTE PROCESSING												
MAINTENANCE PERSONNEL	2		0		0		2		0.781	0.000	0.211	0.992
OPERATIONS PERSONNEL	3		0		0		3		1.025	0.000	0.890	1.915
HEALTH PHYSICS PERSONNEL	1		0		0		1		0.554	0.000	0.308	0.862
SUPERVISORY PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0		0		0		0		0.115	0.000	0.000	0.115
TOTAL	6		0		0		6		2.475	0.000	1.409	3.884
REFUELING												
MAINTENANCE PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
TOTAL	0		0		0		0		0.000	0.000	0.000	0.000
TOTAL BY JOB FUNCTION												
MAINTENANCE PERSONNEL	64	(63)	0	(0)	44	(28)	108	(91)	110.049	0.000	30.564	140.613
OPERATIONS PERSONNEL	14	(13)	0	(0)	2	(2)	16	(15)	15.674	0.000	1.382	17.056
HEALTH PHYSICS PERSONNEL	17	(16)	0	(0)	12	(7)	29	(23)	13.489	0.000	7.058	20.547
SUPERVISORY PERSONNEL	3	(3)	0	(0)	4	(2)	7	(5)	0.544	0.000	0.353	0.897
ENGINEERING PERSONNEL	19	(19)	0	(0)	2	(1)	21	(20)	5.744	0.000	0.534	6.278
GRAND TOTALS	117	(114)	0	(0)	64	(40)	181	(154)	145.500	0.000	39.891	185.391

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *FARLEY 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	29	0	11	40	1.285	0.000	0.172	1.457
OPERATIONS PERSONNEL	136	1	3	140	15.692	0.287	1.230	17.209
HEALTH PHYSICS PERSONNEL	68	0	106	174	23.616	0.000	51.721	75.337
SUPERVISORY PERSONNEL	27	14	5	46	1.735	1.971	0.080	3.786
ENGINEERING PERSONNEL	31	8	36	75	3.224	0.601	4.157	7.982
TOTAL	291	23	161	475	45.552	2.859	57.360	105.771
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	196	7	148	351	66.522	0.164	10.418	77.104
OPERATIONS PERSONNEL	34	0	0	34	4.714	0.000	0.000	4.714
HEALTH PHYSICS PERSONNEL	68	0	51	119	17.382	0.000	3.315	20.697
SUPERVISORY PERSONNEL	7	1	0	8	0.075	0.005	0.000	0.080
ENGINEERING PERSONNEL	9	1	7	17	0.057	0.009	0.116	0.182
TOTAL	314	9	206	529	88.750	0.178	13.849	102.777
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	17	0	5	22	0.055	0.000	0.100	0.155
OPERATIONS PERSONNEL	2	0	0	2	0.030	0.000	0.000	0.030
HEALTH PHYSICS PERSONNEL	1	0	1	2	0.005	0.000	0.017	0.022
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	6	0	4	10	0.062	0.000	0.143	0.205
TOTAL	26	0	10	36	0.152	0.000	0.260	0.412
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	137	9	789	935	3.325	0.604	412.763	416.692
OPERATIONS PERSONNEL	20	0	1	21	0.330	0.000	0.070	0.400
HEALTH PHYSICS PERSONNEL	39	0	29	68	1.522	0.000	4.168	5.690
SUPERVISORY PERSONNEL	3	3	1	7	0.032	0.016	0.060	0.108
ENGINEERING PERSONNEL	2	5	46	53	0.008	0.320	4.797	5.125
TOTAL	201	17	866	1084	5.217	0.940	421.858	428.015
WASTE PROCESSING								
MAINTENANCE PERSONNEL	3	0	2	5	0.036	0.000	0.940	0.976
OPERATIONS PERSONNEL	10	0	0	10	0.080	0.000	0.000	0.080
HEALTH PHYSICS PERSONNEL	50	0	10	60	5.710	0.000	1.184	6.894
SUPERVISORY PERSONNEL	1	0	0	1	0.065	0.000	0.000	0.065
ENGINEERING PERSONNEL	2	0	0	2	0.011	0.000	0.000	0.011
TOTAL	66	0	12	78	5.902	0.000	2.124	8.026
REFUELING								
MAINTENANCE PERSONNEL	15	0	26	41	0.190	0.000	2.030	2.220
OPERATIONS PERSONNEL	1	0	0	1	0.004	0.000	0.000	0.004
HEALTH PHYSICS PERSONNEL	3	0	9	12	0.004	0.000	0.800	0.804
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	2	0	1	3	0.020	0.000	0.020	0.040
TOTAL	21	0	36	57	0.218	0.000	2.850	3.068
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	397	16	981	1394	71.413	0.768	426.423	498.604
OPERATIONS PERSONNEL	203	1	4	208	20.850	0.287	1.300	22.437
HEALTH PHYSICS PERSONNEL	229	0	206	435	48.239	0.000	61.205	109.444
SUPERVISORY PERSONNEL	38	18	6	62	1.907	1.992	0.140	4.039
ENGINEERING PERSONNEL	52	14	94	160	3.382	0.930	9.233	13.545
GRAND TOTALS	919	49	1291	2259	145.791	3.977	498.301	648.069

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *FERMI 2 TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	4	0	3	7	1.485	0.001	1.884	3.370
OPERATIONS PERSONNEL	56	0	2	58	16.666	0.000	0.729	17.395
HEALTH PHYSICS PERSONNEL	26	0	63	89	6.453	0.000	18.238	24.691
SUPERVISORY PERSONNEL	0	0	1	1	1.321	0.018	0.523	1.862
ENGINEERING PERSONNEL	5	0	0	5	1.828	0.021	0.144	1.993
TOTAL	91	0	69	160	27.753	0.040	21.518	49.311
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	15	0	39	54	5.338	0.000	11.819	17.157
OPERATIONS PERSONNEL	1	0	0	1	0.451	0.000	0.018	0.469
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.075	0.000	0.013	0.088
SUPERVISORY PERSONNEL	0	0	0	0	0.231	0.000	0.309	0.540
ENGINEERING PERSONNEL	0	0	1	1	0.247	0.000	0.272	0.519
TOTAL	16	0	40	56	6.342	0.000	12.431	18.773
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	54	55	0.769	0.000	16.739	17.508
OPERATIONS PERSONNEL	7	0	0	7	1.362	0.000	0.000	1.362
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.157	0.000	0.100	0.257
SUPERVISORY PERSONNEL	4	0	6	10	1.138	0.000	1.566	2.704
ENGINEERING PERSONNEL	2	0	19	21	0.897	0.000	4.465	5.362
TOTAL	14	0	79	93	4.323	0.000	22.870	27.193
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	74	0	186	260	18.669	0.000	58.494	77.163
OPERATIONS PERSONNEL	6	0	0	6	2.007	0.000	0.070	2.077
HEALTH PHYSICS PERSONNEL	8	0	9	17	2.198	0.000	2.713	4.911
SUPERVISORY PERSONNEL	4	0	2	6	1.232	0.000	1.344	2.576
ENGINEERING PERSONNEL	8	0	1	9	2.535	0.009	0.570	3.114
TOTAL	100	0	198	298	26.641	0.009	63.191	89.841
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	8	8	0.147	0.000	2.006	2.153
OPERATIONS PERSONNEL	0	0	2	2	0.044	0.000	0.831	0.875
HEALTH PHYSICS PERSONNEL	7	0	16	23	1.712	0.000	3.676	5.388
SUPERVISORY PERSONNEL	0	0	0	0	0.016	0.000	0.000	0.016
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	7	0	26	33	1.919	0.000	6.513	8.432
REFUELING								
MAINTENANCE PERSONNEL	4	0	13	17	2.060	0.000	4.145	6.205
OPERATIONS PERSONNEL	2	0	15	17	0.390	0.000	3.349	3.739
HEALTH PHYSICS PERSONNEL	1	0	17	18	0.551	0.000	3.993	4.544
SUPERVISORY PERSONNEL	0	0	0	0	0.209	0.000	0.022	0.231
ENGINEERING PERSONNEL	2	0	9	11	0.490	0.000	2.009	2.499
TOTAL	9	0	54	63	3.700	0.000	13.518	17.218
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	98	0	303	401	28.468	0.001	95.087	123.556
OPERATIONS PERSONNEL	72	0	19	91	20.920	0.000	4.997	25.917
HEALTH PHYSICS PERSONNEL	42	0	105	147	11.146	0.000	28.733	39.879
SUPERVISORY PERSONNEL	8	0	9	17	4.147	0.018	3.764	7.929
ENGINEERING PERSONNEL	17	0	30	47	5.997	0.030	7.460	13.487
GRAND TOTALS	237	0	466	703	70.678	0.049	140.041	210.768

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *FITZPATRICK

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	52	39	8	99	3.461	0.024	0.083	3.568
OPERATIONS PERSONNEL	114	54	1	169	30.426	0.000	0.000	30.426
HEALTH PHYSICS PERSONNEL	42	5	27	74	3.583	0.000	1.418	5.001
SUPERVISORY PERSONNEL	15	0	10	25	0.225	0.000	0.222	0.447
ENGINEERING PERSONNEL	14	4	9	27	0.985	0.000	0.942	1.927
TOTAL	237	102	55	394	38.680	0.024	2.665	41.369
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	114	18	291	423	57.033	0.872	42.075	99.980
OPERATIONS PERSONNEL	77	14	4	95	9.078	0.000	0.009	9.087
HEALTH PHYSICS PERSONNEL	54	6	107	167	15.659	0.000	9.924	25.583
SUPERVISORY PERSONNEL	29	5	45	79	1.596	0.010	2.618	4.224
ENGINEERING PERSONNEL	24	20	21	65	2.401	0.130	1.307	3.838
TOTAL	298	63	468	829	85.767	1.012	55.933	142.712
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	129	34	268	431	9.072	0.304	6.612	15.988
OPERATIONS PERSONNEL	120	80	8	208	3.758	0.040	0.112	3.910
HEALTH PHYSICS PERSONNEL	52	7	86	145	3.202	0.000	1.670	4.872
SUPERVISORY PERSONNEL	46	18	131	195	2.037	0.560	2.360	4.957
ENGINEERING PERSONNEL	33	33	73	139	1.969	0.904	2.775	5.648
TOTAL	380	172	566	1118	20.038	1.808	13.529	35.375
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	26	2	181	209	0.550	0.000	18.072	18.622
OPERATIONS PERSONNEL	14	2	1	17	0.535	0.000	0.000	0.535
HEALTH PHYSICS PERSONNEL	21	4	26	51	1.041	0.000	0.711	1.752
SUPERVISORY PERSONNEL	8	0	23	31	0.762	0.000	2.516	3.278
ENGINEERING PERSONNEL	12	2	9	23	0.216	0.046	0.459	0.721
TOTAL	81	10	240	331	3.104	0.046	21.758	24.908
WASTE PROCESSING								
MAINTENANCE PERSONNEL	81	59	147	287	12.379	0.000	7.541	19.920
OPERATIONS PERSONNEL	56	14	8	78	10.725	0.000	4.064	14.789
HEALTH PHYSICS PERSONNEL	33	4	82	119	2.404	0.000	2.697	5.101
SUPERVISORY PERSONNEL	9	0	12	21	0.004	0.000	0.354	0.358
ENGINEERING PERSONNEL	10	1	6	17	0.079	0.000	0.067	0.146
TOTAL	189	78	255	522	25.591	0.000	14.723	40.314
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	402	152	895	1449	82.495	1.200	74.383	158.078
OPERATIONS PERSONNEL	381	164	22	567	54.522	0.040	4.185	58.747
HEALTH PHYSICS PERSONNEL	202	26	328	556	25.889	0.000	16.420	42.309
SUPERVISORY PERSONNEL	107	23	221	351	4.624	0.570	8.070	13.264
ENGINEERING PERSONNEL	93	60	118	271	5.650	1.080	5.550	12.280
GRAND TOTALS	1185	425	1584	3194	173.180	2.890	108.608	284.678

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *FORT CALHOUN

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	1	0	0	1	0.220	0.010	0.020	0.250
OPERATIONS PERSONNEL	8	0	0	8	3.191	0.000	0.005	3.196
HEALTH PHYSICS PERSONNEL	10	0	1	11	4.906	0.000	0.145	5.051
SUPERVISORY PERSONNEL	1	0	0	1	0.100	0.000	0.000	0.100
ENGINEERING PERSONNEL	4	0	0	4	0.858	0.000	0.000	0.858
TOTAL	24	0	1	25	9.275	0.010	0.170	9.455
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	9	0	1	10	1.535	0.020	0.160	1.715
OPERATIONS PERSONNEL	0	0	0	0	0.065	0.000	0.000	0.065
HEALTH PHYSICS PERSONNEL	4	0	5	9	1.254	0.000	1.807	3.061
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	2	3	0.246	0.000	0.682	0.928
TOTAL	14	0	8	22	3.100	0.020	2.649	5.769
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.010	0.000	0.000	0.010
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.020	0.000	0.000	0.020
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.010	0.000	0.000	0.010
TOTAL	0	0	0	0	0.040	0.000	0.000	0.040
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	16	1	5	22	3.374	0.245	3.511	7.130
OPERATIONS PERSONNEL	1	0	0	1	0.085	0.000	0.000	0.085
HEALTH PHYSICS PERSONNEL	7	0	2	9	3.157	0.000	0.445	3.602
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	3	0	22	25	0.810	0.000	10.251	11.061
TOTAL	27	1	29	57	7.426	0.245	14.207	21.878
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.020	0.000	0.000	0.020
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	3	0	2	5	1.470	0.000	0.475	1.945
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	3	0	2	5	1.490	0.000	0.475	1.965
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.015	0.000	0.000	0.015
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.015	0.000	0.000	0.015
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	26	1	6	33	5.174	0.275	3.691	9.140
OPERATIONS PERSONNEL	9	0	0	9	3.341	0.000	0.005	3.346
HEALTH PHYSICS PERSONNEL	24	0	10	34	10.807	0.000	2.872	13.679
SUPERVISORY PERSONNEL	1	0	0	1	0.100	0.000	0.000	0.100
ENGINEERING PERSONNEL	8	0	24	32	1.924	0.000	10.933	12.857
GRAND TOTALS	68	1	40	109	21.346	0.275	17.501	39.122

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *FORT ST. VRAIN

TYPE: HTGR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	1	0	4	5	0.200	0.000	0.800	1.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	1	0	4	5	0.200	0.000	0.800	1.000
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	8	0	0	8	3.000	0.000	0.000	3.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	8	0	0	8	3.000	0.000	0.000	3.000
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	8	0	0	8	3.000	0.000	0.000	3.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	1	0	4	5	0.200	0.000	0.800	1.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
GRAND TOTALS	9	0	4	13	3.200	0.000	0.800	4.000

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *GINNA TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	38	82	172	292	1.476	0.134	1.314	2.924
OPERATIONS PERSONNEL	25	2	3	30	5.642	0.466	1.349	7.457
HEALTH PHYSICS PERSONNEL	12	4	54	70	2.226	0.288	17.264	19.778
SUPERVISORY PERSONNEL	17	12	27	56	2.817	0.297	0.654	3.768
ENGINEERING PERSONNEL	1	1	9	11	0.030	0.000	0.102	0.132
TOTAL	93	101	265	459	12.191	1.185	20.683	34.059
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	41	164	248	453	9.170	16.504	45.933	71.607
OPERATIONS PERSONNEL	21	1	2	24	0.578	0.005	0.014	0.597
HEALTH PHYSICS PERSONNEL	9	4	52	65	1.206	0.174	8.296	9.676
SUPERVISORY PERSONNEL	17	12	26	55	1.772	2.733	2.096	6.601
ENGINEERING PERSONNEL	1	1	7	9	0.001	0.000	0.312	0.313
TOTAL	89	182	335	606	12.727	19.416	56.651	88.794
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	4	39	33	76	0.178	3.034	1.555	4.767
OPERATIONS PERSONNEL	2	0	0	2	0.042	0.000	0.000	0.042
HEALTH PHYSICS PERSONNEL	0	0	4	4	0.000	0.000	0.086	0.086
SUPERVISORY PERSONNEL	6	10	10	26	0.713	0.875	0.727	2.315
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	12	49	47	108	0.933	3.909	2.368	7.210
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	51	169	367	587	6.890	53.476	92.981	153.347
OPERATIONS PERSONNEL	21	2	2	25	0.668	0.167	0.008	0.843
HEALTH PHYSICS PERSONNEL	5	2	30	37	0.089	0.125	1.162	1.376
SUPERVISORY PERSONNEL	19	14	40	73	0.898	3.307	6.910	11.115
ENGINEERING PERSONNEL	2	1	13	16	0.072	0.014	0.976	1.062
TOTAL	98	188	452	738	8.617	57.089	102.037	167.743
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	6	12	19	0.000	0.008	0.500	0.508
OPERATIONS PERSONNEL	3	0	0	3	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	1	0	5	6	0.000	0.000	0.171	0.171
SUPERVISORY PERSONNEL	1	0	2	3	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	6	6	19	31	0.000	0.008	0.671	0.679
REFUELING								
MAINTENANCE PERSONNEL	17	27	79	123	0.850	2.427	9.418	12.695
OPERATIONS PERSONNEL	6	1	0	7	1.780	0.034	0.000	1.814
HEALTH PHYSICS PERSONNEL	2	0	3	5	0.040	0.000	0.143	0.183
SUPERVISORY PERSONNEL	2	4	9	15	0.258	0.179	0.282	0.719
ENGINEERING PERSONNEL	0	1	0	1	0.000	0.283	0.000	0.283
TOTAL	27	33	91	151	2.928	2.923	9.843	15.694
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	152 (273)	487 (41)	911 (164)	1550 (478)	18.564	75.583	151.701	245.848
OPERATIONS PERSONNEL	78 (3)	6 (25)	7 (2)	91 (30)	8.710	0.672	1.371	10.753
HEALTH PHYSICS PERSONNEL	29 (54)	10 (12)	148 (4)	187 (70)	3.561	0.587	27.122	31.270
SUPERVISORY PERSONNEL	62 (30)	52 (18)	114 (12)	228 (60)	6.458	7.391	10.669	24.518
ENGINEERING PERSONNEL	4 (9)	4 (1)	29 (1)	37 (11)	0.103	0.297	1.390	1.790
GRAND TOTALS	325 (369)	559 (97)	1209 (183)	2093 (649)	37.396	84.530	192.253	314.179

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *GRAND GULF

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	5	0	0	5	0.032	0.000	0.000	0.032
OPERATIONS PERSONNEL	52	0	5	57	12.039	0.000	0.188	12.227
HEALTH PHYSICS PERSONNEL	36	0	4	40	8.507	0.000	1.386	9.893
SUPERVISORY PERSONNEL	5	0	1	6	0.206	0.000	0.026	0.232
ENGINEERING PERSONNEL	3	0	1	4	0.219	0.000	0.002	0.221
TOTAL	101	0	11	112	21.003	0.000	1.602	22.605
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	128	0	59	187	38.647	0.000	20.982	59.629
OPERATIONS PERSONNEL	14	0	3	17	0.407	0.000	0.061	0.468
HEALTH PHYSICS PERSONNEL	29	0	2	31	4.096	0.000	0.364	4.460
SUPERVISORY PERSONNEL	6	0	1	7	1.082	0.000	0.220	1.302
ENGINEERING PERSONNEL	2	0	1	3	0.241	0.000	0.113	0.354
TOTAL	179	0	66	245	44.473	0.000	21.740	66.213
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
WASTE PROCESSING								
MAINTENANCE PERSONNEL	69	0	8	77	1.796	0.000	0.294	2.090
OPERATIONS PERSONNEL	1	0	6	7	0.843	0.000	1.683	2.526
HEALTH PHYSICS PERSONNEL	7	0	1	8	2.167	0.000	0.002	2.169
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	77	0	15	92	4.806	0.000	1.979	6.785
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	202	0	67	269	40.475	0.000	21.276	61.751
OPERATIONS PERSONNEL	67	0	14	81	13.289	0.000	1.932	15.221
HEALTH PHYSICS PERSONNEL	72	0	7	79	14.770	0.000	1.752	16.522
SUPERVISORY PERSONNEL	11	0	2	13	1.288	0.000	0.246	1.534
ENGINEERING PERSONNEL	5	0	2	7	0.460	0.000	0.115	0.575
GRAND TOTALS	357	0	92	449	70.282	0.000	25.321	95.603

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *HADDAM NECK TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	2	0	3	5	0.720	0.030	0.670	1.420
OPERATIONS PERSONNEL	39	0	1	40	30.920	0.010	0.470	31.400
HEALTH PHYSICS PERSONNEL	17	2	63	82	7.250	0.320	38.910	46.480
SUPERVISORY PERSONNEL	0	0	0	0	0.100	0.000	0.000	0.100
ENGINEERING PERSONNEL	0	0	2	2	0.040	0.050	0.350	0.440
TOTAL	58	2	69	129	39.030	0.410	40.400	79.840
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	49	44	190	283	32.930	16.700	113.530	163.160
OPERATIONS PERSONNEL	3	0	2	5	1.000	0.190	0.370	1.560
HEALTH PHYSICS PERSONNEL	13	0	30	43	4.440	0.100	9.880	14.420
SUPERVISORY PERSONNEL	1	0	1	2	0.190	0.000	0.590	0.780
ENGINEERING PERSONNEL	4	12	28	44	1.580	4.300	9.540	15.420
TOTAL	70	56	251	377	40.140	21.290	133.910	195.340
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	10	9	52	71	4.230	4.300	27.920	36.450
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.020	0.020
HEALTH PHYSICS PERSONNEL	1	0	10	11	0.300	0.000	4.440	4.740
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	3	1	146	150	1.040	1.970	174.210	177.220
TOTAL	14	10	208	232	5.570	6.270	206.590	218.430
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	11	58	69	0.170	3.310	21.590	25.070
OPERATIONS PERSONNEL	0	0	1	1	0.000	0.010	0.670	0.680
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.280	0.280
SUPERVISORY PERSONNEL	0	0	1	1	0.000	0.000	0.130	0.130
ENGINEERING PERSONNEL	0	0	10	10	0.170	0.010	8.400	8.580
TOTAL	0	11	70	81	0.340	3.330	31.070	34.740
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.130	0.130
OPERATIONS PERSONNEL	0	0	0	0	0.160	0.000	0.000	0.160
HEALTH PHYSICS PERSONNEL	9	0	45	54	5.850	0.000	19.340	25.190
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.020	0.000	0.020
TOTAL	9	0	45	54	6.010	0.020	19.470	25.500
REFUELING								
MAINTENANCE PERSONNEL	10	1	43	54	2.950	0.600	27.190	30.740
OPERATIONS PERSONNEL	0	0	0	0	0.240	0.000	0.000	0.240
HEALTH PHYSICS PERSONNEL	0	0	3	3	0.020	0.000	1.350	1.370
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	1	10	11	0.250	0.550	2.610	3.410
TOTAL	10	2	56	68	3.460	1.150	31.150	35.760
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	71	65	346	482	41.000	24.940	191.030	256.970
OPERATIONS PERSONNEL	42	0	4	46	32.320	0.210	1.530	34.060
HEALTH PHYSICS PERSONNEL	40	2	151	193	17.860	0.420	74.200	92.480
SUPERVISORY PERSONNEL	1	0	2	3	0.290	0.000	0.720	1.010
ENGINEERING PERSONNEL	7	14	196	217	3.080	6.900	195.110	205.090
GRAND TOTALS	161	81	699	941	94.550	32.470	462.590	589.610

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *HARRIS TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	3	0	1	4	0.740	0.001	0.506	1.247
OPERATIONS PERSONNEL	22	0	2	24	6.092	0.000	1.770	7.862
HEALTH PHYSICS PERSONNEL	21	0	52	73	7.568	0.000	12.990	20.558
SUPERVISORY PERSONNEL	0	0	0	0	0.141	0.000	0.036	0.177
ENGINEERING PERSONNEL	2	0	0	2	1.949	0.425	0.603	2.977
TOTAL	48	0	55	103	16.490	0.426	15.905	32.821
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	0	1	31	32	1.841	0.725	12.217	14.783
OPERATIONS PERSONNEL	0	0	1	1	0.026	0.000	0.259	0.285
HEALTH PHYSICS PERSONNEL	3	0	1	4	0.650	0.000	0.915	1.565
SUPERVISORY PERSONNEL	0	0	0	0	0.025	0.000	0.000	0.025
ENGINEERING PERSONNEL	0	0	0	0	0.157	0.030	0.282	0.469
TOTAL	3	1	33	37	2.699	0.755	13.673	17.127
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.086	0.150	0.040	0.276
OPERATIONS PERSONNEL	1	0	2	3	0.287	0.000	0.480	0.767
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.061	0.000	0.173	0.234
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.050	0.000	0.000	0.050
TOTAL	1	0	2	3	0.484	0.150	0.693	1.327
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	40	6	85	131	19.977	2.756	31.521	54.254
OPERATIONS PERSONNEL	14	0	0	14	5.386	0.000	0.335	5.721
HEALTH PHYSICS PERSONNEL	13	0	29	42	7.676	0.000	10.007	17.683
SUPERVISORY PERSONNEL	1	0	0	1	0.559	0.000	0.010	0.569
ENGINEERING PERSONNEL	13	0	59	72	5.236	0.119	37.231	42.586
TOTAL	81	6	173	260	38.834	2.875	79.104	120.813
WASTE PROCESSING								
MAINTENANCE PERSONNEL	2	0	0	2	1.030	0.030	0.165	1.225
OPERATIONS PERSONNEL	0	0	0	0	0.020	0.000	0.000	0.020
HEALTH PHYSICS PERSONNEL	5	0	1	6	2.390	0.005	0.680	3.075
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	1	2	0.143	0.000	0.215	0.358
TOTAL	8	0	2	10	3.583	0.035	1.060	4.678
REFUELING								
MAINTENANCE PERSONNEL	24	13	96	133	12.453	5.920	39.264	57.637
OPERATIONS PERSONNEL	0	0	0	0	1.177	0.000	0.000	1.177
HEALTH PHYSICS PERSONNEL	7	0	24	31	2.635	0.000	7.315	9.950
SUPERVISORY PERSONNEL	0	0	0	0	0.150	0.030	0.350	0.530
ENGINEERING PERSONNEL	7	1	42	50	2.769	0.425	24.350	27.544
TOTAL	38	14	162	214	19.184	6.375	71.279	96.838
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	69	20	213	302	36.127	9.582	83.713	129.422
OPERATIONS PERSONNEL	37	0	5	42	12.988	0.000	2.844	15.832
HEALTH PHYSICS PERSONNEL	49	0	107	156	20.980	0.005	32.080	53.065
SUPERVISORY PERSONNEL	1	0	0	1	0.875	0.030	0.396	1.301
ENGINEERING PERSONNEL	23	1	102	126	10.304	0.999	62.681	73.984
GRAND TOTALS	179	21	427	627	81.274	10.616	181.714	273.604

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *HATCH 1,2

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	67	2	152	221	40.659	1.229	61.256	103.144
OPERATIONS PERSONNEL	51	0	1	52	27.057	0.043	0.181	27.281
HEALTH PHYSICS PERSONNEL	41	0	43	84	22.078	0.091	17.314	39.483
SUPERVISORY PERSONNEL	29	0	7	36	10.947	0.256	3.686	14.889
ENGINEERING PERSONNEL	19	0	7	26	6.440	0.095	4.442	10.977
TOTAL	207	2	210	419	107.181	1.714	86.879	195.774
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	133	2	211	346	61.941	1.612	82.166	145.719
OPERATIONS PERSONNEL	35	1	0	36	12.170	0.941	0.006	13.117
HEALTH PHYSICS PERSONNEL	30	1	46	77	17.147	0.129	25.150	42.426
SUPERVISORY PERSONNEL	13	0	8	21	6.464	0.030	3.394	9.888
ENGINEERING PERSONNEL	7	0	11	18	4.787	0.141	5.557	10.485
TOTAL	218	4	276	498	102.509	2.853	116.273	221.635
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	23	1	284	308	10.477	0.168	137.179	147.824
OPERATIONS PERSONNEL	3	0	0	3	0.507	0.000	0.006	0.513
HEALTH PHYSICS PERSONNEL	5	0	27	32	2.491	0.002	11.696	14.189
SUPERVISORY PERSONNEL	2	0	2	4	0.596	0.011	1.384	1.991
ENGINEERING PERSONNEL	3	0	9	12	0.936	0.122	3.095	4.153
TOTAL	36	1	322	359	15.007	0.303	153.360	168.670
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	117	3	493	613	72.100	1.439	243.318	316.857
OPERATIONS PERSONNEL	27	1	1	29	14.606	0.470	1.368	16.444
HEALTH PHYSICS PERSONNEL	22	0	61	83	11.618	0.081	35.572	47.271
SUPERVISORY PERSONNEL	13	2	12	27	2.999	0.880	4.401	8.280
ENGINEERING PERSONNEL	16	1	29	46	5.354	0.216	17.393	22.963
TOTAL	195	7	596	798	106.677	3.086	302.052	411.815
WASTE PROCESSING								
MAINTENANCE PERSONNEL	20	0	93	113	9.239	0.005	31.647	40.891
OPERATIONS PERSONNEL	3	0	0	3	0.988	0.000	0.006	0.994
HEALTH PHYSICS PERSONNEL	4	0	16	20	2.102	0.002	7.626	9.730
SUPERVISORY PERSONNEL	0	0	1	1	0.117	0.011	1.066	1.194
ENGINEERING PERSONNEL	0	0	1	1	0.056	0.014	0.712	0.782
TOTAL	27	0	111	138	12.502	0.032	41.057	53.591
REFUELING								
MAINTENANCE PERSONNEL	20	1	190	211	6.123	0.168	87.532	93.823
OPERATIONS PERSONNEL	7	0	1	8	2.473	0.000	0.167	2.640
HEALTH PHYSICS PERSONNEL	3	0	23	26	1.554	0.002	6.807	8.363
SUPERVISORY PERSONNEL	1	0	3	4	0.423	0.011	1.580	2.014
ENGINEERING PERSONNEL	1	0	7	8	0.296	0.014	2.934	3.244
TOTAL	32	1	224	257	10.869	0.195	99.020	110.084
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	380	9	1423	1812	200.539	4.621	643.098	848.258
OPERATIONS PERSONNEL	126	2	3	131	57.801	1.454	1.734	60.989
HEALTH PHYSICS PERSONNEL	105	1	216	322	56.990	0.307	104.165	161.462
SUPERVISORY PERSONNEL	58	2	33	93	21.546	1.199	15.511	38.256
ENGINEERING PERSONNEL	46	1	64	111	17.869	0.602	34.133	52.604
GRAND TOTALS	715	15	1739	2469	354.745	8.183	798.641	1161.569

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *HOPE CREEK 1 TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	5	1	4	10	2.288	0.180	1.776	4.244
OPERATIONS PERSONNEL	12	1	2	15	3.161	0.264	0.784	4.209
HEALTH PHYSICS PERSONNEL	1	1	1	3	1.521	0.293	0.651	2.465
SUPERVISORY PERSONNEL	0	0	0	0	0.030	0.003	0.026	0.059
ENGINEERING PERSONNEL	1	0	0	1	0.446	0.021	0.009	0.476
TOTAL	19	3	7	29	7.446	0.761	3.246	11.453
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	6	6	1.543	0.001	2.936	4.480
OPERATIONS PERSONNEL	0	0	0	0	0.044	0.000	0.000	0.044
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.084	0.084
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.002	0.000	0.002
ENGINEERING PERSONNEL	0	0	0	0	0.061	0.034	0.049	0.144
TOTAL	0	0	6	6	1.648	0.037	3.069	4.754
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	138	139	0.335	0.000	64.191	64.526
OPERATIONS PERSONNEL	1	0	0	1	0.284	0.000	0.068	0.352
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.047	0.000	0.116	0.163
SUPERVISORY PERSONNEL	0	0	0	0	0.049	0.135	0.000	0.184
ENGINEERING PERSONNEL	1	1	0	2	0.327	0.749	0.028	1.104
TOTAL	3	1	138	142	1.042	0.884	64.403	66.329
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	85	2	56	143	28.395	0.418	21.084	49.897
OPERATIONS PERSONNEL	44	2	8	54	13.644	0.342	3.432	17.418
HEALTH PHYSICS PERSONNEL	35	1	19	55	16.731	0.191	6.521	23.443
SUPERVISORY PERSONNEL	0	0	1	1	0.179	0.065	0.229	0.473
ENGINEERING PERSONNEL	4	5	2	11	1.683	0.791	0.421	2.895
TOTAL	168	10	86	264	60.632	1.807	31.687	94.126
WASTE PROCESSING								
MAINTENANCE PERSONNEL	2	0	3	5	0.502	0.000	2.652	3.154
OPERATIONS PERSONNEL	0	0	0	0	0.140	0.000	0.031	0.171
HEALTH PHYSICS PERSONNEL	8	0	1	9	3.916	0.004	0.162	4.082
SUPERVISORY PERSONNEL	0	0	0	0	0.004	0.000	0.000	0.004
ENGINEERING PERSONNEL	0	0	0	0	0.240	0.000	0.000	0.240
TOTAL	10	0	4	14	4.802	0.004	2.845	7.651
REFUELING								
MAINTENANCE PERSONNEL	89	2	312	403	29.175	0.355	125.450	154.980
OPERATIONS PERSONNEL	22	1	7	30	5.858	0.213	2.085	8.156
HEALTH PHYSICS PERSONNEL	20	0	48	68	7.947	0.000	13.952	21.899
SUPERVISORY PERSONNEL	0	1	2	3	0.260	0.283	0.396	0.939
ENGINEERING PERSONNEL	2	1	2	5	0.849	0.217	1.760	2.826
TOTAL	133	5	371	509	44.089	1.068	143.643	188.800
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	182	5	519	706	62.238	0.954	218.089	281.281
OPERATIONS PERSONNEL	79	4	17	100	23.131	0.819	6.400	30.350
HEALTH PHYSICS PERSONNEL	64	2	69	135	30.162	0.488	21.486	52.136
SUPERVISORY PERSONNEL	0	1	3	4	0.522	0.488	0.651	1.661
ENGINEERING PERSONNEL	8	7	4	19	3.606	1.812	2.267	7.685
GRAND TOTALS	333	19	612	964	119.659	4.561	248.893	373.113

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *INDIAN POINT 2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	89	127	245	461	18.697	18.998	70.170	107.865
OPERATIONS PERSONNEL	51	0	0	51	34.206	0.000	0.000	34.206
HEALTH PHYSICS PERSONNEL	17	0	28	45	8.942	0.000	19.936	28.878
SUPERVISORY PERSONNEL	11	0	1	12	2.305	0.000	0.000	2.305
ENGINEERING PERSONNEL	23	5	0	28	3.928	0.851	0.000	4.779
TOTAL	191	132	274	597	68.078	19.849	90.106	178.033
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	16	54	60	130	0.437	2.091	1.672	4.200
OPERATIONS PERSONNEL	4	0	0	4	0.157	0.000	0.000	0.157
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.105	0.000	0.000	0.105
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	4	3	0	7	0.221	0.078	0.000	0.299
TOTAL	25	57	60	142	0.920	2.169	1.672	4.761
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	74	187	181	442	6.461	15.479	15.243	37.183
OPERATIONS PERSONNEL	3	0	0	3	0.098	0.020	0.000	0.118
HEALTH PHYSICS PERSONNEL	0	0	7	7	0.000	0.000	0.185	0.185
SUPERVISORY PERSONNEL	3	0	1	4	0.106	0.335	0.029	0.470
ENGIHEERING PERSONNEL	8	1	0	9	0.215	0.070	0.000	0.285
TOTAL	88	188	189	465	6.880	15.904	15.457	38.241
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	149	417	707	1273	81.941	280.090	640.650	1002.681
OPERATIONS PERSONNEL	31	0	1	32	2.579	0.329	2.046	4.954
HEALTH PHYSICS PERSONNEL	14	0	9	23	3.070	0.470	2.876	6.416
SUPERVISORY PERSONNEL	10	0	4	14	1.861	1.269	1.607	4.737
ENGINEERING PERSONNEL	27	2	2	31	4.970	0.419	2.666	8.055
TOTAL	231	419	723	1373	94.421	282.577	649.845	1026.843
WASTE PROCESSING								
MAINTENANCE PERSONNEL	97	61	257	415	11.464	2.481	74.632	88.577
OPERATIONS PERSONNEL	5	0	0	5	1.098	0.000	0.000	1.098
HEALTH PHYSICS PERSOHNEL	13	0	23	36	1.819	0.020	4.244	6.083
SUPERVISORY PERSONNEL	7	0	1	8	0.955	0.000	0.270	1.225
ENGINEERING PERSONNEL	12	2	1	15	3.019	0.161	0.275	3.455
TOTAL	134	63	282	479	18.355	2.662	79.421	100.438
REFUELING								
MAINTENANCE PERSONNEL	55	61	197	313	7.215	10.379	81.115	98.709
OPERATIONS PERSONNEL	21	0	0	21	2.899	0.000	0.000	2.899
HEALTH PHYSICS PERSONNEL	14	0	23	37	1.294	0.000	4.023	5.317
SUPERVISORY PERSONNEL	7	0	1	8	1.065	1.158	0.185	2.408
ENGINEERING PERSONNEL	10	2	2	14	1.943	0.700	0.442	3.085
TOTAL	107	63	223	393	14.416	12.237	85.765	112.418
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	480 (94)	907 (76)	1647 (392)	3034 (562)	126.215	329.518	883.482	1339.215
OPERATIONS PERSONNEL	115 (51)	0 (0)	1 (0)	116 (51)	41.037	0.349	2.046	43.432
HEALTH PHYSICS PERSONNEL	59 (24)	0 (0)	90 (50)	149 (74)	15.230	0.490	31.264	46.984
SUPERVISORY PERSONNEL	38 (4)	0 (5)	8 (13)	46 (22)	6.292	2.762	2.091	11.145
ENGINEERING PERSONNEL	84 (4)	15 (0)	5 (0)	104 (4)	14.296	2.279	3.383	19.958
GRAND TOTALS	776 (177)	922 (81)	1751 (455)	3449 (713)	203.070	335.398	922.266	1460.734

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *INDIAN POINT 3 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	4	0	0	4	0.400	0.000	0.000	0.400
OPERATIONS PERSONNEL	45	0	2	47	5.880	0.000	0.200	6.080
HEALTH PHYSICS PERSONNEL	27	0	5	32	6.760	0.000	0.570	7.330
SUPERVISORY PERSONNEL	5	0	0	5	0.690	0.000	0.000	0.690
ENGINEERING PERSONNEL	4	0	0	4	0.650	0.000	0.000	0.650
TOTAL	85	0	7	92	14.380	0.000	0.770	15.150
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	1	0	1	2	0.110	0.000	0.100	0.210
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	1	0	1	2	0.110	0.000	0.100	0.210
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	28	1	12	41	4.890	0.220	1.390	6.500
OPERATIONS PERSONNEL	1	0	0	1	0.150	0.000	0.000	0.150
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	3	0	0	3	0.540	0.000	0.000	0.540
ENGINEERING PERSONNEL	1	0	0	1	0.150	0.000	0.000	0.150
TOTAL	33	1	12	46	5.730	0.220	1.390	7.340
WASTE PROCESSING								
MAINTENANCE PERSONNEL	15	0	8	23	2.440	0.000	1.390	3.830
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	1	0	0	1	0.110	0.000	0.000	0.110
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	16	0	8	24	2.550	0.000	1.390	3.940
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	47	1	20	68	7.730	0.220	2.780	10.730
OPERATIONS PERSONNEL	47	0	3	50	6.140	0.000	0.300	6.440
HEALTH PHYSICS PERSONNEL	27	0	5	32	6.760	0.000	0.570	7.330
SUPERVISORY PERSONNEL	9	0	0	9	1.340	0.000	0.000	1.340
ENGINEERING PERSONNEL	5	0	0	5	0.800	0.000	0.000	0.800
GRAND TOTALS	135	1	28	164	22.770	0.220	3.650	26.640

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM
BY WORK AND JOB FUNCTION

1991

PLANT: *KEWAUNEE TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	10	0	11	21	0.174	0.000	0.185	0.359
OPERATIONS PERSONNEL	19	0	0	19	2.875	0.000	0.000	2.875
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	1	0	0	1	0.013	0.000	0.000	0.013
ENGINEERING PERSONNEL	6	6	2	14	0.180	0.192	0.118	0.490
TOTAL	36	6	13	55	3.242	0.192	0.303	3.737
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	39	5	59	103	5.916	0.601	9.938	16.455
OPERATIONS PERSONNEL	13	0	4	17	0.942	0.000	0.490	1.432
HEALTH PHYSICS PERSONNEL	19	0	35	54	4.818	0.000	12.058	16.876
SUPERVISORY PERSONNEL	1	0	0	1	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	6	2	1	9	0.047	0.000	0.004	0.051
TOTAL	78	7	99	184	11.723	0.601	22.490	34.814
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	11	0	23	34	0.087	0.000	0.911	0.998
OPERATIONS PERSONNEL	0	0	7	7	0.000	0.000	1.759	1.759
HEALTH PHYSICS PERSONNEL	4	0	0	4	0.008	0.000	0.000	0.008
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	2	1	0	3	0.010	0.000	0.000	0.010
TOTAL	17	1	30	48	0.105	0.000	2.670	2.775
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	36	5	143	184	4.681	0.200	142.502	147.383
OPERATIONS PERSONNEL	8	0	2	10	0.534	0.000	0.086	0.620
HEALTH PHYSICS PERSONNEL	10	0	2	12	0.254	0.000	0.000	0.254
SUPERVISORY PERSONNEL	1	0	0	1	0.132	0.000	0.000	0.132
ENGINEERING PERSONNEL	7	6	1	14	1.507	1.984	0.523	4.014
TOTAL	62	11	148	221	7.108	2.184	143.111	152.403
WASTE PROCESSING								
MAINTENANCE PERSONNEL	17	2	2	21	0.125	0.003	0.034	0.162
OPERATIONS PERSONNEL	1	0	0	1	0.717	0.000	0.000	0.717
HEALTH PHYSICS PERSONNEL	7	0	3	10	0.421	0.000	0.117	0.538
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	25	2	5	32	1.263	0.003	0.151	1.417
REFUELING								
MAINTENANCE PERSONNEL	10	1	15	26	2.655	0.018	5.375	8.048
OPERATIONS PERSONNEL	3	0	0	3	0.429	0.000	0.000	0.429
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	1	0	0	1	0.054	0.000	0.000	0.054
ENGINEERING PERSONNEL	1	1	0	2	0.226	0.286	0.000	0.512
TOTAL	15	2	15	32	3.364	0.304	5.375	9.043
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	123	13	253	389	13.638	0.822	158.945	173.405
OPERATIONS PERSONNEL	44	0	13	57	5.497	0.000	2.335	7.832
HEALTH PHYSICS PERSONNEL	40	0	40	80	5.501	0.000	12.175	17.676
SUPERVISORY PERSONNEL	4	0	0	4	0.199	0.000	0.000	0.199
ENGINEERING PERSONNEL	22	16	4	42	1.970	2.462	0.645	5.077
GRAND TOTALS	233	29	310	572	26.805	3.284	174.100	204.189

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *LASALLE 1,2

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	24	5	78	107	22.626	0.121	21.785	44.532
OPERATIONS PERSONNEL	148	0	88	236	49.803	0.000	6.131	55.934
HEALTH PHYSICS PERSONNEL	25	0	28	53	13.014	0.000	8.022	21.036
SUPERVISORY PERSONNEL	93	82	56	231	15.884	0.483	2.881	19.248
ENGINEERING PERSONNEL	98	151	28	277	14.261	3.623	2.157	20.041
TOTAL	388	238	278	904	115.588	4.227	40.976	160.791
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	139	23	738	900	128.356	0.597	205.678	334.631
OPERATIONS PERSONNEL	27	0	0	27	9.269	0.000	0.011	9.280
HEALTH PHYSICS PERSONNEL	45	0	10	55	24.088	0.000	2.932	27.020
SUPERVISORY PERSONNEL	137	13	22	172	23.470	0.078	1.160	24.708
ENGINEERING PERSONNEL	30	95	19	144	4.366	2.279	1.453	8.098
TOTAL	378	131	789	1298	189.549	2.954	211.234	403.737
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	1	296	298	0.600	0.027	82.536	83.163
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	1	0	12	13	0.430	0.000	3.395	3.825
SUPERVISORY PERSONNEL	1	3	22	26	0.074	0.018	1.111	1.203
ENGINEERING PERSONNEL	5	3	0	8	0.705	0.067	0.002	0.774
TOTAL	8	7	330	345	1.809	0.112	87.044	88.965
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	18	118	215	351	17.159	3.103	60.032	80.294
OPERATIONS PERSONNEL	2	0	0	2	0.578	0.000	0.000	0.578
HEALTH PHYSICS PERSONNEl	7	0	1	8	3.757	0.000	0.148	3.905
SUPERVISORY PERSONNEL	16	2	17	35	2.761	0.010	0.891	3.662
ENGINEERING PERSONNEL	9	37	47	93	1.312	0.896	3.680	5.888
TOTAL	52	157	280	489	25.567	4.009	64.751	94.327
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	0	27	28	0.439	0.009	7.551	7.999
OPERATIONS PERSONNEL	43	0	120	163	14.547	0.000	8.407	22.954
HEALTH PHYSICS PERSONNEL	7	0	0	7	3.736	0.000	0.000	3.736
SUPERVISORY PERSONNEL	10	1	0	11	1.734	0.004	0.000	1.738
ENGINEERING PERSONNEL	0	0	0	0	0.023	0.002	0.000	0.025
TOTAL	61	1	147	209	20.479	0.015	15.958	36.452
REFUELING								
MAINTENANCE PERSONNEL	10	0	24	34	9.592	0.000	6.652	16.244
OPERATIONS PERSONNEL	8	0	0	8	2.773	0.000	0.000	2.773
HEALTH PHYSICS PERSONNEL	2	0	0	2	1.161	0.000	0.000	1.161
SUPERVISORY PERSONNEL	9	0	1	10	1.595	0.000	0.027	1.622
ENGINEERING PERSONNEL	0	2	0	2	0.065	0.049	0.005	0.119
TOTAL	29	2	25	56	15.186	0.049	6.684	21.919
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	193	147	1378	1718	178.772	3.857	384.234	566.863
OPERATIONS PERSONNEL	228	0	208	436	76.970	0.000	14.549	91.519
HEALTH PHYSICS PERSONNEL	87	0	51	138	46.186	0.000	14.497	60.683
SUPERVISORY PERSONNEL	266	101	118	485	45.518	0.593	6.070	52.181
ENGINEERING PERSONNEL	142	288	94	524	20.732	6.916	7.297	34.945
GRAND TOTALS	916	536	1849	3301	368.178	11.366	426.647	806.191

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *LIMERICK 1,2 TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	87	50	127	264	2.245	0.520	2.020	4.785
OPERATIONS PERSONNEL	165	7	30	202	9.592	0.173	1.581	11.346
HEALTH PHYSICS PERSONNEL	40	2	31	73	4.274	0.077	1.648	5.999
SUPERVISORY PERSONNEL	2	0	1	3	0.014	0.000	0.104	0.118
ENGINEERING PERSONNEL	31	6	28	65	0.946	0.071	1.041	2.058
TOTAL	325	65	217	607	17.071	0.841	6.394	24.306
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	97	130	236	463	5.025	8.006	7.340	20.371
OPERATIONS PERSONNEL	76	4	32	112	1.594	0.098	1.908	3.600
HEALTH PHYSICS PERSONNEL	21	1	35	57	0.740	0.007	1.398	2.145
SUPERVISORY PERSONNEL	2	3	2	7	0.009	0.102	0.017	0.128
ENGINEERING PERSONNEL	21	11	26	58	0.369	0.436	1.326	2.131
TOTAL	217	149	331	697	7.737	8.649	11.989	28.375
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	46	6	67	119	2.763	0.084	15.820	18.667
OPERATIONS PERSONNEL	31	4	9	44	1.170	0.077	0.401	1.648
HEALTH PHYSICS PERSONNEL	16	1	10	27	0.731	0.042	0.158	0.931
SUPERVISORY PERSONNEL	0	0	1	1	0.000	0.000	0.286	0.286
ENGINEERING PERSONNEL	4	3	4	11	0.253	0.016	0.038	0.307
TOTAL	97	14	91	202	4.917	0.219	16.703	21.839
WASTE PROCESSING								
MAINTENANCE PERSONNEL	11	0	37	48	0.082	0.000	0.841	0.923
OPERATIONS PERSONNEL	38	1	12	51	0.661	0.005	0.310	0.976
HEALTH PHYSICS PERSONNEL	16	0	9	25	0.705	0.000	0.035	0.740
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	3	1	1	5	0.131	0.002	0.000	0.133
TOTAL	68	2	59	129	1.579	0.007	1.186	2.772
REFUELING								
MAINTENANCE PERSONNEL	94	121	287	502	5.259	3.014	12.649	20.922
OPERATIONS PERSONNEL	105	7	28	140	2.616	0.181	1.135	3.932
HEALTH PHYSICS PERSONNEL	26	2	26	54	1.048	0.065	0.683	1.796
SUPERVISORY PERSONNEL	4	2	9	15	0.048	0.169	0.192	0.409
ENGINEERING PERSONNEL	31	7	27	65	0.665	0.117	0.695	1.477
TOTAL	260	139	377	776	9.636	3.546	15.354	28.536
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	335 (272)	307 (401)	754 (823)	1396(1496)	15.374	11.624	38.670	65.668
OPERATIONS PERSONNEL	415 (402)	23 (106)	111 (331)	549 (839)	15.633	0.534	5.335	21.502
HEALTH PHYSICS PERSONNEL	119 (66)	6 (14)	111 (83)	236 (163)	7.498	0.191	3.922	11.611
SUPERVISORY PERSONNEL	8 (19)	5 (32)	13 (80)	26 (131)	0.071	0.271	0.599	0.941
ENGINEERING PERSONNEL	90 (173)	28 (268)	86 (224)	204 (665)	2.364	0.642	3.100	6.106
GRAND TOTALS	967 (932)	369 (821)	1075 (1541)	2411(3294)	40.940	13.262	51.626	105.828

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *MAINE YANKEE

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	2	0	1	3	1.668	0.000	0.900	2.568
OPERATIONS PERSONNEL	34	0	0	34	12.894	0.000	0.075	12.969
HEALTH PHYSICS PERSONNEL	21	0	5	26	8.671	0.000	1.460	10.131
SUPERVISORY PERSONNEL	0	0	0	0	0.215	0.000	0.155	0.370
ENGINEERING PERSONNEL	2	0	0	2	0.710	0.000	0.164	0.874
TOTAL	59	0	6	65	24.158	0.000	2.754	26.912
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	23	0	23	46	7.133	0.000	11.043	18.176
OPERATIONS PERSONNEL	3	0	0	3	1.640	0.000	0.075	1.715
HEALTH PHYSICS PERSONNEL	23	0	4	27	5.311	0.000	0.933	6.244
SUPERVISORY PERSONNEL	0	0	1	1	0.175	0.000	0.601	0.776
ENGINEERING PERSONNEL	3	0	0	3	1.200	0.000	0.355	1.555
TOTAL	52	0	28	80	15.459	0.000	13.007	28.466
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.020	0.000	0.000	0.020
OPERATIONS PERSONNEL	0	0	0	0	0.055	0.000	0.030	0.085
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.015	0.000	0.000	0.015
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	0	1	0.340	0.000	0.000	0.340
TOTAL	1	0	0	1	0.430	0.000	0.030	0.460
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	21	0	16	37	7.452	0.000	8.580	16.032
OPERATIONS PERSONNEL	4	0	0	4	1.755	0.000	0.000	1.755
HEALTH PHYSICS PERSONNEL	11	0	15	26	2.798	0.000	3.065	5.863
SUPERVISORY PERSONNEL	1	0	10	11	0.534	0.000	6.072	6.606
ENGINEERING PERSONNEL	1	0	15	16	0.650	0.000	9.883	10.533
TOTAL	38	0	56	94	13.189	0.000	27.600	40.789
WASTE PROCESSING								
MAINTENANCE PERSONNEL	7	0	2	9	2.485	0.000	1.310	3.795
OPERATIONS PERSONNEL	1	0	0	1	0.470	0.000	0.000	0.470
HEALTH PHYSICS PERSONNEL	4	0	1	5	2.977	0.000	0.665	3.642
SUPERVISORY PERSONNEL	0	0	1	1	0.106	0.000	0.137	0.243
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.065	0.065
TOTAL	12	0	4	16	6.038	0.000	2.177	8.215
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	53	0	42	95	18.758	0.000	21.833	40.591
OPERATIONS PERSONNEL	42	0	0	42	16.814	0.000	0.180	16.994
HEALTH PHYSICS PERSONNEL	59	0	25	84	19.772	0.000	6.123	25.895
SUPERVISORY PERSONNEL	1	0	12	13	1.030	0.000	6.965	7.995
ENGINEERING PERSONNEL	7	0	15	22	2.900	0.000	10.467	13.367
GRAND TOTALS	162	0	94	256	59.274	0.000	45.568	104.842

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *MCGUIRE 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	168	305	107	580	2.560	0.455	0.540	3.555
OPERATIONS PERSONNEL	50	3	39	92	1.240	0.110	1.500	2.850
HEALTH PHYSICS PERSONNEL	30	0	93	123	4.710	0.000	5.040	9.750
SUPERVISORY PERSONNEL	1	0	0	1	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	77	7	0	84	3.225	0.000	0.000	3.225
TOTAL	326	315	239	880	11.735	0.565	7.080	19.380
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	181	338	186	705	46.750	161.710	61.460	269.920
OPERATIONS PERSONNEL	52	2	48	102	7.535	0.095	17.015	24.645
HEALTH PHYSICS PERSONNEL	30	0	93	123	5.700	0.000	28.130	33.830
SUPERVISORY PERSONNEL	1	0	0	1	0.165	0.000	0.000	0.165
ENGINEERING PERSONNEL	76	10	4	90	18.285	6.805	1.075	26.165
TOTAL	340	350	331	1021	78.435	168.610	107.680	354.725
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	32	111	28	171	0.665	3.000	2.065	5.730
OPERATIONS PERSONNEL	0	0	17	17	0.000	0.000	0.125	0.125
HEALTH PHYSICS PERSONNEL	10	0	38	48	0.095	0.000	1.015	1.110
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	25	1	3	29	2.450	0.000	0.545	2.995
TOTAL	67	112	86	265	3.210	3.000	3.750	9.960
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	92	124	36	252	3.385	3.955	0.935	8.275
OPERATIONS PERSONNEL	8	1	22	31	0.360	0.020	0.855	1.235
HEALTH PHYSICS PERSONNEL	22	0	36	58	1.140	0.000	0.375	1.515
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	26	1	0	27	0.255	0.000	0.000	0.255
TOTAL	148	126	94	368	5.140	3.975	2.165	11.280
WASTE PROCESSING								
MAINTENANCE PERSONNEL	10	2	2	14	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	4	0	35	39	0.015	0.000	0.455	0.470
HEALTH PHYSICS PERSONNEL	19	0	7	26	0.080	0.000	0.000	0.080
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	17	0	0	17	0.715	0.000	0.000	0.715
TOTAL	50	2	44	96	0.810	0.000	0.455	1.265
REFUELING								
MAINTENANCE PERSONNEL	21	12	13	46	0.205	0.115	0.040	0.360
OPERATIONS PERSONNEL	3	0	3	6	0.000	0.000	0.600	0.600
HEALTH PHYSICS PERSONNEL	13	0	26	39	0.000	0.000	0.065	0.065
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	3	0	0	3	0.010	0.000	0.000	0.010
TOTAL	40	12	42	94	0.215	0.115	0.705	1.035
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	504 (181)	892 (338)	372 (191)	1768 (710)	53.565	169.235	65.040	287.840
OPERATIONS PERSONNEL	117 (53)	6 (1)	164 (48)	287 (102)	9.150	0.225	20.550	29.925
HEALTH PHYSICS PERSONNEL	124 (30)	0 (0)	293 (93)	417 (123)	11.725	0.000	34.625	46.350
SUPERVISORY PERSONNEL	2 (1)	0 (0)	0 (0)	2 (1)	0.165	0.000	0.000	0.165
ENGINEERING PERSONNEL	224 (76)	19 (11)	7 (5)	250 (92)	24.940	6.805	1.620	33.365
GRAND TOTALS	971 (341)	917 (350)	836 (337)	2724(1028)	99.545	176.265	121.835	397.645

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *MILLSTONE POINT 1 TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	30	2	15	47	8.450	0.970	6.930	16.350
OPERATIONS PERSONNEL	34	0	3	37	12.150	0.010	2.090	14.250
HEALTH PHYSICS PERSONNEL	18	0	33	51	5.010	0.070	15.720	20.800
SUPERVISORY PERSONNEL	0	0	0	0	0.080	0.000	0.140	0.220
ENGINEERING PERSONNEL	0	1	4	5	0.440	1.190	1.660	3.290
TOTAL	82	3	55	140	26.130	2.240	26.540	54.910
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	27	8	69	104	10.180	2.540	27.820	40.540
OPERATIONS PERSONNEL	1	0	1	2	0.470	0.000	0.520	0.990
HEALTH PHYSICS PERSONNEL	4	0	22	26	1.400	0.080	7.990	9.470
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	3	2	6	11	0.730	0.800	2.310	3.840
TOTAL	35	10	98	143	12.780	3.420	38.640	54.840
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	5	0	101	106	2.020	0.000	50.340	52.360
OPERATIONS PERSONNEL	1	0	3	4	0.250	0.000	0.500	0.750
HEALTH PHYSICS PERSONNEL	0	0	3	3	0.100	0.000	1.380	1.480
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.020	0.020
ENGINEERING PERSONNEL	5	6	34	45	1.310	2.560	19.640	23.510
TOTAL	11	6	141	158	3.680	2.560	71.880	78.120
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	27	2	214	243	9.420	0.440	90.640	100.500
OPERATIONS PERSONNEL	15	0	5	20	4.220	0.000	1.740	5.960
HEALTH PHYSICS PERSONNEL	8	0	40	48	2.250	0.070	12.030	14.350
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.010	0.010
ENGINEERING PERSONNEL	1	2	16	19	0.500	1.380	5.080	6.960
TOTAL	51	4	275	330	16.390	1.890	109.500	127.780
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	12	12	0.080	0.000	3.350	3.430
OPERATIONS PERSONNEL	1	0	1	2	1.260	0.000	0.560	1.820
HEALTH PHYSICS PERSONNEL	9	0	13	22	3.150	0.140	5.630	8.920
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.160	0.000	0.160
TOTAL	10	0	26	36	4.490	0.300	9.540	14.330
REFUELING								
MAINTENANCE PERSONNEL	24	2	40	66	8.970	0.310	17.970	27.250
OPERATIONS PERSONNEL	15	0	0	15	5.010	0.000	0.000	5.010
HEALTH PHYSICS PERSONNEL	3	0	22	25	1.140	0.000	6.990	8.130
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	3	1	7	11	0.590	0.400	4.980	5.970
TOTAL	45	3	69	117	15.710	0.710	29.940	46.360
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	113	14	451	578	39.120	4.260	197.050	240.430
OPERATIONS PERSONNEL	67	0	13	80	23.360	0.010	5.410	28.780
HEALTH PHYSICS PERSONNEL	42	0	133	175	13.050	0.360	49.740	63.150
SUPERVISORY PERSONNEL	0	0	0	0	0.080	0.000	0.170	0.250
ENGINEERING PERSONNEL	12	12	67	91	3.570	6.490	33.670	43.730
GRAND TOTALS	234	26	664	924	79.180	11.120	286.040	376.340

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *MILLSTONE POINT 2,3 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	7	0	10	17	2.670	0.010	4.170	6.850
OPERATIONS PERSONNEL	13	0	0	13	4.170	0.000	0.060	4.230
HEALTH PHYSICS PERSONNEL	7	0	8	15	2.990	0.070	3.980	7.040
SUPERVISORY PERSONNEL	0	0	0	0	0.010	0.000	0.040	0.050
ENGINEERING PERSONNEL	1	0	1	2	0.340	0.090	0.310	0.740
TOTAL	28	0	19	47	10.180	0.170	8.560	18.910
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	57	1	111	169	18.930	0.610	38.140	57.680
OPERATIONS PERSONNEL	23	0	0	23	6.470	0.000	0.110	6.580
HEALTH PHYSICS PERSONNEL	11	0	40	51	5.030	0.130	10.250	15.410
SUPERVISORY PERSONNEL	0	0	0	0	0.010	0.000	0.110	0.120
ENGINEERING PERSONNEL	0	5	22	27	0.270	2.010	6.360	8.640
TOTAL	91	6	173	270	30.710	2.750	54.970	88.430
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	3	0	73	76	1.030	0.000	30.280	31.310
OPERATIONS PERSONNEL	0	0	0	0	0.020	0.000	0.070	0.090
HEALTH PHYSICS PERSONNEL	2	0	8	10	0.260	0.000	2.630	2.890
SUPERVISORY PERSONNEL	0	0	3	3	0.000	0.000	0.720	0.720
ENGINEERING PERSONNEL	0	3	14	17	0.080	1.250	7.280	8.610
TOTAL	5	3	98	106	1.390	1.250	40.980	43.620
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	52	0	146	198	21.900	0.260	80.170	102.330
OPERATIONS PERSONNEL	31	0	7	38	9.820	0.020	2.480	12.320
HEALTH PHYSICS PERSONNEL	26	0	29	55	10.230	0.000	12.680	22.910
SUPERVISORY PERSONNEL	0	0	0	0	0.060	0.000	0.060	0.120
ENGINEERING PERSONNEL	11	4	33	48	4.350	1.730	19.140	25.220
TOTAL	120	4	215	339	46.360	2.010	114.530	162.900
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	0	5	6	0.200	0.000	1.360	1.560
OPERATIONS PERSONNEL	1	0	0	1	0.990	0.000	0.000	0.990
HEALTH PHYSICS PERSONNEL	12	0	11	23	3.070	0.060	3.340	6.470
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.010	0.000	0.010
TOTAL	14	0	16	30	4.260	0.070	4.700	9.030
REFUELING								
MAINTENANCE PERSONNEL	28	1	19	48	9.970	0.310	6.090	16.370
OPERATIONS PERSONNEL	1	0	1	2	0.540	0.000	0.130	0.670
HEALTH PHYSICS PERSONNEL	10	0	12	22	4.750	0.020	4.080	8.850
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	6	6	0.070	0.330	1.910	2.310
TOTAL	39	1	38	78	15.330	0.660	12.210	28.200
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	148	2	364	514	54.700	1.190	160.210	216.100
OPERATIONS PERSONNEL	69	0	8	77	22.010	0.020	2.850	24.880
HEALTH PHYSICS PERSONNEL	68	0	108	176	26.330	0.280	36.960	63.570
SUPERVISORY PERSONNEL	0	0	3	3	0.080	0.000	0.930	1.010
ENGINEERING PERSONNEL	12	12	76	100	5.110	5.420	35.000	45.530
GRAND TOTALS	297	14	559	870	108.230	6.910	235.950	351.090

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *MONTICELLO

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	44	98	9	151	11.544	27.933	4.559	44.036
OPERATIONS PERSONNEL	44	0	2	46	22.120	0.000	1.405	23.525
HEALTH PHYSICS PERSONNEL	23	0	26	49	9.526	0.000	7.436	16.962
SUPERVISORY PERSONNEL	27	2	12	41	8.090	1.078	4.968	14.136
ENGINEERING PERSONNEL	9	1	0	10	3.433	0.155	0.000	3.588
TOTAL	147	101	49	297	54.713	29.166	18.368	102.247
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	42	232	46	320	24.340	77.176	13.977	115.493
OPERATIONS PERSONNEL	3	0	0	3	1.986	0.000	0.000	1.986
HEALTH PHYSICS PERSONNEL	10	0	15	25	3.108	0.000	7.476	10.584
SUPERVISORY PERSONNEL	4	3	25	32	1.812	0.855	12.372	15.039
ENGINEERING PERSONNEL	0	0	0	0	0.191	0.000	0.000	0.191
TOTAL	59	235	86	380	31.437	78.031	33.825	143.293
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	15	12	27	0.078	4.538	5.273	9.889
OPERATIONS PERSONNEL	0	0	0	0	0.237	0.000	0.000	0.237
HEALTH PHYSICS PERSONNEL	0	0	2	2	0.072	0.000	0.864	0.936
SUPERVISORY PERSONNEL	0	0	24	24	0.054	0.237	7.861	8.152
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	15	38	53	0.441	4.775	13.998	19.214
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	34	191	32	257	17.415	85.428	10.493	113.336
OPERATIONS PERSONNEL	39	0	0	39	14.225	0.000	0.000	14.225
HEALTH PHYSICS PERSONNEL	10	0	17	27	5.216	0.000	11.338	16.554
SUPERVISORY PERSONNEL	30	5	27	62	13.199	1.173	9.427	23.799
ENGINEERING PERSONNEL	9	1	0	10	3.303	0.319	0.000	3.622
TOTAL	122	197	76	395	53.358	86.920	31.258	171.536
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	0	0	1	0.566	0.405	0.000	0.971
OPERATIONS PERSONNEL	1	0	0	1	0.431	0.000	0.000	0.431
HEALTH PHYSICS PERSONNEL	1	0	1	2	0.396	0.000	0.211	0.607
SUPERVISORY PERSONNEL	1	0	1	2	0.241	0.004	1.510	1.755
ENGINEERING PERSONNEL	0	0	0	0	0.004	0.000	0.000	0.004
TOTAL	4	0	2	6	1.638	0.409	1.721	3.768
REFUELING								
MAINTENANCE PERSONNEL	14	34	0	48	4.348	11.158	0.144	15.650
OPERATIONS PERSONNEL	32	0	0	32	7.733	0.000	0.010	7.743
HEALTH PHYSICS PERSONNEL	2	0	4	6	0.776	0.000	1.933	2.709
SUPERVISORY PERSONNEL	2	0	1	3	0.609	0.115	0.129	0.853
ENGINEERING PERSONNEL	0	0	0	0	0.048	0.001	0.000	0.049
TOTAL	50	34	5	89	13.514	11.274	2.216	27.004
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	135	570	99	804	58.291	206.638	34.446	299.375
OPERATIONS PERSONNEL	119	0	2	121	46.732	0.000	1.415	48.147
HEALTH PHYSICS PERSONNEL	46	0	65	111	19.094	0.000	29.258	48.352
SUPERVISORY PERSONNEL	64	10	90	164	24.005	3.462	36.267	63.734
ENGINEERING PERSONNEL	18	2	0	20	6.979	0.475	0.000	7.454
GRAND TOTALS	382	582	256	1220	155.101	210.575	101.386	467.062

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *NINE MILE POINT 1,2 TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	813	0	278	1091	13.878	0.000	3.739	17.617
OPERATIONS PERSONNEL	1304	0	978	2282	22.409	0.000	3.907	26.316
HEALTH PHYSICS PERSONNEL	1461	0	73	1534	12.937	0.000	0.734	13.671
SUPERVISORY PERSONNEL	177	0	12	189	3.760	0.000	0.155	3.915
ENGINEERING PERSONNEL	130	1	85	216	2.023	0.010	1.856	3.889
TOTAL	3885	1	1426	5312	55.007	0.010	10.391	65.408
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	2758	1	2422	5181	60.244	0.005	47.135	107.384
OPERATIONS PERSONNEL	593	0	57	650	13.560	0.000	0.603	14.163
HEALTH PHYSICS PERSONNEL	2239	0	425	2664	23.133	0.000	6.776	29.909
SUPERVISORY PERSONNEL	230	2	178	410	3.833	0.040	2.238	6.111
ENGINEERING PERSONNEL	498	18	388	904	7.578	0.480	7.430	15.488
TOTAL	6318	21	3470	9809	108.348	0.525	64.182	173.055
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	8	0	15	23	0.035	0.000	0.125	0.160
OPERATIONS PERSONNEL	1	0	0	1	0.015	0.000	0.000	0.015
HEALTH PHYSICS PERSONNEL	11	0	1	12	0.116	0.000	0.002	0.118
SUPERVISORY PERSONNEL	3	0	0	3	0.025	0.000	0.000	0.025
ENGINEERING PERSONNEL	37	0	1	38	0.597	0.000	0.005	0.602
TOTAL	60	0	17	77	0.788	0.000	0.132	0.920
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	40	0	311	351	0.683	0.000	5.886	6.569
OPERATIONS PERSONNEL	11	0	0	11	0.369	0.000	0.000	0.369
HEALTH PHYSICS PERSONNEL	49	0	2	51	0.348	0.000	0.007	0.355
SUPERVISORY PERSONNEL	6	0	27	33	0.105	0.000	0.330	0.435
ENGINEERING PERSONNEL	42	15	58	115	0.906	0.475	1.082	2.463
TOTAL	148	15	398	561	2.411	0.475	7.305	10.191
WASTE PROCESSING								
MAINTENANCE PERSONNEL	49	0	23	72	0.456	0.000	0.164	0.620
OPERATIONS PERSONNEL	1103	0	97	1200	8.253	0.000	1.680	9.933
HEALTH PHYSICS PERSONNEL	256	0	6	262	2.688	0.000	0.053	2.741
SUPERVISORY PERSONNEL	4	0	0	4	0.009	0.000	0.000	0.009
ENGINEERING PERSONNEL	31	0	39	70	0.035	0.000	0.642	0.677
TOTAL	1443	0	165	1608	11.441	0.000	2.539	13.980
REFUELING								
MAINTENANCE PERSONNEL	5	0	35	40	0.000	0.000	0.181	0.181
OPERATIONS PERSONNEL	1	0	0	1	0.005	0.000	0.000	0.005
HEALTH PHYSICS PERSONNEL	11	0	2	13	0.037	0.000	0.003	0.040
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	19	0	0	19	0.000	0.000	0.000	0.000
TOTAL	36	0	37	73	0.042	0.000	0.184	0.226
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	3673 (159)	1	(1) 3084	(252) 6758 (412)	75.296	0.005	57.230	132.531
OPERATIONS PERSONNEL	3013 (65)	0	(0) 1132	(91) 4145 (156)	44.611	0.000	6.190	50.801
HEALTH PHYSICS PERSONNEL	4027 (69)	0	(0) 509	(105) 4536 (174)	39.259	0.000	7.575	46.834
SUPERVISORY PERSONNEL	420 (48)	2	(1) 217	(60) 639 (109)	7.732	0.040	2.723	10.495
ENGINEERING PERSONNEL	757 (133)	34	(1) 571	(213) 1362 (347)	11.139	0.965	11.015	23.119
GRAND TOTALS	11890 (474)	37	(3) 5513	(721)17440(1198)	178.037	1.010	84.733	263.780

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *NORTH ANNA 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	98	1	26	125	4.099	0.002	0.090	4.191
OPERATIONS PERSONNEL	115	2	1	118	12.544	0.001	0.000	12.545
HEALTH PHYSICS PERSONNEL	45	0	31	76	1.510	0.000	0.465	1.975
SUPERVISORY PERSONNEL	46	5	0	51	0.474	0.001	0.000	0.475
ENGINEERING PERSONNEL	13	1	2	16	0.323	0.004	0.000	0.327
TOTAL	317	9	60	386	18.950	0.008	0.555	19.513
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	266	11	801	1078	88.339	0.001	168.522	256.862
OPERATIONS PERSONNEL	221	15	20	256	18.379	0.123	0.224	18.726
HEALTH PHYSICS PERSONNEL	111	20	246	377	24.929	0.031	57.116	82.076
SUPERVISORY PERSONNEL	104	17	19	140	3.992	0.021	0.511	4.524
ENGINEERING PERSONNEL	128	71	71	270	4.791	0.470	2.648	7.909
TOTAL	830	134	1157	2121	140.430	0.646	229.021	370.097
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	32	0	119	151	2.578	0.000	34.396	36.974
OPERATIONS PERSONNEL	16	0	1	17	2.004	0.000	0.002	2.006
HEALTH PHYSICS PERSONNEL	8	0	71	79	0.126	0.000	5.062	5.188
SUPERVISORY PERSONNEL	1	0	1	2	0.034	0.000	0.001	0.035
ENGINEERING PERSONNEL	14	0	18	32	1.355	0.000	7.838	9.193
TOTAL	71	0	210	281	6.097	0.000	47.299	53.396
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	50	1	445	496	0.527	0.000	161.365	161.892
OPERATIONS PERSONNEL	11	0	3	14	0.175	0.000	0.113	0.288
HEALTH PHYSICS PERSONNEL	20	0	100	120	0.212	0.000	11.005	11.217
SUPERVISORY PERSONNEL	5	0	0	5	0.175	0.000	0.000	0.175
ENGINEERING PERSONNEL	23	2	22	47	0.556	0.001	0.822	1.379
TOTAL	109	3	570	682	1.645	0.001	173.305	174.951
WASTE PROCESSING								
MAINTENANCE PERSONNEL	66	0	63	129	0.617	0.000	0.458	1.075
OPERATIONS PERSONNEL	32	1	0	33	0.590	0.000	0.000	0.590
HEALTH PHYSICS PERSONNEL	43	1	17	61	1.919	0.001	0.219	2.139
SUPERVISORY PERSONNEL	9	0	1	10	0.202	0.000	0.000	0.202
ENGINEERING PERSONNEL	11	0	4	15	0.052	0.000	0.313	0.365
TOTAL	161	2	85	248	3.380	0.001	0.990	4.371
REFUELING								
MAINTENANCE PERSONNEL	33	0	76	109	0.471	0.000	22.630	23.101
OPERATIONS PERSONNEL	29	1	2	32	1.023	0.036	0.036	1.095
HEALTH PHYSICS PERSONNEL	32	1	96	129	0.557	0.022	3.462	4.041
SUPERVISORY PERSONNEL	8	1	0	9	0.299	0.038	0.000	0.337
ENGINEERING PERSONNEL	4	6	15	25	0.323	0.100	0.974	1.397
TOTAL	106	9	189	304	2.673	0.196	27.102	29.971
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	545	13	1530	2088	96.631	0.003	387.461	484.095
OPERATIONS PERSONNEL	424	19	27	470	34.715	0.160	0.375	35.250
HEALTH PHYSICS PERSONNEL	259	22	561	842	29.253	0.054	77.329	106.636
SUPERVISORY PERSONNEL	173	23	21	217	5.176	0.060	0.512	5.748
ENGINEERING PERSONNEL	193	80	132	405	7.400	0.575	12.595	20.570
GRAND TOTALS	1594	157	2271	4022	173.175	0.852	478.272	652.299

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *OCONEE 1,2,3 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	258	490	194	942	6.769	1.402	0.749	8.920
OPERATIONS PERSONNEL	98	1	37	136	20.881	0.000	0.173	21.054
HEALTH PHYSICS PERSONNEL	52	0	100	152	5.098	0.000	17.607	22.705
SUPERVISORY PERSONNEL	8	0	0	8	0.175	0.000	0.000	0.175
ENGINEERING PERSONNEL	84	11	4	99	4.461	0.000	0.175	4.636
TOTAL	500	502	335	1337	37.384	1.402	18.704	57.490
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	267	480	185	932	120.051	184.088	44.519	348.658
OPERATIONS PERSONNEL	83	1	51	135	9.371	0.120	39.506	48.997
HEALTH PHYSICS PERSONNEL	51	0	99	150	9.618	0.000	33.094	42.712
SUPERVISORY PERSONNEL	8	0	0	8	1.198	0.000	0.000	1.198
ENGINEERING PERSONNEL	80	11	5	96	12.389	1.990	0.335	14.714
TOTAL	489	492	340	1321	152.627	186.198	117.454	456.279
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	50	197	81	328	0.755	20.377	2.837	23.969
OPERATIONS PERSONNEL	8	0	4	12	0.340	0.000	0.010	0.350
HEALTH PHYSICS PERSONNEL	15	0	61	76	0.190	0.000	4.236	4.426
SUPERVISORY PERSONNEL	2	0	0	2	0.190	0.000	0.000	0.190
ENGINEERING PERSONNEL	53	12	0	65	10.497	2.175	0.000	12.672
TOTAL	128	209	146	483	11.972	22.552	7.083	41.607
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	102	277	107	486	2.382	62.696	24.780	89.858
OPERATIONS PERSONNEL	3	1	4	8	0.005	0.035	0.040	0.080
HEALTH PHYSICS PERSONNEL	27	0	73	100	0.735	0.000	5.820	6.555
SUPERVISORY PERSONNEL	8	0	0	8	0.180	0.000	0.000	0.180
ENGINEERING PERSONNEL	34	1	1	36	0.705	0.000	0.000	0.705
TOTAL	174	279	185	638	4.007	62.731	30.640	97.378
WASTE PROCESSING								
MAINTENANCE PERSONNEL	31	18	1	50	0.475	0.360	0.000	0.835
OPERATIONS PERSONNEL	24	0	45	69	0.735	0.000	2.210	2.945
HEALTH PHYSICS PERSONNEL	34	0	4	38	2.700	0.000	0.010	2.710
SUPERVISORY PERSONNEL	1	0	0	1	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	20	0	1	21	2.705	0.000	1.080	3.785
TOTAL	110	18	51	179	6.615	0.360	3.300	10.275
REFUELING								
MAINTENANCE PERSONNEL	73	80	24	177	7.756	4.463	0.813	13.032
OPERATIONS PERSONNEL	79	0	11	90	6.834	0.000	0.567	7.401
HEALTH PHYSICS PERSONNEL	9	0	38	47	3.039	0.000	0.710	3.749
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	31	2	1	34	1.666	0.005	0.000	1.671
TOTAL	192	82	74	348	19.295	4.468	2.090	25.853
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	781 (266)	1542 (489)	592 (195)	2915 (950)	138.188	273.386	73.698	485.272
OPERATIONS PERSONNEL	295 (97)	3 (1)	152 (51)	450 (149)	38.166	0.155	42.506	80.827
HEALTH PHYSICS PERSONNEL	188 (52)	0 (0)	375 (101)	563 (153)	21.380	0.000	61.477	82.857
SUPERVISORY PERSONNEL	27 (9)	0 (0)	0 (0)	27 (9)	1.743	0.000	0.000	1.743
ENGINEERING PERSONNEL	302 (90)	37 (12)	12 (5)	351 (107)	32.423	4.170	1.590	38.183
GRAND TOTALS	1593 (514)	1582 (502)	1131 (352)	4306(1368)	231.900	277.711	179.271	688.882

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *OYSTER CREEK TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	202	2	683	887	23.044	0.005	21.894	44.943
OPERATIONS PERSONNEL	177	0	26	203	45.627	0.000	0.784	46.411
HEALTH PHYSICS PERSONNEL	109	0	139	248	19.633	0.000	52.747	72.380
SUPERVISORY PERSONNEL	43	0	38	81	1.182	0.000	2.134	3.316
ENGINEERING PERSONNEL	53	2	37	92	1.942	0.022	2.563	4.527
TOTAL	584	4	923	1511	91.428	0.027	80.122	171.577
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	427	15	1361	1803	84.251	0.116	463.692	548.059
OPERATIONS PERSONNEL	322	1	86	409	19.211	0.005	4.408	23.624
HEALTH PHYSICS PERSONNEL	93	0	114	207	6.495	0.000	7.676	14.171
SUPERVISORY PERSONNEL	118	2	86	206	4.086	0.004	11.286	15.376
ENGINEERING PERSONNEL	189	3	112	304	5.402	0.070	6.686	12.158
TOTAL	1149	21	1759	2929	119.445	0.195	493.748	613.388
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	67	0	470	537	1.578	0.000	75.017	76.595
OPERATIONS PERSONNEL	45	0	4	49	1.297	0.000	0.597	1.894
HEALTH PHYSICS PERSONNEL	7	0	21	28	0.050	0.000	0.514	0.564
SUPERVISORY PERSONNEL	4	0	16	20	0.010	0.000	2.007	2.017
ENGINEERING PERSONNEL	25	1	16	42	1.088	0.005	5.145	6.238
TOTAL	148	1	527	676	4.023	0.005	83.280	87.308
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	211	4	1064	1279	35.652	0.013	323.717	359.382
OPERATIONS PERSONNEL	96	0	32	128	5.944	0.000	7.579	13.523
HEALTH PHYSICS PERSONNEL	47	0	111	158	4.635	0.000	10.896	15.531
SUPERVISORY PERSONNEL	29	0	53	82	0.483	0.000	5.056	5.539
ENGINEERING PERSONNEL	57	1	40	98	2.235	0.000	4.937	7.172
TOTAL	440	5	1300	1745	48.949	0.013	352.185	401.147
WASTE PROCESSING								
MAINTENANCE PERSONNEL	94	1	262	357	1.935	0.000	9.578	11.513
OPERATIONS PERSONNEL	68	0	5	73	2.153	0.000	3.096	5.249
HEALTH PHYSICS PERSONNEL	45	0	54	99	1.472	0.000	1.573	3.045
SUPERVISORY PERSONNEL	7	0	4	11	0.202	0.000	0.002	0.204
ENGINEERING PERSONNEL	11	2	7	20	0.109	0.002	1.709	1.820
TOTAL	225	3	332	560	5.871	0.002	15.958	21.831
REFUELING								
MAINTENANCE PERSONNEL	129	0	274	403	7.676	0.000	33.053	40.729
OPERATIONS PERSONNEL	45	0	12	57	2.181	0.000	2.703	4.884
HEALTH PHYSICS PERSONNEL	9	0	37	46	0.887	0.000	4.056	4.943
SUPERVISORY PERSONNEL	7	0	10	17	0.291	0.000	0.701	0.992
ENGINEERING PERSONNEL	16	0	20	36	0.251	0.000	1.243	1.494
TOTAL	206	0	353	559	11.286	0.000	41.756	53.042
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	1130 (440)	22 (16)	4114 (1442)	5266(1898)	154.136	0.134	926.951	1081.221
OPERATIONS PERSONNEL	753 (366)	1 (1)	165 (90)	919 (457)	76.413	0.005	19.167	95.585
HEALTH PHYSICS PERSONNEL	310 (133)	0 (0)	476 (161)	786 (294)	33.172	0.000	77.462	110.634
SUPERVISORY PERSONNEL	208 (124)	2 (2)	207 (89)	417 (215)	6.254	0.004	21.186	27.444
ENGINEERING PERSONNEL	351 (196)	9 (4)	232 (120)	592 (320)	11.027	0.099	22.283	33.409
GRAND TOTALS	2752 (1259)	34 (23)	5194 (1902)	7980(3184)	281.002	0.242	1067.049	1348.293

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *PALISADES

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	0	0	2	2	0.408	0.018	1.343	1.769
OPERATIONS PERSONNEL	31	0	0	31	9.078	0.018	1.153	10.249
HEALTH PHYSICS PERSONNEL	19	0	60	79	4.306	0.000	16.061	20.367
SUPERVISORY PERSONNEL	4	0	0	4	1.121	0.034	0.112	1.267
ENGINEERING PERSONNEL	3	0	1	4	1.397	0.283	0.493	2.173
TOTAL	57	0	63	120	16.310	0.353	19.162	35.825
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	58	5	35	98	15.179	1.304	12.014	28.497
OPERATIONS PERSONNEL	0	0	0	0	0.254	0.000	0.307	0.561
HEALTH PHYSICS PERSONNEL	2	0	3	5	1.261	0.000	2.015	3.276
SUPERVISORY PERSONNEL	1	0	2	3	0.231	0.010	0.325	0.566
ENGINEERING PERSONNEL	1	0	1	2	0.444	0.279	0.569	1.292
TOTAL	62	5	41	108	17.369	1.593	15.230	34.192
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	6	6	0.209	0.000	2.512	2.721
OPERATIONS PERSONNEL	0	0	1	1	0.000	0.000	0.183	0.183
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.098	0.000	0.034	0.132
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.031	0.031
ENGINEERING PERSONNEL	0	4	0	4	0.000	0.879	0.220	1.099
TOTAL	0	4	7	11	0.307	0.879	2.980	4.166
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	117	117	0.449	0.046	48.245	48.740
OPERATIONS PERSONNEL	0	0	5	5	0.059	0.004	2.462	2.525
HEALTH PHYSICS PERSONNEL	0	0	22	22	0.122	0.000	8.167	8.289
SUPERVISORY PERSONNEL	0	0	2	2	0.060	0.000	0.422	0.482
ENGINEERING PERSONNEL	0	0	17	17	0.047	0.089	4.728	4.864
TOTAL	0	0	163	163	0.737	0.139	64.024	64.900
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	3	0	0	3	0.905	0.000	0.000	0.905
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	3	0	0	3	0.905	0.000	0.000	0.905
REFUELING								
MAINTENANCE PERSONNEL	10	37	0	47	2.908	20.908	0.008	23.824
OPERATIONS PERSONNEL	9	0	2	11	3.289	0.000	0.655	3.944
HEALTH PHYSICS PERSONNEL	1	0	20	21	0.385	0.000	5.379	5.764
SUPERVISORY PERSONNEL	2	0	0	2	0.651	0.027	0.000	0.678
ENGINEERING PERSONNEL	0	1	18	19	0.385	0.105	6.903	7.393
TOTAL	22	38	40	100	7.618	21.040	12.945	41.603
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	68	42	160	270	19.153	22.276	64.122	105.551
OPERATIONS PERSONNEL	40	0	8	48	12.680	0.022	4.760	17.462
HEALTH PHYSICS PERSONNEL	25	0	105	130	7.077	0.000	31.656	38.733
SUPERVISORY PERSONNEL	7	0	4	11	2.063	0.071	0.890	3.024
ENGINEERING PERSONNEL	4	5	37	46	2.273	1.635	12.913	16.821
GRAND TOTALS	144	47	314	505	43.246	24.004	114.341	181.591

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *PALO VERDE 1,2,3 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	0	0	1	1	0.935	0.000	1.535	2.470
OPERATIONS PERSONNEL	82	0	1	83	22.901	0.000	0.980	23.881
HEALTH PHYSICS PERSONNEL	56	0	95	151	16.707	0.000	29.315	46.022
SUPERVISORY PERSONNEL	3	0	0	3	1.650	0.000	0.445	2.095
ENGINEERING PERSONNEL	4	0	4	8	2.265	0.000	2.010	4.275
TOTAL	145	0	101	246	44.458	0.000	34.285	78.743
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	176	0	419	595	68.603	0.000	176.449	245.052
OPERATIONS PERSONNEL	23	0	14	37	8.226	0.000	6.769	14.995
HEALTH PHYSICS PERSONNEL	69	0	184	253	23.785	0.000	81.236	105.021
SUPERVISORY PERSONNEL	11	0	4	15	5.503	0.000	2.120	7.623
ENGINEERING PERSONNEL	11	0	53	64	5.503	0.000	27.320	32.823
TOTAL	290	0	674	964	111.620	0.000	293.894	405.514
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	6	0	49	55	1.642	0.000	20.913	22.555
OPERATIONS PERSONNEL	1	0	4	5	0.463	0.000	0.979	1.442
HEALTH PHYSICS PERSONNEL	1	0	10	11	0.801	0.000	3.355	4.156
SUPERVISORY PERSONNEL	1	0	0	1	0.300	0.000	0.045	0.345
ENGINEERING PERSONNEL	0	0	18	18	0.177	0.000	6.875	7.052
TOTAL	9	0	81	90	3.383	0.000	32.167	35.550
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	27	27	0.020	0.000	7.780	7.800
OPERATIONS PERSONNEL	0	0	3	3	0.030	0.000	1.029	1.059
HEALTH PHYSICS PERSONNEL	0	0	3	3	0.125	0.000	1.550	1.675
SUPERVISORY PERSONNEL	0	0	1	1	0.090	0.000	0.215	0.305
ENGINEERING PERSONNEL	0	0	13	13	0.045	0.000	4.754	4.799
TOTAL	0	0	47	47	0.310	0.000	15.328	15.638
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.105	0.000	0.305	0.410
OPERATIONS PERSONNEL	0	0	0	0	0.290	0.000	0.010	0.300
HEALTH PHYSICS PERSONNEL	22	0	19	41	9.767	0.000	9.018	18.785
SUPERVISORY PERSONNEL	1	0	0	1	0.185	0.000	0.000	0.185
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.010	0.010
TOTAL	23	0	19	42	10.347	0.000	9.343	19.690
REFUELING								
MAINTENANCE PERSONNEL	26	0	70	96	9.065	0.000	23.560	32.625
OPERATIONS PERSONNEL	0	0	1	1	0.620	0.000	0.615	1.235
HEALTH PHYSICS PERSONNEL	3	0	30	33	1.375	0.000	9.730	11.105
SUPERVISORY PERSONNEL	5	0	1	6	1.025	0.000	0.670	1.695
ENGINEERING PERSONNEL	1	0	5	6	0.875	0.000	1.667	2.542
TOTAL	35	0	107	142	12.960	0.000	36.242	49.202
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	208	0	566	774	80.370	0.000	230.542	310.912
OPERATIONS PERSONNEL	106	0	23	129	32.530	0.000	10.382	42.912
HEALTH PHYSICS PERSONNEL	151	0	341	492	52.560	0.000	134.204	186.764
SUPERVISORY PERSONNEL	21	0	6	27	8.753	0.000	3.495	12.248
ENGINEERING PERSONNEL	16	0	93	109	8.865	0.000	42.636	51.501
GRAND TOTALS	502	0	1029	1531	183.078	0.000	421.259	604.337

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *PEACH BOTTOM 2,3 TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	115	143	314	572	6.921	4.988	30.633	42.542
OPERATIONS PERSONNEL	155	36	147	338	20.293	1.341	14.657	36.291
HEALTH PHYSICS PERSONNEL	109	5	143	257	23.225	0.550	25.826	49.601
SUPERVISORY PERSONNEL	6	10	30	46	0.153	0.498	1.017	1.668
ENGINEERING PERSONNEL	59	54	54	167	3.443	2.210	1.734	7.387
TOTAL	444	248	688	1380	54.035	9.587	73.867	137.489
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	126	232	553	911	16.358	8.225	54.341	78.924
OPERATIONS PERSONNEL	62	28	126	216	4.092	1.305	9.950	15.347
HEALTH PHYSICS PERSONNEL	61	3	100	164	6.968	0.138	7.606	14.712
SUPERVISORY PERSONNEL	2	3	9	14	0.094	0.059	0.402	0.555
ENGINEERING PERSONNEL	45	39	46	130	2.504	1.371	1.764	5.639
TOTAL	296	305	834	1435	30.016	11.098	74.063	115.177
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	3	14	0	17	0.081	0.127	0.000	0.208
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	2	0	3	5	0.010	0.000	0.023	0.033
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	0	1	0.181	0.000	0.000	0.181
TOTAL	6	14	3	23	0.272	0.127	0.023	0.422
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	152	336	1104	1592	36.531	104.455	256.053	397.039
OPERATIONS PERSONNEL	72	43	187	302	10.074	4.497	45.769	60.340
HEALTH PHYSICS PERSONNEL	65	7	131	203	12.541	1.785	27.759	42.085
SUPERVISORY PERSONNEL	4	10	39	53	0.734	2.153	3.947	6.834
ENGINEERING PERSONNEL	52	54	97	203	5.525	6.495	9.015	21.035
TOTAL	345	450	1558	2353	65.405	119.385	342.543	527.333
WASTE PROCESSING								
MAINTENANCE PERSONNEL	20	12	54	86	0.806	0.081	2.792	3.679
OPERATIONS PERSONNEL	1	2	12	15	0.028	0.007	1.057	1.092
HEALTH PHYSICS PERSONNEL	16	1	34	51	0.613	0.303	1.472	2.388
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	1	2	0.068	0.002	0.000	0.070
TOTAL	38	15	101	154	1.515	0.393	5.321	7.229
REFUELING								
MAINTENANCE PERSONNEL	75	159	721	955	6.471	16.946	82.863	106.280
OPERATIONS PERSONNEL	26	17	119	162	1.206	1.211	14.760	17.177
HEALTH PHYSICS PERSONNEL	30	3	100	133	3.655	0.231	13.494	17.380
SUPERVISORY PERSONNEL	2	6	16	24	0.067	1.081	1.230	2.378
ENGINEERING PERSONNEL	27	24	44	95	0.640	1.248	1.515	3.403
TOTAL	160	209	1000	1369	12.039	20.717	113.862	146.618
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	491 (316)	896 (482)	2746 (1752)	4133(2550)	67.168	134.822	426.682	628.672
OPERATIONS PERSONNEL	316 (349)	126 (186)	591 (732)	1033(1267)	35.693	8.361	86.193	130.247
HEALTH PHYSICS PERSONNEL	283 (156)	19 (24)	511 (200)	813 (380)	47.012	3.007	76.180	126.199
SUPERVISORY PERSONNEL	14 (25)	29 (43)	94 (106)	137 (174)	1.048	3.791	6.596	11.435
ENGINEERING PERSONNEL	185 (132)	171 (276)	242 (257)	598 (665)	12.361	11.326	14.028	37.715
GRAND TOTALS	1289 (978)	1241 (1011)	4184 (3047)	6714(5036)	163.282	161.307	609.679	934.268

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *PERRY

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	18	0	4	22	0.247	0.000	0.000	0.247
OPERATIONS PERSONNEL	94	0	5	99	12.811	0.000	0.031	12.842
HEALTH PHYSICS PERSONNEL	40	0	16	56	9.863	0.000	3.255	13.118
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	12	1	13	0.000	0.300	0.020	0.320
TOTAL	152	12	26	190	22.921	0.300	3.306	26.527
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	98	0	72	170	4.438	0.000	2.689	7.127
OPERATIONS PERSONNEL	64	0	6	70	5.133	0.000	0.375	5.508
HEALTH PHYSICS PERSONNEL	33	0	16	49	0.613	0.000	0.372	0.985
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	12	2	15	0.415	0.104	0.010	0.529
TOTAL	196	12	96	304	10.599	0.104	3.446	14.149
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	9	0	17	26	0.075	0.000	1.090	1.165
OPERATIONS PERSONNEL	0	0	1	1	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	13	0	4	17	0.285	0.000	0.245	0.530
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	3	1	4	0.000	0.614	0.395	1.009
TOTAL	22	3	23	48	0.360	0.614	1.730	2.704
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	100	0	87	187	32.834	0.000	36.924	69.758
OPERATIONS PERSONNEL	94	0	7	101	9.626	0.000	0.795	10.421
HEALTH PHYSICS PERSONNEL	39	0	16	55	15.257	0.000	4.135	19.392
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	14	2	17	0.015	4.246	0.310	4.571
TOTAL	234	14	112	360	57.732	4.246	42.164	104.142
WASTE PROCESSING								
MAINTENANCE PERSONNEL	74	0	22	96	1.450	0.000	3.225	4.675
OPERATIONS PERSONNEL	32	0	2	34	3.100	0.000	0.960	4.060
HEALTH PHYSICS PERSONNEL	33	0	15	48	4.245	0.000	0.925	5.170
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	2	0	2	0.000	0.075	0.000	0.075
TOTAL	139	2	39	180	8.795	0.075	5.110	13.980
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	299	0	202	501	39.044	0.000	43.928	82.972
OPERATIONS PERSONNEL	284	0	21	305	30.670	0.000	2.161	32.831
HEALTH PHYSICS PERSONNEL	158	0	67	225	30.263	0.000	8.932	39.195
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	2	43	6	51	0.430	5.339	0.735	6.504
GRAND TOTALS	743	43	296	1082	100.407	5.339	55.756	161.502

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *PILGRIM TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	14	1	43	58	5.966	0.325	11.710	18.001
OPERATIONS PERSONNEL	72	1	3	76	32.400	0.308	5.017	37.725
HEALTH PHYSICS PERSONNEL	34	0	27	61	15.325	0.000	10.954	26.279
SUPERVISORY PERSONNEL	30	3	3	36	8.158	0.988	2.639	11.785
ENGINEERING PERSONNEL	15	0	5	20	5.667	0.104	2.381	8.152
TOTAL	165	5	81	251	67.516	1.725	32.701	101.942
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	98	4	413	515	53.894	1.940	191.544	247.378
OPERATIONS PERSONNEL	35	1	2	38	7.756	0.161	0.893	8.810
HEALTH PHYSICS PERSONNEL	30	0	14	44	9.270	0.000	4.292	13.562
SUPERVISORY PERSONNEL	15	2	28	45	5.480	0.626	9.463	15.569
ENGINEERING PERSONNEL	12	0	36	48	5.133	0.195	13.768	19.096
TOTAL	190	7	493	690	81.533	2.922	219.960	304.415
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	7	0	157	164	1.884	0.049	63.407	65.340
OPERATIONS PERSONNEL	0	0	0	0	0.207	0.000	0.033	0.240
HEALTH PHYSICS PERSONNEL	1	0	2	3	0.416	0.000	0.903	1.319
SUPERVISORY PERSONNEL	1	0	10	11	0.317	0.013	3.663	3.993
ENGINEERING PERSONNEL	2	0	2	4	0.661	0.046	1.478	2.185
TOTAL	11	0	171	182	3.485	0.108	69.484	73.077
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
WASTE PROCESSING								
MAINTENANCE PERSONNEL	9	1	13	23	2.009	0.117	3.830	5.956
OPERATIONS PERSONNEL	8	1	0	9	2.958	0.364	0.014	3.336
HEALTH PHYSICS PERSONNEL	6	0	0	6	1.781	0.000	0.147	1.928
SUPERVISORY PERSONNEL	3	0	0	3	0.837	0.001	0.013	0.851
ENGINEERING PERSONNEL	0	0	0	0	0.039	0.000	0.001	0.040
TOTAL	26	2	13	41	7.624	0.482	4.005	12.111
REFUELING								
MAINTENANCE PERSONNEL	5	1	73	79	3.090	0.179	34.106	37.375
OPERATIONS PERSONNEL	5	0	0	5	2.124	0.000	0.355	2.479
HEALTH PHYSICS PERSONNEL	3	0	5	8	2.255	0.000	1.458	3.713
SUPERVISORY PERSONNEL	4	0	9	13	1.194	0.005	3.261	4.460
ENGINEERING PERSONNEL	3	0	10	13	0.833	0.026	3.869	4.728
TOTAL	20	1	97	118	9.496	0.210	43.049	52.755
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	133	7	699	839	66.843	2.610	304.597	374.050
OPERATIONS PERSONNEL	120	3	5	128	45.445	0.833	6.312	52.590
HEALTH PHYSICS PERSONNEL	74	0	48	122	29.047	0.000	17.754	46.801
SUPERVISORY PERSONNEL	53	5	50	108	15.986	1.633	19.039	36.658
ENGINEERING PERSONNEL	32	0	53	85	12.333	0.371	21.497	34.201
GRAND TOTALS	412	15	855	1282	169.654	5.447	369.199	544.300

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *POINT BEACH 1,2

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.740	0.420	1.160
OPERATIONS PERSONNEL	0	0	0	0	19.030	0.000	0.000	19.030
HEALTH PHYSICS PERSONNEL	0	0	0	0	21.510	0.000	0.000	21.510
SUPERVISORY PERSONNEL	0	0	0	0	0.290	0.000	0.000	0.290
ENGINEERING PERSONNEL	0	0	0	0	0.100	0.000	0.000	0.100
TOTAL	0	0	0	0	40.930	0.740	0.420	42.090
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	0	0	19.860	10.230	0.000	30.090
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	2.650	0.000	0.000	2.650
TOTAL	0	0	0	0	22.510	10.230	0.000	32.740
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.910	3.180	34.610	38.700
OPERATIONS PERSONNEL	0	0	0	0	9.360	0.000	0.000	9.360
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.150	0.000	0.000	0.150
ENGINEERING PERSONNEL	0	0	0	0	2.520	0.000	0.000	2.520
TOTAL	0	0	0	0	12.940	3.180	34.610	50.730
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	0	0	0.090	0.000	95.630	95.720
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.090	0.000	95.630	95.720
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	3.240	3.240
OPERATIONS PERSONNEL	0	0	0	0	0.370	0.000	0.000	0.370
HEALTH PHYSICS PERSONNEL	0	0	0	0	1.770	0.000	0.000	1.770
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	2.140	0.000	3.240	5.380
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	22.410	12.060	0.000	34.470
OPERATIONS PERSONNEL	0	0	0	0	2.130	0.000	0.000	2.130
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.320	0.000	0.000	0.320
ENGINEERING PERSONNEL	0	0	0	0	1.320	0.000	0.000	1.320
TOTAL	0	0	0	0	26.180	12.060	0.000	38.240
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	0 (44)	0 (30)	0 (253)	0 (327)	43.270	26.210	133.900	203.380
OPERATIONS PERSONNEL	0 (68)	0 (0)	0 (0)	0 (68)	30.890	0.000	0.000	30.890
HEALTH PHYSICS PERSONNEL	0 (36)	0 (0)	0 (0)	0 (36)	23.280	0.000	0.000	23.280
SUPERVISORY PERSONNEL	0 (4)	0 (0)	0 (0)	0 (4)	0.760	0.000	0.000	0.760
ENGINEERING PERSONNEL	0 (23)	0 (0)	0 (0)	0 (23)	6.590	0.000	0.000	6.590
GRAND TOTALS	0 (175)	0 (30)	0 (253)	0 (458)	104.790	26.210	133.900	264.900

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *PRAIRIE ISLAND 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	1	0	0	1	1.567	0.350	0.018	1.935
OPERATIONS PERSONNEL	11	0	0	11	3.326	0.000	0.024	3.350
HEALTH PHYSICS PERSONNEL	8	0	2	10	2.096	0.001	0.739	2.836
SUPERVISORY PERSONNEL	1	1	1	3	0.574	0.433	0.307	1.314
ENGINEERING PERSONNEL	0	0	0	0	0.338	0.000	0.000	0.338
TOTAL	21	1	3	25	7.901	0.784	1.088	9.773
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	4	5	0	9	1.392	2.539	0.014	3.945
OPERATIONS PERSONNEL	0	0	0	0	0.011	0.000	0.000	0.011
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.029	0.000	0.016	0.045
SUPERVISORY PERSONNEL	1	0	0	1	0.692	0.033	0.102	0.827
ENGINEERING PERSONNEL	2	0	0	2	0.786	0.193	0.010	0.989
TOTAL	7	5	0	12	2.910	2.765	0.142	5.817
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	2	31	11	44	0.624	11.010	2.356	13.990
OPERATIONS PERSONNEL	0	0	0	0	0.007	0.000	0.000	0.007
HEALTH PHYSICS PERSONNEL	0	0	9	9	0.014	0.028	1.841	1.883
SUPERVISORY PERSONNEL	1	1	21	23	0.194	0.201	6.479	6.874
ENGINEERING PERSONNEL	0	0	12	12	0.000	0.000	2.857	2.857
TOTAL	3	32	53	88	0.839	11.239	13.533	25.611
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	15	48	11	74	4.121	19.007	3.743	26.871
OPERATIONS PERSONNEL	4	0	0	4	1.396	0.000	0.000	1.396
HEALTH PHYSICS PERSONNEL	6	0	18	24	1.948	0.027	5.400	7.375
SUPERVISORY PERSONNEL	2	2	4	8	1.008	0.770	1.855	3.633
ENGINEERING PERSONNEL	2	0	0	2	0.520	0.000	0.081	0.601
TOTAL	29	50	33	112	8.993	19.804	11.079	39.876
WASTE PROCESSING								
MAINTENANCE PERSONNEL	6	0	0	6	1.980	0.099	0.000	2.079
OPERATIONS PERSONNEL	0	0	0	0	0.124	0.000	0.000	0.124
HEALTH PHYSICS PERSONNEL	1	0	0	1	1.324	0.000	0.082	1.406
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.024	0.000	0.024
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	7	0	0	7	3.428	0.123	0.082	3.633
REFUELING								
MAINTENANCE PERSONNEL	25	22	0	47	6.536	5.213	0.003	11.752
OPERATIONS PERSONNEL	1	0	0	1	0.782	0.000	0.000	0.782
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.035	0.001	0.370	0.406
SUPERVISORY PERSONNEL	2	0	0	2	0.825	0.019	0.054	0.898
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	28	22	1	51	8.178	5.233	0.427	13.838
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	53	106	22	181	16.220	38.218	6.134	60.572
OPERATIONS PERSONNEL	16	0	0	16	5.646	0.000	0.024	5.670
HEALTH PHYSICS PERSONNEL	15	0	30	45	5.446	0.057	8.448	13.951
SUPERVISORY PERSONNEL	7	4	26	37	3.293	1.480	8.797	13.570
ENGINEERING PERSONNEL	4	0	12	16	1.644	0.193	2.948	4.785
GRAND TOTALS	95	110	90	295	32.249	39.948	26.351	98.548

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *QUAD CITIES 1,2 TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	17	11	37	65	9.851	0.075	6.549	16.475
OPERATIONS PERSONNEL	138	0	213	351	28.906	0.000	16.774	45.680
HEALTH PHYSICS PERSONNEL	36	0	28	64	24.220	0.000	2.173	26.393
SUPERVISORY PERSONNEL	121	69	6	196	13.565	0.353	0.193	14.111
ENGINEERING PERSONNEL	32	72	15	119	2.543	0.633	0.904	4.080
TOTAL	344	152	299	795	79.085	1.061	26.593	106.739
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	108	71	814	993	61.909	0.503	144.213	206.625
OPERATIONS PERSONNEL	34	0	1	35	7.060	0.000	0.043	7.103
HEALTH PHYSICS PERSONNEL	11	0	2	13	7.660	0.000	0.154	7.814
SUPERVISORY PERSONNEL	91	23	90	204	10.242	0.115	3.142	13.499
ENGINEERING PERSONNEL	28	97	54	179	2.262	0.839	3.227	6.328
TOTAL	272	191	961	1424	89.133	1.457	150.779	241.369
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	2	7	92	101	1.408	0.052	16.426	17.886
OPERATIONS PERSONNEL	1	0	0	1	0.055	0.000	0.000	0.055
HEALTH PHYSICS PERSONNEL	1	0	1	2	0.312	0.000	0.059	0.371
SUPERVISORY PERSONNEL	2	0	1	3	0.195	0.000	0.082	0.277
ENGINEERING PERSONNEL	36	69	14	119	2.916	0.604	0.848	4.368
TOTAL	42	76	108	226	4.886	0.656	17.415	22.957
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	5	109	450	564	2.848	0.776	79.664	83.288
OPERATIONS PERSONNEL	1	0	0	1	0.099	0.000	0.000	0.099
HEALTH PHYSICS PERSONNEL	5	0	1	6	3.037	0.000	0.086	3.123
SUPERVISORY PERSONNEL	10	0	29	39	1.141	0.000	0.975	2.116
ENGINEERING PERSONNEL	18	49	180	247	1.443	0.431	10.826	12.700
TOTAL	39	158	660	857	8.568	1.207	91.551	101.326
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	7	14	22	0.033	0.000	2.419	2.452
OPERATIONS PERSONNEL	36	0	35	71	7.539	0.000	2.748	10.287
HEALTH PHYSICS PERSONNEL	2	0	6	8	1.510	0.000	0.423	1.933
SUPERVISORY PERSONNEL	23	0	1	24	2.523	0.003	0.018	2.544
ENGINEERING PERSONNEL	1	1	1	3	0.039	0.058	0.010	0.107
TOTAL	63	8	57	128	11.644	0.061	5.618	17.323
REFUELING								
MAINTENANCE PERSONNEL	21	1	1	23	12.084	0.005	0.213	12.302
OPERATIONS PERSONNEL	14	0	0	14	2.922	0.000	0.000	2.922
HEALTH PHYSICS PERSONNEL	2	0	0	2	1.422	0.000	0.000	1.422
SUPERVISORY PERSONNEL	19	0	0	19	2.134	0.000	0.000	2.134
ENGINEERING PERSONNEL	2	1	1	4	0.200	0.013	0.004	0.217
TOTAL	58	2	2	62	18.762	0.018	0.217	18.997
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	154	206	1408	1768	88.133	1.411	249.484	339.028
OPERATIONS PERSONNEL	224	0	249	473	46.581	0.000	19.565	66.146
HEALTH PHYSICS PERSONNEL	57	0	38	95	38.161	0.000	2.895	41.056
SUPERVISORY PERSONNEL	266	92	127	485	29.800	0.471	4.410	34.681
ENGINEERING PERSONNEL	117	289	265	671	9.403	2.578	15.819	27.800
GRAND TOTALS	818	587	2087	3492	212.078	4.460	292.173	508.711

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *RANCHO SECO

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	2	0	0	2	0.244	0.000	0.000	0.244
HEALTH PHYSICS PERSONNEL	9	0	1	10	1.787	0.000	0.178	1.965
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	11	0	1	12	2.031	0.000	0.178	2.209
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.003	0.000	0.000	0.003
SUPERVISORY PERSONNEL	1	0	0	1	0.005	0.000	0.000	0.005
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	2	0	0	2	0.008	0.000	0.000	0.008
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	8	0	1	9	1.246	0.000	0.161	1.407
SUPERVISORY PERSONNEL	1	0	0	1	0.167	0.000	0.000	0.167
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	9	0	1	10	1.413	0.000	0.161	1.574
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	2	0	0	2	0.244	0.000	0.000	0.244
HEALTH PHYSICS PERSONNEL	18	0	2	20	3.036	0.000	0.339	3.375
SUPERVISORY PERSONNEL	2	0	0	2	0.172	0.000	0.000	0.172
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
GRAND TOTALS	22	0	2	24	3.452	0.000	0.339	3.791

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *RIVER BEND 1 TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	6	0	2	8	2.361	0.035	0.710	3.106
OPERATIONS PERSONNEL	25	0	1	26	14.734	0.000	0.140	14.874
HEALTH PHYSICS PERSONNEL	20	0	8	28	12.385	0.000	3.359	15.744
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	1	4	6	0.150	0.160	1.454	1.764
TOTAL	52	1	15	68	29.630	0.195	5.663	35.488
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	7	0	7	14	2.565	0.000	1.813	4.378
OPERATIONS PERSONNEL	2	0	0	2	0.840	0.000	0.000	0.840
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.600	0.000	0.100	0.700
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	1	1	3	0.250	0.235	0.110	0.595
TOTAL	11	1	8	20	4.255	0.235	2.023	6.513
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	2	1	1	4	0.915	0.070	0.115	1.100
OPERATIONS PERSONNEL	1	0	0	1	0.205	0.000	0.000	0.205
HEALTH PHYSICS PERSONNEL	1	0	1	2	0.235	0.000	0.450	0.685
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	1	4	6	0.195	0.130	1.830	2.155
TOTAL	5	2	6	13	1.550	0.200	2.395	4.145
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	62	0	47	109	34.182	0.000	32.880	67.062
OPERATIONS PERSONNEL	5	0	1	6	2.327	0.000	0.460	2.787
HEALTH PHYSICS PERSONNEL	10	0	5	15	6.758	0.000	2.217	8.975
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	7	3	3	13	1.577	0.914	0.660	3.151
TOTAL	84	3	56	143	44.844	0.914	36.217	81.975
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	2	2	0.025	0.000	0.805	0.830
OPERATIONS PERSONNEL	1	0	6	7	0.225	0.000	3.165	3.390
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.672	0.000	0.105	0.777
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	2	0	8	10	0.922	0.000	4.075	4.997
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.010	0.000	0.015	0.025
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.020	0.000	0.000	0.020
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.030	0.000	0.015	0.045
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	77	1	59	137	40.058	0.105	36.338	76.501
OPERATIONS PERSONNEL	34	0	8	42	18.331	0.000	3.765	22.096
HEALTH PHYSICS PERSONNEL	33	0	14	47	20.670	0.000	6.231	26.901
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	10	6	12	28	2.172	1.439	4.054	7.665
GRAND TOTALS	154	7	93	254	81.231	1.544	50.388	133.163

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *ROBINSON 2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	6	0	1	7	2.830	0.075	1.005	3.910
OPERATIONS PERSONNEL	41	0	2	43	11.710	0.000	4.350	16.060
HEALTH PHYSICS PERSONNEL	26	0	17	43	7.876	0.045	6.130	14.051
SUPERVISORY PERSONNEL	0	0	0	0	0.080	0.020	0.065	0.165
ENGINEERING PERSONNEL	2	0	5	7	1.682	0.335	1.985	4.002
TOTAL	75	0	25	100	24.178	0.475	13.535	38.188
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	28	9	28	65	6.945	2.440	8.730	18.115
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.080	0.080
HEALTH PHYSICS PERSONNEL	5	0	0	5	1.385	0.000	0.275	1.660
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	1	5	6	0.115	0.325	2.740	3.180
TOTAL	33	10	33	76	8.445	2.765	11.825	23.035
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	13	13	0.365	0.020	3.640	4.025
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.220	0.220
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	3	0	3	6	1.075	0.000	0.795	1.870
TOTAL	3	0	16	19	1.440	0.020	4.655	6.115
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	37	1	101	139	12.070	0.425	38.650	51.145
OPERATIONS PERSONNEL	1	0	7	8	0.930	0.000	1.375	2.305
HEALTH PHYSICS PERSONNEL	9	0	15	24	3.683	0.020	4.355	8.058
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.030	0.030
ENGINEERING PERSONNEL	1	1	28	30	1.065	0.715	10.880	12.660
TOTAL	48	2	151	201	17.748	1.160	55.290	74.198
WASTE PROCESSING								
MAINTENANCE PERSONNEL	6	4	18	28	1.055	0.900	6.160	8.115
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.100	0.100
HEALTH PHYSICS PERSONNEL	0	0	5	5	0.380	0.000	1.685	2.065
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	1	1	0.090	0.000	0.295	0.385
TOTAL	6	4	24	34	1.525	0.900	8.240	10.665
REFUELING								
MAINTENANCE PERSONNEL	18	1	60	79	4.945	0.605	29.310	34.860
OPERATIONS PERSONNEL	0	0	3	3	0.310	0.000	0.995	1.305
HEALTH PHYSICS PERSONNEL	5	0	13	18	1.570	0.000	4.115	5.685
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	42	43	0.950	0.085	43.935	44.970
TOTAL	24	1	118	143	7.775	0.690	78.355	86.820
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	95	15	221	331	28.210	4.465	87.495	120.170
OPERATIONS PERSONNEL	42	0	12	54	12.950	0.000	6.900	19.850
HEALTH PHYSICS PERSONNEL	45	0	50	95	14.894	0.065	16.780	31.739
SUPERVISORY PERSONNEL	0	0	0	0	0.080	0.020	0.095	0.195
ENGINEERING PERSONNEL	7	2	84	93	4.977	1.460	60.630	67.067
GRAND TOTALS	189	17	367	573	61.111	6.010	171.900	239.021

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *SALEM 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	12	0	5	17	6.331	0.005	4.272	10.608
OPERATIONS PERSONNEL	0	0	0	0	0.269	0.000	0.069	0.338
HEALTH PHYSICS PERSONNEL	6	0	0	6	2.963	0.000	0.311	3.274
SUPERVISORY PERSONNEL	0	1	0	1	0.000	0.221	0.027	0.248
ENGINEERING PERSONNEL	0	0	0	0	0.415	0.061	0.039	0.515
TOTAL	18	1	5	24	9.978	0.287	4.718	14.983
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	7	1	36	44	6.335	0.337	17.505	24.177
OPERATIONS PERSONNEL	12	0	6	18	5.548	0.010	2.194	7.752
HEALTH PHYSICS PERSONNEL	47	0	30	77	15.811	0.110	11.588	27.509
SUPERVISORY PERSONNEL	0	1	0	1	0.047	0.312	0.031	0.390
ENGINEERING PERSONNEL	2	0	0	2	1.463	0.185	0.128	1.776
TOTAL	68	2	72	142	29.204	0.954	31.446	61.604
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	88	88	0.427	0.009	39.525	39.961
OPERATIONS PERSONNEL	1	0	0	1	0.165	0.000	0.001	0.166
HEALTH PHYSICS PERSONNEL	3	0	12	15	0.923	0.000	3.786	4.709
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.004	0.000	0.004
ENGINEERING PERSONNEL	2	0	0	2	0.290	0.001	0.025	0.316
TOTAL	6	0	100	106	1.805	0.014	43.337	45.156
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	4	0	1	5	1.944	0.057	1.197	3.198
OPERATIONS PERSONNEL	0	0	0	0	0.085	0.000	0.342	0.427
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.613	0.000	0.114	0.727
SUPERVISORY PERSONNEL	0	0	0	0	0.038	0.052	0.004	0.094
ENGINEERING PERSONNEL	0	0	0	0	0.147	0.050	0.000	0.197
TOTAL	5	0	1	6	2.827	0.159	1.657	4.643
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.085	0.000	0.040	0.125
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.012	0.012
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.665	0.000	0.121	0.786
SUPERVISORY PERSONNEL	0	0	0	0	0.004	0.012	0.000	0.016
ENGINEERING PERSONNEL	0	0	0	0	0.006	0.000	0.000	0.006
TOTAL	0	0	0	0	0.760	0.012	0.173	0.945
REFUELING								
MAINTENANCE PERSONNEL	81	2	476	559	28.115	0.502	263.854	292.471
OPERATIONS PERSONNEL	7	0	0	7	2.747	0.002	0.680	3.429
HEALTH PHYSICS PERSONNEL	23	0	40	63	9.849	0.000	19.572	29.421
SUPERVISORY PERSONNEL	1	4	0	5	0.215	1.687	0.361	2.263
ENGINEERING PERSONNEL	7	0	1	8	2.579	0.369	0.390	3.338
TOTAL	119	6	517	642	43.505	2.560	284.857	330.922
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	104	3	606	713	43.237	0.910	326.393	370.540
OPERATIONS PERSONNEL	20	0	6	26	8.814	0.012	3.298	12.124
HEALTH PHYSICS PERSONNEL	80	0	82	162	30.824	0.110	35.492	66.426
SUPERVISORY PERSONNEL	1	6	0	7	0.304	2.288	0.423	3.015
ENGINEERING PERSONNEL	11	0	1	12	4.900	0.666	0.582	6.148
GRAND TOTALS	216	9	695	920	88.079	3.986	366.188	458.253

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *SAN ONOFRE 1,2,3 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	40	3	42	85	1.796	0.013	1.386	3.195
OPERATIONS PERSONNEL	31	8	3	42	6.658	0.536	0.200	7.394
HEALTH PHYSICS PERSONNEL	43	0	115	158	6.841	0.000	18.816	25.657
SUPERVISORY PERSONNEL	0	0	1	1	0.000	0.000	0.162	0.162
ENGINEERING PERSONNEL	26	2	14	42	1.552	0.119	1.439	3.110
TOTAL	140	13	175	328	16.847	0.668	22.003	39.518
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	113	14	320	447	37.992	5.451	102.353	145.796
OPERATIONS PERSONNEL	29	10	4	43	2.569	0.913	0.229	3.711
HEALTH PHYSICS PERSONNEL	62	2	201	265	14.225	0.920	54.841	69.986
SUPERVISORY PERSONNEL	4	0	2	6	0.630	0.000	0.120	0.750
ENGINEERING PERSONNEL	53	7	83	143	14.994	1.588	24.647	41.229
TOTAL	261	33	610	904	70.410	8.872	182.190	261.472
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	16	0	45	61	0.275	0.000	3.852	4.127
OPERATIONS PERSONNEL	0	0	1	1	0.000	0.000	0.142	0.142
HEALTH PHYSICS PERSONNEL	3	0	4	7	0.016	0.000	0.035	0.051
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	19	2	15	36	0.885	0.012	1.723	2.620
TOTAL	38	2	65	105	1.176	0.012	5.752	6.940
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	48	8	113	169	1.985	0.252	7.037	9.274
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	22	2	79	103	2.142	0.274	9.145	11.561
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	13	1	11	25	0.292	0.142	0.275	0.709
TOTAL	83	11	203	297	4.419	0.668	16.457	21.544
WASTE PROCESSING								
MAINTENANCE PERSONNEL	13	7	16	36	0.362	0.097	1.462	1.921
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	16	2	75	93	1.358	0.224	8.052	9.634
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	2	0	10	12	0.013	0.000	1.623	1.636
TOTAL	31	9	101	141	1.733	0.321	11.137	13.191
REFUELING								
MAINTENANCE PERSONNEL	14	0	82	96	3.012	0.000	17.949	20.961
OPERATIONS PERSONNEL	2	0	0	2	0.040	0.000	0.000	0.040
HEALTH PHYSICS PERSONNEL	15	1	34	50	1.439	0.123	4.034	5.596
SUPERVISORY PERSONNEL	1	0	1	2	0.016	0.000	0.007	0.023
ENGINEERING PERSONNEL	13	2	17	32	2.635	0.065	4.860	7.560
TOTAL	45	3	134	182	7.142	0.188	26.850	34.180
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	244 (113)	32 (14)	618 (329)	894 (456)	45.422	5.813	134.039	185.274
OPERATIONS PERSONNEL	62 (31)	18 (10)	8 (4)	88 (45)	9.267	1.449	0.571	11.287
HEALTH PHYSICS PERSONNEL	161 (63)	7 (2)	508 (209)	676 (274)	26.021	1.541	94.923	122.485
SUPERVISORY PERSONNEL	5 (4)	0 (0)	4 (2)	9 (6)	0.646	0.000	0.289	0.935
ENGINEERING PERSONNEL	126 (54)	14 (7)	150 (91)	290 (152)	20.371	1.926	34.567	56.864
GRAND TOTALS	598 (265)	71 (33)	1288 (635)	1957 (933)	101.727	10.729	264.389	376.845

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *SEABROOK

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	19	1	8	28	0.090	0.000	0.040	0.130
OPERATIONS PERSONNEL	13	2	1	16	0.083	0.010	0.005	0.098
HEALTH PHYSICS PERSONNEL	16	0	1	17	0.470	0.000	0.000	0.470
SUPERVISORY PERSONNEL	2	1	0	3	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	4	0	0	4	0.080	0.000	0.000	0.080
TOTAL	54	4	10	68	0.723	0.010	0.045	0.778
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	31	2	33	66	4.716	0.320	5.537	10.573
OPERATIONS PERSONNEL	14	3	4	21	2.048	0.560	0.480	3.088
HEALTH PHYSICS PERSONNEL	16	0	11	27	2.505	0.000	3.305	5.810
SUPERVISORY PERSONNEL	2	1	0	3	0.175	0.160	0.000	0.335
ENGINEERING PERSONNEL	4	0	1	5	0.692	0.000	0.213	0.905
TOTAL	67	6	49	122	10.136	1.040	9.535	20.711
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	9	10	0.000	0.000	1.150	1.150
OPERATIONS PERSONNEL	0	1	0	1	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	2	2	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	1	2	0.035	0.000	0.002	0.037
TOTAL	2	1	12	15	0.035	0.000	1.152	1.187
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	18	1	13	32	0.995	0.030	1.008	2.033
OPERATIONS PERSONNEL	1	0	2	3	0.025	0.000	0.160	0.185
HEALTH PHYSICS PERSONNEL	1	0	1	2	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	2	1	0	3	0.140	0.105	0.000	0.245
ENGINEERING PERSONNEL	2	0	0	2	0.100	0.000	0.000	0.100
TOTAL	24	2	16	42	1.260	0.135	1.168	2.563
WASTE PROCESSING								
MAINTENANCE PERSONNEL	4	1	1	6	0.640	0.000	0.580	1.220
OPERATIONS PERSONNEL	3	0	1	4	0.225	0.000	0.000	0.225
HEALTH PHYSICS PERSONNEL	7	0	5	12	0.110	0.000	0.125	0.235
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	14	1	7	22	0.975	0.000	0.705	1.680
REFUELING								
MAINTENANCE PERSONNEL	28	2	23	53	1.840	0.015	2.152	4.007
OPERATIONS PERSONNEL	12	2	4	18	0.262	0.000	0.245	0.507
HEALTH PHYSICS PERSONNEL	7	0	7	14	0.060	0.000	0.140	0.200
SUPERVISORY PERSONNEL	2	1	0	3	0.385	0.055	0.000	0.440
ENGINEERING PERSONNEL	4	0	0	4	0.190	0.000	0.000	0.190
TOTAL	53	5	34	92	2.737	0.070	2.537	5.344
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	101 (31)	7 (2)	87 (96)	195 (129)	8.281	0.365	10.467	19.113
OPERATIONS PERSONNEL	43 (14)	8 (4)	12 (22)	63 (40)	2.643	0.570	0.890	4.103
HEALTH PHYSICS PERSONNEL	47 (16)	0 (0)	27 (48)	74 (64)	3.145	0.000	3.570	6.715
SUPERVISORY PERSONNEL	8 (3)	4 (1)	0 (1)	12 (5)	0.700	0.320	0.000	1.020
ENGINEERING PERSONNEL	15 (4)	0 (0)	2 (28)	17 (32)	1.097	0.000	0.215	1.312
GRAND TOTALS	214 (68)	19 (7)	128 (195)	361 (270)	15.866	1.255	15.142	32.263

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *SEQUOYAH 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	257	3	13	273	6.121	0.011	0.601	6.733
OPERATIONS PERSONNEL	39	2	2	43	6.789	0.113	0.008	6.910
HEALTH PHYSICS PERSONNEL	55	1	95	151	5.380	0.007	11.074	16.461
SUPERVISORY PERSONNEL	28	4	10	42	1.997	0.655	0.405	3.057
ENGINEERING PERSONNEL	48	19	9	76	3.216	1.269	0.417	4.902
TOTAL	427	29	129	585	23.503	2.055	12.505	38.063
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	554	10	13	577	87.542	2.312	1.316	91.170
OPERATIONS PERSONNEL	33	2	0	35	0.210	0.000	0.000	0.210
HEALTH PHYSICS PERSONNEL	130	1	94	225	45.775	0.000	5.313	51.088
SUPERVISORY PERSONNEL	27	4	9	40	1.443	0.019	0.286	1.748
ENGINEERING PERSONNEL	68	22	142	232	5.427	0.825	14.378	20.630
TOTAL	812	39	258	1109	140.397	3.156	21.293	164.846
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	116	1	0	117	13.827	0.299	0.000	14.126
OPERATIONS PERSONNEL	4	0	0	4	0.069	0.000	0.000	0.069
HEALTH PHYSICS PERSONNEL	67	0	52	119	21.935	0.000	20.513	42.448
SUPERVISORY PERSONNEL	8	0	26	34	0.528	0.000	4.425	4.953
ENGINEERING PERSONNEL	12	37	175	224	3.366	18.889	98.573	120.828
TOTAL	207	38	253	498	39.725	19.188	123.511	182.424
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	388	4	12	404	108.468	0.622	2.173	111.263
OPERATIONS PERSONNEL	18	1	0	19	0.171	0.001	0.000	0.172
HEALTH PHYSICS PERSONNEL	54	0	82	136	4.116	0.000	25.803	29.919
SUPERVISORY PERSONNEL	26	0	11	37	2.510	0.000	0.487	2.997
ENGINEERING PERSONNEL	56	15	129	200	13.332	1.183	82.857	97.372
TOTAL	542	20	234	796	128.597	1.806	111.320	241.723
WASTE PROCESSING								
MAINTENANCE PERSONNEL	76	0	1	77	2.632	0.000	0.030	2.662
OPERATIONS PERSONNEL	8	0	2	10	0.078	0.000	1.798	1.876
HEALTH PHYSICS PERSONNEL	79	0	18	97	5.566	0.000	0.486	6.052
SUPERVISORY PERSONNEL	9	2	2	13	0.182	0.024	0.013	0.219
ENGINEERING PERSONNEL	6	3	0	9	0.161	0.051	0.000	0.212
TOTAL	178	5	23	206	8.619	0.075	2.327	11.021
REFUELING								
MAINTENANCE PERSONNEL	255	5	3	263	13.295	0.010	0.015	13.320
OPERATIONS PERSONNEL	28	1	0	29	0.497	0.008	0.000	0.505
HEALTH PHYSICS PERSONNEL	99	0	38	137	7.632	0.000	7.067	14.699
SUPERVISORY PERSONNEL	9	0	4	13	1.312	0.000	0.514	1.826
ENGINEERING PERSONNEL	29	12	37	78	0.255	1.714	15.402	17.371
TOTAL	420	18	82	520	22.991	1.732	22.998	47.721
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	1646 (551)	23 (11)	42 (19)	1711 (581)	231.885	3.254	4.135	239.274
OPERATIONS PERSONNEL	130 (39)	6 (2)	4 (2)	140 (43)	7.814	0.122	1.806	9.742
HEALTH PHYSICS PERSONNEL	484 (110)	2 (1)	379 (92)	865 (203)	90.404	0.007	70.256	160.667
SUPERVISORY PERSONNEL	107 (26)	10 (6)	62 (28)	179 (60)	7.972	0.698	6.130	14.800
ENGINEERING PERSONNEL	219 (75)	108 (37)	492 (176)	819 (288)	25.757	23.931	211.627	261.315
GRAND TOTALS	2586 (801)	149 (57)	979 (317)	3714(1175)	363.832	28.012	293.954	685.798

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *SHOREHAM TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	1	0	0	1	0.298	0.000	0.000	0.298
OPERATIONS PERSONNEL	0	0	0	0	0.045	0.000	0.000	0.045
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.045	0.000	0.000	0.045
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.025	0.025
TOTAL	1	0	0	1	0.388	0.000	0.025	0.413
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.015	0.000	0.000	0.015
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.015	0.000	0.000	0.015
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	1	0	0	1	0.313	0.000	0.000	0.313
OPERATIONS PERSONNEL	0	0	0	0	0.045	0.000	0.000	0.045
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.045	0.000	0.000	0.045
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.025	0.025
GRAND TOTALS	1	0	0	1	0.403	0.000	0.025	0.428

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *SOUTH TEXAS 1,2

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	3	1	1	5	1.039	1.394	0.892	3.325
OPERATIONS PERSONNEL	29	0	0	29	6.225	0.000	0.004	6.229
HEALTH PHYSICS PERSONNEL	34	0	38	72	11.479	0.000	14.790	26.269
SUPERVISORY PERSONNEL	5	0	0	5	2.344	0.136	0.000	2.480
ENGINEERING PERSONNEL	2	0	0	2	0.665	0.000	0.301	0.966
TOTAL	73	1	39	113	21.752	1.530	15.987	39.269
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	60	0	59	119	18.975	0.400	20.599	39.974
OPERATIONS PERSONNEL	1	0	0	1	0.224	0.000	0.024	0.248
HEALTH PHYSICS PERSONNEL	3	0	1	4	1.670	0.000	1.954	3.624
SUPERVISORY PERSONNEL	4	0	0	4	2.028	0.149	0.000	2.177
ENGINEERING PERSONNEL	3	0	5	8	1.045	0.000	1.640	2.685
TOTAL	71	0	65	136	23.942	0.549	24.217	48.708
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	38	39	1.364	0.195	15.279	16.838
OPERATIONS PERSONNEL	0	0	0	0	0.017	0.000	0.000	0.017
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.256	0.000	0.580	0.836
SUPERVISORY PERSONNEL	2	0	0	2	1.079	0.000	0.000	1.079
ENGINEERING PERSONNEL	4	0	3	7	1.424	0.000	0.971	2.395
TOTAL	7	0	41	48	4.140	0.195	16.830	21.165
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	39	0	64	103	12.087	0.250	33.539	45.876
OPERATIONS PERSONNEL	0	0	0	0	0.024	0.000	0.065	0.089
HEALTH PHYSICS PERSONNEL	5	0	17	22	1.462	0.000	5.295	6.757
SUPERVISORY PERSONNEL	13	0	0	13	3.614	0.133	0.000	3.747
ENGINEERING PERSONNEL	0	0	82	82	0.186	0.000	38.047	38.233
TOTAL	57	0	163	220	17.373	0.383	76.946	94.702
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	1	1	0.049	0.389	1.872	2.310
OPERATIONS PERSONNEL	0	0	0	0	0.006	0.000	0.000	0.006
HEALTH PHYSICS PERSONNEL	4	0	67	71	3.329	0.000	21.236	24.565
SUPERVISORY PERSONNEL	1	0	0	1	0.860	0.059	0.000	0.919
ENGINEERING PERSONNEL	0	0	0	0	0.124	0.000	0.208	0.332
TOTAL	5	0	68	73	4.368	0.448	23.316	28.132
REFUELING								
MAINTENANCE PERSONNEL	25	3	44	72	8.310	0.757	11.513	20.580
OPERATIONS PERSONNEL	0	0	10	10	0.083	0.000	2.874	2.957
HEALTH PHYSICS PERSONNEL	3	0	4	7	1.396	0.000	2.316	3.712
SUPERVISORY PERSONNEL	7	1	0	8	2.597	0.213	0.000	2.810
ENGINEERING PERSONNEL	0	0	15	15	0.217	0.000	5.969	6.186
TOTAL	35	4	73	112	12.603	0.970	22.672	36.245
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	128	4	207	339	41.824	3.385	83.694	128.903
OPERATIONS PERSONNEL	30	0	10	40	6.579	0.000	2.967	9.546
HEALTH PHYSICS PERSONNEL	49	0	127	176	19.592	0.000	46.171	65.763
SUPERVISORY PERSONNEL	32	1	0	33	12.522	0.690	0.000	13.212
ENGINEERING PERSONNEL	9	0	105	114	3.661	0.000	47.136	50.797
GRAND TOTALS	248	5	449	702	84.178	4.075	179.968	268.221

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *ST. LUCIE 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	0	0	8	8	0.986	0.142	3.172	4.300
OPERATIONS PERSONNEL	36	4	6	46	17.239	1.174	3.078	21.491
HEALTH PHYSICS PERSONNEL	26	0	13	39	10.187	0.000	5.923	16.110
SUPERVISORY PERSONNEL	0	0	0	0	0.140	0.000	0.000	0.140
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.450	0.387	0.837
TOTAL	62	4	27	93	28.552	1.766	12.560	42.878
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	135	3	222	360	48.249	1.377	122.890	172.516
OPERATIONS PERSONNEL	9	3	19	31	1.358	0.690	12.760	14.808
HEALTH PHYSICS PERSONNEL	1	0	0	1	1.095	0.010	0.260	1.365
SUPERVISORY PERSONNEL	2	0	0	2	0.455	0.000	0.000	0.455
ENGINEERING PERSONNEL	0	2	1	3	0.000	0.760	0.310	1.070
TOTAL	147	8	242	397	51.157	2.837	136.220	190.214
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	3	57	61	0.670	0.510	27.445	28.625
OPERATIONS PERSONNEL	4	4	45	53	1.300	1.515	38.220	41.035
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.150	0.000	0.000	0.150
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	2	10	12	0.000	0.590	4.855	5.445
TOTAL	5	9	112	126	2.120	2.615	70.520	75.255
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	91	1	88	180	78.154	0.505	30.640	109.299
OPERATIONS PERSONNEL	0	6	25	31	0.230	1.800	8.830	10.860
HEALTH PHYSICS PERSONNEL	20	0	97	117	13.195	0.000	59.450	72.645
SUPERVISORY PERSONNEL	1	0	0	1	0.280	0.000	0.000	0.280
ENGINEERING PERSONNEL	0	1	0	1	0.000	0.240	0.063	0.303
TOTAL	112	8	210	330	91.859	2.545	98.983	193.387
WASTE PROCESSING								
MAINTENANCE PERSONNEL	16	0	22	38	5.518	0.000	12.260	17.778
OPERATIONS PERSONNEL	0	1	6	7	0.485	0.335	1.445	2.265
HEALTH PHYSICS PERSONNEL	6	0	32	38	2.180	0.000	9.540	11.720
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	22	1	60	83	8.183	0.335	23.245	31.763
REFUELING								
MAINTENANCE PERSONNEL	0	0	2	2	0.320	0.000	0.410	0.730
OPERATIONS PERSONNEL	19	0	1	20	6.340	0.000	0.425	6.765
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.020	0.000	0.105	0.125
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	19	0	3	22	6.680	0.000	0.940	7.620
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	243 (177)	7 (7)	399 (346)	649 (530)	133.897	2.534	196.817	333.248
OPERATIONS PERSONNEL	68 (60)	18 (8)	102 (77)	188 (145)	26.952	5.514	64.758	97.224
HEALTH PHYSICS PERSONNEL	53 (36)	0 (0)	142 (109)	195 (145)	26.827	0.010	75.278	102.115
SUPERVISORY PERSONNEL	3 (3)	0 (0)	0 (0)	3 (3)	0.875	0.000	0.000	0.875
ENGINEERING PERSONNEL	0 (0)	5 (6)	11 (12)	16 (18)	0.000	2.040	5.615	7.655
GRAND TOTALS	367 (276)	30 (21)	654 (544)	1051 (841)	188.551	10.098	342.468	541.117

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *SUMMER 1 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	5	0	3	8	1.800	0.000	1.615	3.415
OPERATIONS PERSONNEL	33	0	1	34	7.506	0.020	0.850	8.376
HEALTH PHYSICS PERSONNEL	5	0	22	27	1.120	0.000	7.490	8.610
SUPERVISORY PERSONNEL	0	0	0	0	0.420	0.000	0.075	0.495
ENGINEERING PERSONNEL	2	0	3	5	0.560	0.000	1.135	1.695
TOTAL	45	0	29	74	11.406	0.020	11.165	22.591
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	22	0	45	67	6.485	0.000	16.175	22.660
OPERATIONS PERSONNEL	4	1	6	11	1.970	0.110	1.750	3.830
HEALTH PHYSICS PERSONNEL	2	0	36	38	0.615	0.000	9.805	10.420
SUPERVISORY PERSONNEL	0	0	1	1	0.330	0.000	0.150	0.480
ENGINEERING PERSONNEL	0	0	1	1	0.260	0.000	0.480	0.740
TOTAL	28	1	89	118	9.660	0.110	28.360	38.130
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	85	85	0.105	0.000	41.880	41.985
OPERATIONS PERSONNEL	5	0	2	7	1.380	0.000	0.520	1.900
HEALTH PHYSICS PERSONNEL	0	0	16	16	0.085	0.000	4.025	4.110
SUPERVISORY PERSONNEL	0	0	0	0	0.045	0.000	0.040	0.085
ENGINEERING PERSONNEL	0	0	2	2	0.005	0.000	0.735	0.740
TOTAL	5	0	105	110	1.620	0.000	47.200	48.820
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	29	0	224	253	8.590	0.000	123.080	131.670
OPERATIONS PERSONNEL	6	1	13	20	1.815	0.130	3.745	5.690
HEALTH PHYSICS PERSONNEL	10	0	91	101	4.085	0.000	30.585	34.670
SUPERVISORY PERSONNEL	0	0	1	1	0.155	0.000	0.275	0.430
ENGINEERING PERSONNEL	1	0	10	11	0.485	0.000	4.550	5.035
TOTAL	46	1	339	386	15.130	0.130	162.235	177.495
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.050	0.000	0.460	0.510
OPERATIONS PERSONNEL	1	0	0	1	0.180	0.000	0.395	0.575
HEALTH PHYSICS PERSONNEL	4	0	7	11	1.235	0.000	2.775	4.010
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	5	0	7	12	1.465	0.000	3.630	5.095
REFUELING								
MAINTENANCE PERSONNEL	2	0	22	24	0.645	0.000	14.950	15.595
OPERATIONS PERSONNEL	1	0	4	5	0.560	0.075	2.465	3.100
HEALTH PHYSICS PERSONNEL	0	0	6	6	0.025	0.000	2.930	2.955
SUPERVISORY PERSONNEL	0	0	0	0	0.065	0.000	0.000	0.065
ENGINEERING PERSONNEL	0	0	2	2	0.015	0.000	1.210	1.225
TOTAL	3	0	34	37	1.310	0.075	21.555	22.940
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	58	0	379	437	17.675	0.000	198.160	215.835
OPERATIONS PERSONNEL	50	2	26	78	13.411	0.335	9.725	23.471
HEALTH PHYSICS PERSONNEL	21	0	178	199	7.165	0.000	57.610	64.775
SUPERVISORY PERSONNEL	0	0	2	2	1.015	0.000	0.540	1.555
ENGINEERING PERSONNEL	3	0	18	21	1.325	0.000	8.110	9.435
GRAND TOTALS	132	2	603	737	40.591	0.335	274.145	315.071

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *SURRY 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	178	0	457	635	4.758	0.000	1.181	5.939
OPERATIONS PERSONNEL	339	45	99	483	18.885	0.119	0.391	19.395
HEALTH PHYSICS PERSONNEL	84	7	127	218	11.725	0.019	6.836	18.580
SUPERVISORY PERSONNEL	147	7	111	265	2.759	0.006	2.392	5.157
ENGINEERING PERSONNEL	104	46	35	185	1.201	0.079	0.152	1.432
TOTAL	852	105	829	1786	39.328	0.223	10.952	50.503
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	168	0	670	838	90.183	0.000	142.823	233.006
OPERATIONS PERSONNEL	163	14	77	254	24.869	0.124	5.281	30.274
HEALTH PHYSICS PERSONNEL	81	1	181	263	24.780	0.016	57.426	82.222
SUPERVISORY PERSONNEL	92	1	82	175	10.224	0.010	16.007	26.241
ENGINEERING PERSONNEL	82	30	64	176	3.855	0.354	4.178	8.387
TOTAL	586	46	1074	1706	153.911	0.504	225.715	380.130
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	2	0	129	131	0.023	0.000	34.094	34.117
OPERATIONS PERSONNEL	31	8	24	63	0.733	0.010	2.795	3.538
HEALTH PHYSICS PERSONNEL	4	0	32	36	0.034	0.000	2.964	2.998
SUPERVISORY PERSONNEL	5	2	12	19	0.041	0.003	2.763	2.807
ENGINEERING PERSONNEL	16	2	41	59	2.361	0.032	7.821	10.214
TOTAL	58	12	238	308	3.192	0.045	50.437	53.674
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	88	0	450	538	9.179	0.000	44.556	53.735
OPERATIONS PERSONNEL	53	8	38	99	3.352	0.215	4.337	7.904
HEALTH PHYSICS PERSONNEL	47	0	72	119	4.202	0.000	2.613	6.815
SUPERVISORY PERSONNEL	18	0	66	84	1.133	0.000	8.048	9.181
ENGINEERING PERSONNEL	26	12	29	67	2.175	0.068	0.769	3.012
TOTAL	232	20	655	907	20.041	0.283	60.323	80.647
WASTE PROCESSING								
MAINTENANCE PERSONNEL	18	0	8	26	0.019	0.000	0.026	0.045
OPERATIONS PERSONNEL	16	2	3	21	1.739	0.006	0.027	1.772
HEALTH PHYSICS PERSONNEL	38	0	10	48	2.203	0.000	0.082	2.285
SUPERVISORY PERSONNEL	4	0	4	8	0.666	0.000	0.069	0.735
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	76	2	25	103	4.627	0.006	0.204	4.837
REFUELING								
MAINTENANCE PERSONNEL	4	0	22	26	0.266	0.000	0.709	0.975
OPERATIONS PERSONNEL	11	7	3	21	0.427	0.089	0.082	0.598
HEALTH PHYSICS PERSONNEL	20	0	11	31	0.419	0.000	0.132	0.551
SUPERVISORY PERSONNEL	3	0	2	5	0.207	0.000	0.278	0.485
ENGINEERING PERSONNEL	2	1	2	5	0.074	0.070	0.004	0.148
TOTAL	40	8	40	88	1.393	0.159	1.205	2.757
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	458	0	1736	2194	104.428	0.000	223.389	327.817
OPERATIONS PERSONNEL	613	84	244	941	50.005	0.563	12.913	63.481
HEALTH PHYSICS PERSONNEL	274	8	433	715	43.363	0.035	70.053	113.451
SUPERVISORY PERSONNEL	269	10	277	556	15.030	0.019	29.557	44.606
ENGINEERING PERSONNEL	230	91	171	492	9.666	0.603	12.924	23.193
GRAND TOTALS	1844	193	2861	4898	222.492	1.220	348.836	572.548

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *SUSQUEHANNA 1,2 TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	70	0	5	75	21.754	0.000	0.846	22.600
HEALTH PHYSICS PERSONNEL	20	0	22	42	11.851	0.000	9.494	21.345
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	90	0	27	117	33.605	0.000	10.340	43.945
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	71	204	184	459	33.382	95.844	60.347	189.573
OPERATIONS PERSONNEL	46	0	15	61	17.702	0.000	8.685	26.387
HEALTH PHYSICS PERSONNEL	20	0	121	141	10.071	0.000	54.301	64.372
SUPERVISORY PERSONNEL	6	1	0	7	1.229	0.160	0.000	1.389
ENGINEERING PERSONNEL	6	5	2	13	1.088	0.626	0.275	1.989
TOTAL	149	210	322	681	63.472	96.630	123.608	283.710
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	2	31	59	92	0.752	18.459	31.084	50.295
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	3	3	0.000	0.000	1.685	1.685
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	2	2	0.000	0.000	0.635	0.635
TOTAL	2	31	64	97	0.752	18.459	33.404	52.615
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	4	73	75	152	1.449	33.563	36.663	71.675
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	8	8	0.000	0.000	2.578	2.578
SUPERVISORY PERSONNEL	4	0	0	4	1.112	0.000	0.000	1.112
ENGINEERING PERSONNEL	0	0	26	26	0.000	0.000	12.588	12.588
TOTAL	8	73	109	190	2.561	33.563	51.829	87.953
WASTE PROCESSING								
MAINTENANCE PERSONNEL	3	5	2	10	1.095	1.860	0.540	3.495
OPERATIONS PERSONNEL	0	0	13	13	0.000	0.000	15.971	15.971
HEALTH PHYSICS PERSONNEL	3	0	15	18	0.965	0.000	12.045	13.010
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	6	5	30	41	2.060	1.860	28.556	32.476
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	3	0	0	3	0.385	0.000	0.000	0.385
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	3	0	0	3	0.385	0.000	0.000	0.385
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	80	313	320	713	36.678	149.726	128.634	315.038
OPERATIONS PERSONNEL	119	0	33	152	39.841	0.000	25.502	65.343
HEALTH PHYSICS PERSONNEL	43	0	169	212	22.887	0.000	80.103	102.990
SUPERVISORY PERSONNEL	10	1	0	11	2.341	0.160	0.000	2.501
ENGINEERING PERSONNEL	6	5	30	41	1.088	0.626	13.498	15.212
GRAND TOTALS	258	319	552	1129	102.835	150.512	247.737	501.084

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *THREE MILE ISLAND 1

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	140	4	209	353	6.728	0.046	3.089	9.863
OPERATIONS PERSONNEL	100	4	6	110	16.534	0.060	0.071	16.665
HEALTH PHYSICS PERSONNEL	78	4	50	132	12.432	0.012	8.403	20.847
SUPERVISORY PERSONNEL	173	42	32	247	5.495	0.125	0.798	6.418
ENGINEERING PERSONNEL	76	14	45	135	1.967	0.230	1.231	3.428
TOTAL	567	68	342	977	43.156	0.473	13.592	57.221
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	157	5	465	627	10.770	0.002	12.662	23.434
OPERATIONS PERSONNEL	92	2	7	101	1.247	0.046	0.095	1.388
HEALTH PHYSICS PERSONNEL	68	4	18	90	1.074	0.002	0.283	1.359
SUPERVISORY PERSONNEL	217	31	38	286	2.009	0.102	0.628	2.739
ENGINEERING PERSONNEL	70	15	46	131	0.925	0.117	0.418	1.460
TOTAL	604	57	574	1235	16.025	0.269	14.086	30.380
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	51	4	117	172	0.292	0.074	7.677	8.043
OPERATIONS PERSONNEL	26	2	3	31	0.575	0.022	0.043	0.640
HEALTH PHYSICS PERSONNEL	17	3	11	31	0.583	0.047	0.247	0.877
SUPERVISORY PERSONNEL	58	5	14	77	0.948	0.009	0.582	1.539
ENGINEERING PERSONNEL	26	1	28	55	0.233	0.001	2.499	2.733
TOTAL	178	15	173	366	2.631	0.153	11.048	13.832
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	132	3	528	663	12.520	0.084	66.975	79.579
OPERATIONS PERSONNEL	47	2	4	53	1.886	0.010	1.082	2.978
HEALTH PHYSICS PERSONNEL	36	0	27	63	3.042	0.000	1.051	4.093
SUPERVISORY PERSONNEL	79	18	44	141	4.886	0.077	2.172	7.135
ENGINEERING PERSONNEL	39	6	56	101	1.491	0.016	2.994	4.501
TOTAL	333	29	659	1021	23.825	0.187	74.274	98.286
WASTE PROCESSING								
MAINTENANCE PERSONNEL	59	3	75	137	0.749	0.010	2.026	2.785
OPERATIONS PERSONNEL	45	0	6	51	11.101	0.000	0.156	11.257
HEALTH PHYSICS PERSONNEL	44	0	18	62	1.820	0.000	0.313	2.133
SUPERVISORY PERSONNEL	86	37	13	136	0.802	0.003	0.381	1.186
ENGINEERING PERSONNEL	29	3	12	44	0.128	0.000	0.041	0.169
TOTAL	263	43	124	430	14.600	0.013	2.917	17.530
REFUELING								
MAINTENANCE PERSONNEL	92	0	73	165	8.276	0.000	4.216	12.492
OPERATIONS PERSONNEL	93	0	0	93	6.899	0.000	0.000	6.899
HEALTH PHYSICS PERSONNEL	13	0	12	25	0.994	0.000	0.539	1.533
SUPERVISORY PERSONNEL	63	1	9	73	3.051	0.009	0.198	3.258
ENGINEERING PERSONNEL	22	3	7	32	0.967	0.015	0.271	1.253
TOTAL	283	4	101	388	20.187	0.024	5.224	25.435
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	631 (166)	19 (11)	1467 (635)	2117 (812)	39.335	0.216	96.645	136.196
OPERATIONS PERSONNEL	403 (121)	10 (4)	26 (13)	439 (138)	38.242	0.138	1.447	39.827
HEALTH PHYSICS PERSONNEL	256 (82)	11 (8)	136 (52)	403 (142)	19.945	0.061	10.836	30.842
SUPERVISORY PERSONNEL	676 (277)	134 (104)	150 (66)	960 (447)	17.191	0.325	4.759	22.275
ENGINEERING PERSONNEL	262 (102)	42 (28)	194 (85)	498 (215)	5.711	0.379	7.454	13.544
GRAND TOTALS	2228 (748)	216 (155)	1973 (851)	4417(1754)	120.424	1.119	121.141	242.684

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *THREE MILE ISLAND 2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)								TOTAL PERSON-REM			
	STATION		UTILITY		CONTRACT		TOTAL		STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV												
MAINTENANCE PERSONNEL	9		0		8		17		0.120	0.000	0.037	0.157
OPERATIONS PERSONNEL	40		1		8		49		0.324	0.000	0.000	0.324
HEALTH PHYSICS PERSONNEL	21		0		9		30		0.231	0.000	0.026	0.257
SUPERVISORY PERSONNEL	16		1		5		22		0.100	0.000	0.047	0.147
ENGINEERING PERSONNEL	4		0		3		7		0.002	0.000	0.042	0.044
TOTAL	90		2		33		125		0.777	0.000	0.152	0.929
ROUTINE MAINTENANCE												
MAINTENANCE PERSONNEL	53		2		102		157		0.620	0.007	0.199	0.826
OPERATIONS PERSONNEL	77		1		9		87		0.674	0.000	0.140	0.814
HEALTH PHYSICS PERSONNEL	67		2		7		76		0.952	0.000	0.004	0.956
SUPERVISORY PERSONNEL	74		5		21		100		0.162	0.000	0.024	0.186
ENGINEERING PERSONNEL	21		0		9		30		0.045	0.000	0.023	0.068
TOTAL	292		10		148		450		2.453	0.007	0.390	2.850
IN-SERVICE INSPECTION												
MAINTENANCE PERSONNEL	2		0		3		5		0.000	0.000	0.011	0.011
OPERATIONS PERSONNEL	27		0		1		28		0.261	0.000	0.000	0.261
HEALTH PHYSICS PERSONNEL	29		0		9		38		0.268	0.000	0.153	0.421
SUPERVISORY PERSONNEL	78		0		4		82		0.095	0.000	0.000	0.095
ENGINEERING PERSONNEL	9		1		3		13		0.086	0.003	0.002	0.091
TOTAL	145		1		20		166		0.710	0.003	0.166	0.879
SPECIAL MAINTENANCE												
MAINTENANCE PERSONNEL	26		2		173		201		6.430	0.000	1.468	7.898
OPERATIONS PERSONNEL	27		1		10		38		6.676	0.000	0.017	6.693
HEALTH PHYSICS PERSONNEL	18		0		4		22		5.810	0.000	0.195	6.005
SUPERVISORY PERSONNEL	26		9		17		52		2.453	0.167	0.230	2.850
ENGINEERING PERSONNEL	12		0		10		22		2.812	0.000	0.545	3.357
TOTAL	109		12		214		335		24.181	0.167	2.455	26.803
WASTE PROCESSING												
MAINTENANCE PERSONNEL	28		3		15		46		3.807	0.000	0.068	3.875
OPERATIONS PERSONNEL	48		2		11		61		2.298	0.000	0.053	2.351
HEALTH PHYSICS PERSONNEL	20		2		7		29		1.899	0.000	0.009	1.908
SUPERVISORY PERSONNEL	38		6		6		50		0.562	0.001	0.028	0.591
ENGINEERING PERSONNEL	12		2		7		21		0.719	0.000	0.264	0.983
TOTAL	146		15		46		207		9.285	0.001	0.422	9.708
REFUELING												
MAINTENANCE PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0		0		0		0		0.000	0.000	0.000	0.000
TOTAL	0		0		0		0		0.000	0.000	0.000	0.000
TOTAL BY JOB FUNCTION												
MAINTENANCE PERSONNEL	118	(66)	7	(7)	301	(208)	426	(281)	10.977	0.007	1.783	12.767
OPERATIONS PERSONNEL	219	(92)	5	(2)	39	(15)	263	(109)	10.233	0.000	0.210	10.443
HEALTH PHYSICS PERSONNEL	155	(70)	4	(4)	36	(17)	195	(91)	9.160	0.000	0.387	9.547
SUPERVISORY PERSONNEL	232	(160)	21	(17)	53	(30)	306	(207)	3.372	0.168	0.329	3.869
ENGINEERING PERSONNEL	58	(27)	3	(3)	32	(16)	93	(46)	3.664	0.003	0.876	4.543
GRAND TOTALS	782	(415)	40	(33)	461	(286)	1283	(734)	37.406	0.178	3.585	41.169

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *TROJAN

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	3	0	4	7	1.600	0.000	1.770	3.370
OPERATIONS PERSONNEL	21	0	0	21	7.400	0.000	0.000	7.400
HEALTH PHYSICS PERSONNEL	7	0	2	9	2.610	0.000	1.850	4.460
SUPERVISORY PERSONNEL	4	0	3	7	1.760	0.030	1.860	3.650
ENGINEERING PERSONNEL	6	0	1	7	2.580	0.000	0.810	3.390
TOTAL	41	0	10	51	15.950	0.030	6.290	22.270
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	142	0	207	349	43.130	0.180	95.880	139.190
OPERATIONS PERSONNEL	1	0	0	1	0.180	0.000	0.000	0.180
HEALTH PHYSICS PERSONNEL	58	0	88	146	19.810	0.000	67.670	87.480
SUPERVISORY PERSONNEL	5	0	23	28	2.790	0.000	6.350	9.140
ENGINEERING PERSONNEL	7	0	119	126	2.190	0.000	89.850	92.040
TOTAL	213	0	437	650	68.100	0.180	259.750	328.030
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	31	0	91	122	12.600	0.040	43.060	55.700
OPERATIONS PERSONNEL	1	0	0	1	0.200	0.000	0.000	0.200
HEALTH PHYSICS PERSONNEL	15	0	61	76	4.620	0.000	49.390	54.010
SUPERVISORY PERSONNEL	2	0	9	11	0.810	0.010	4.780	5.600
ENGINEERING PERSONNEL	1	1	207	209	0.450	1.300	198.190	199.940
TOTAL	50	1	368	419	18.680	1.350	295.420	315.450
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.090	0.000	0.280	0.370
OPERATIONS PERSONNEL	0	0	0	0	0.260	0.000	0.000	0.260
HEALTH PHYSICS PERSONNEL	29	0	0	29	7.530	0.000	0.830	8.360
SUPERVISORY PERSONNEL	0	0	0	0	0.020	0.000	0.040	0.060
ENGINEERING PERSONNEL	0	0	1	1	0.000	0.140	0.140	0.280
TOTAL	29	0	1	30	7.900	0.140	1.290	9.330
REFUELING								
MAINTENANCE PERSONNEL	5	0	16	21	1.520	0.000	10.420	11.940
OPERATIONS PERSONNEL	1	0	0	1	0.250	0.000	0.000	0.250
HEALTH PHYSICS PERSONNEL	7	0	17	24	2.270	0.000	6.430	8.700
SUPERVISORY PERSONNEL	2	0	0	2	0.430	0.000	0.170	0.600
ENGINEERING PERSONNEL	2	0	35	37	0.600	0.000	25.510	26.110
TOTAL	17	0	68	85	5.070	0.000	42.530	47.600
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	181 (139)	0 (1)	318 (235)	499 (375)	58.940	0.220	151.410	210.570
OPERATIONS PERSONNEL	24 (24)	0 (0)	0 (0)	24 (24)	8.290	0.000	0.000	8.290
HEALTH PHYSICS PERSONNEL	116 (70)	0 (1)	168 (98)	284 (169)	36.840	0.000	126.170	163.010
SUPERVISORY PERSONNEL	13 (14)	0 (0)	35 (30)	48 (44)	5.810	0.040	13.200	19.050
ENGINEERING PERSONNEL	16 (8)	1 (1)	363 (266)	380 (275)	5.820	1.440	314.500	321.760
GRAND TOTALS	350 (255)	1 (3)	884 (629)	1235 (887)	115.700	1.700	605.280	722.680

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *TURKEY POINT 3,4

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	86	1	139	226	39.720	1.010	66.560	107.290
OPERATIONS PERSONNEL	9	0	0	9	5.480	0.000	0.000	5.480
HEALTH PHYSICS PERSONNEL	13	0	1	14	5.417	0.000	0.596	6.013
SUPERVISORY PERSONNEL	2	0	0	2	0.626	0.135	0.510	1.271
ENGINEERING PERSONNEL	1	0	0	1	0.605	0.030	0.010	0.645
TOTAL	111	1	140	252	51.848	1.175	67.676	120.699
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	230	3	392	625	107.397	1.410	268.904	377.711
OPERATIONS PERSONNEL	2	0	0	2	0.785	0.000	0.000	0.785
HEALTH PHYSICS PERSONNEL	3	0	17	20	1.443	0.000	4.010	5.453
SUPERVISORY PERSONNEL	0	1	0	1	0.415	0.290	0.100	0.805
ENGINEERING PERSONNEL	4	0	0	4	1.970	0.040	0.010	2.020
TOTAL	239	4	409	652	112.010	1.740	273.024	386.774
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	27	3	191	221	8.650	0.790	99.200	108.640
OPERATIONS PERSONNEL	0	0	0	0	0.100	0.000	0.180	0.280
HEALTH PHYSICS PERSONNEL	1	0	1	2	0.940	0.000	0.000	0.940
SUPERVISORY PERSONNEL	0	1	1	2	0.010	0.850	0.770	1.630
ENGINEERING PERSONNEL	1	1	1	3	0.240	0.245	0.170	0.655
TOTAL	29	5	194	228	9.940	1.885	100.320	112.145
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	47	2	554	603	16.551	1.540	332.381	350.472
OPERATIONS PERSONNEL	2	0	0	2	0.370	0.000	0.000	0.370
HEALTH PHYSICS PERSONNEL	5	0	2	7	1.635	0.000	0.625	2.260
SUPERVISORY PERSONNEL	0	0	2	2	0.040	0.095	0.595	0.730
ENGINEERING PERSONNEL	1	0	0	1	0.210	0.000	0.030	0.240
TOTAL	55	2	558	615	18.806	1.635	333.631	354.072
WASTE PROCESSING								
MAINTENANCE PERSONNEL	14	0	9	23	4.470	0.000	4.670	9.140
OPERATIONS PERSONNEL	0	0	0	0	0.030	0.000	0.000	0.030
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.225	0.000	0.000	0.225
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.010	0.000	0.010
TOTAL	14	0	9	23	4.725	0.010	4.670	9.405
REFUELING								
MAINTENANCE PERSONNEL	127	1	18	146	83.935	0.115	8.107	92.157
OPERATIONS PERSONNEL	3	0	0	3	1.240	0.000	0.000	1.240
HEALTH PHYSICS PERSONNEL	2	0	12	14	0.635	0.000	2.795	3.430
SUPERVISORY PERSONNEL	2	1	0	3	0.480	0.395	0.040	0.915
ENGINEERING PERSONNEL	5	0	0	5	2.250	0.010	0.055	2.315
TOTAL	139	2	30	171	88.540	0.520	10.997	100.057
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	531 (344)	10 (11)	1303 (1025)	1844 (1380)	260.723	4.865	779.822	1045.410
OPERATIONS PERSONNEL	16 (14)	0 (0)	0 (0)	16 (14)	8.005	0.000	0.180	8.185
HEALTH PHYSICS PERSONNEL	24 (17)	0 (0)	33 (20)	57 (37)	10.295	0.000	8.026	18.321
SUPERVISORY PERSONNEL	4 (4)	3 (3)	3 (3)	10 (10)	1.571	1.765	2.015	5.351
ENGINEERING PERSONNEL	12 (8)	1 (2)	1 (1)	14 (11)	5.275	0.335	0.275	5.885
GRAND TOTALS	587 (387)	14 (16)	1340 (1049)	1941 (1452)	285.869	6.965	790.318	1083.152

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *VERMONT YANKEE

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	9	0	6	15	2.540	0.030	2.836	5.406
OPERATIONS PERSONNEL	24	0	1	25	8.101	0.000	0.420	8.521
HEALTH PHYSICS PERSONNEL	12	0	0	12	3.890	0.000	0.188	4.078
SUPERVISORY PERSONNEL	0	0	0	0	0.032	0.000	0.010	0.042
ENGINEERING PERSONNEL	0	0	0	0	0.078	0.000	0.000	0.078
TOTAL	45	0	7	52	14.641	0.030	3.454	18.125
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	36	0	82	118	13.023	0.135	27.974	41.132
OPERATIONS PERSONNEL	5	0	0	5	1.471	0.000	0.034	1.505
HEALTH PHYSICS PERSONNEL	9	0	6	15	4.139	0.000	2.120	6.259
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.090	0.090
ENGINEERING PERSONNEL	0	0	0	0	0.122	0.000	0.000	0.122
TOTAL	50	0	88	138	18.755	0.135	30.218	49.108
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	14	0	53	67	4.049	0.015	16.649	20.713
OPERATIONS PERSONNEL	1	0	0	1	0.834	0.000	0.000	0.834
HEALTH PHYSICS PERSONNEL	4	0	1	5	1.151	0.000	0.573	1.724
SUPERVISORY PERSONNEL	0	0	0	0	0.010	0.000	0.000	0.010
ENGINEERING PERSONNEL	1	0	0	1	0.142	0.000	0.000	0.142
TOTAL	20	0	54	74	6.186	0.015	17.222	23.423
WASTE PROCESSING								
MAINTENANCE PERSONNEL	4	0	22	26	1.523	0.000	8.453	9.976
OPERATIONS PERSONNEL	2	0	0	2	0.932	0.000	0.000	0.932
HEALTH PHYSICS PERSONNEL	11	0	6	17	6.285	0.000	3.127	9.412
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.005	0.000	0.000	0.005
TOTAL	17	0	28	45	8.745	0.000	11.580	20.325
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	63	0	163	226	21.135	0.180	55.912	77.227
OPERATIONS PERSONNEL	32	0	1	33	11.338	0.000	0.454	11.792
HEALTH PHYSICS PERSONNEL	36	0	13	49	15.465	0.000	6.008	21.473
SUPERVISORY PERSONNEL	0	0	0	0	0.042	0.000	0.100	0.142
ENGINEERING PERSONNEL	1	0	0	1	0.347	0.000	0.000	0.347
GRAND TOTALS	132	0	177	309	48.327	0.180	62.474	110.981

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *VOGTLE 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	18	0	46	64	6.297	0.000	17.105	23.402
OPERATIONS PERSONNEL	8	0	1	9	2.619	0.082	0.428	3.129
HEALTH PHYSICS PERSONNEL	4	0	38	42	2.175	0.000	16.991	19.166
SUPERVISORY PERSONNEL	0	0	3	3	0.017	0.014	1.747	1.778
ENGINEERING PERSONNEL	1	0	1	2	0.447	0.000	0.627	1.074
TOTAL	31	0	89	120	11.555	0.096	36.898	48.549
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	9	1	49	59	3.516	0.213	17.731	21.460
OPERATIONS PERSONNEL	23	0	1	24	0.000	0.000	0.179	0.179
HEALTH PHYSICS PERSONNEL	12	0	14	26	0.000	0.000	5.855	5.855
SUPERVISORY PERSONNEL	0	1	4	5	0.161	0.161	1.914	2.236
ENGINEERING PERSONNEL	0	0	3	3	0.000	0.000	0.906	0.906
TOTAL	44	2	71	117	3.677	0.374	26.585	30.636
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	19	0	51	70	5.833	0.079	24.495	30.407
OPERATIONS PERSONNEL	2	0	1	3	0.715	0.000	0.207	0.922
HEALTH PHYSICS PERSONNEL	0	0	5	5	0.222	0.000	1.847	2.069
SUPERVISORY PERSONNEL	1	0	9	10	0.125	0.014	2.220	2.359
ENGINEERING PERSONNEL	1	0	5	6	0.438	0.000	1.007	1.445
TOTAL	23	0	71	94	7.333	0.093	29.776	37.202
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	32	1	239	272	13.808	0.112	105.149	119.069
OPERATIONS PERSONNEL	13	0	1	14	3.311	0.020	0.537	3.868
HEALTH PHYSICS PERSONNEL	17	1	61	79	5.530	0.174	26.235	31.939
SUPERVISORY PERSONNEL	6	0	15	21	3.929	0.279	4.782	8.990
ENGINEERING PERSONNEL	1	0	8	9	0.585	0.000	2.783	3.368
TOTAL	69	2	324	395	27.163	0.585	139.486	167.234
WASTE PROCESSING								
MAINTENANCE PERSONNEL	5	0	7	12	2.999	0.000	4.114	7.113
OPERATIONS PERSONNEL	0	0	0	0	0.534	0.000	0.002	0.536
HEALTH PHYSICS PERSONNEL	1	0	16	17	0.625	0.000	5.810	6.435
SUPERVISORY PERSONNEL	0	0	0	0	0.017	0.000	0.336	0.353
ENGINEERING PERSONNEL	0	0	0	0	0.012	0.000	0.063	0.075
TOTAL	6	0	23	29	4.187	0.000	10.325	14.512
REFUELING								
MAINTENANCE PERSONNEL	5	0	40	45	2.651	0.000	16.847	19.498
OPERATIONS PERSONNEL	4	0	0	4	2.040	0.000	0.002	2.042
HEALTH PHYSICS PERSONNEL	13	0	61	74	5.025	0.016	22.527	27.568
SUPERVISORY PERSONNEL	0	0	8	8	0.030	0.000	4.109	4.139
ENGINEERING PERSONNEL	0	0	4	4	0.042	0.000	1.743	1.785
TOTAL	22	0	113	135	9.788	0.016	45.228	55.032
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	88	2	432	522	35.104	0.404	185.441	220.949
OPERATIONS PERSONNEL	50	0	4	54	9.219	0.102	1.355	10.676
HEALTH PHYSICS PERSONNEL	47	1	195	243	13.577	0.190	79.265	93.032
SUPERVISORY PERSONNEL	7	1	39	47	4.279	0.468	15.108	19.855
ENGINEERING PERSONNEL	3	0	21	24	1.524	0.000	7.129	8.653
GRAND TOTALS	195	4	691	890	63.703	1.164	288.298	353.165

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *WASHINGTON NUCLEAR 2 TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	38	1	10	49	17.100	0.300	3.700	21.100
OPERATIONS PERSONNEL	29	0	0	29	28.300	0.000	0.000	28.300
HEALTH PHYSICS PERSONNEL	31	0	25	56	18.600	0.000	15.800	34.400
SUPERVISORY PERSONNEL	8	0	0	8	2.200	0.000	0.000	2.200
ENGINEERING PERSONNEL	5	2	2	9	1.700	0.800	0.300	2.800
TOTAL	111	3	37	151	67.900	1.100	19.800	88.800
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	144	1	149	294	88.500	0.100	79.500	168.100
OPERATIONS PERSONNEL	8	0	0	8	9.300	0.000	0.000	9.300
HEALTH PHYSICS PERSONNEL	13	0	14	27	15.200	0.000	12.500	27.700
SUPERVISORY PERSONNEL	8	2	1	11	2.400	0.600	0.500	3.500
ENGINEERING PERSONNEL	16	18	18	52	6.900	8.100	6.500	21.500
TOTAL	189	21	182	392	122.300	8.800	99.000	230.100
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	2	0	1	3	0.600	0.000	1.200	1.800
OPERATIONS PERSONNEL	0	0	0	0	0.200	0.000	0.000	0.200
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.700	0.000	1.100	1.800
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.200	0.000	0.200
ENGINEERING PERSONNEL	1	0	1	2	0.600	0.200	0.600	1.400
TOTAL	4	0	2	6	2.100	0.400	2.900	5.400
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	15	0	16	31	3.300	0.000	8.300	11.600
OPERATIONS PERSONNEL	0	0	0	0	0.100	0.000	0.000	0.100
HEALTH PHYSICS PERSONNEL	1	0	1	2	0.500	0.000	1.100	1.600
SUPERVISORY PERSONNEL	0	0	0	0	0.100	0.000	0.000	0.100
ENGINEERING PERSONNEL	2	1	2	5	0.500	0.400	0.500	1.400
TOTAL	18	1	19	38	4.500	0.400	9.900	14.800
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	0	1	2	0.900	0.000	0.100	1.000
OPERATIONS PERSONNEL	0	0	0	0	0.100	0.000	0.000	0.100
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.100	0.000	0.200	0.300
SUPERVISORY PERSONNEL	0	0	0	0	0.100	0.000	0.000	0.100
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	1	0	2	3	1.200	0.000	0.300	1.500
REFUELING								
MAINTENANCE PERSONNEL	24	0	19	43	28.100	0.000	5.700	33.800
OPERATIONS PERSONNEL	4	0	0	4	4.100	0.000	0.000	4.100
HEALTH PHYSICS PERSONNEL	1	0	9	10	1.500	0.000	4.100	5.600
SUPERVISORY PERSONNEL	4	0	2	6	1.300	0.000	0.500	1.800
ENGINEERING PERSONNEL	3	2	8	13	0.800	1.400	1.700	3.900
TOTAL	36	2	38	76	35.800	1.400	12.000	49.200
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	224	2	196	422	138.500	0.400	98.500	237.400
OPERATIONS PERSONNEL	41	0	0	41	42.100	0.000	0.000	42.100
HEALTH PHYSICS PERSONNEL	47	0	50	97	36.600	0.000	34.800	71.400
SUPERVISORY PERSONNEL	20	2	3	25	6.100	0.800	1.000	7.900
ENGINEERING PERSONNEL	27	23	31	81	10.500	10.900	9.600	31.000
GRAND TOTALS	359	27	280	666	233.800	12.100	143.900	389.800

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *WATERFORD 3 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM) STATION	UTILITY	CONTRACT	TOTAL	TOTAL PERSON-REM STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	2	0	5	7	0.922	0.000	2.641	3.563
OPERATIONS PERSONNEL	28	0	87	115	8.723	0.000	37.936	46.659
HEALTH PHYSICS PERSONNEL	13	0	77	90	4.247	0.000	31.517	35.764
SUPERVISORY PERSONNEL	3	0	0	3	1.007	0.016	0.155	1.178
ENGINEERING PERSONNEL	10	0	14	24	3.838	0.027	4.750	8.615
TOTAL	56	0	183	239	18.737	0.043	76.999	95.779
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	49	0	411	460	19.605	0.000	142.675	162.280
OPERATIONS PERSONNEL	1	0	20	21	0.604	0.000	5.455	6.059
HEALTH PHYSICS PERSONNEL	2	0	5	7	0.650	0.000	2.034	2.684
SUPERVISORY PERSONNEL	1	0	0	1	0.179	0.000	0.012	0.191
ENGINEERING PERSONNEL	0	0	1	1	0.091	0.000	0.240	0.331
TOTAL	53	0	437	490	21.129	0.000	150.416	171.545
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	5	6	0.268	0.000	2.218	2.486
OPERATIONS PERSONNEL	0	0	10	10	0.159	0.000	2.945	3.104
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.004	0.000	0.363	0.367
SUPERVISORY PERSONNEL	0	0	0	0	0.038	0.000	0.000	0.038
ENGINEERING PERSONNEL	0	0	0	0	0.234	0.000	0.274	0.508
TOTAL	1	0	15	16	0.703	0.000	5.800	6.503
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	15	0	28	43	6.066	0.000	16.907	22.973
OPERATIONS PERSONNEL	1	0	15	16	1.349	0.000	3.914	5.263
HEALTH PHYSICS PERSONNEL	1	0	2	3	0.321	0.000	1.461	1.782
SUPERVISORY PERSONNEL	1	0	0	1	0.589	0.000	0.000	0.589
ENGINEERING PERSONNEL	1	0	6	7	0.280	0.000	1.493	1.773
TOTAL	19	0	51	70	8.605	0.000	23.775	32.380
WASTE PROCESSING								
MAINTENANCE PERSONNEL	2	0	7	9	0.506	0.000	1.653	2.159
OPERATIONS PERSONNEL	11	0	53	64	3.037	0.000	19.979	23.016
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.149	0.000	0.888	1.037
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.116	0.116
TOTAL	13	0	61	74	3.692	0.000	22.636	26.328
REFUELING								
MAINTENANCE PERSONNEL	4	0	9	13	0.960	0.000	2.750	3.710
OPERATIONS PERSONNEL	1	0	26	27	0.403	0.000	7.023	7.426
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.020	0.000	0.846	0.866
SUPERVISORY PERSONNEL	0	0	0	0	0.009	0.000	0.000	0.009
ENGINEERING PERSONNEL	1	0	0	1	0.142	0.000	0.171	0.313
TOTAL	6	0	36	42	1.534	0.000	10.790	12.324
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	73 (53)	0 (0)	465 (429)	538 (482)	28.327	0.000	168.844	197.171
OPERATIONS PERSONNEL	42 (42)	0 (0)	211 (153)	253 (195)	14.275	0.000	77.252	91.527
HEALTH PHYSICS PERSONNEL	16 (17)	0 (0)	86 (86)	102 (103)	5.391	0.000	37.109	42.500
SUPERVISORY PERSONNEL	5 (5)	0 (0)	0 (0)	5 (5)	1.822	0.016	0.167	2.005
ENGINEERING PERSONNEL	12 (11)	0 (0)	21 (22)	33 (33)	4.585	0.027	7.044	11.656
GRAND TOTALS	148 (128)	0. (0)	783 (690)	931 (818)	54.400	0.043	290.416	344.859

*Workers may be counted in more than one category. Numbers in parentheses are total numbers of individuals.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *WOLF CREEK 1

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	2	0	3	5	1.071	0.000	1.758	2.829
OPERATIONS PERSONNEL	16	0	3	19	6.112	0.286	0.922	7.320
HEALTH PHYSICS PERSONNEL	17	1	26	44	5.925	0.363	9.197	15.485
SUPERVISORY PERSONNEL	8	0	2	10	2.923	0.051	1.389	4.363
ENGINEERING PERSONNEL	4	0	0	4	2.245	0.174	0.303	2.722
TOTAL	47	1	34	82	18.276	0.874	13.569	32.719
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	18	0	9	27	6.518	0.032	6.445	12.995
OPERATIONS PERSONNEL	0	0	0	0	0.307	0.006	0.005	0.318
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.478	0.042	0.354	0.874
SUPERVISORY PERSONNEL	2	0	2	4	1.145	0.000	0.960	2.105
ENGINEERING PERSONNEL	1	0	0	1	0.594	0.018	0.074	0.686
TOTAL	21	0	11	32	9.042	0.098	7.838	16.978
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	8	0	14	22	1.928	0.005	5.313	7.246
OPERATIONS PERSONNEL	0	1	1	2	0.107	0.260	0.288	0.655
HEALTH PHYSICS PERSONNEL	2	0	14	16	0.497	0.000	3.631	4.128
SUPERVISORY PERSONNEL	4	0	5	9	0.738	0.000	1.666	2.404
ENGINEERING PERSONNEL	0	0	46	46	0.529	0.000	2.838	3.367
TOTAL	14	1	80	95	3.799	0.265	13.736	17.800
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	45	1	223	269	13.715	0.906	90.571	105.192
OPERATIONS PERSONNEL	1	0	1	2	0.301	0.037	0.228	0.566
HEALTH PHYSICS PERSONNEL	7	0	16	23	3.556	0.018	6.597	10.171
SUPERVISORY PERSONNEL	10	0	9	19	2.740	0.000	4.637	7.377
ENGINEERING PERSONNEL	5	1	121	127	3.484	0.283	49.128	52.895
TOTAL	68	2	370	440	23.796	1.244	151.161	176.201
WASTE PROCESSING								
MAINTENANCE PERSONNEL	2	0	0	2	1.011	0.000	0.292	1.303
OPERATIONS PERSONNEL	0	0	0	0	0.389	0.018	0.125	0.532
HEALTH PHYSICS PERSONNEL	14	0	26	40	4.546	0.018	7.862	12.426
SUPERVISORY PERSONNEL	2	0	0	2	0.580	0.000	0.046	0.626
ENGINEERING PERSONNEL	0	0	0	0	0.037	0.000	0.023	0.060
TOTAL	18	0	26	44	6.563	0.036	8.348	14.947
REFUELING								
MAINTENANCE PERSONNEL	28	0	56	84	7.349	0.000	14.665	22.014
OPERATIONS PERSONNEL	7	1	1	9	2.016	0.292	0.195	2.503
HEALTH PHYSICS PERSONNEL	0	0	6	6	0.046	0.033	1.909	1.988
SUPERVISORY PERSONNEL	4	0	2	6	1.364	0.000	0.840	2.204
ENGINEERING PERSONNEL	4	0	2	6	1.331	0.121	0.859	2.311
TOTAL	43	1	67	111	12.106	0.446	18.468	31.020
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	103	1	305	409	31.592	0.943	119.044	151.579
OPERATIONS PERSONNEL	24	2	6	32	9.232	0.899	1.763	11.894
HEALTH PHYSICS PERSONNEL	40	1	88	129	15.048	0.474	29.550	45.072
SUPERVISORY PERSONNEL	30	0	20	50	9.490	0.051	9.538	19.079
ENGINEERING PERSONNEL	14	1	169	184	8.220	0.596	53.225	62.041
GRAND TOTALS	211	5	588	804	73.582	2.963	213.120	289.665

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *YANKEE-ROWE TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	1	0	2	3	0.706	0.000	0.582	1.288
OPERATIONS PERSONNEL	20	0	1	21	5.465	0.000	0.113	5.578
HEALTH PHYSICS PERSONNEL	8	0	2	10	2.349	0.010	0.745	3.104
SUPERVISORY PERSONNEL	0	0	0	0	0.074	0.000	0.000	0.074
ENGINEERING PERSONNEL	0	0	0	0	0.382	0.197	0.052	0.631
TOTAL	29	0	5	34	8.976	0.207	1.492	10.675
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	13	0	12	25	3.684	0.000	5.252	8.936
OPERATIONS PERSONNEL	1	0	0	1	0.502	0.000	0.000	0.502
HEALTH PHYSICS PERSONNEL	5	0	5	10	1.095	0.000	1.292	2.387
SUPERVISORY PERSONNEL	2	0	0	2	0.536	0.000	0.000	0.536
ENGINEERING PERSONNEL	2	2	0	4	0.996	0.479	0.000	1.475
TOTAL	23	2	17	42	6.813	0.479	6.544	13.836
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.007	0.000	0.000	0.007
OPERATIONS PERSONNEL	0	0	0	0	0.024	0.000	0.000	0.024
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.010	0.000	0.010
TOTAL	0	0	0	0	0.031	0.010	0.000	0.041
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	12	12	0.033	0.000	5.136	5.169
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	3	3	0.012	0.000	0.801	0.813
SUPERVISORY PERSONNEL	1	0	0	1	0.489	0.000	0.000	0.489
ENGINEERING PERSONNEL	0	1	0	1	0.154	0.337	0.000	0.491
TOTAL	1	1	15	17	0.688	0.337	5.937	6.962
WASTE PROCESSING								
MAINTENANCE PERSONNEL	3	0	0	3	1.398	0.000	0.035	1.433
OPERATIONS PERSONNEL	3	0	0	3	0.905	0.000	0.000	0.905
HEALTH PHYSICS PERSONNEL	5	0	9	14	2.231	0.000	2.102	4.333
SUPERVISORY PERSONNEL	1	0	0	1	0.541	0.000	0.000	0.541
ENGINEERING PERSONNEL	2	0	0	2	0.684	0.078	0.000	0.762
TOTAL	14	0	9	23	5.759	0.078	2.137	7.974
REFUELING								
MAINTENANCE PERSONNEL	2	0	0	2	0.594	0.000	0.177	0.771
OPERATIONS PERSONNEL	0	0	0	0	0.038	0.000	0.000	0.038
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	2	0	0	2	0.632	0.000	0.177	0.809
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	19	0	26	45	6.422	0.000	11.182	17.604
OPERATIONS PERSONNEL	24	0	1	25	6.934	0.000	0.113	7.047
HEALTH PHYSICS PERSONNEL	18	0	19	37	5.687	0.010	4.940	10.637
SUPERVISORY PERSONNEL	4	0	0	4	1.640	0.000	0.000	1.640
ENGINEERING PERSONNEL	4	3	0	7	2.216	1.101	0.052	3.369
GRAND TOTALS	69	3	46	118	22.899	1.111	16.287	40.297

*Workers may be counted in more than one category.

APPENDIX D (Continued)

NUMBER OF PERSONNEL AND PERSON-REM BY WORK AND JOB FUNCTION

1991

PLANT: *ZION 1,2 TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	2	0	0	2	0.428	0.000	0.044	0.472
OPERATIONS PERSONNEL	185	0	260	445	8.598	0.000	0.180	8.778
HEALTH PHYSICS PERSONNEL	27	0	17	44	11.411	0.000	2.507	13.918
SUPERVISORY PERSONNEL	77	2	4	83	2.771	0.002	0.120	2.893
ENGINEERING PERSONNEL	8	8	1	17	0.217	0.058	0.014	0.289
TOTAL	299	10	282	591	23.425	0.060	2.865	26.350
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	143	9	228	380	30.743	0.000	32.190	62.933
OPERATIONS PERSONNEL	64	0	1	65	2.956	0.000	0.000	2.956
HEALTH PHYSICS PERSONNEL	10	0	27	37	4.370	0.000	4.041	8.411
SUPERVISORY PERSONNEL	180	86	250	516	6.482	0.087	7.216	13.785
ENGINEERING PERSONNEL	96	159	62	317	2.631	1.078	1.201	4.910
TOTAL	493	254	568	1315	47.182	1.165	44.648	92.995
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	38	39	0.149	0.000	5.344	5.493
OPERATIONS PERSONNEL	4	0	0	4	0.174	0.000	0.000	0.174
HEALTH PHYSICS PERSONNEL	1	0	2	3	0.198	0.000	0.280	0.478
SUPERVISORY PERSONNEL	6	2	79	87	0.219	0.002	2.279	2.500
ENGINEERING PERSONNEL	17	16	15	48	0.477	0.105	0.282	0.864
TOTAL	29	18	134	181	1.217	0.107	8.185	9.509
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	17	0	169	186	3.604	0.000	23.743	27.347
OPERATIONS PERSONNEL	16	0	1	17	0.750	0.000	0.001	0.751
HEALTH PHYSICS PERSONNEL	1	0	8	9	0.404	0.000	1.124	1.528
SUPERVISORY PERSONNEL	51	0	118	169	1.811	0.000	3.404	5.215
ENGINEERING PERSONNEL	9	74	135	218	0.246	0.499	2.592	3.337
TOTAL	94	74	431	599	6.815	0.499	30.864	38.178
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	10	10	0.011	0.000	1.411	1.422
OPERATIONS PERSONNEL	19	0	0	19	0.897	0.000	0.000	0.897
HEALTH PHYSICS PERSONNEL	2	0	8	10	0.840	0.000	1.198	2.038
SUPERVISORY PERSONNEL	1	0	3	4	0.040	0.000	0.075	0.115
ENGINEERING PERSONNEL	0	0	0	0	0.007	0.001	0.000	0.008
TOTAL	22	0	21	43	1.795	0.001	2.684	4.480
REFUELING								
MAINTENANCE PERSONNEL	2	0	5	7	0.575	0.000	0.698	1.273
OPERATIONS PERSONNEL	6	0	0	6	0.256	0.000	0.000	0.256
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.125	0.000	0.015	0.140
SUPERVISORY PERSONNEL	1	0	0	1	0.044	0.000	0.001	0.045
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.002	0.000	0.002
TOTAL	9	0	5	14	1.000	0.002	0.714	1.716
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	165	9	450	624	35.510	0.000	63.430	98.940
OPERATIONS PERSONNEL	294	0	262	556	13.631	0.000	0.181	13.812
HEALTH PHYSICS PERSONNEL	41	0	62	103	17.348	0.000	9.165	26.513
SUPERVISORY PERSONNEL	316	90	454	860	11.367	0.091	13.095	24.553
ENGINEERING PERSONNEL	130	257	213	600	3.578	1.743	4.089	9.410
GRAND TOTALS	946	356	1441	2743	81.434	1.834	89.960	173.228

*Workers may be counted in more than one category.

APPENDIX E

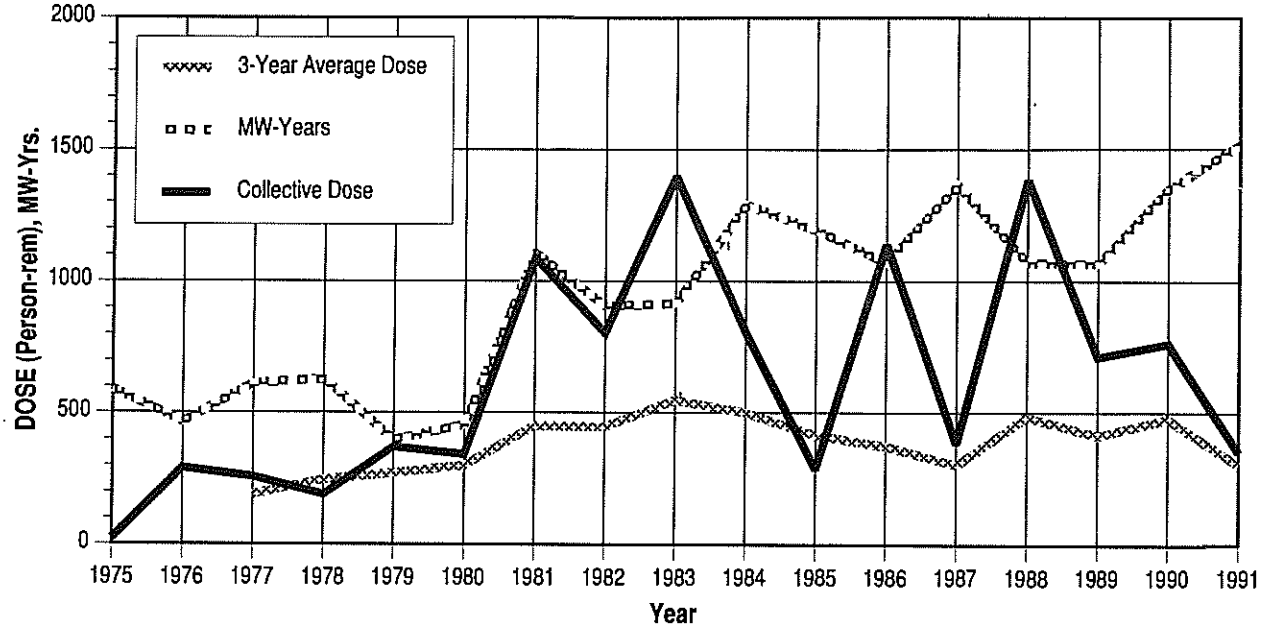
Graphical Representation of Collective Dose Trends by Year and Job Function for Each Site

1973-1991

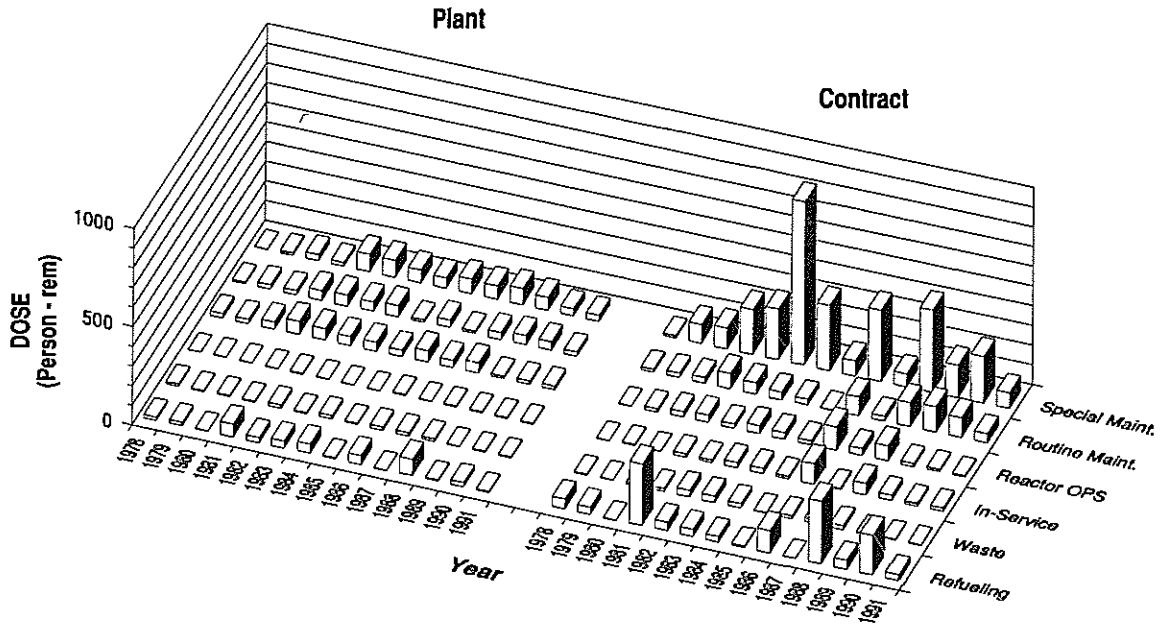
APPENDIX E

ARKANSAS 1, 2

Dose-Performance Indicators **PWR**



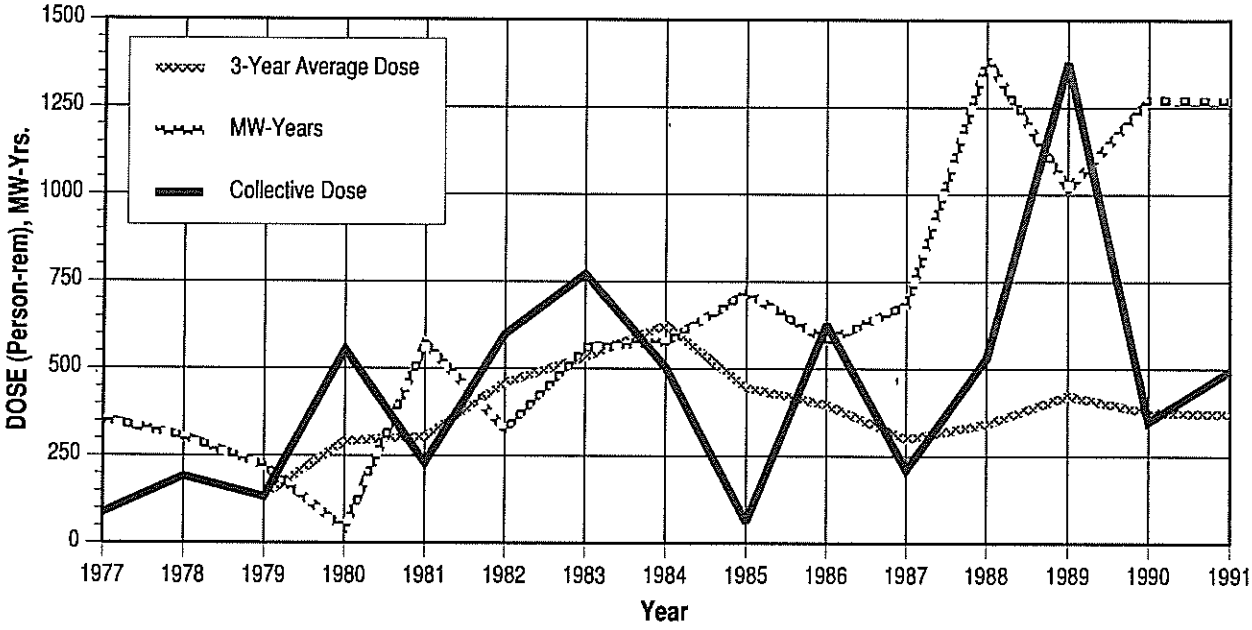
Breakdown by Job Function



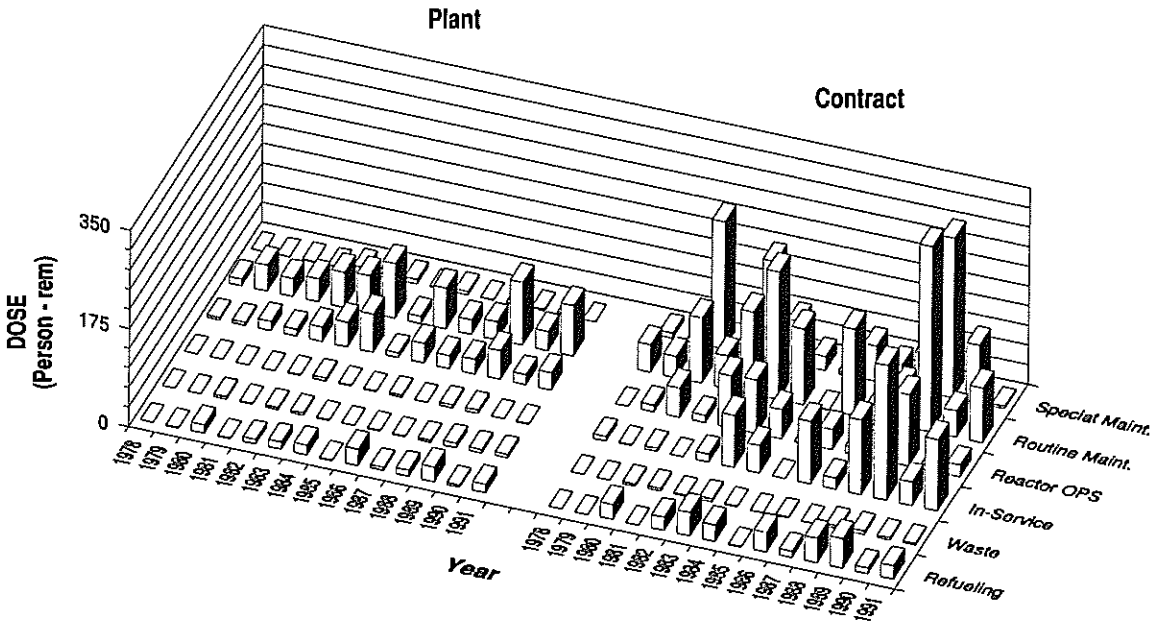
APPENDIX E (continued)

BEAVER VALLEY 1, 2

Dose-Performance Indicators **PWR**



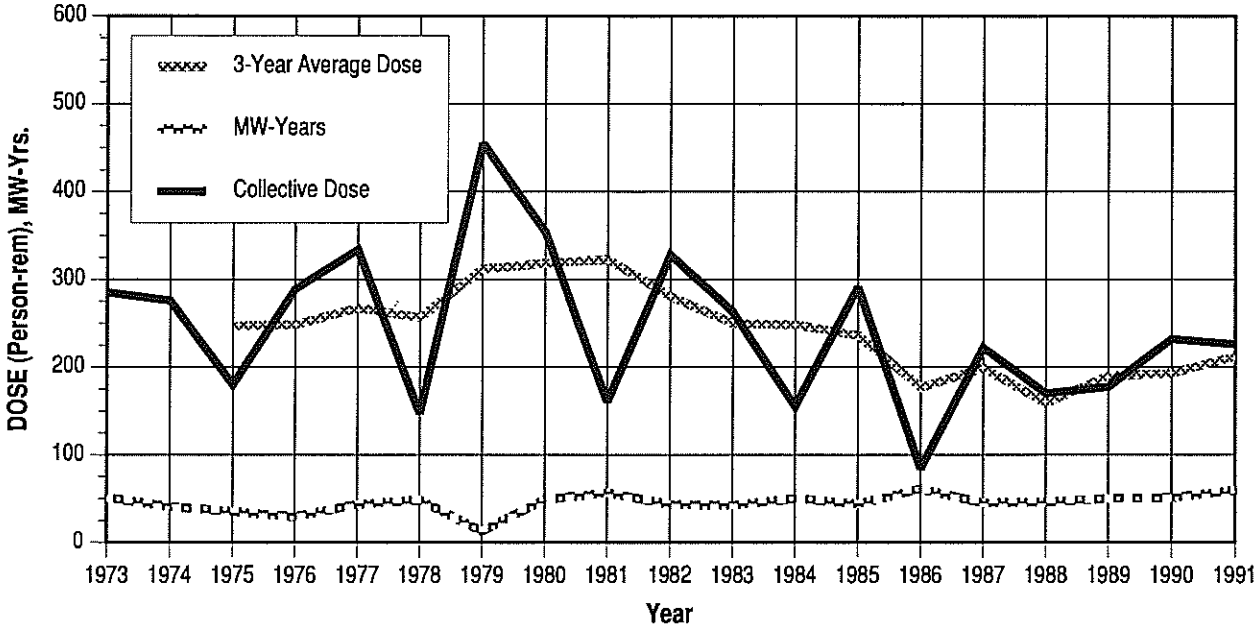
Breakdown by Job Function



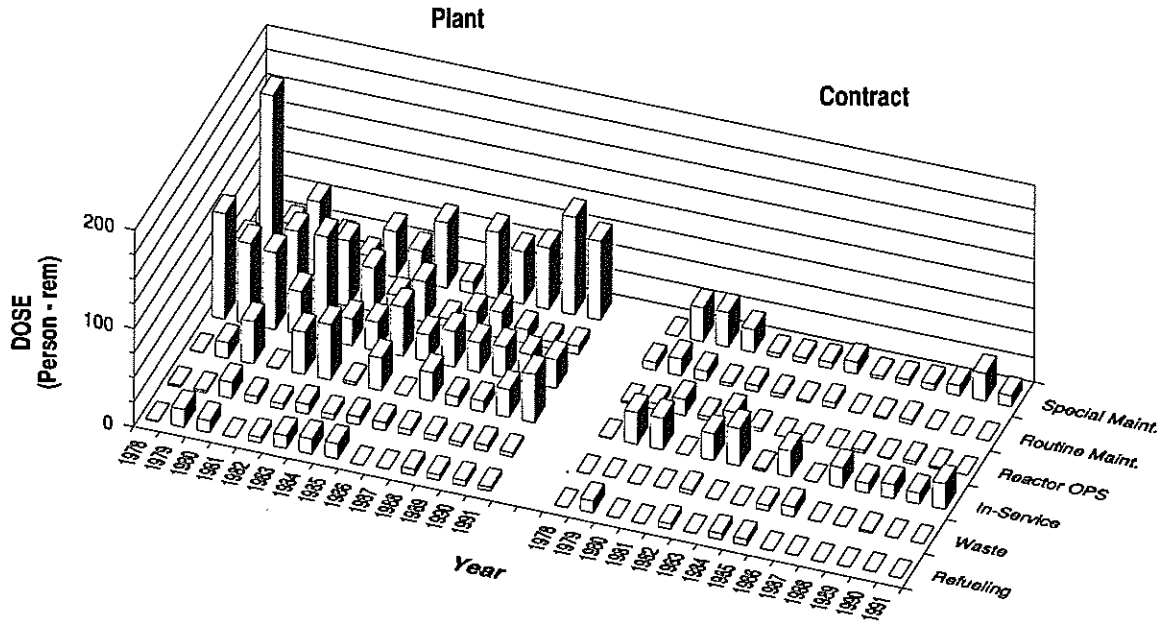
APPENDIX E (continued)

BIG ROCK POINT

Dose-Performance Indicators **BWR**



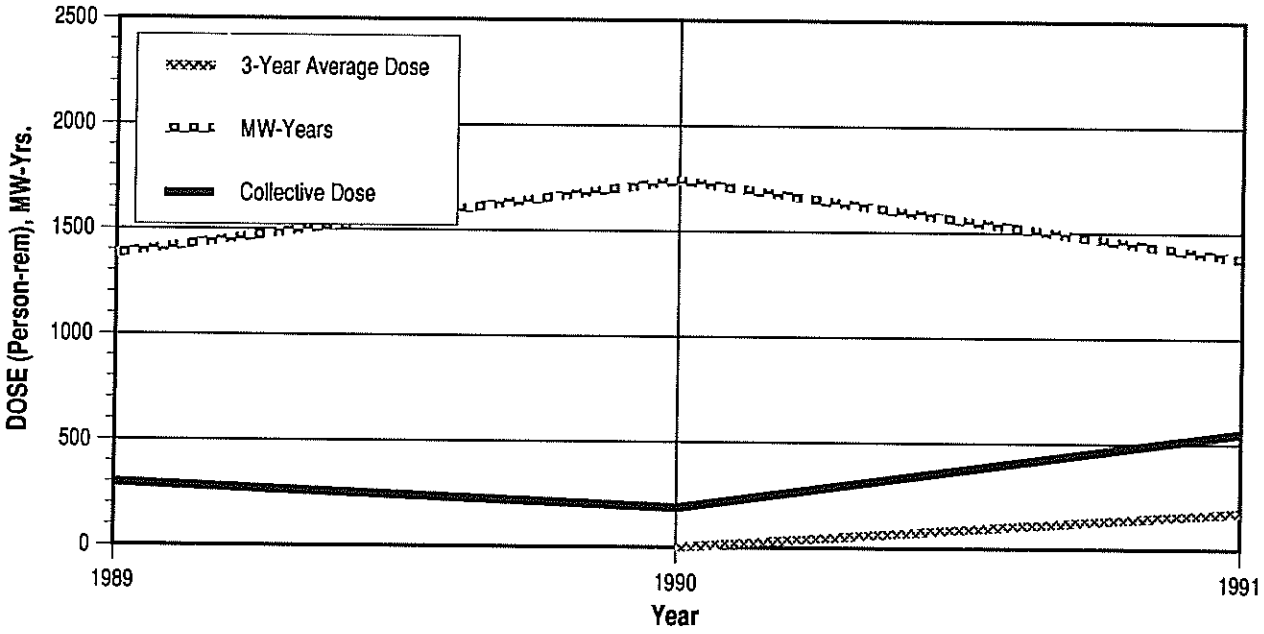
Breakdown by Job Function



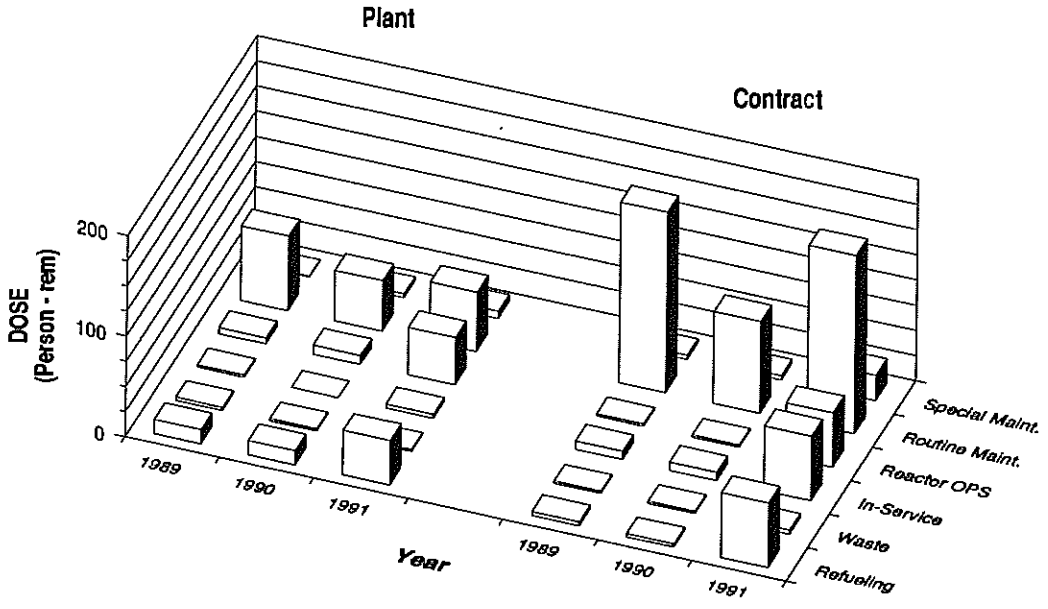
APPENDIX E (continued)

BRAIDWOOD 1, 2

Dose-Performance Indicators **PWR**



Breakdown by Job Function

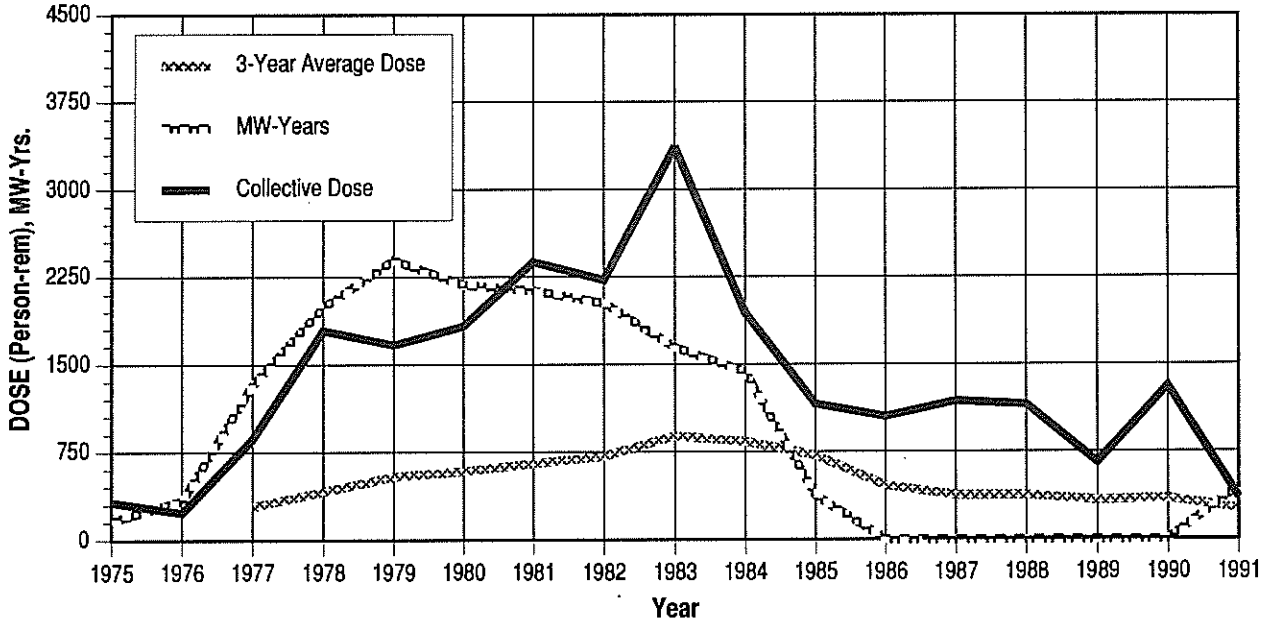


APPENDIX E (continued)

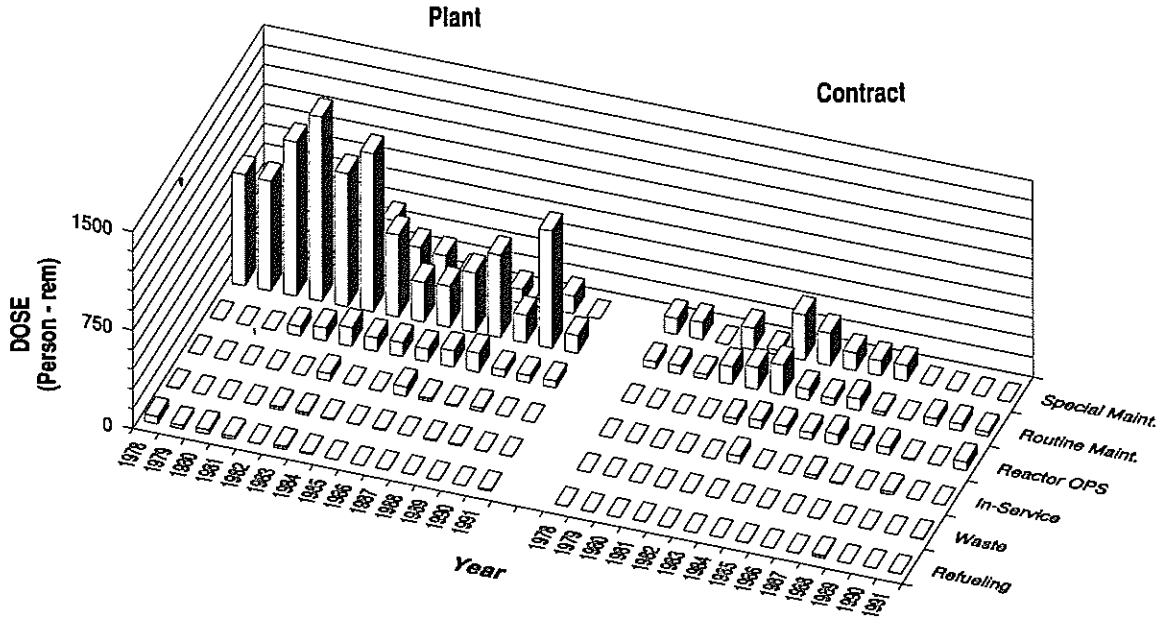
BROWNS FERRY 1, 2, 3

Dose-Performance Indicators

BWR



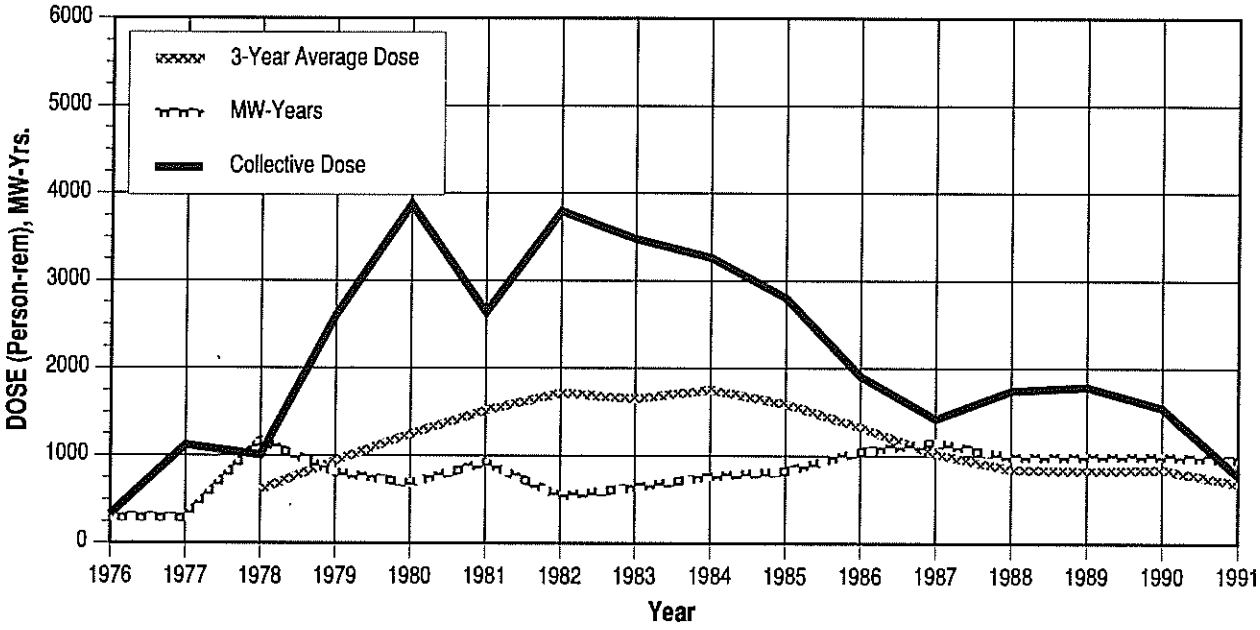
Breakdown by Job Function



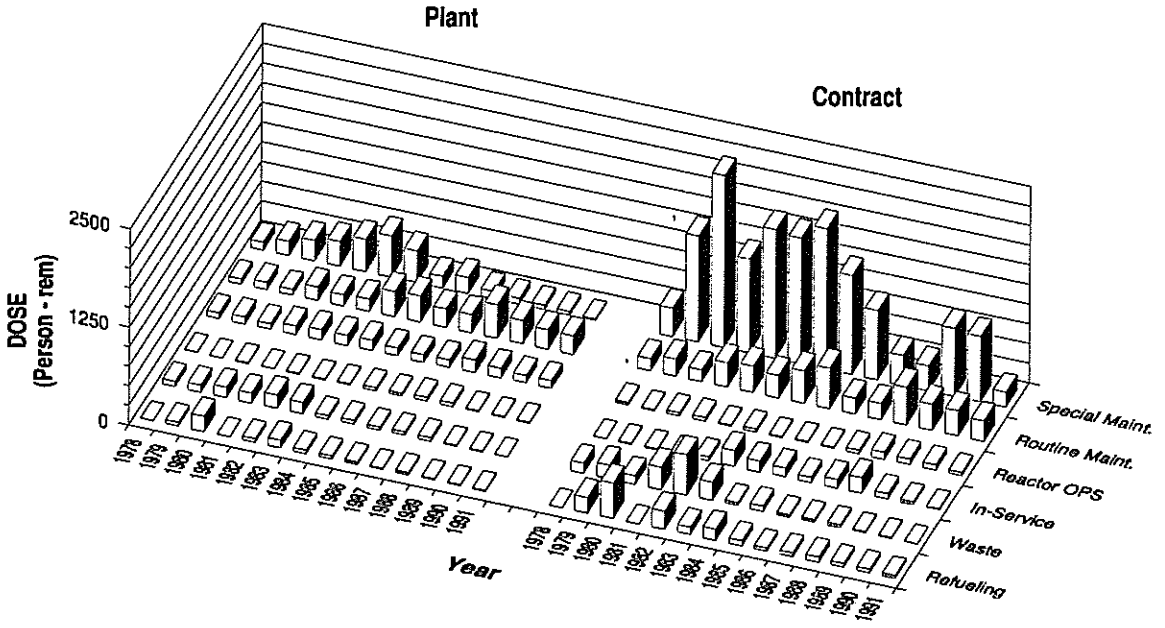
APPENDIX E (continued)

BRUNSWICK 1, 2

Dose-Performance Indicators **BWR**



Breakdown by Job Function

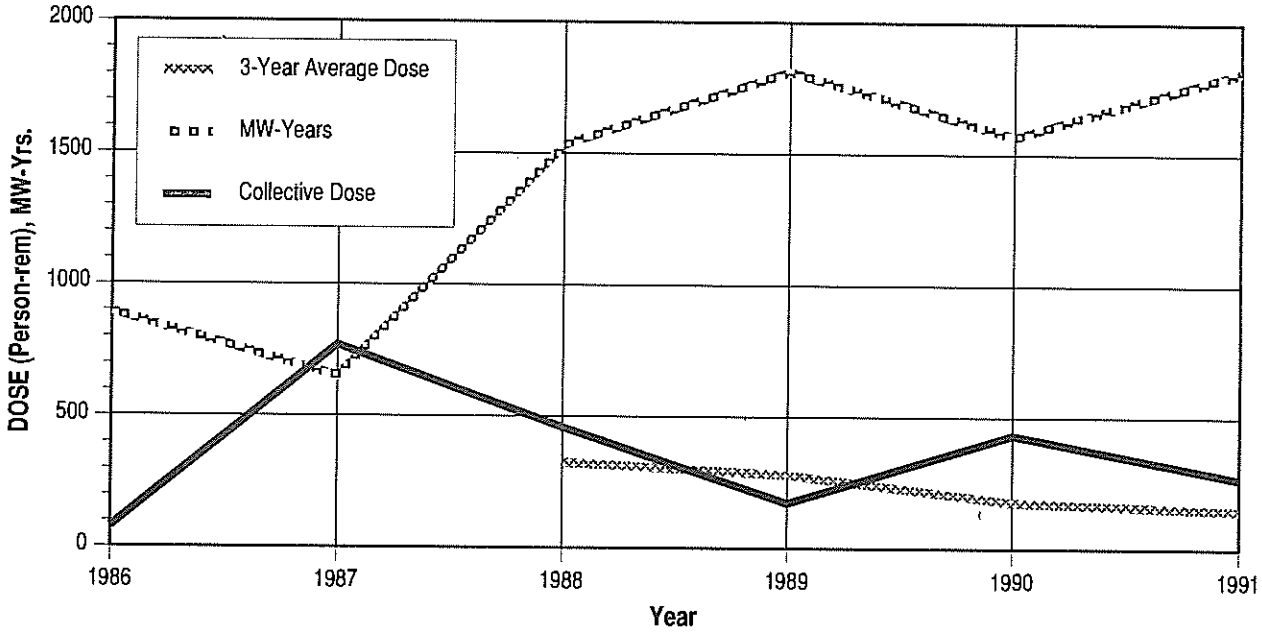


APPENDIX E (continued)

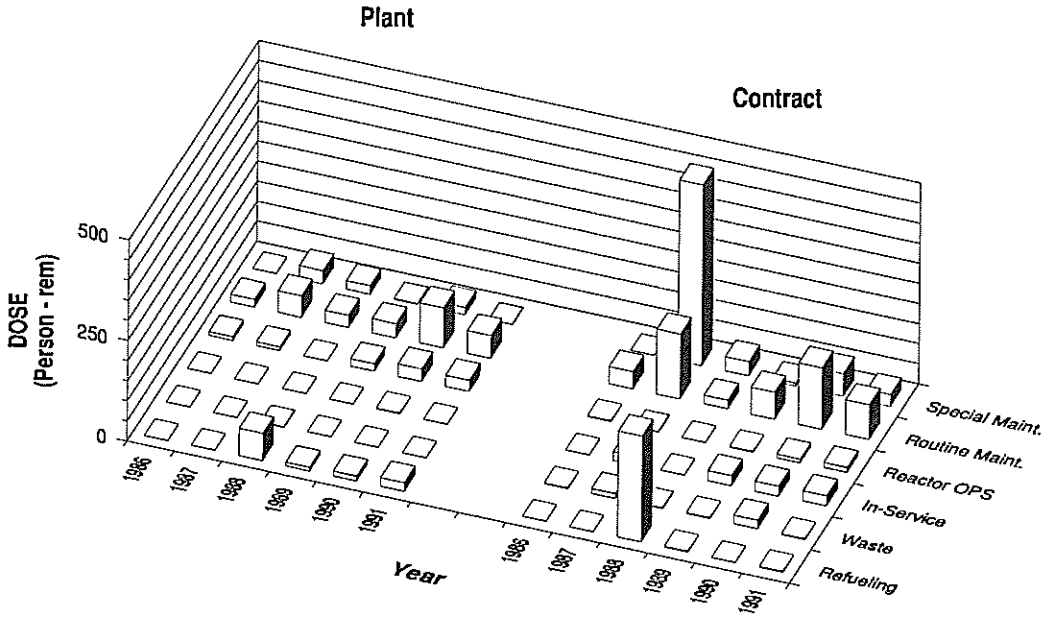
BYRON 1, 2

Dose-Performance Indicators

PWR



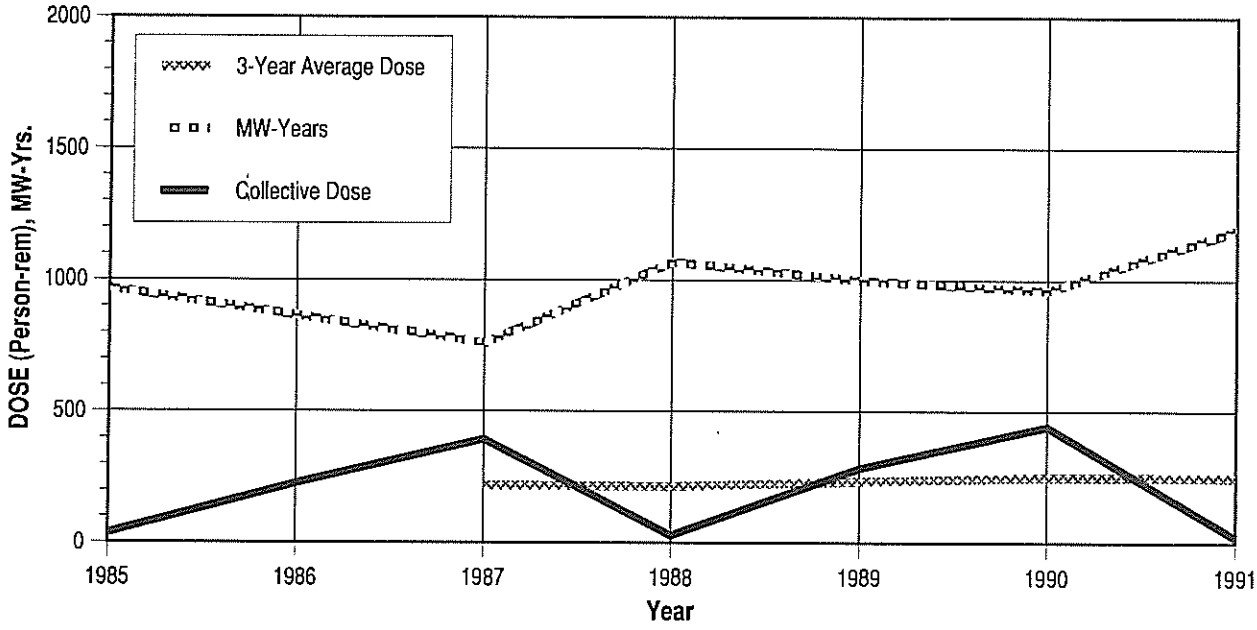
Breakdown by Job Function



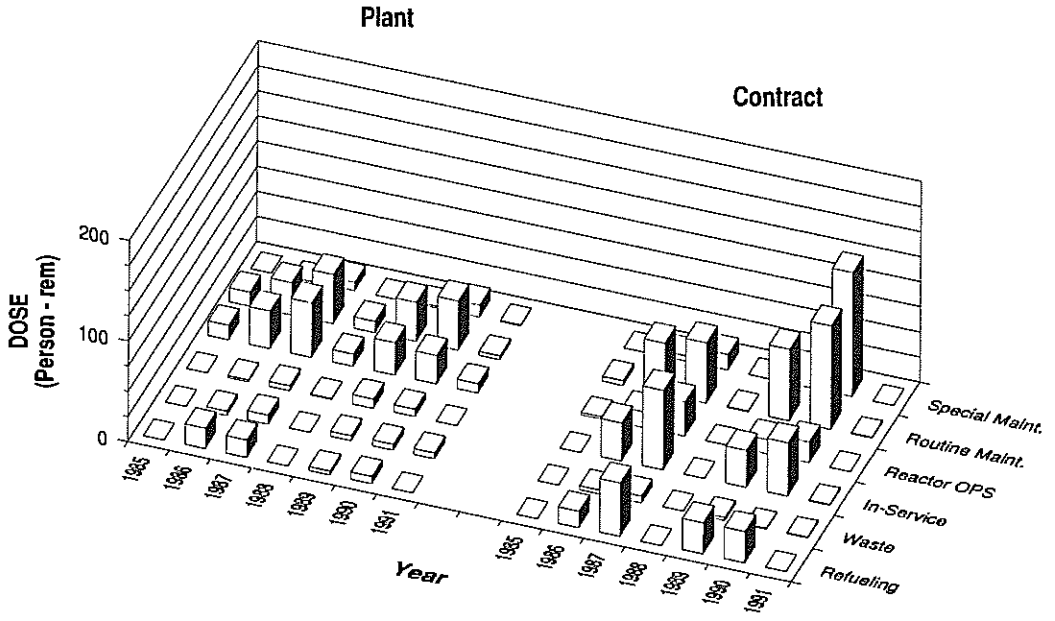
APPENDIX E (continued)

CALLAWAY 1

Dose-Performance Indicators **PWR**



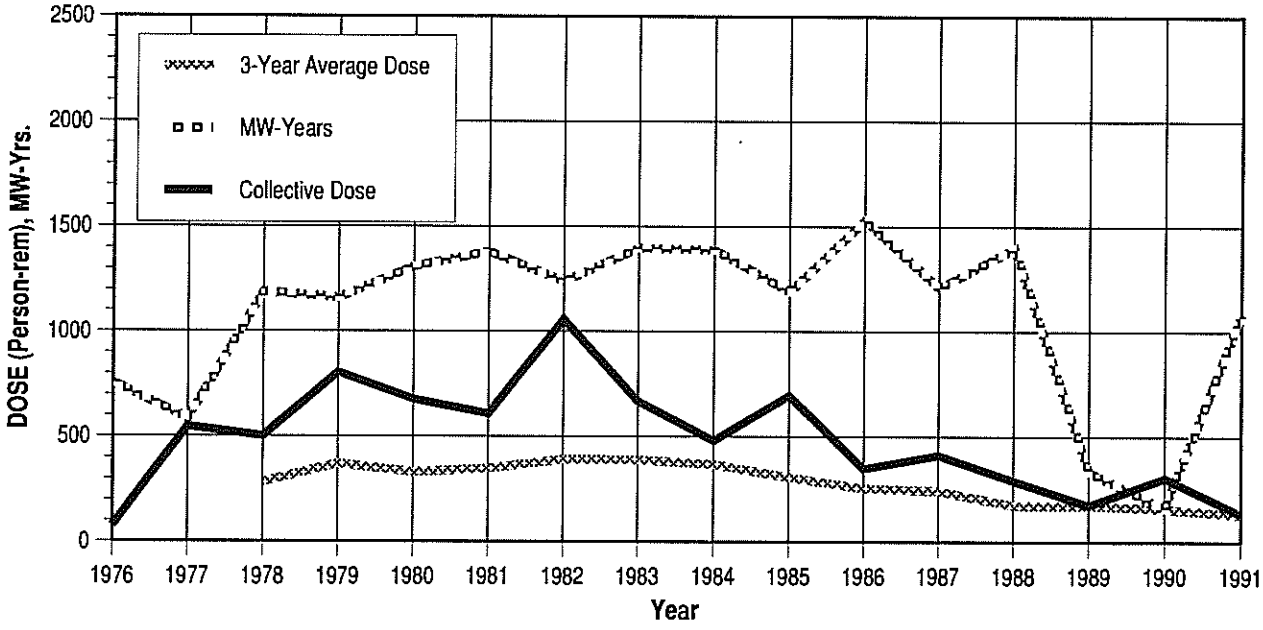
Breakdown by Job Function



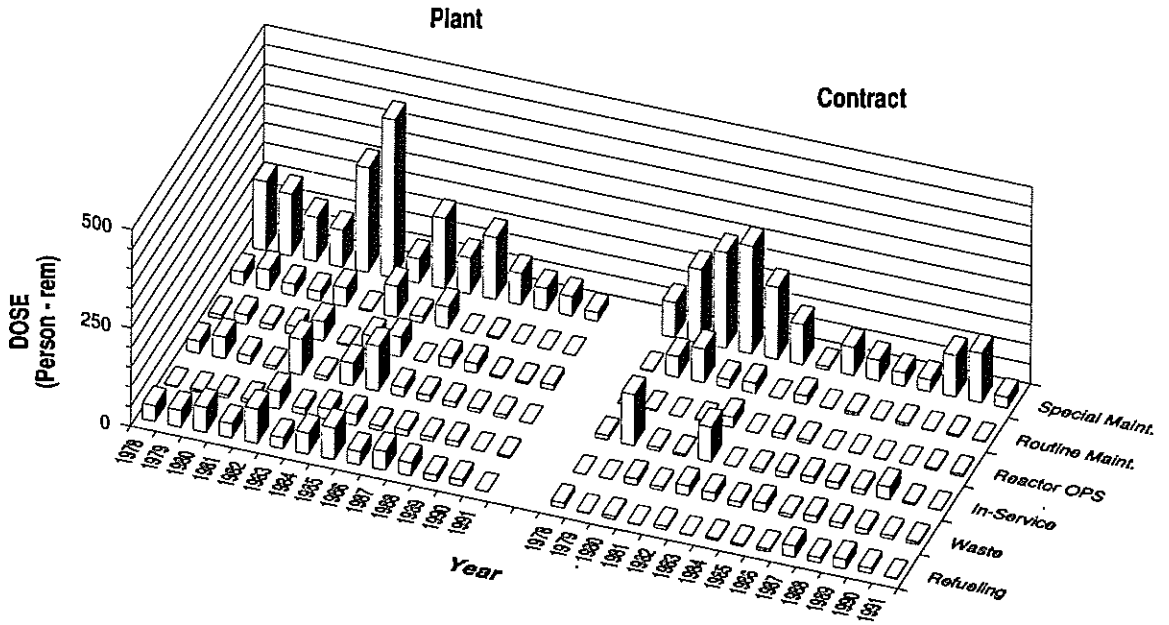
APPENDIX E (continued)

CALVERT CLIFFS 1, 2

Dose-Performance Indicators **PWR**



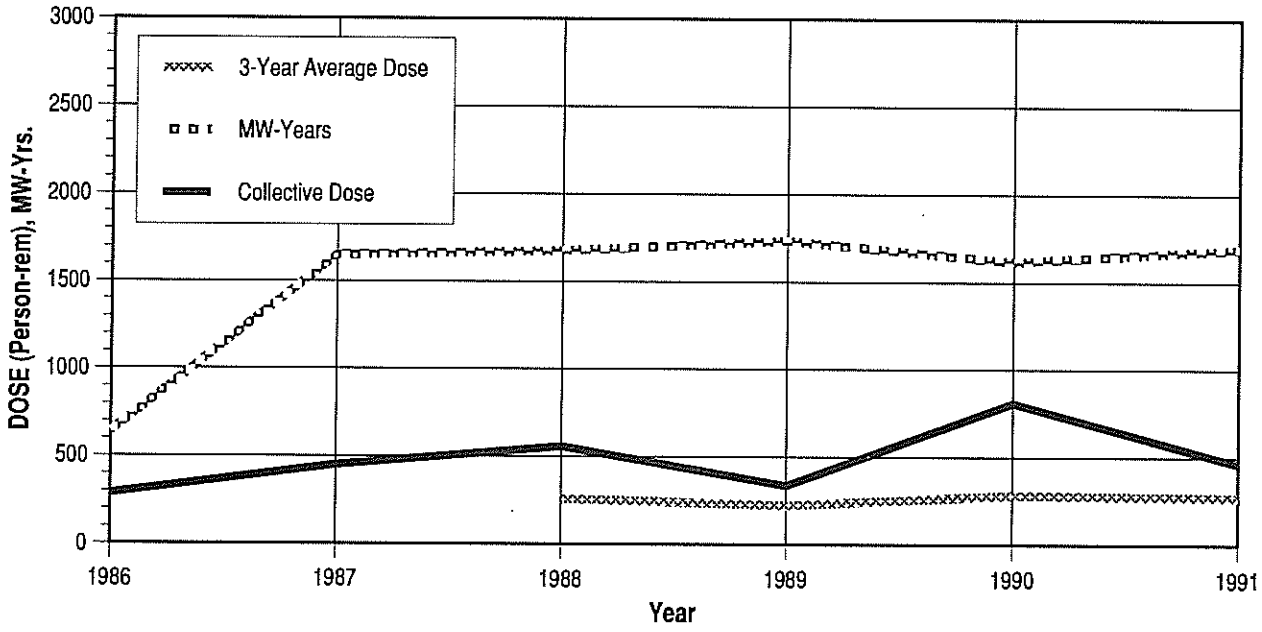
Breakdown by Job Function



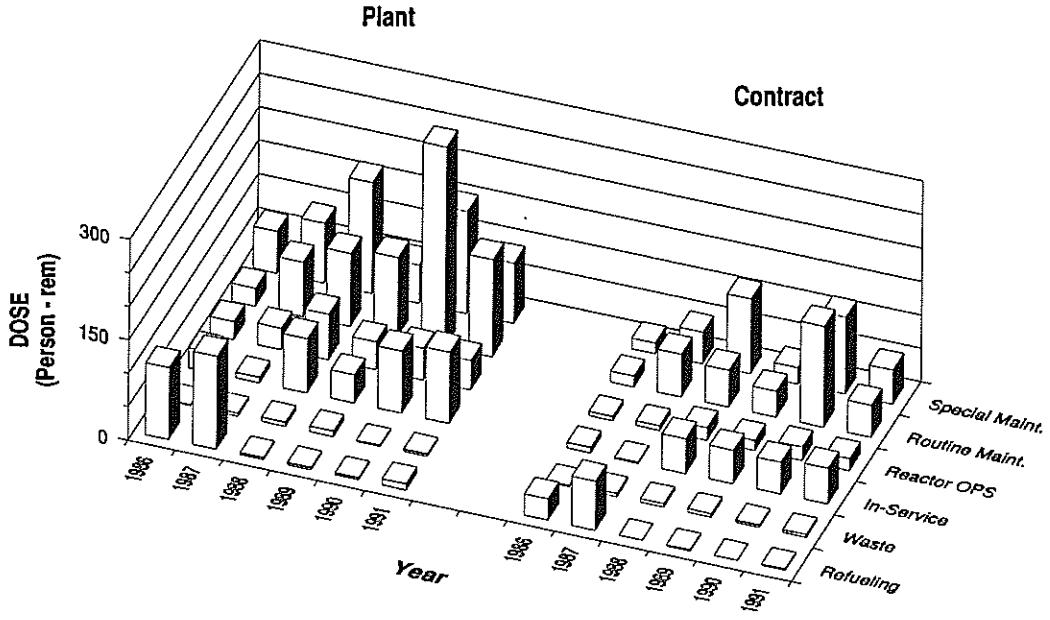
APPENDIX E (continued)

CATAWBA 1, 2

Dose-Performance Indicators **PWR**



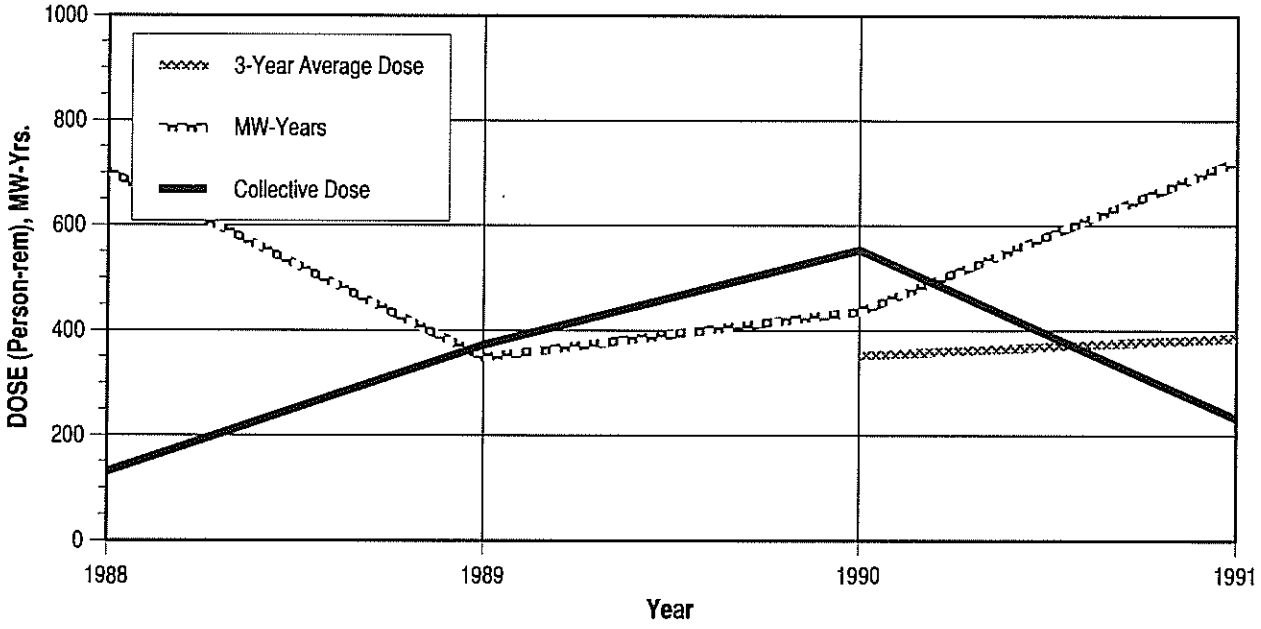
Breakdown by Job Function



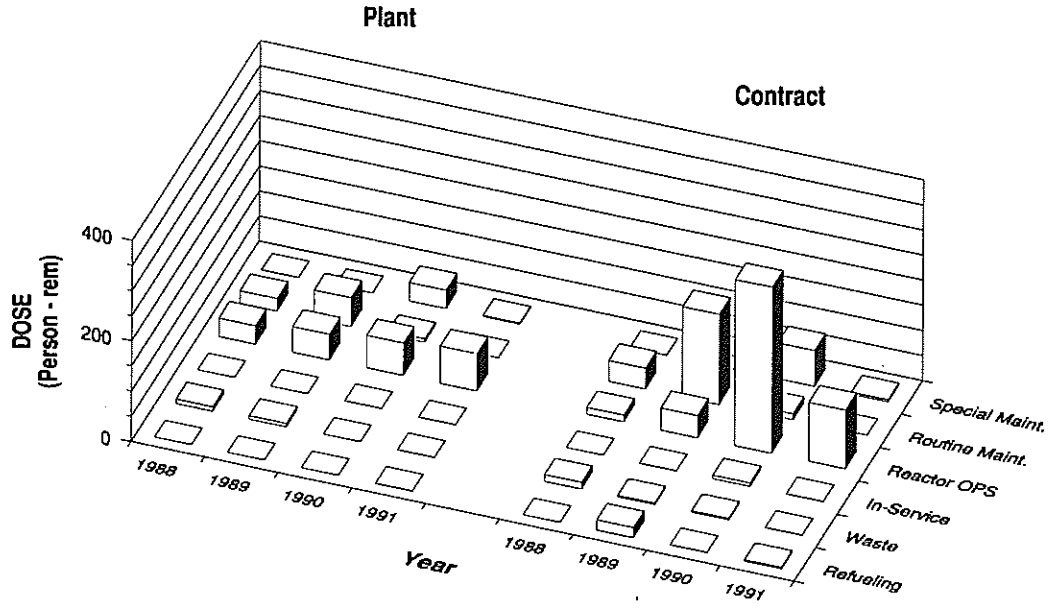
APPENDIX E (continued)

CLINTON

Dose-Performance Indicators **BWR**



Breakdown by Job Function

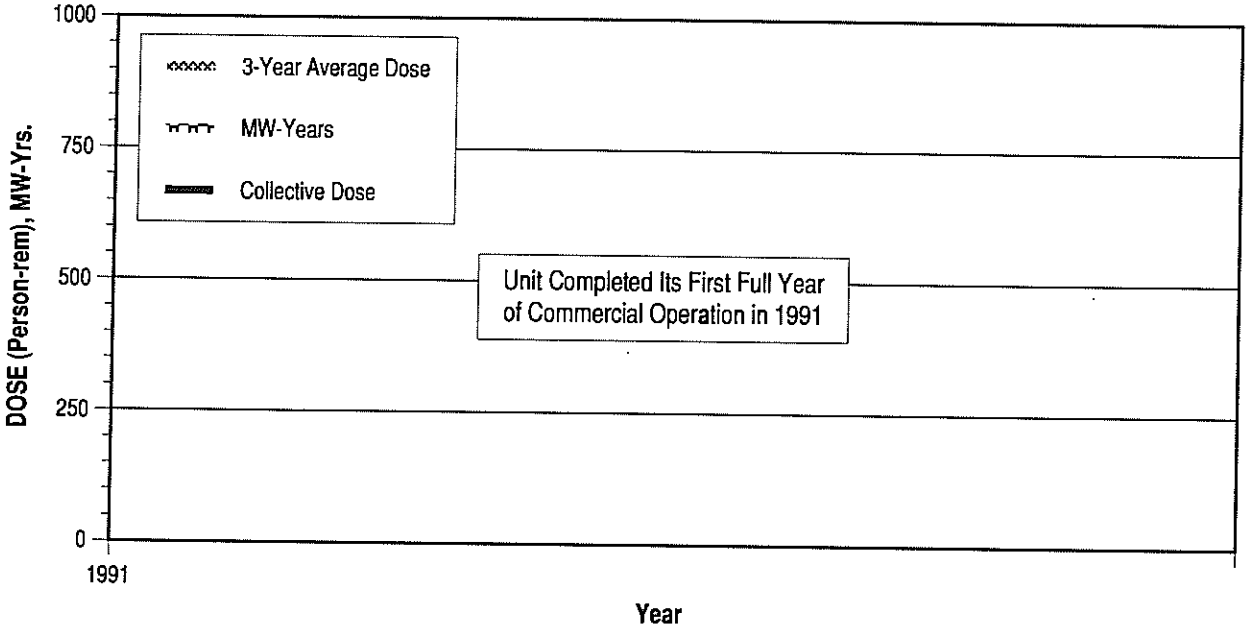


APPENDIX E (continued)

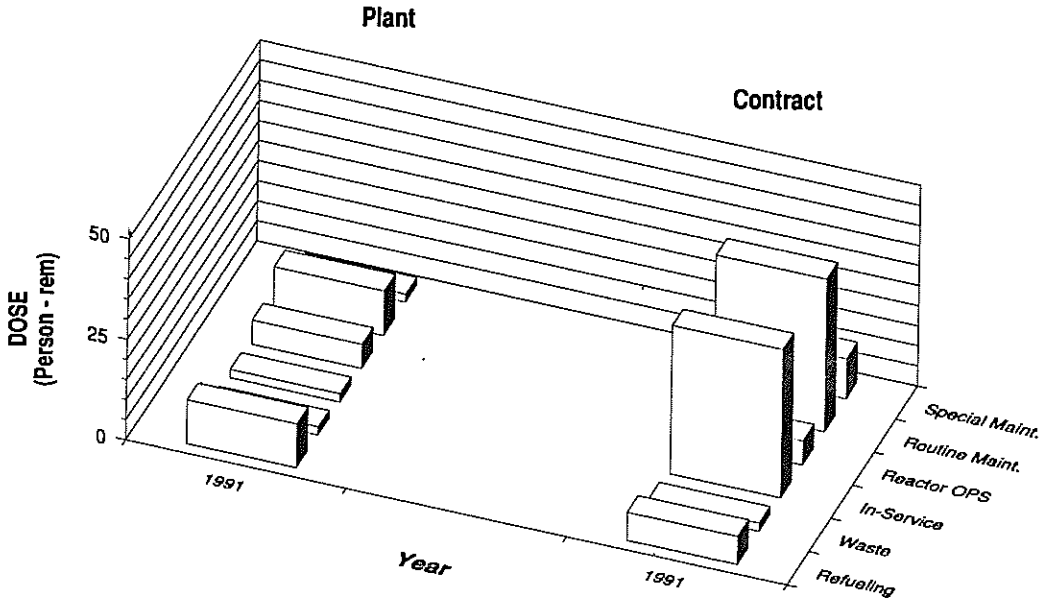
COMANCHE PEAK

Dose-Performance Indicators

PWR



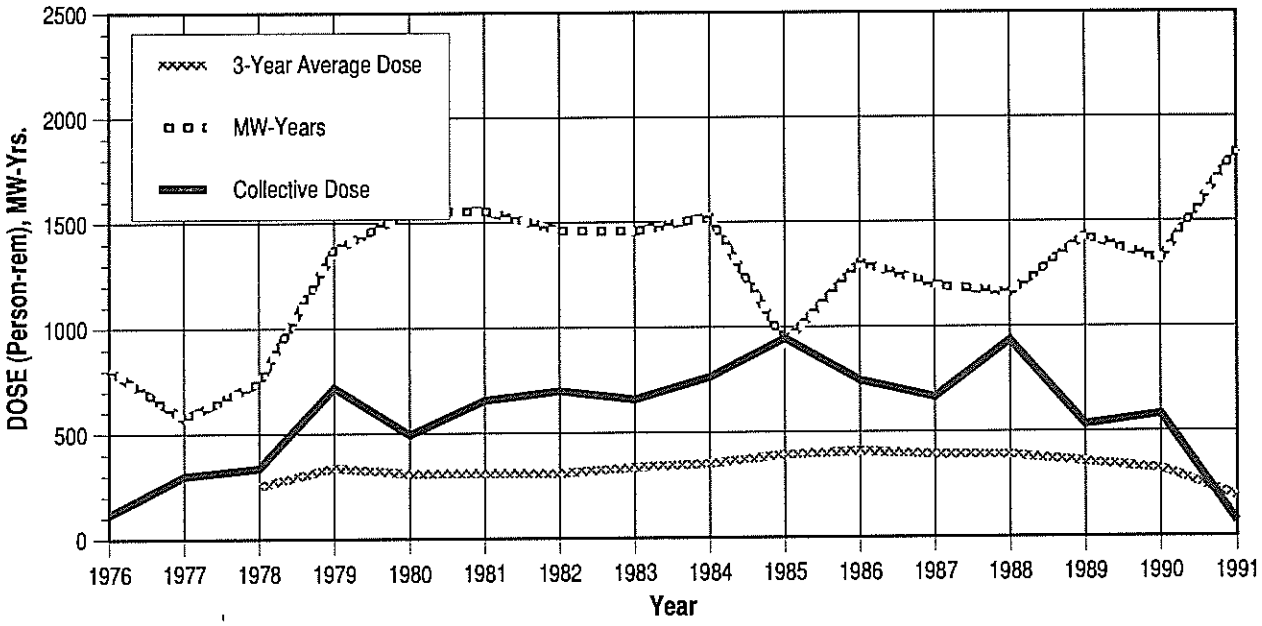
Breakdown by Job Function



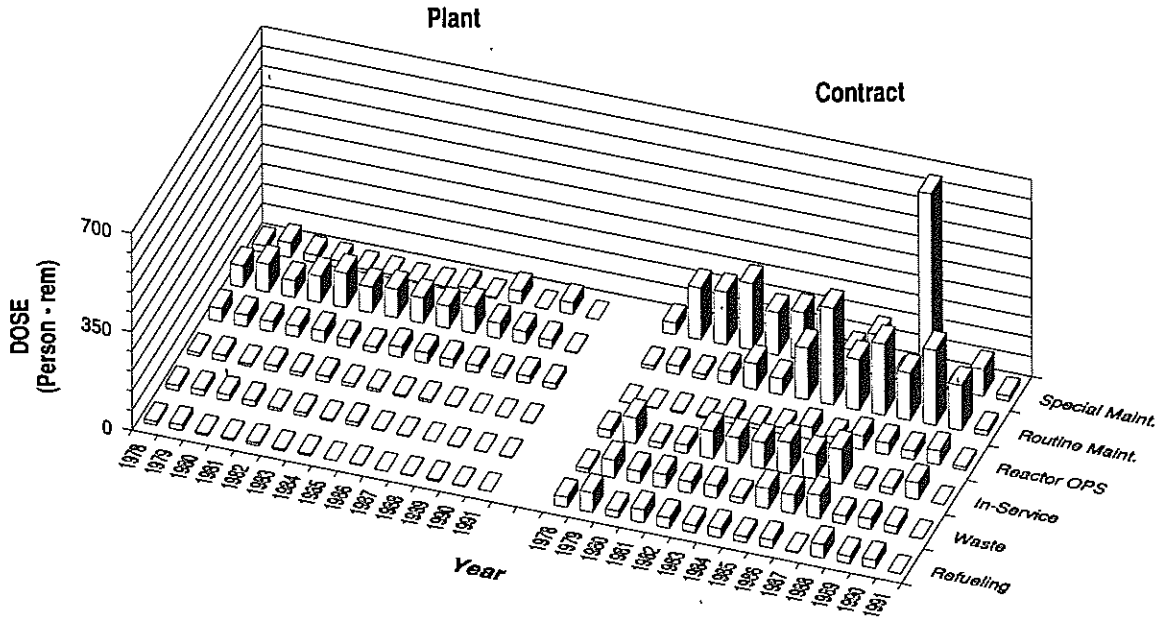
APPENDIX E (continued)

COOK 1, 2

Dose-Performance Indicators **PWR**



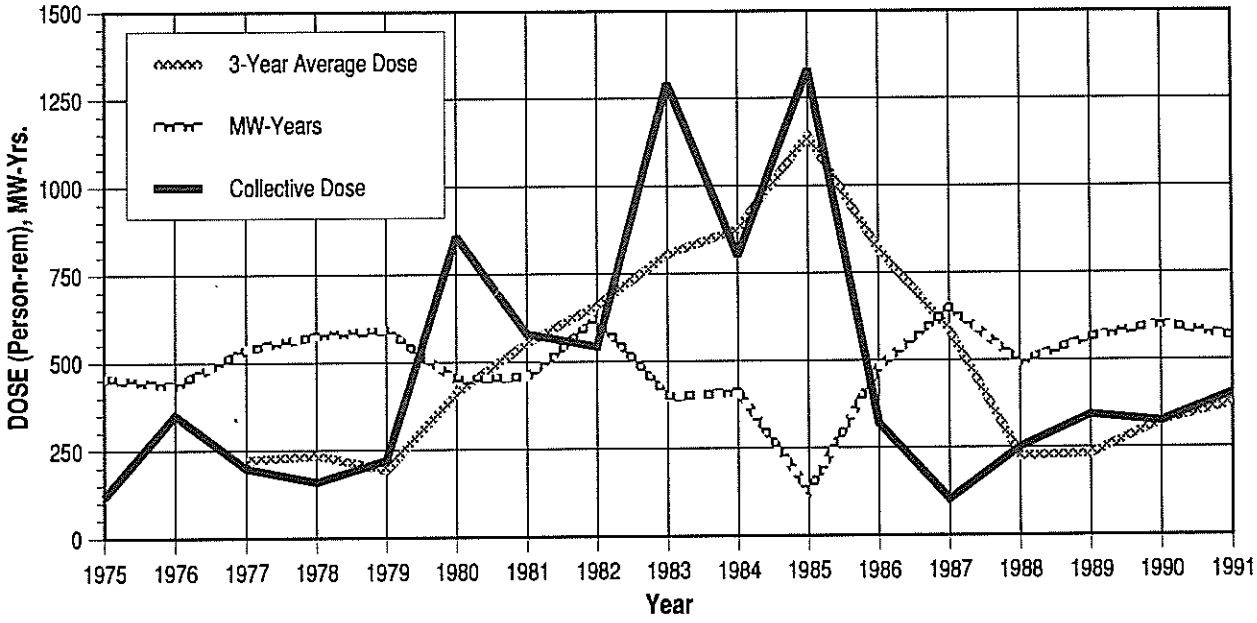
Breakdown by Job Function



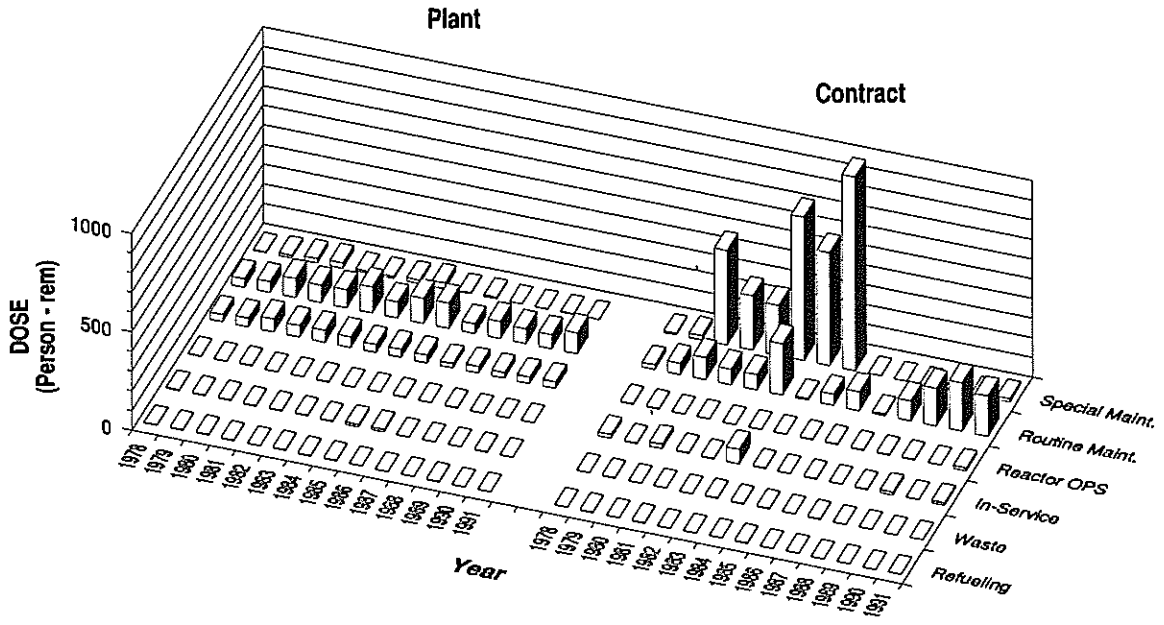
APPENDIX E (continued)

COOPER STATION

Dose-Performance Indicators **BWR**



Breakdown by Job Function

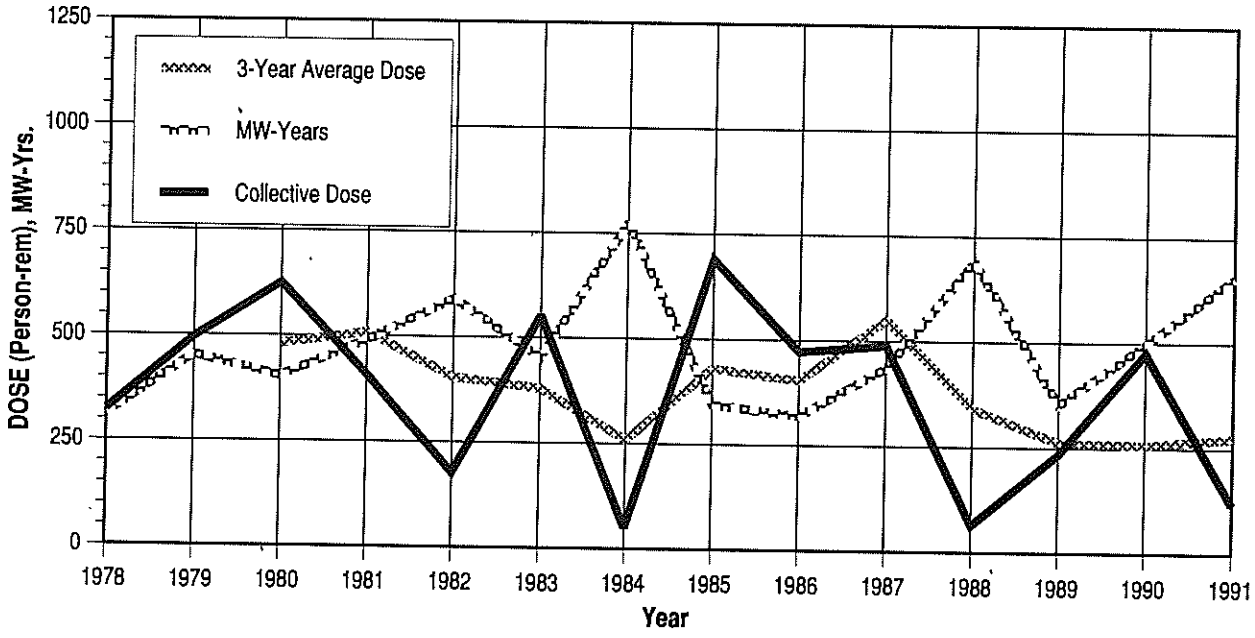


APPENDIX E (continued)

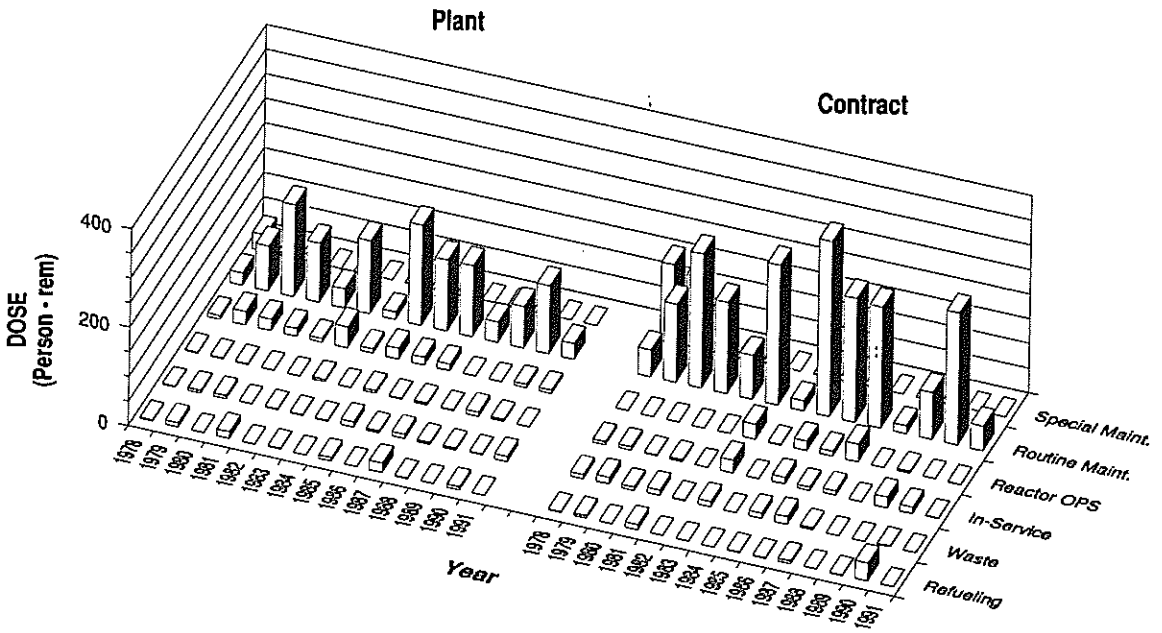
CRYSTAL RIVER 3

Dose-Performance Indicators

PWR



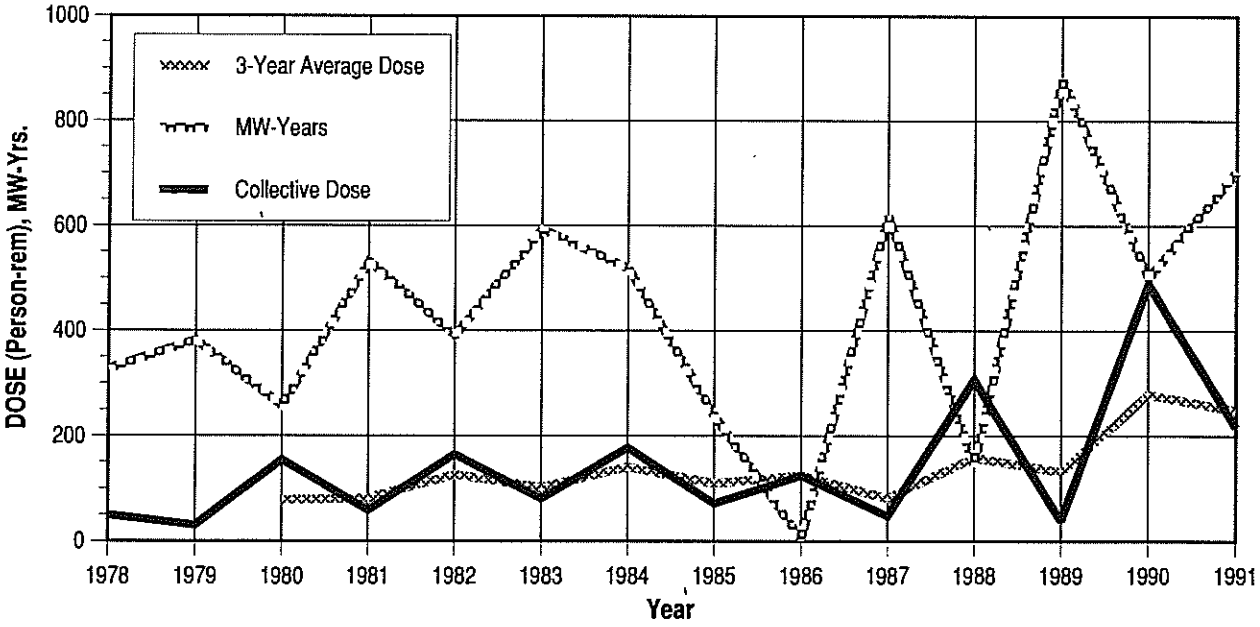
Breakdown by Jdb Function



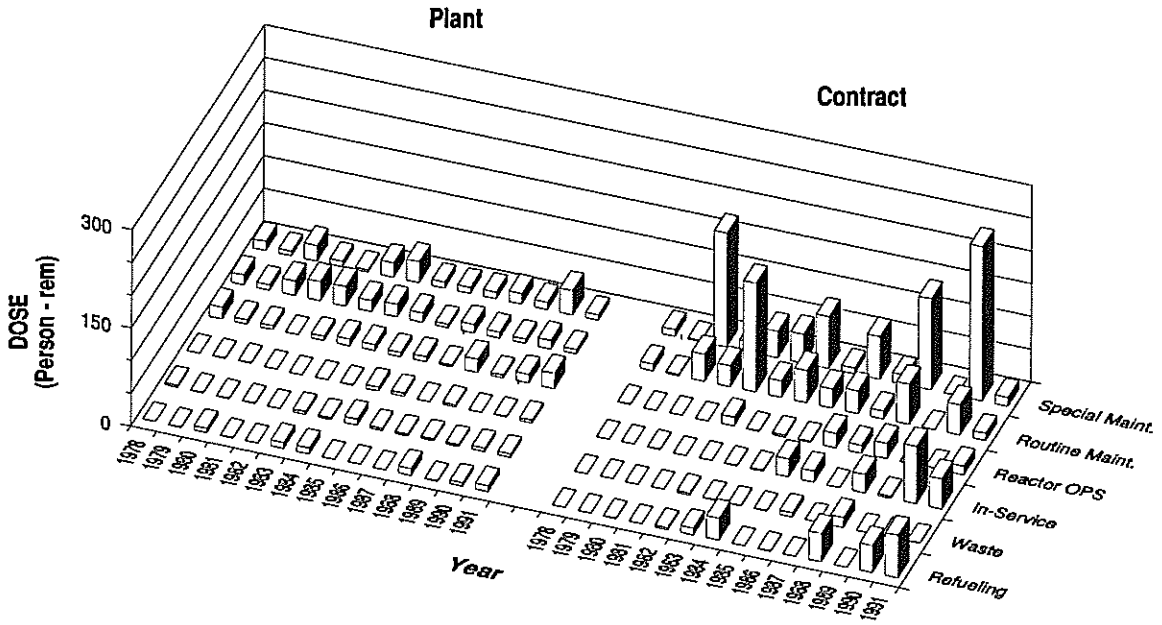
APPENDIX E (continued)

DAVIS-BESSE

Dose-Performance Indicators **PWR**



Breakdown by Job Function

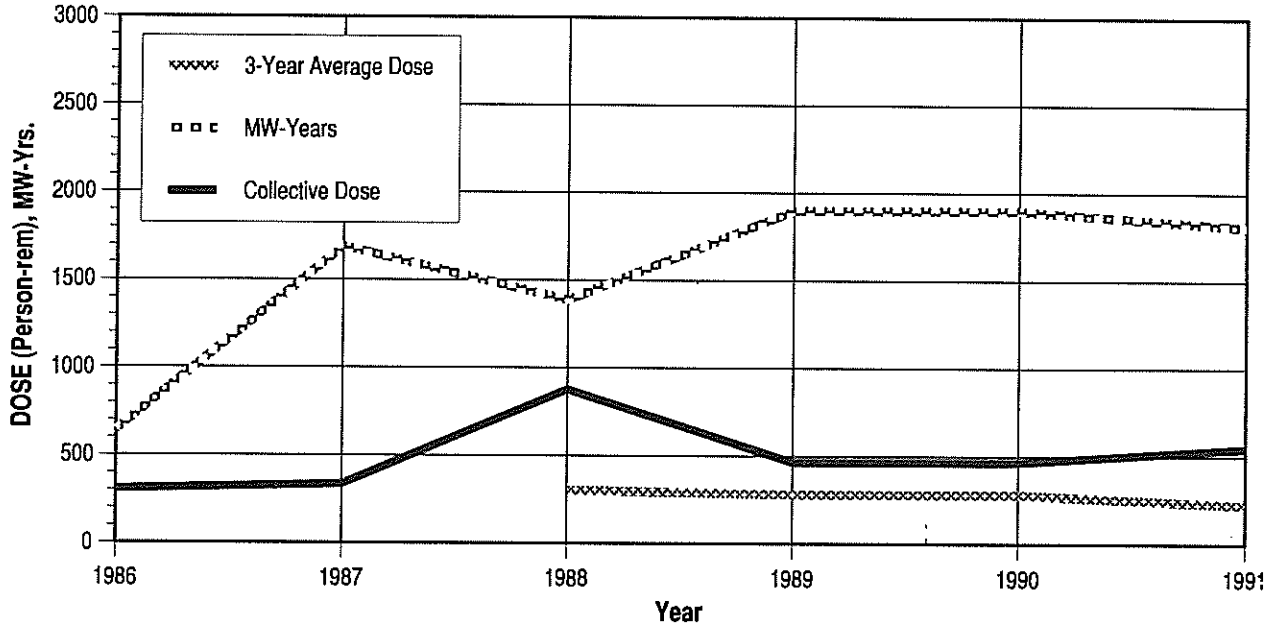


APPENDIX E (continued)

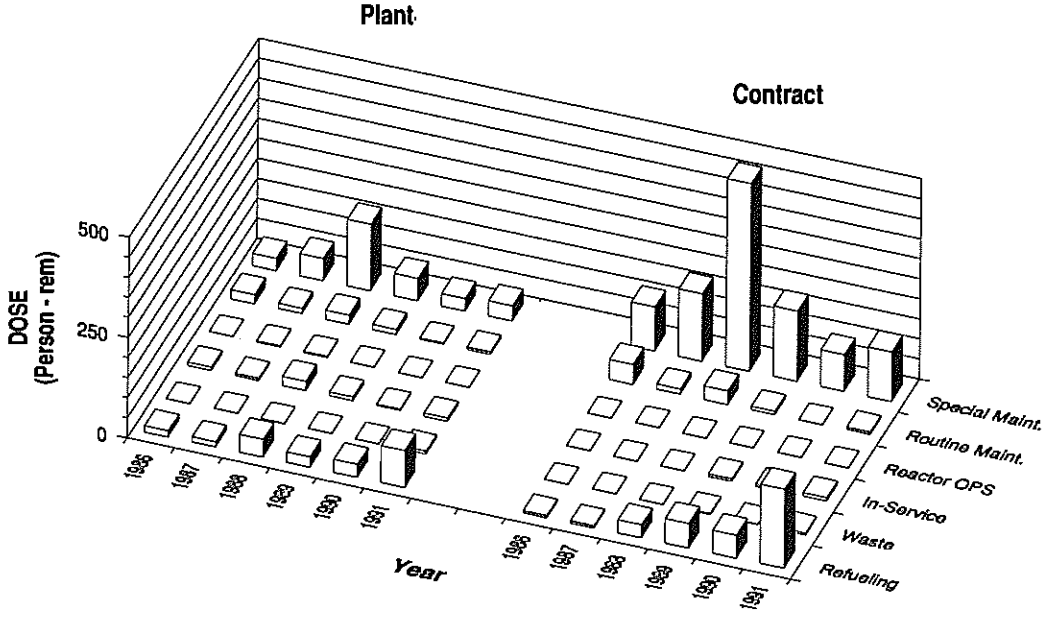
DIABLO CANYON 1, 2

Dose-Performance Indicators

PWR



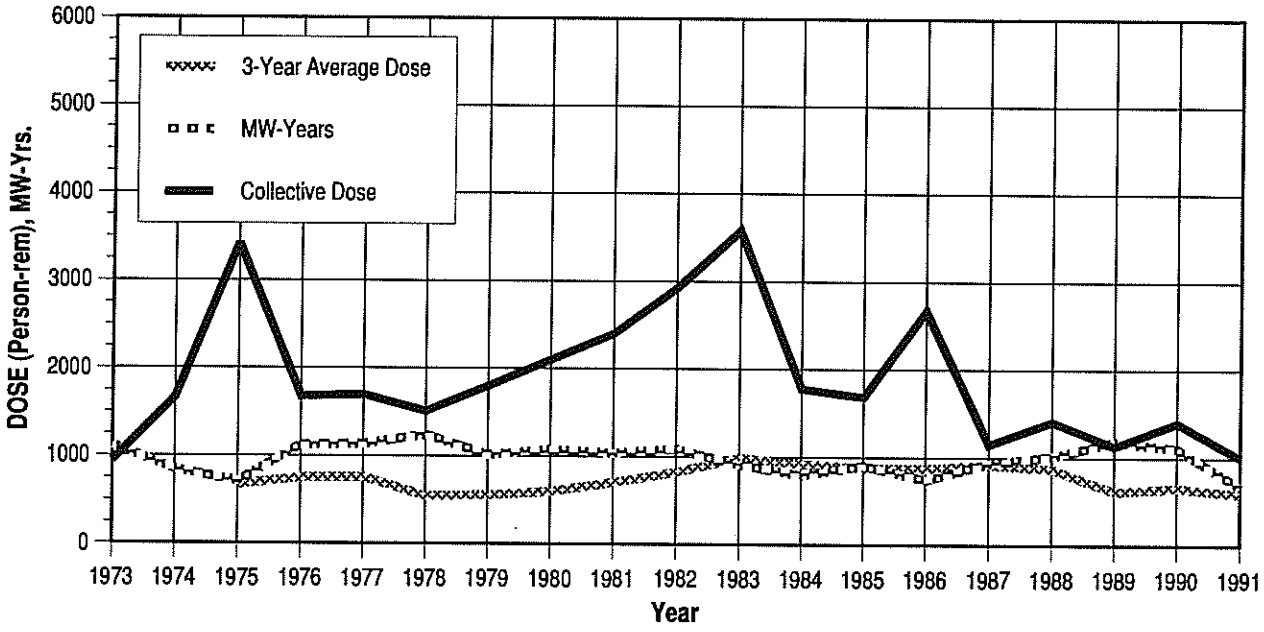
Breakdown by Job Function



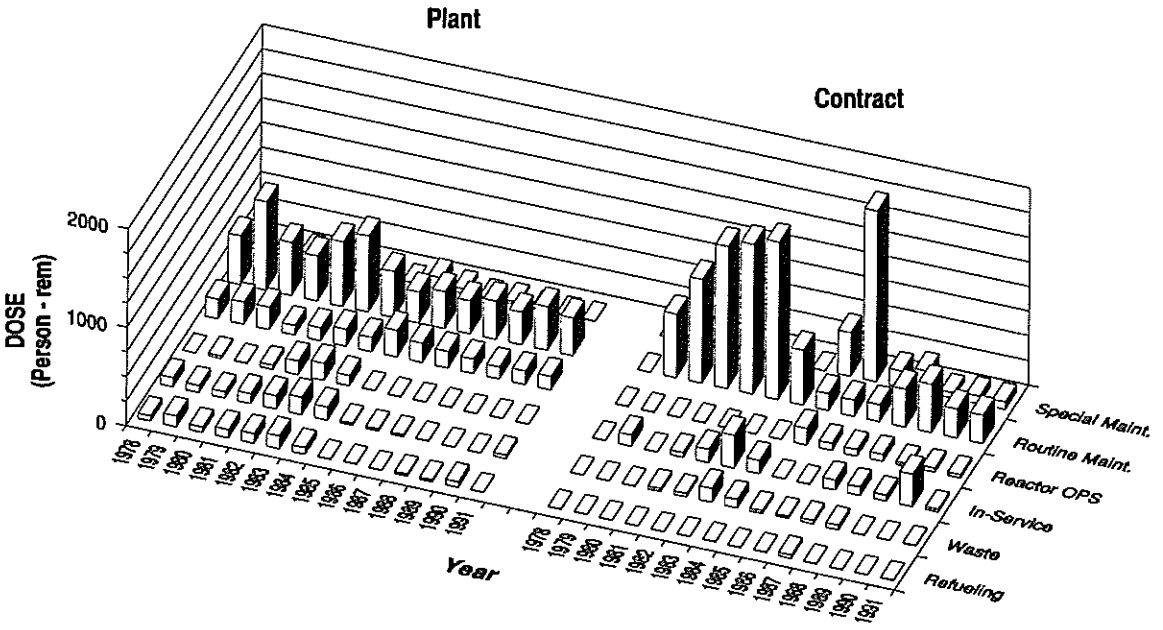
APPENDIX E (continued)

DRESDEN 2, 3

Dose-Performance Indicators **BWR**



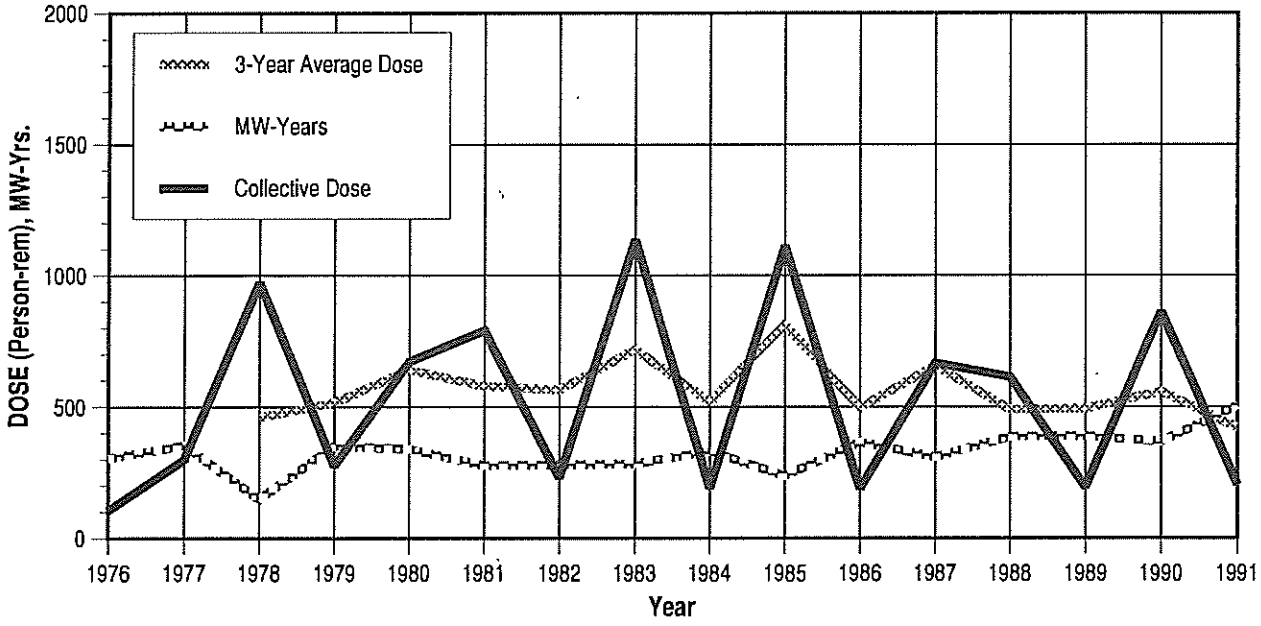
Breakdown by Job Function



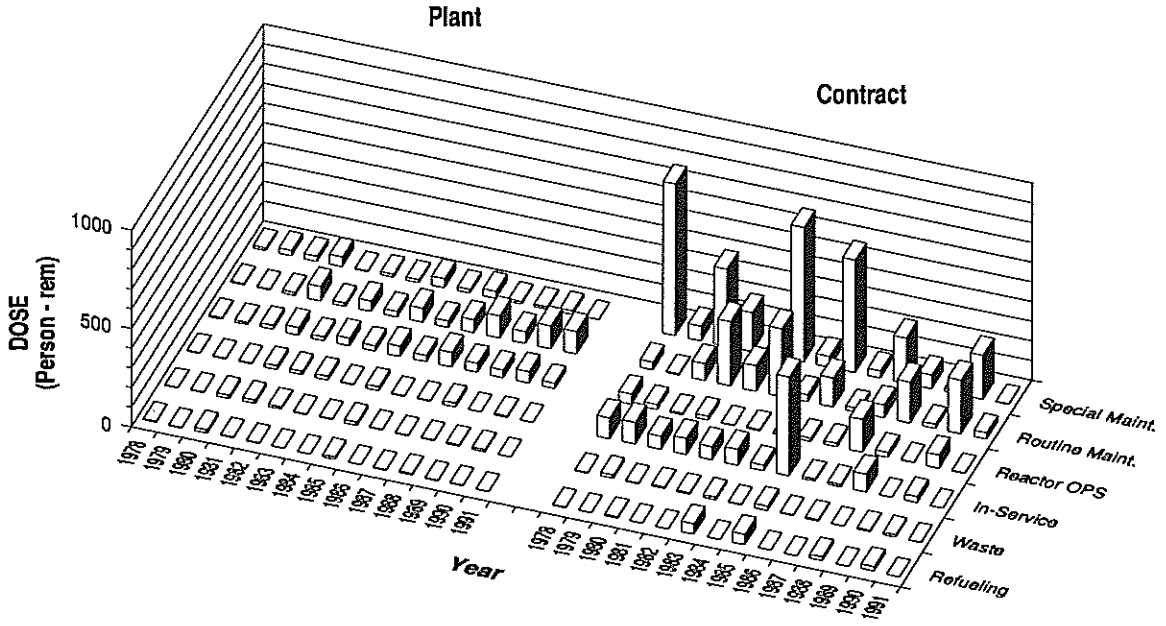
APPENDIX E (continued)

DUANE ARNOLD

Dose-Performance Indicators **BWR**



Breakdown by Job Function

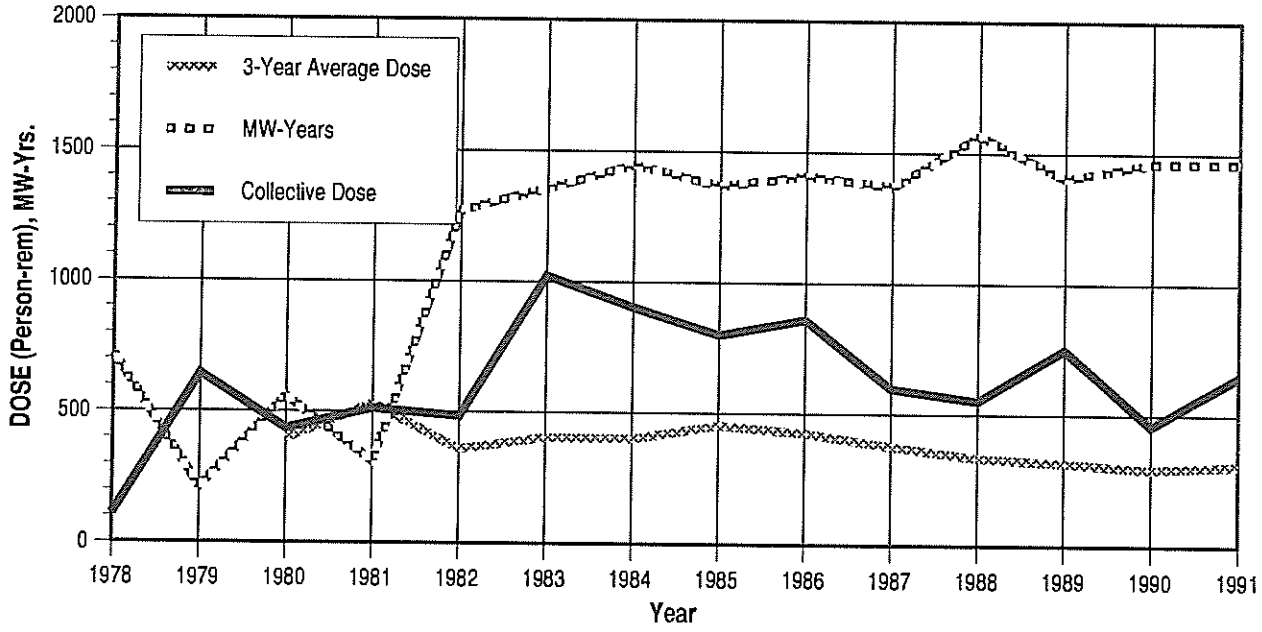


APPENDIX E (continued)

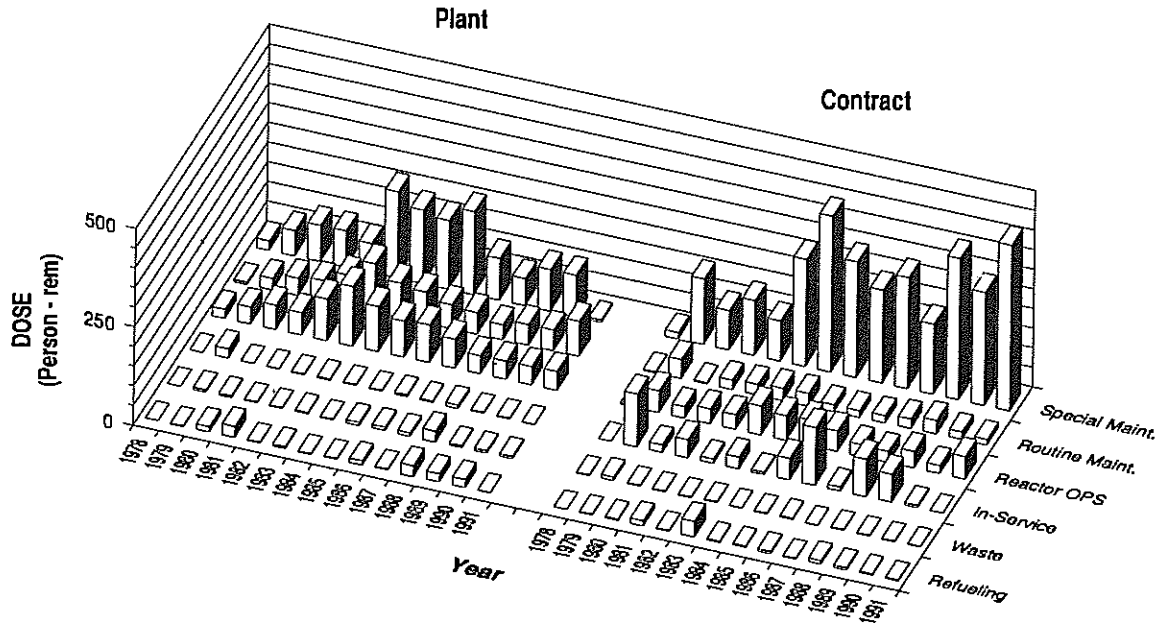
FARLEY 1, 2

Dose-Performance Indicators

PWR



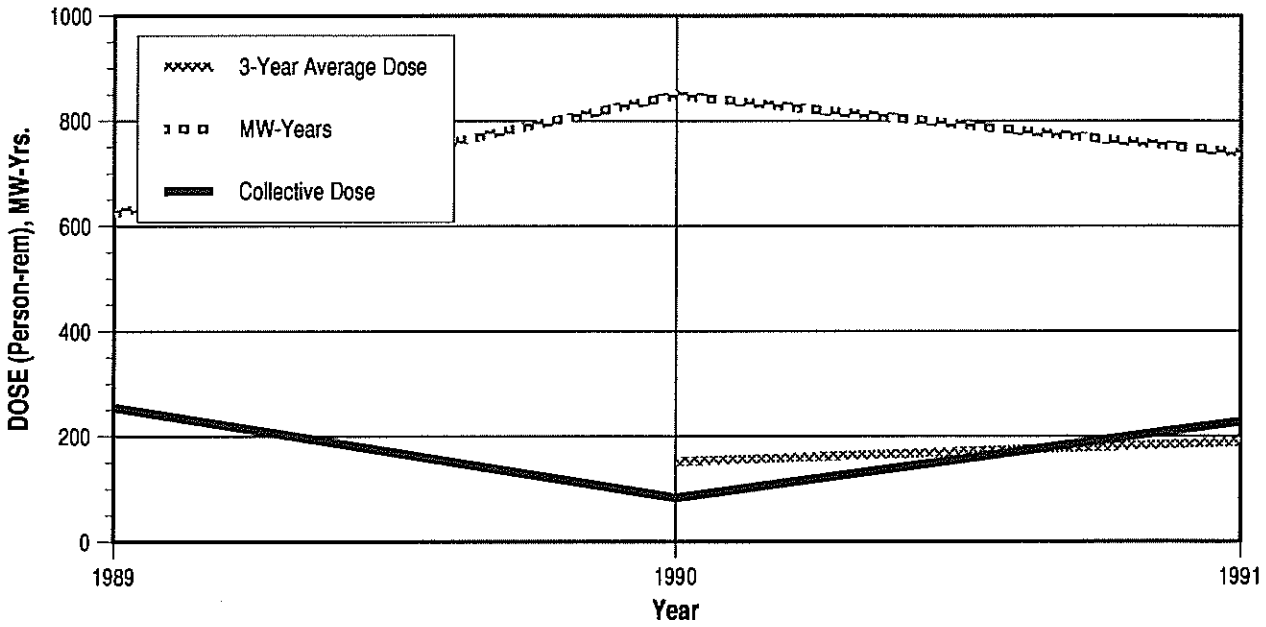
Breakdown by Job Function



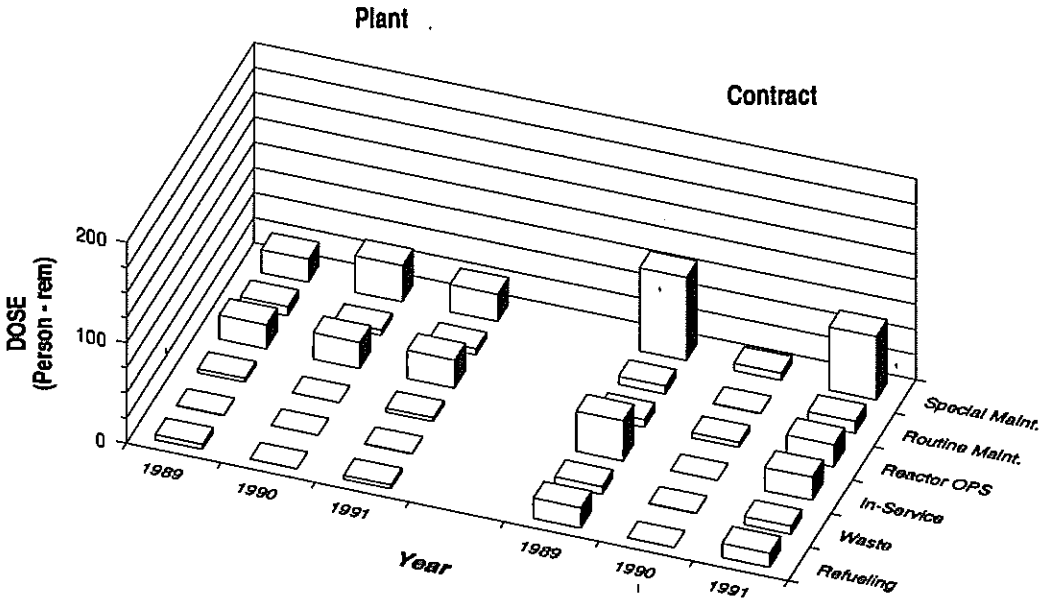
APPENDIX E (continued)

FERMI 2

Dose-Performance Indicators **BWR**



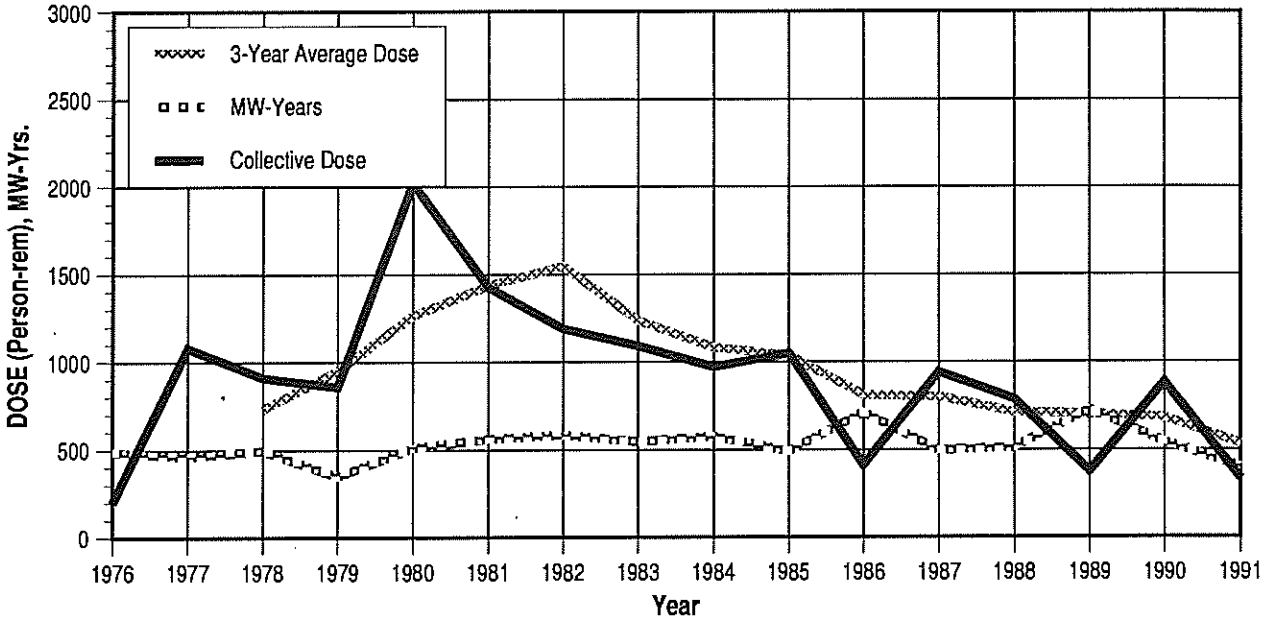
Breakdown by Job Function



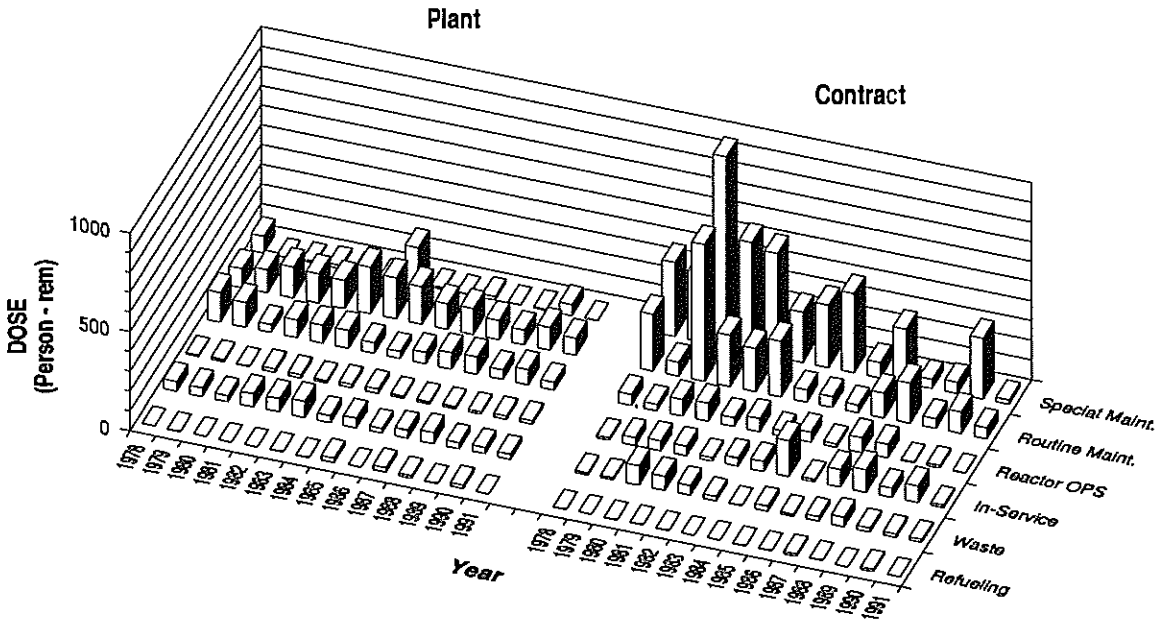
APPENDIX E (continued)

FITZPATRICK

Dose-Performance Indicators **BWR**



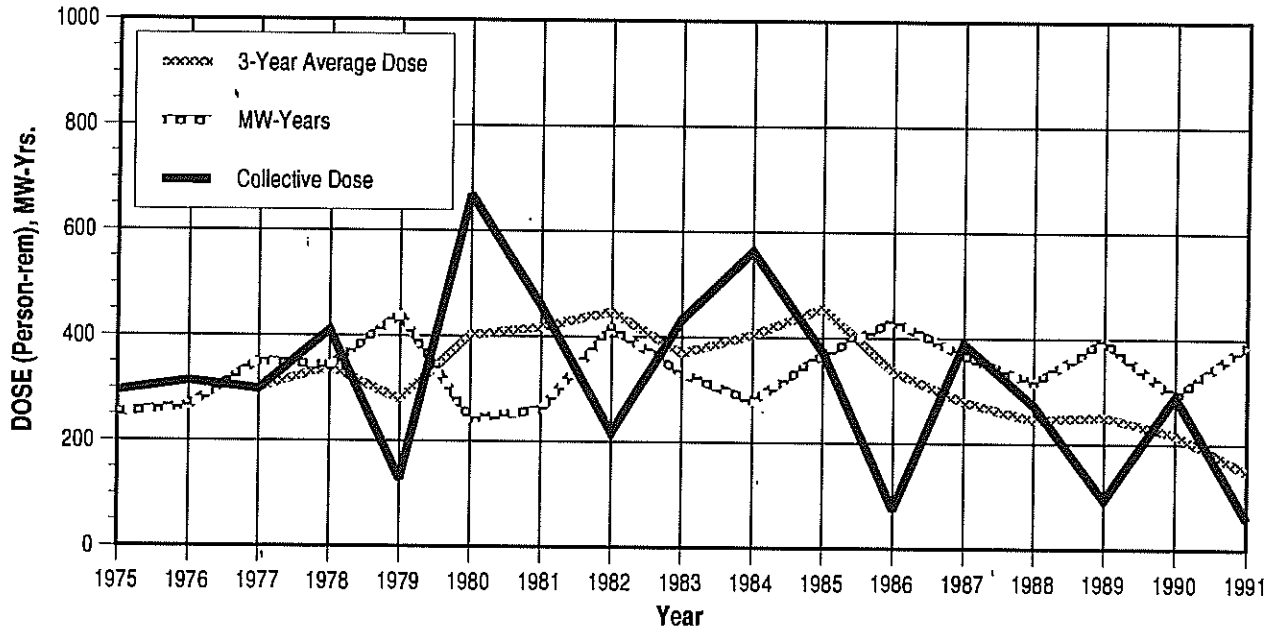
Breakdown by Job Function



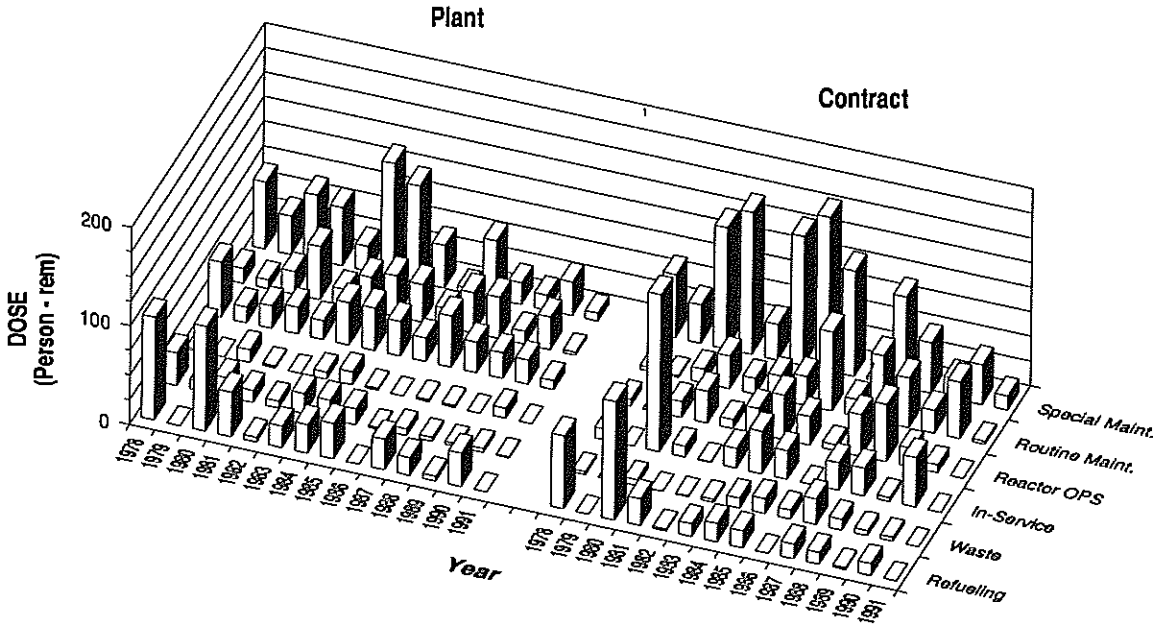
APPENDIX E (continued)

FORT CALHOUN

Dose-Performance Indicators **PWR**



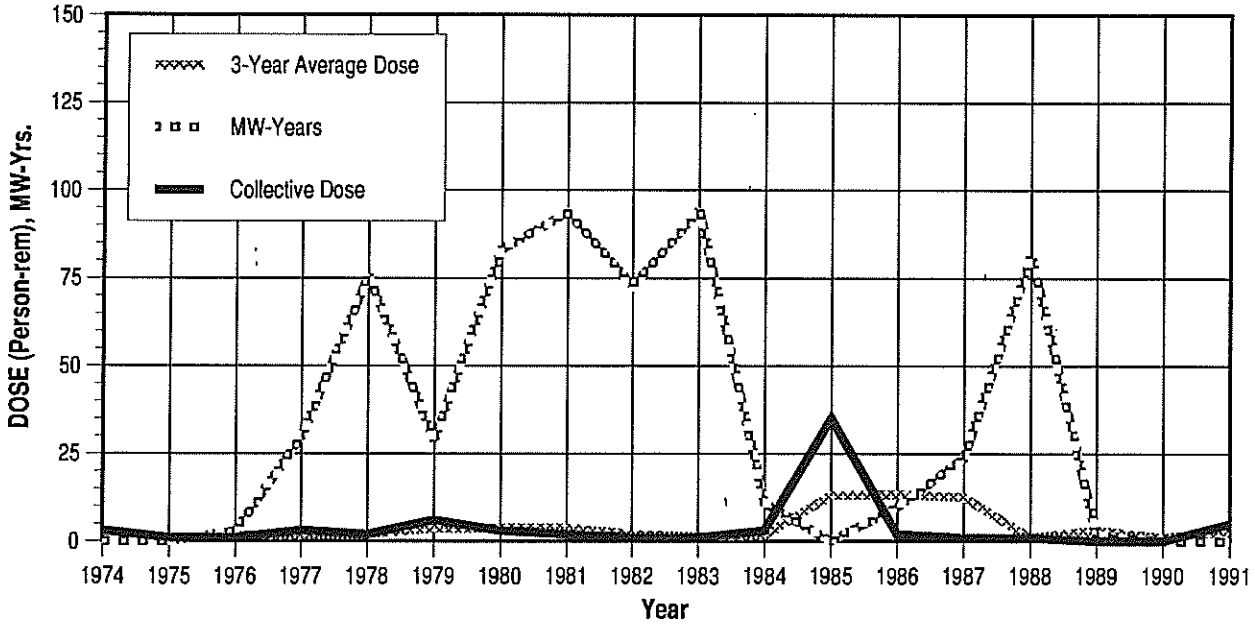
Breakdown by Job Function



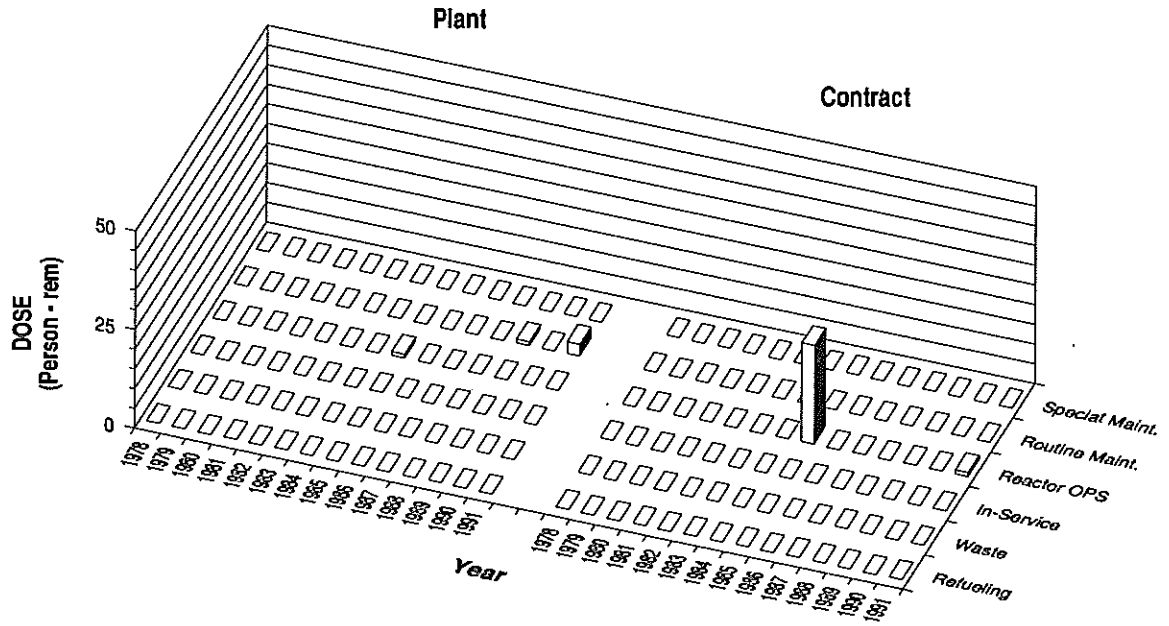
APPENDIX E (continued)

FORT ST. VRAIN

Dose-Performance Indicators **HTGR**



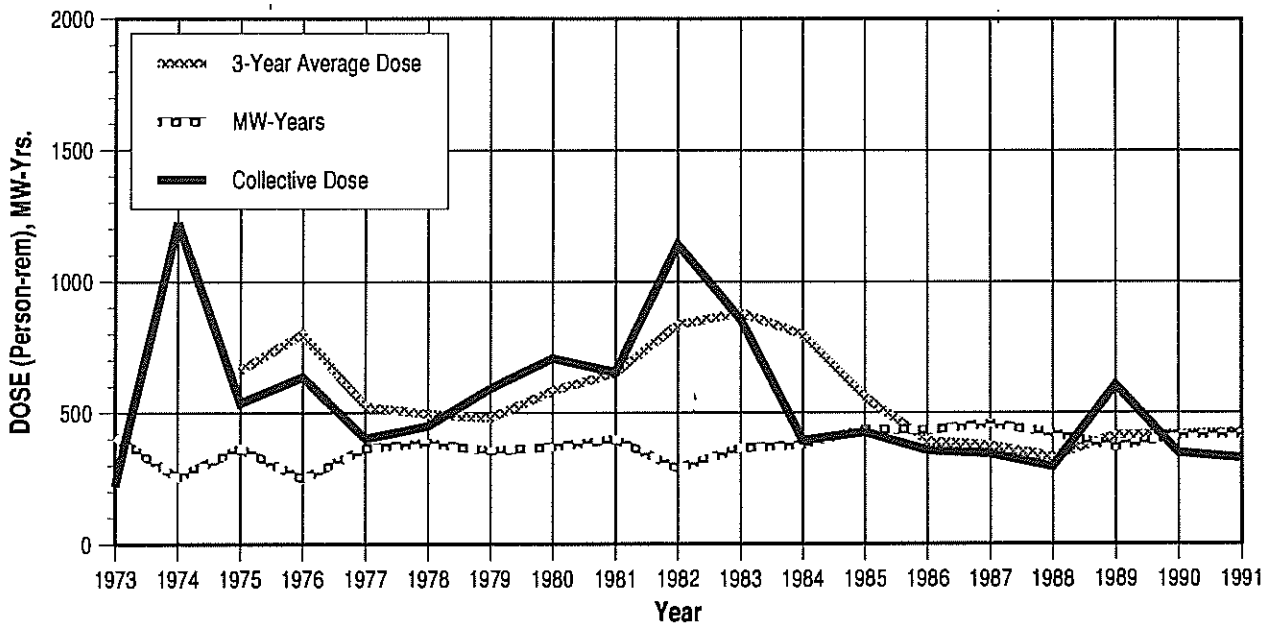
Breakdown by Job Function



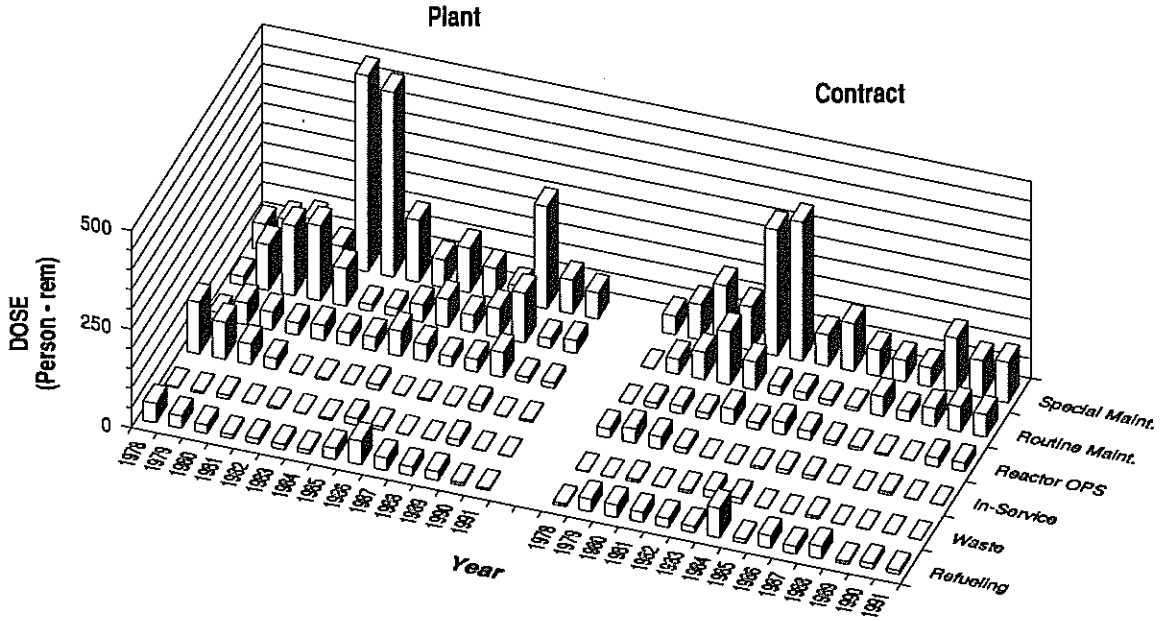
APPENDIX E (continued)

GINNA

Dose-Performance Indicators **PWR**



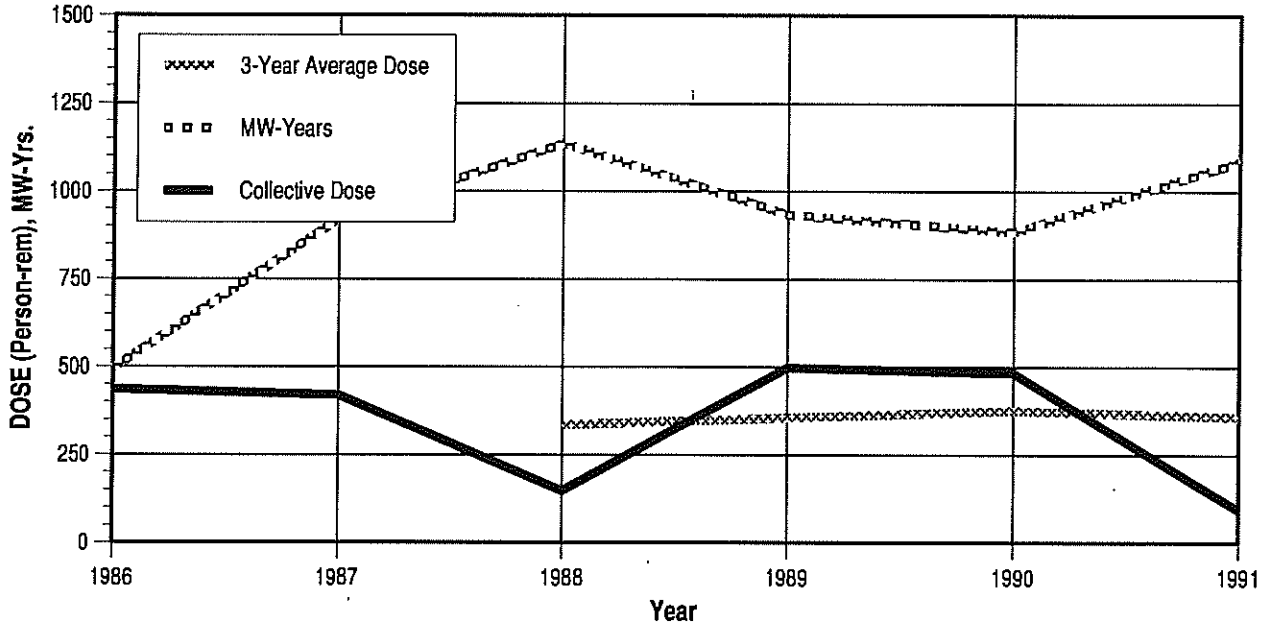
Breakdown by Job Function



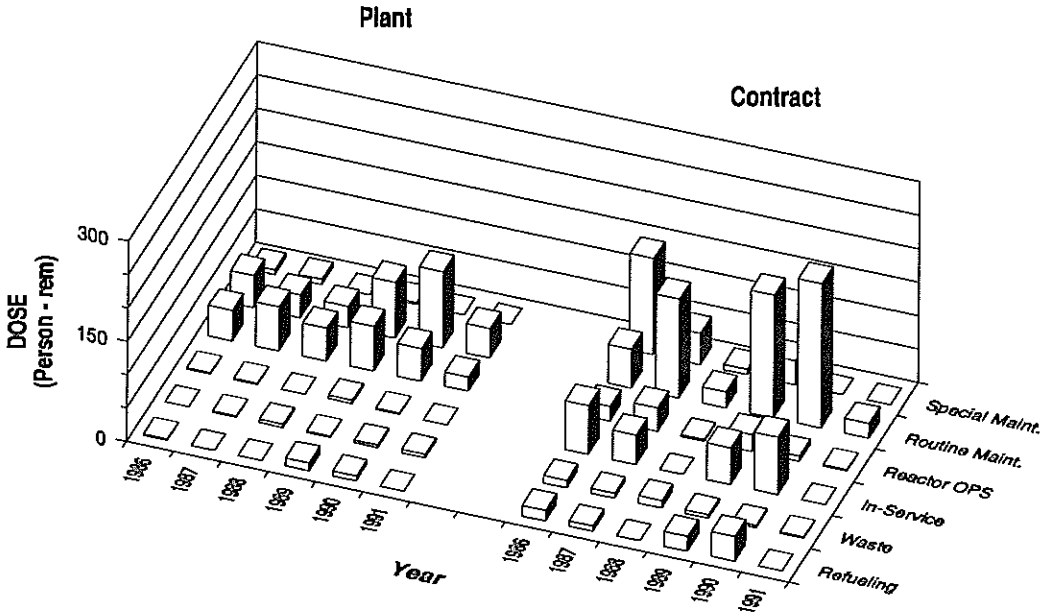
APPENDIX E (continued)

GRAND GULF

Dose-Performance Indicators **BWR**



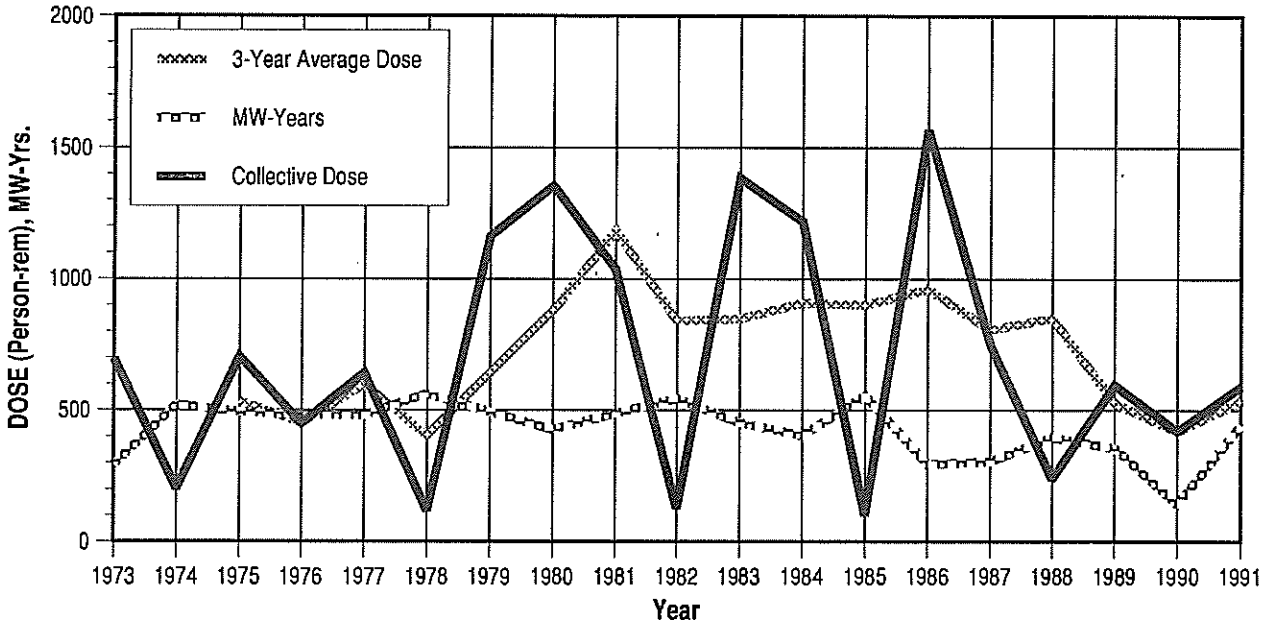
Breakdown by Job Function



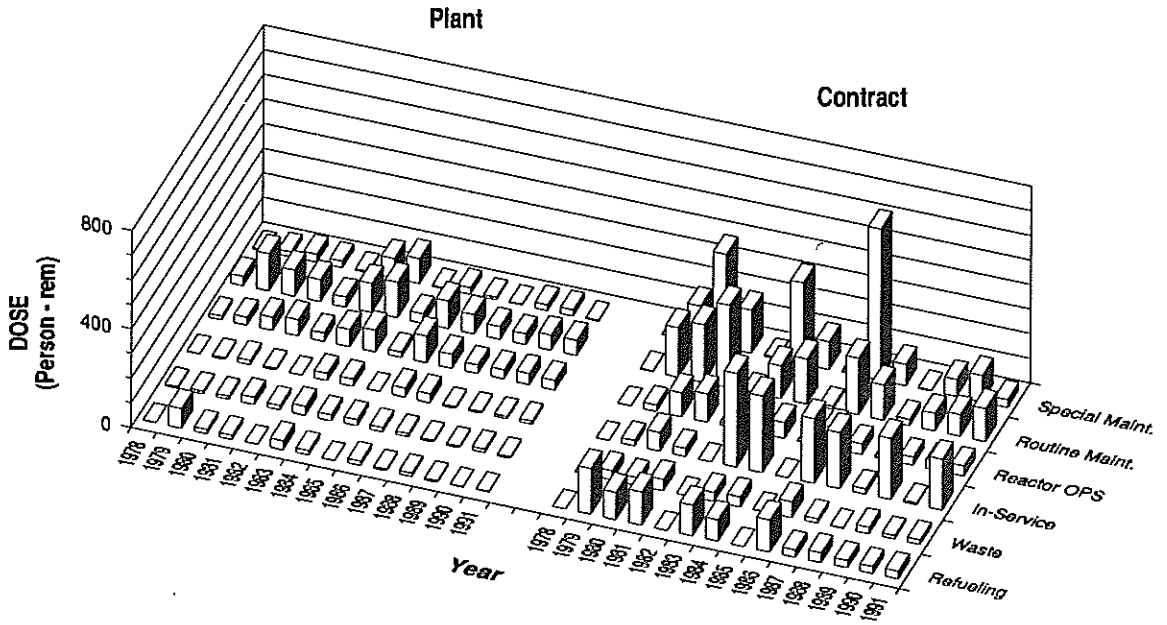
APPENDIX E (continued)

HADDAM NECK

Dose-Performance Indicators **PWR**



Breakdown by Job Function

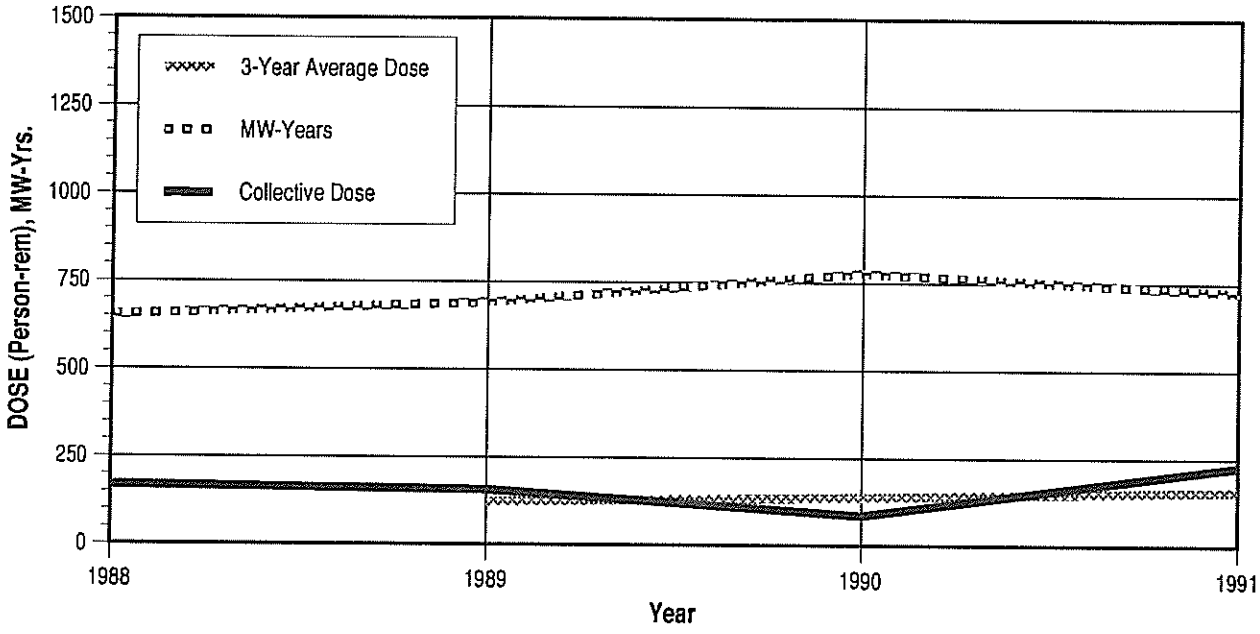


APPENDIX E (continued)

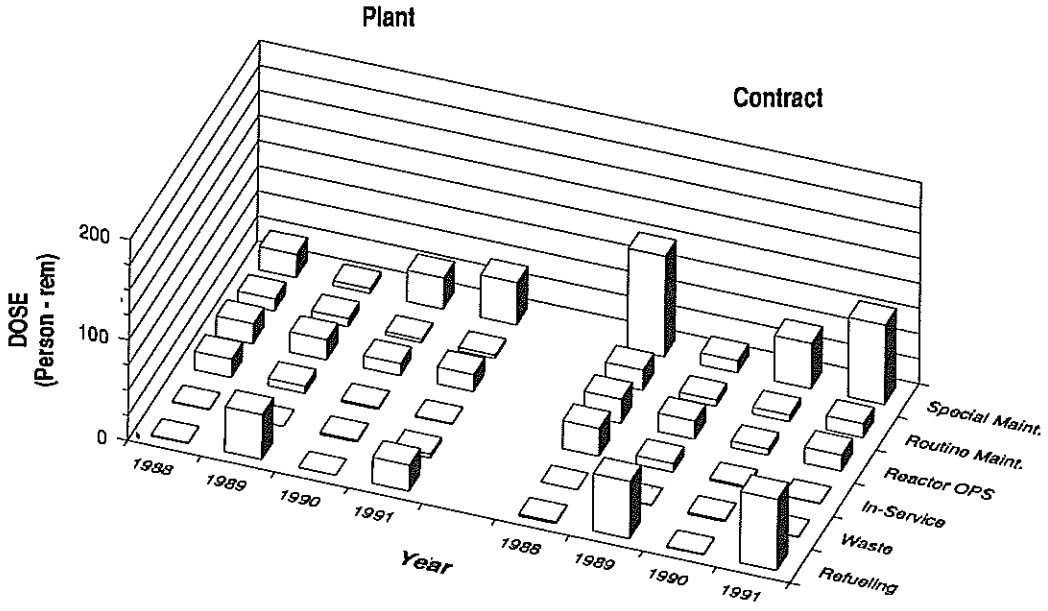
HARRIS

Dose-Performance Indicators

PWR



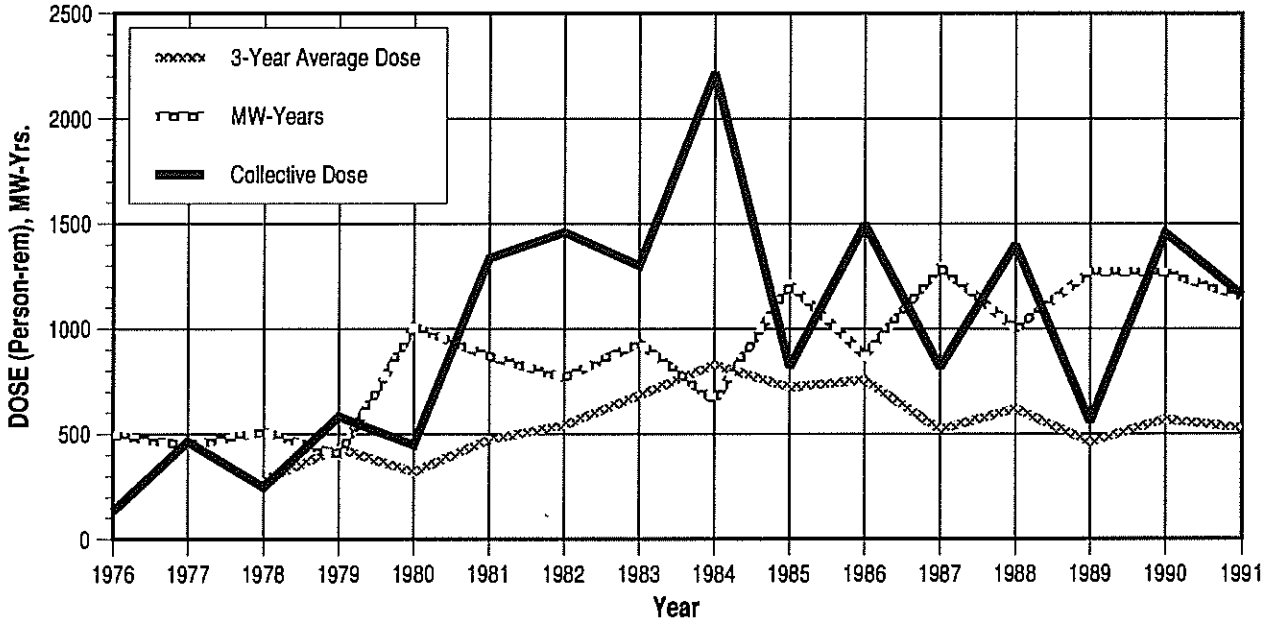
Breakdown by Job Function



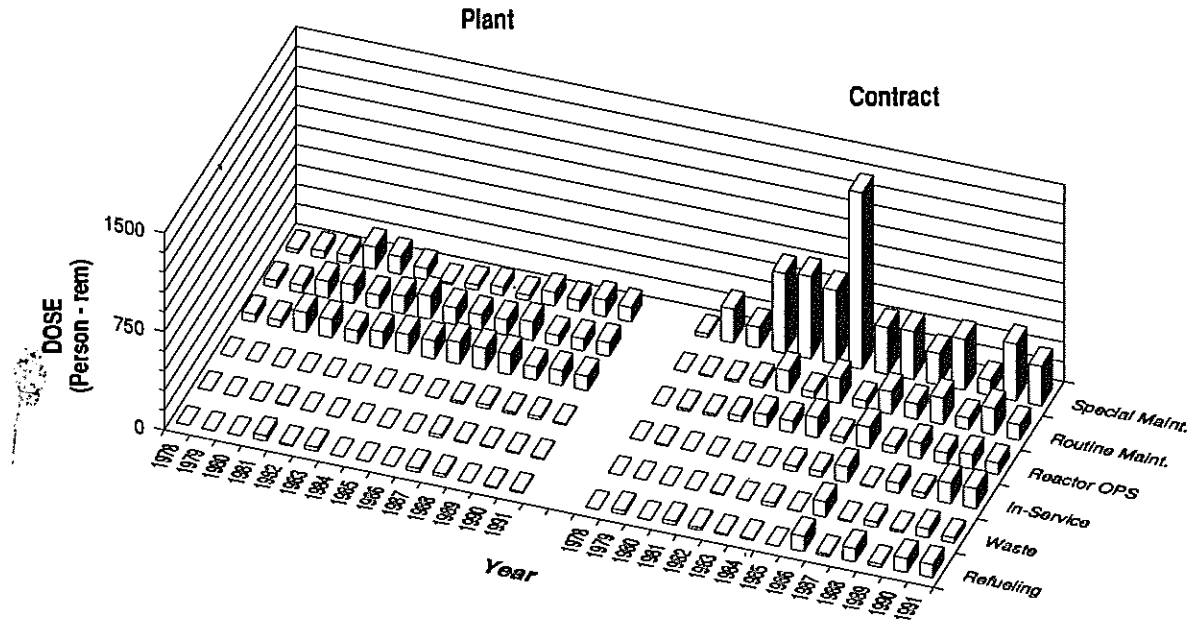
APPENDIX E (continued)

HATCH 1, 2

Dose-Performance Indicators **BWR**



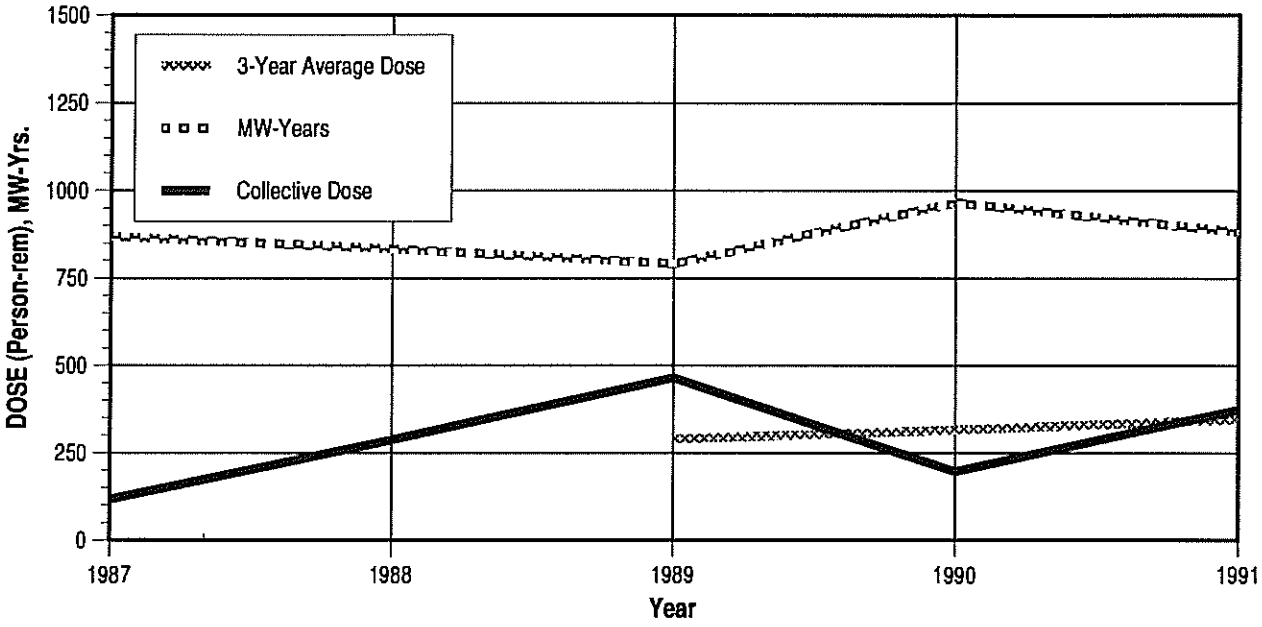
Breakdown by Job Function



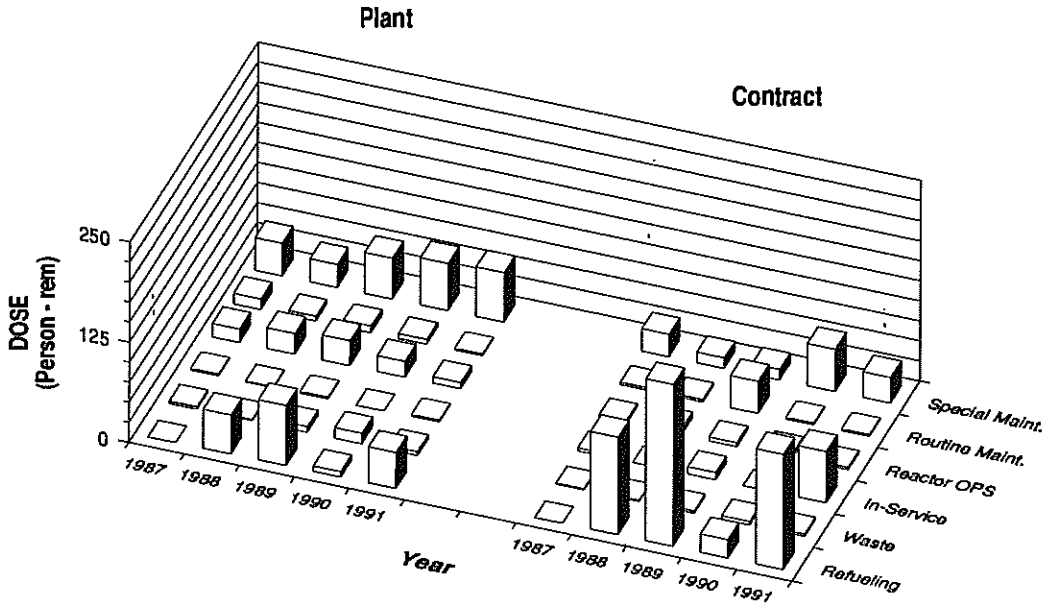
APPENDIX E (continued)

HOPE CREEK 1

Dose-Performance Indicators **BWR**



Breakdown by Job Function

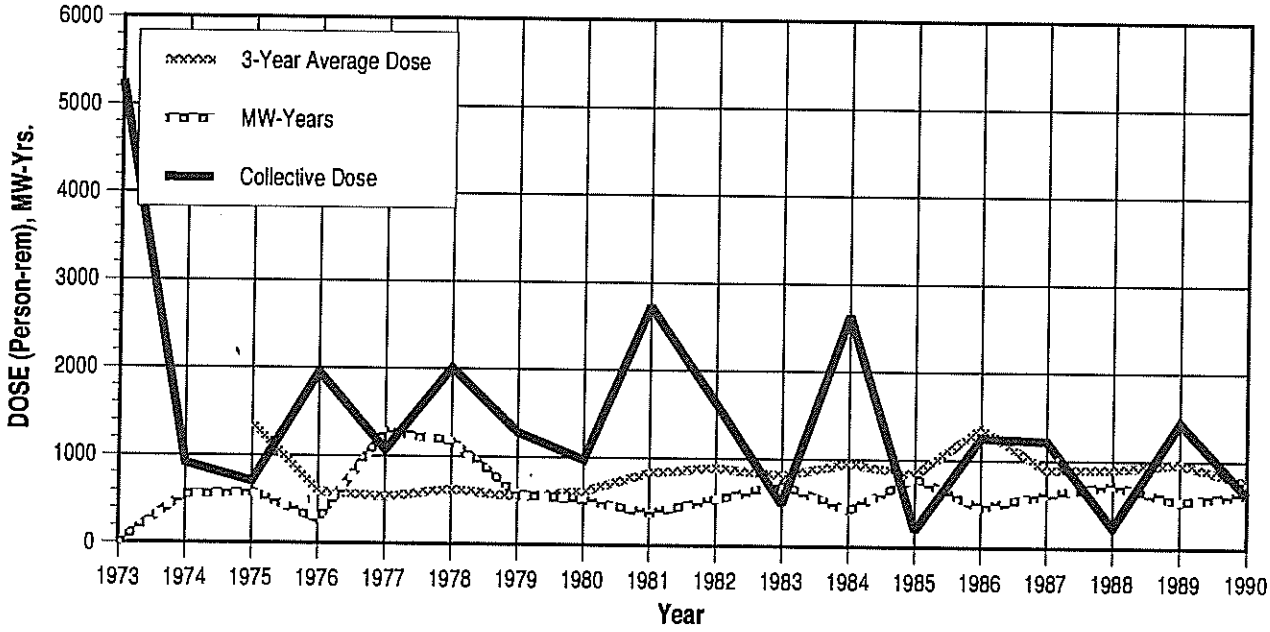


APPENDIX E (continued)

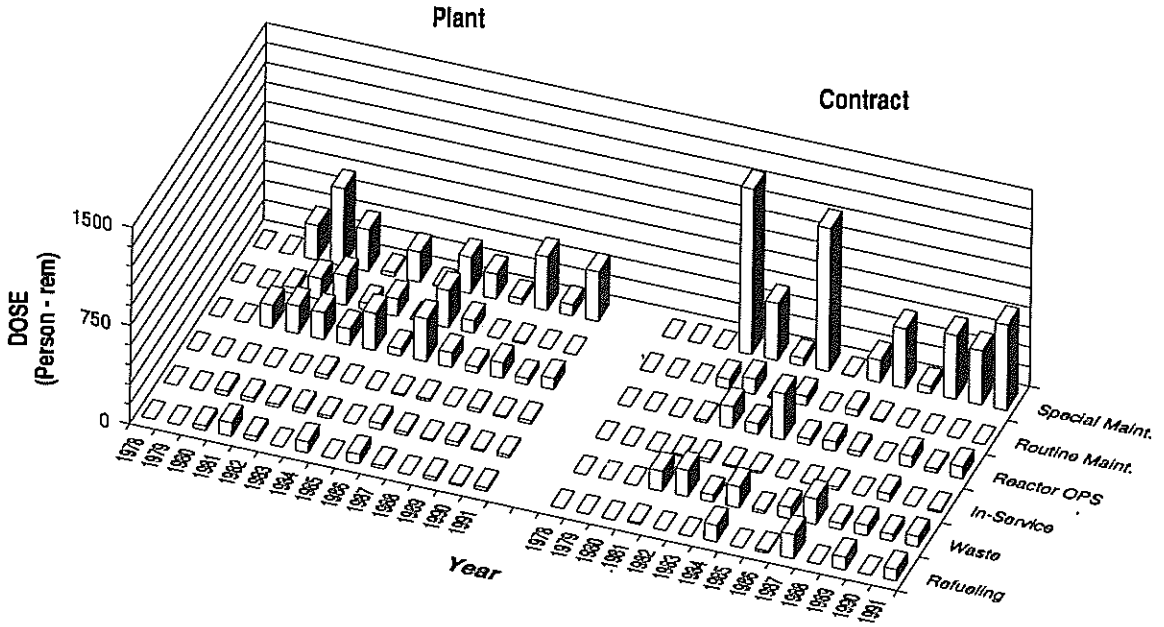
INDIAN POINT 2

Dose-Performance Indicators

PWR



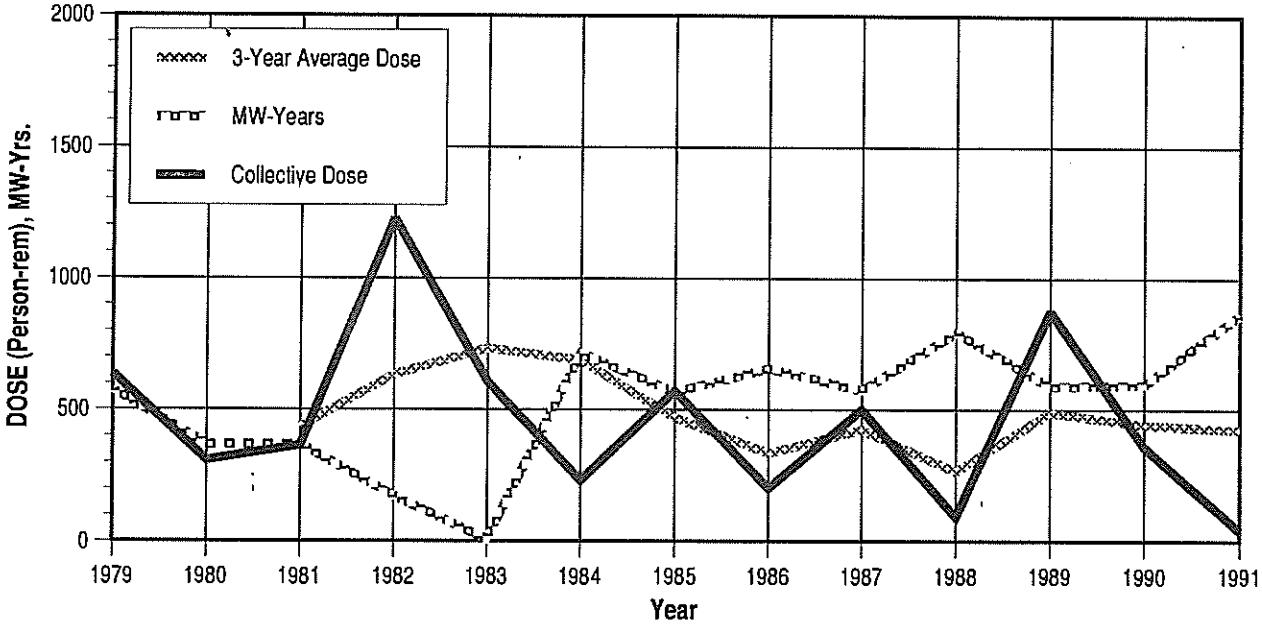
Breakdown by Job Function



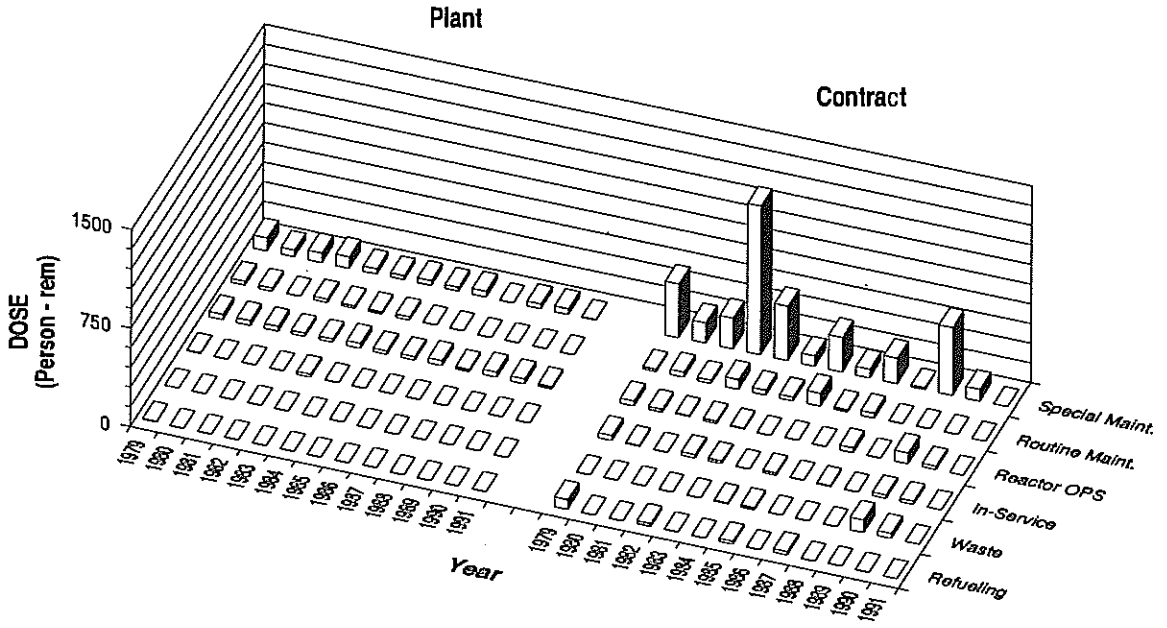
APPENDIX E (continued)

INDIAN POINT 3

Dose-Performance Indicators **PWR**



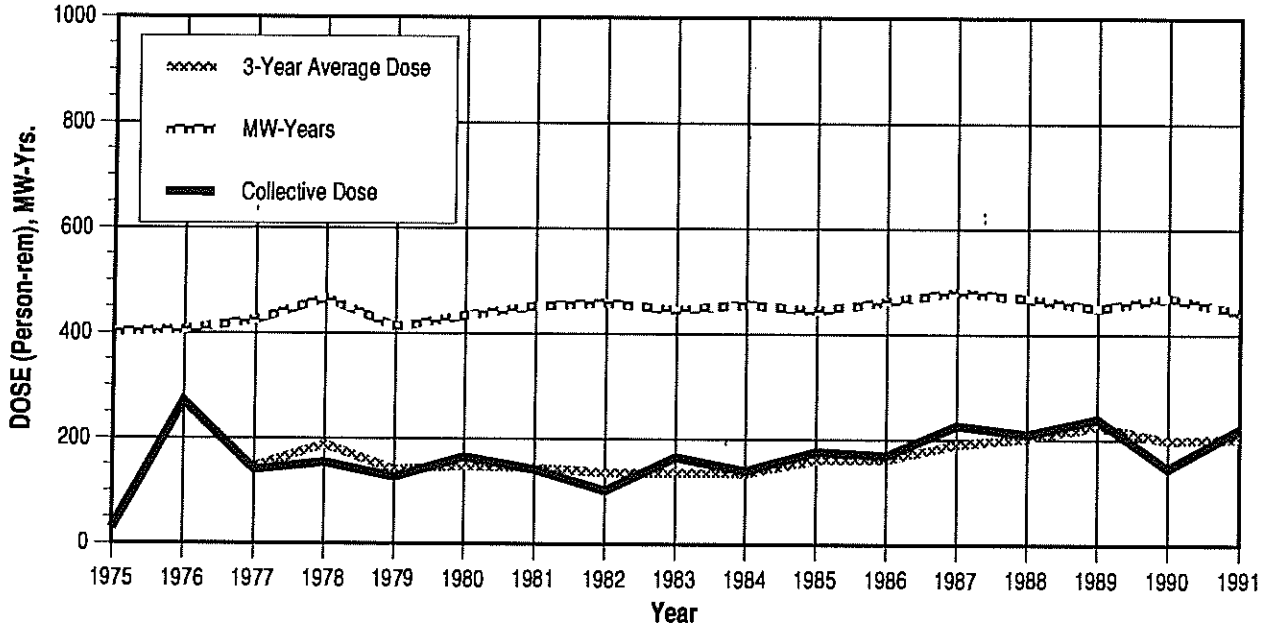
Breakdown by Job Function



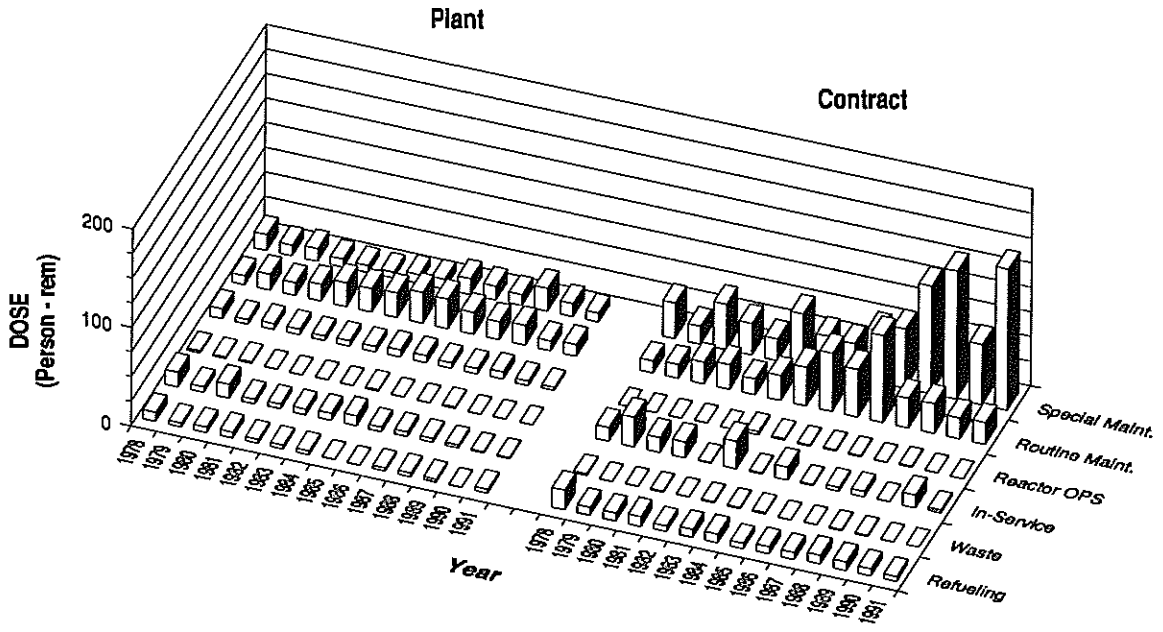
APPENDIX E (continued)

KEWAUNEE

Dose-Performance Indicators **PWR**



Breakdown by Job Function

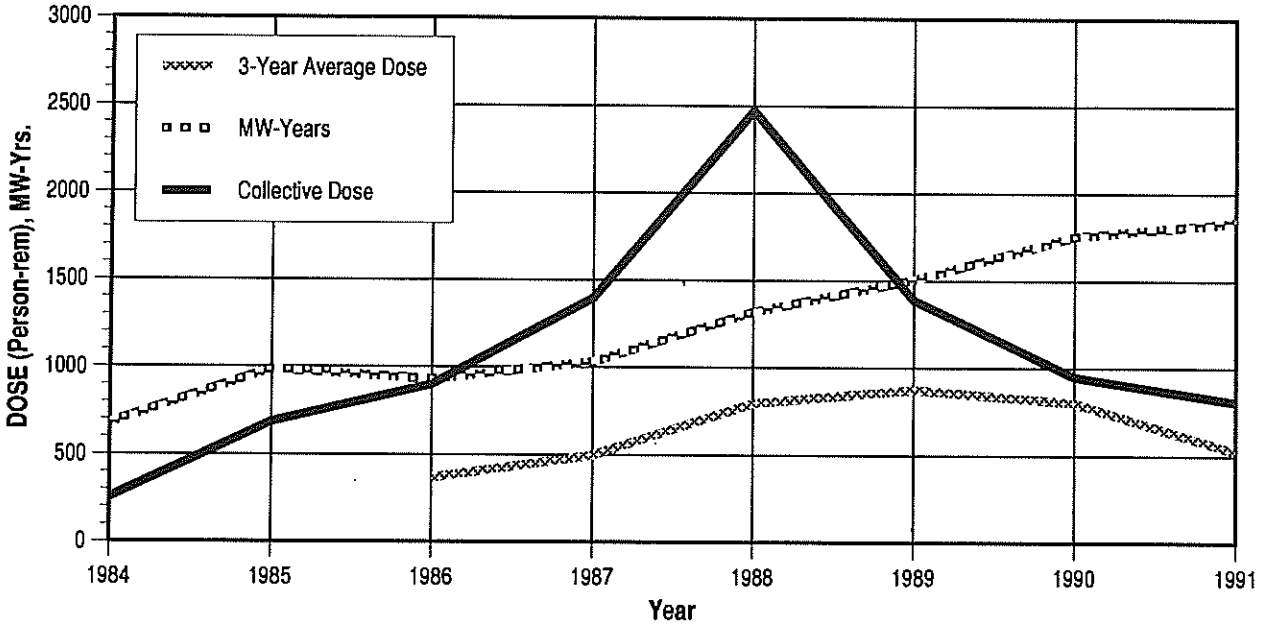


APPENDIX E (continued)

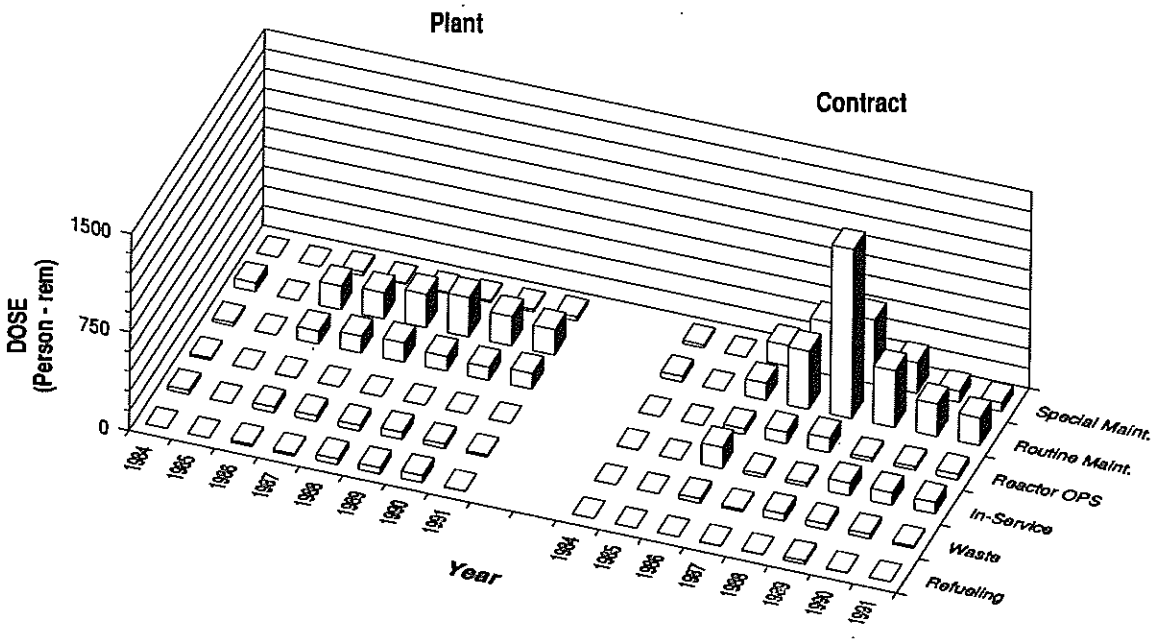
LASALLE 1, 2

Dose-Performance Indicators

BWR



Breakdown by Job Function

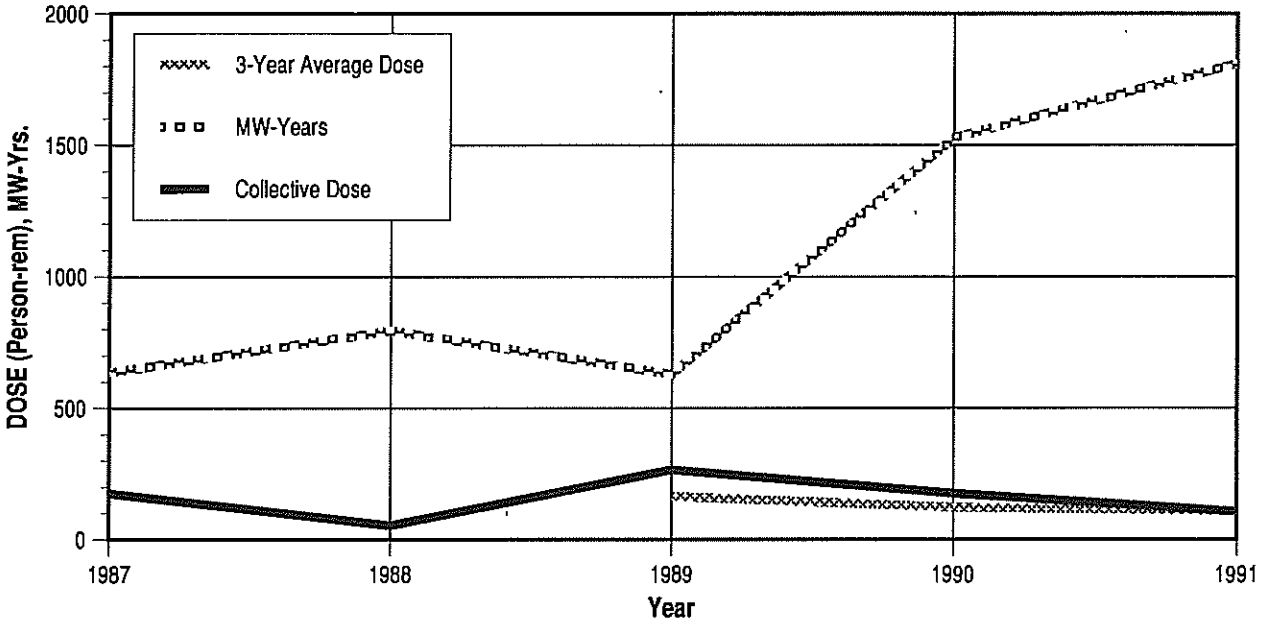


APPENDIX E (continued)

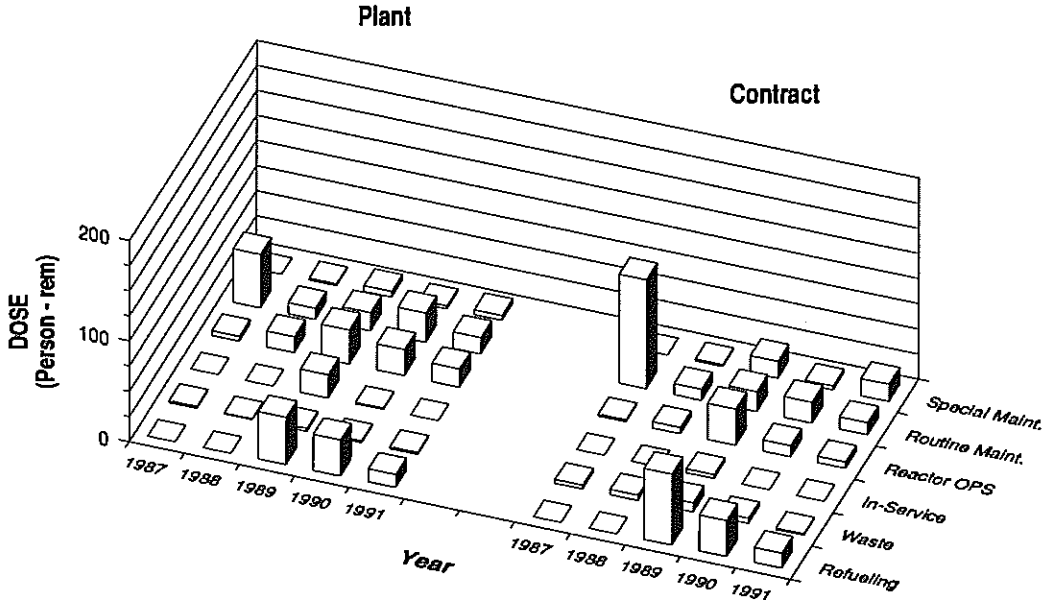
LIMERICK 1, 2

Dose-Performance Indicators

BWR



Breakdown by Job Function

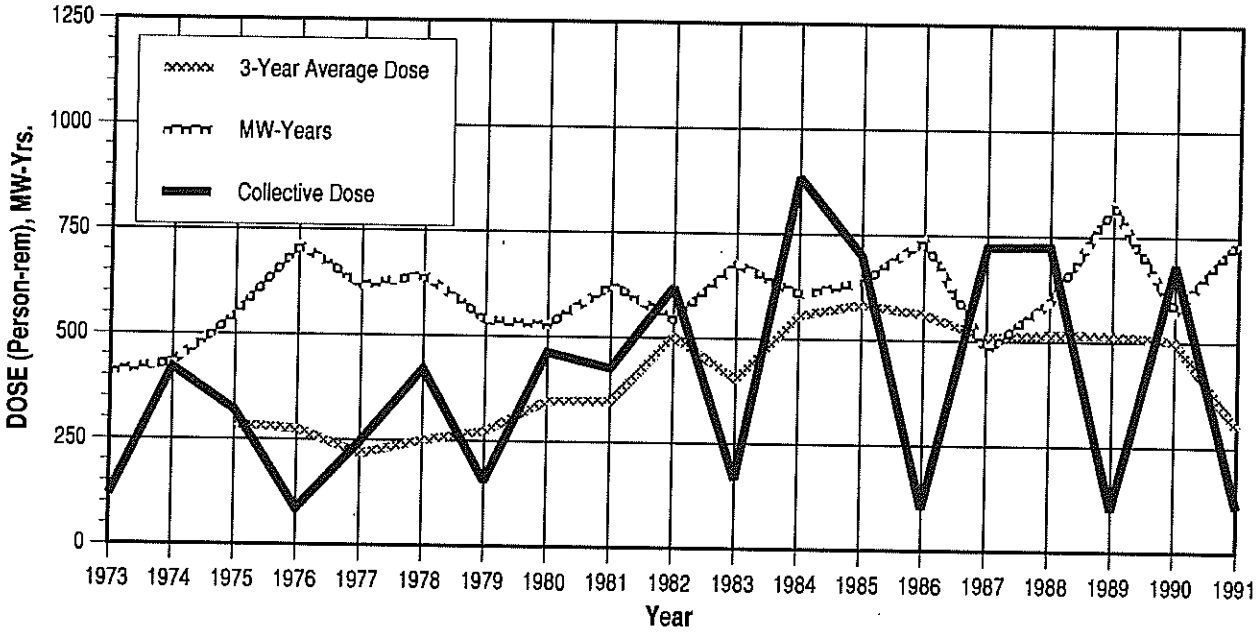


APPENDIX E (continued)

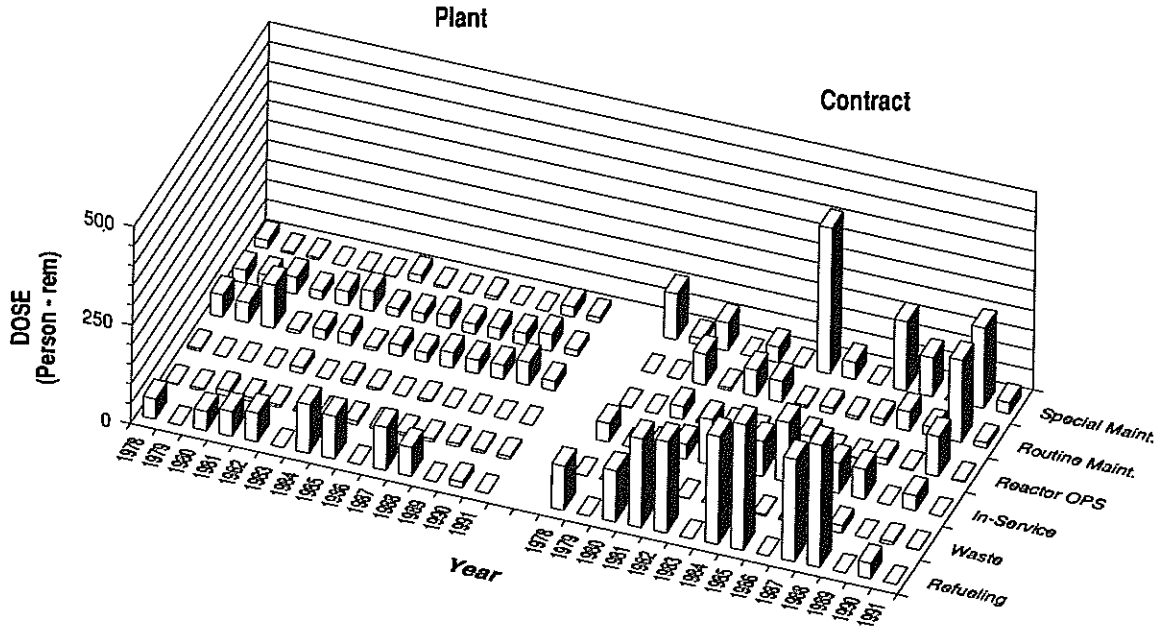
MAINE YANKEE

Dose-Performance Indicators

PWR



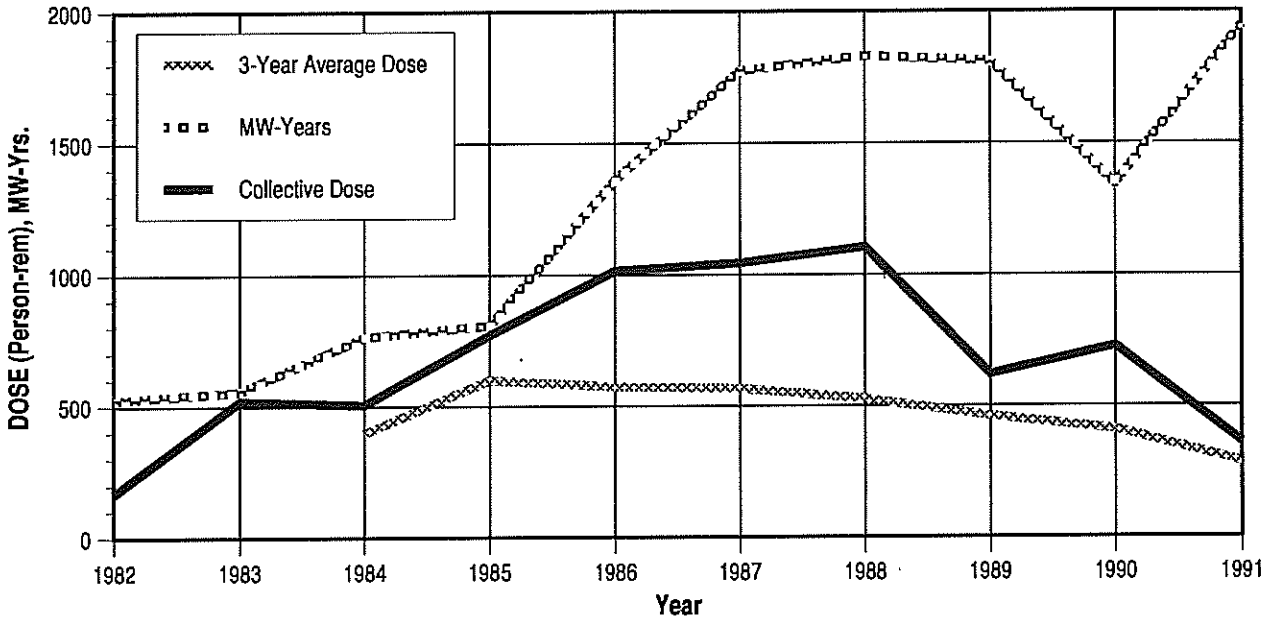
Breakdown by Job Function



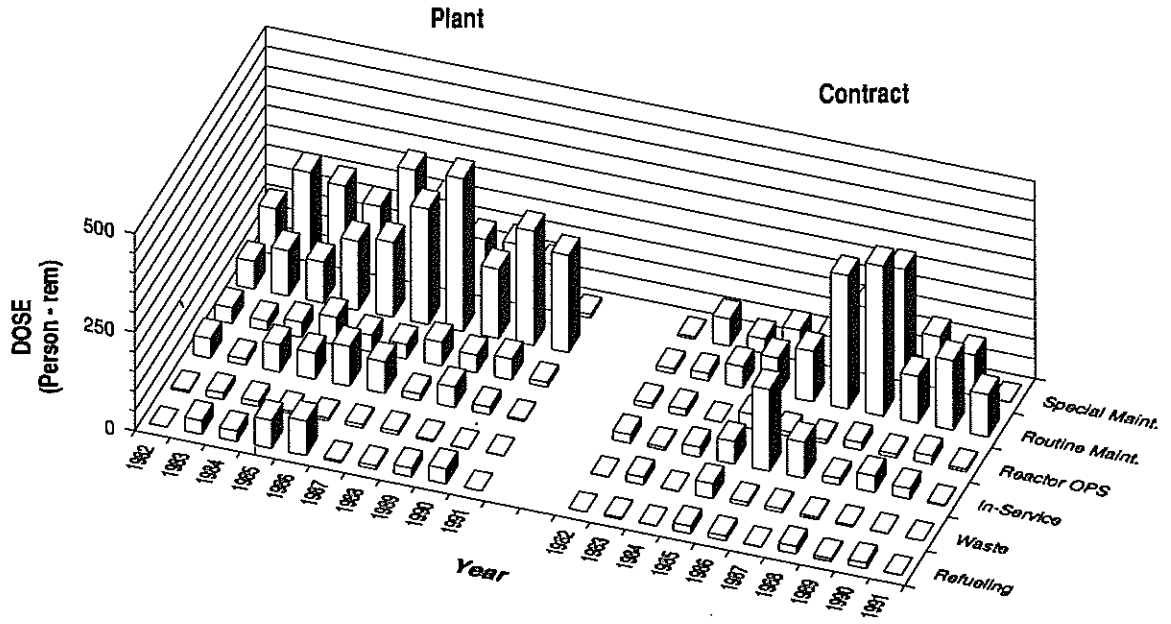
APPENDIX E (continued)

MCGUIRE 1, 2

Dose-Performance Indicators **PWR**



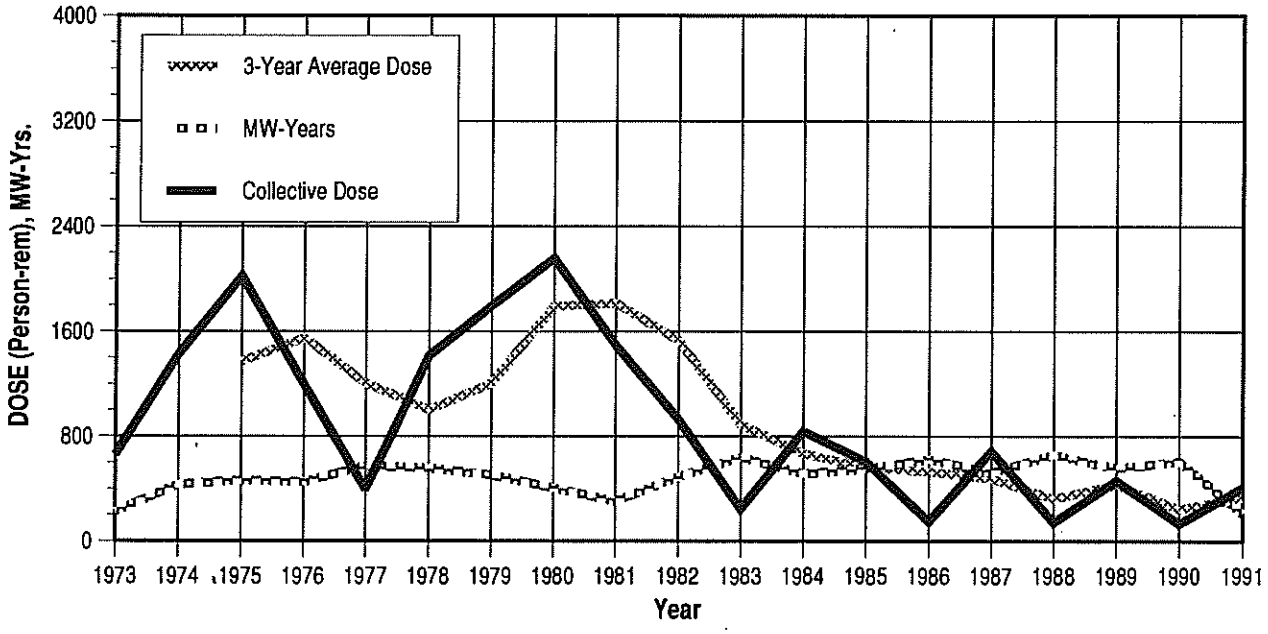
Breakdown by Job Function



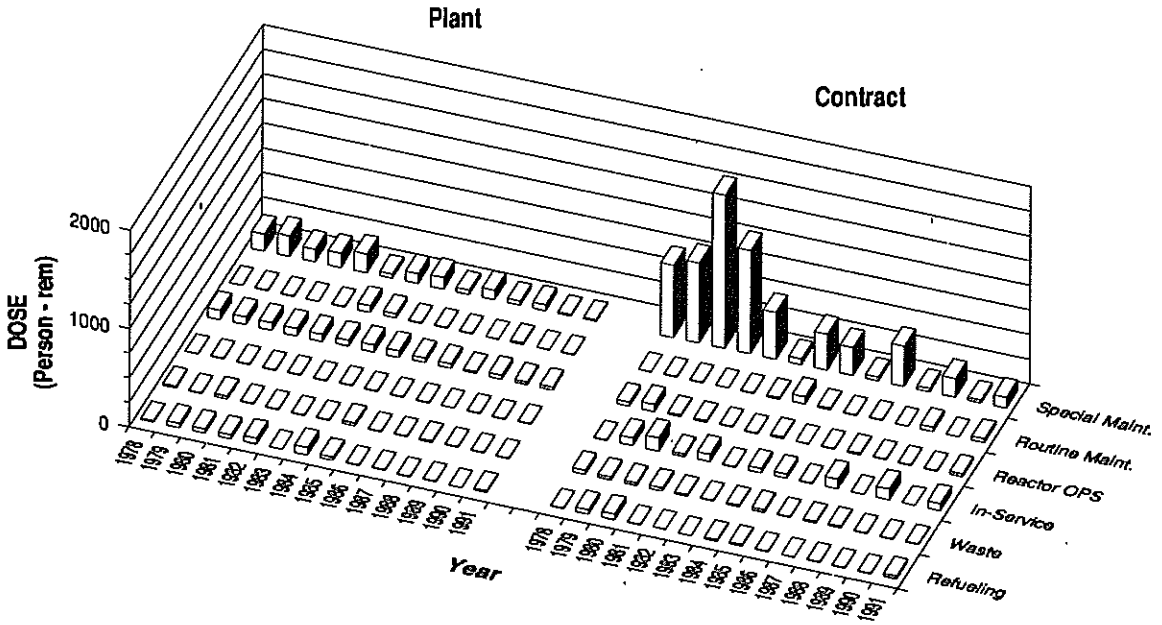
APPENDIX E (continued)

MILLSTONE POINT 1

Dose-Performance Indicators **BWR**



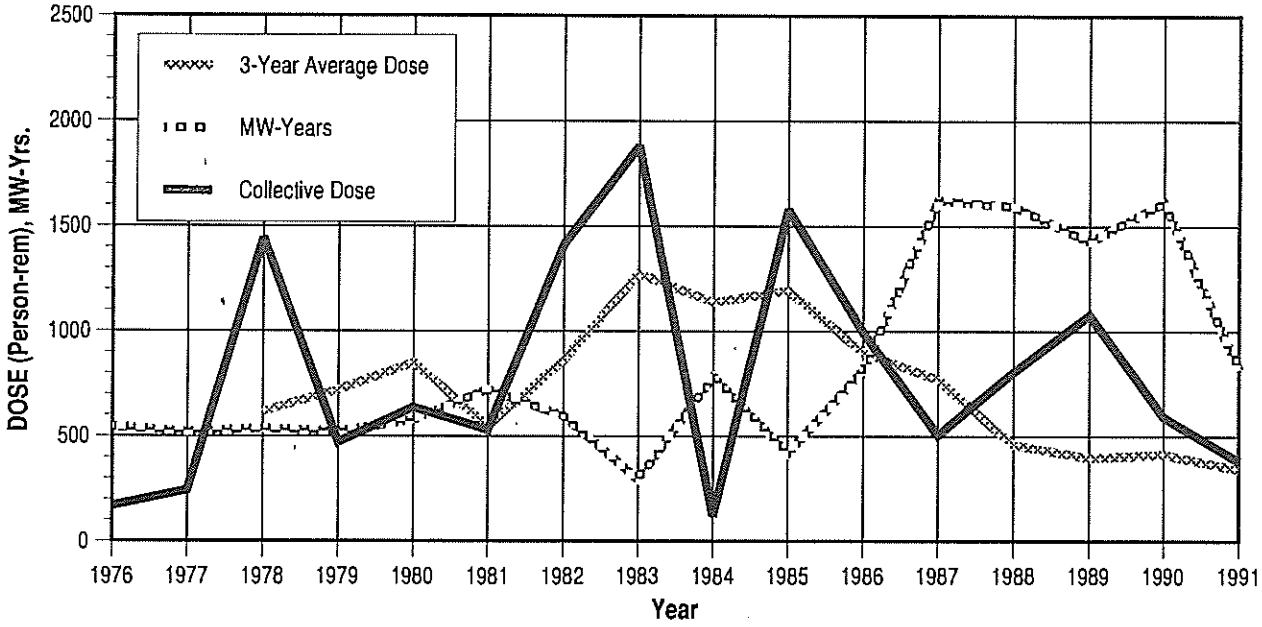
Breakdown by Job Function



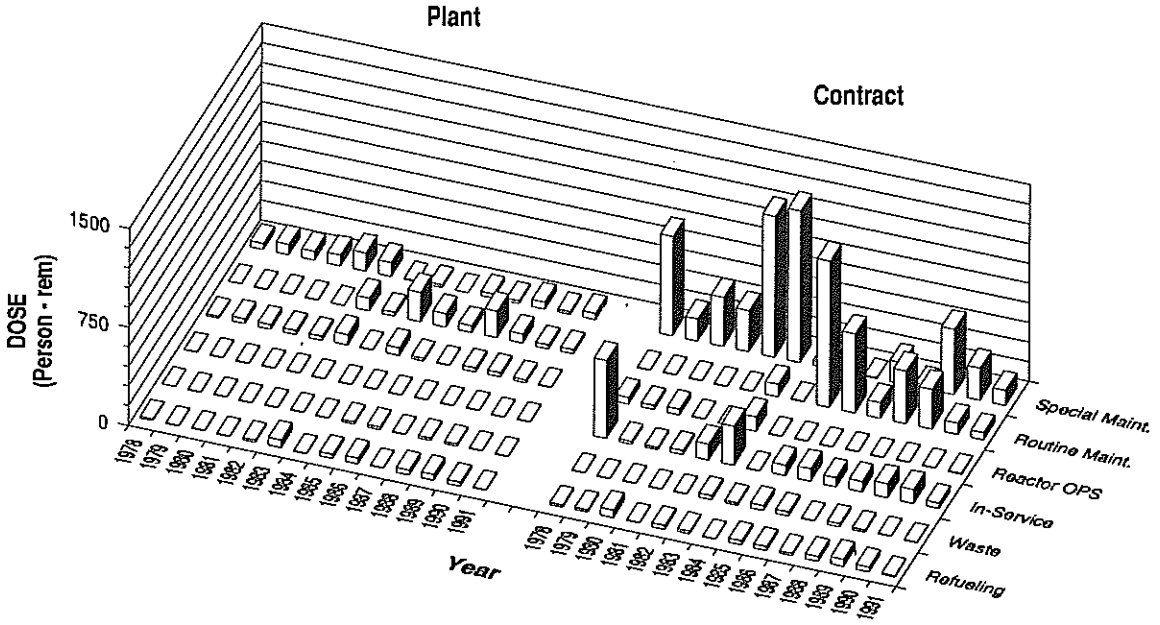
APPENDIX E (continued)

MILLSTONE POINT 2, 3

Dose-Performance Indicators **PWR**



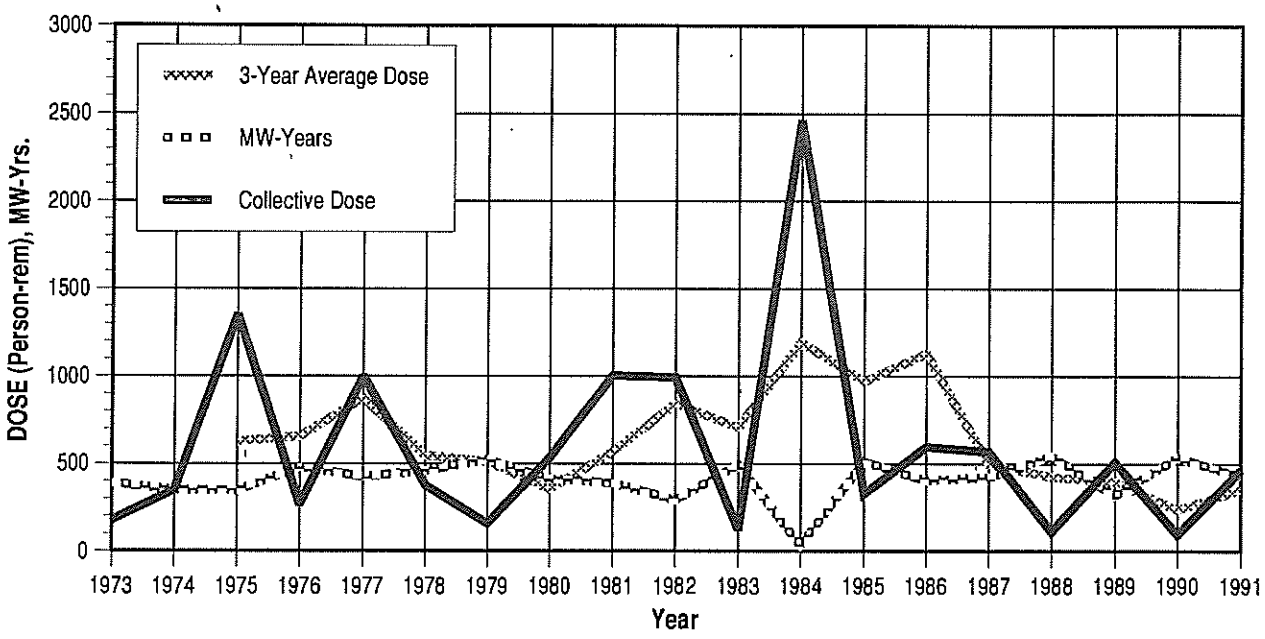
Breakdown by Job Function



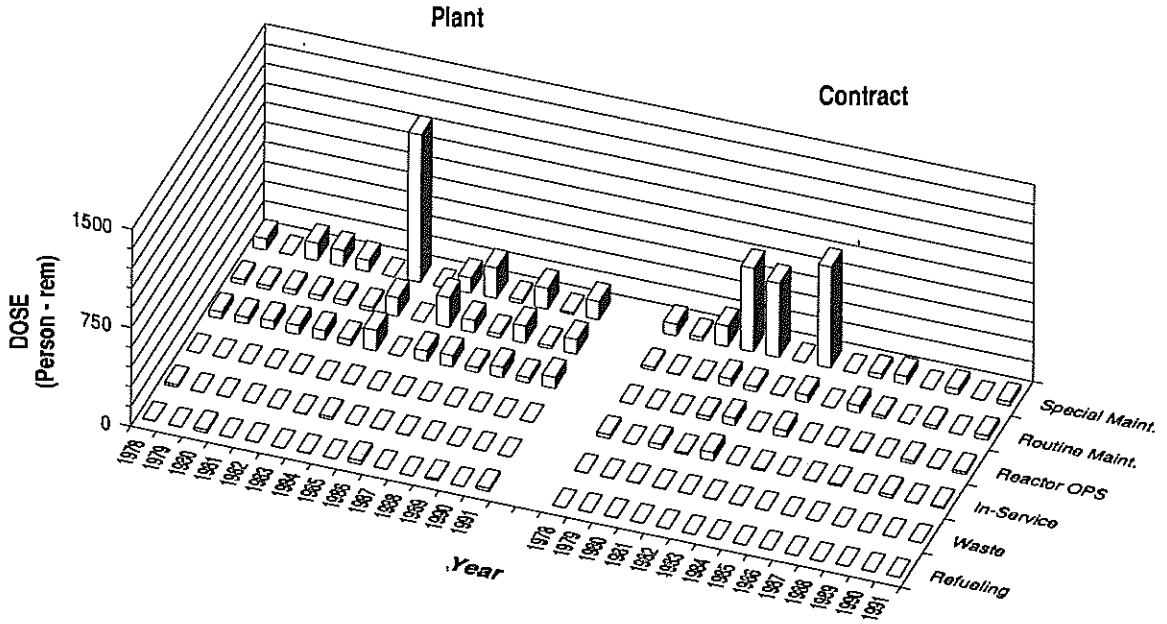
APPENDIX E (continued)

MONTICELLO

Dose-Performance Indicators **BWR**



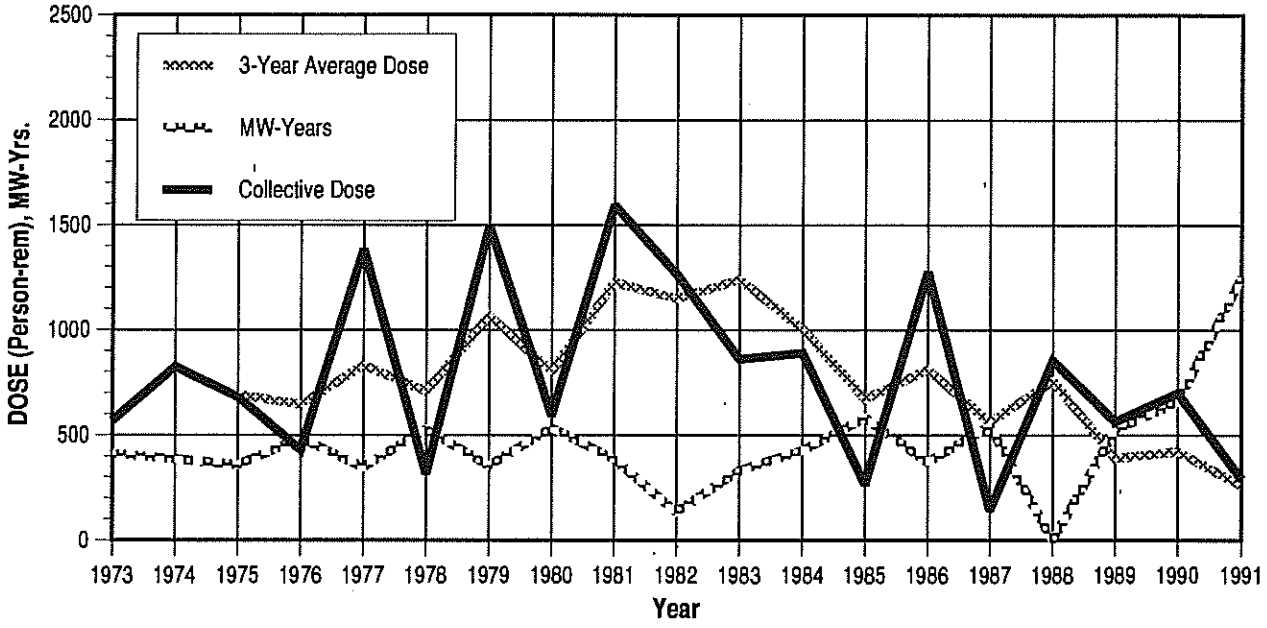
Breakdown by Job Function



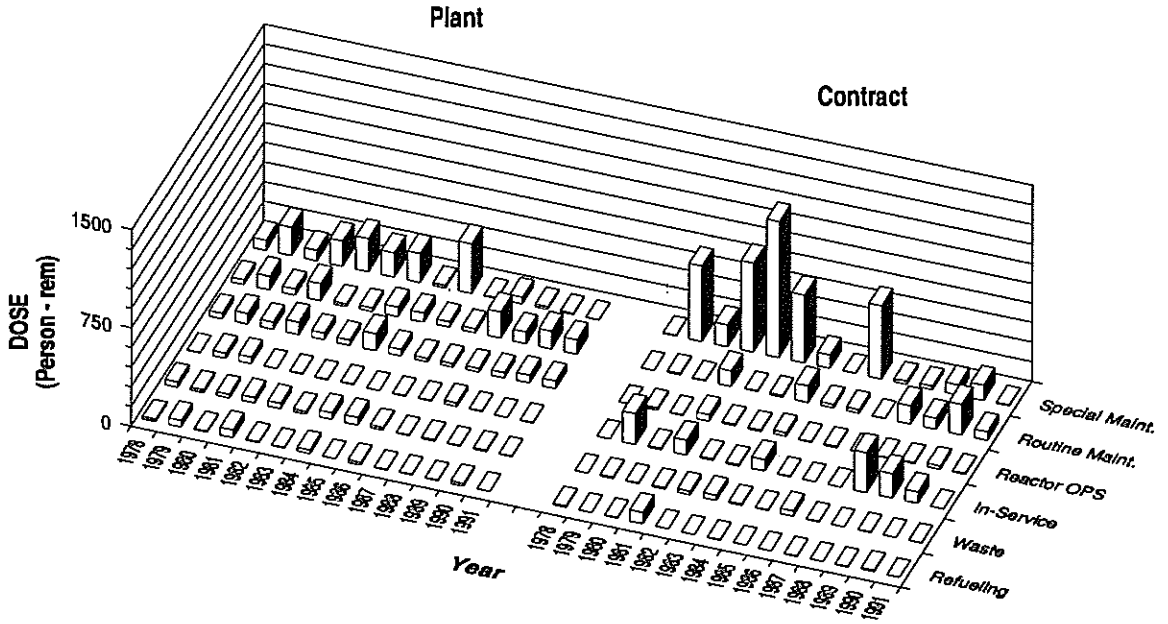
APPENDIX E (continued)

NINE MILE POINT 1, 2

Dose-Performance Indicators **BWR**



Breakdown by Job Function

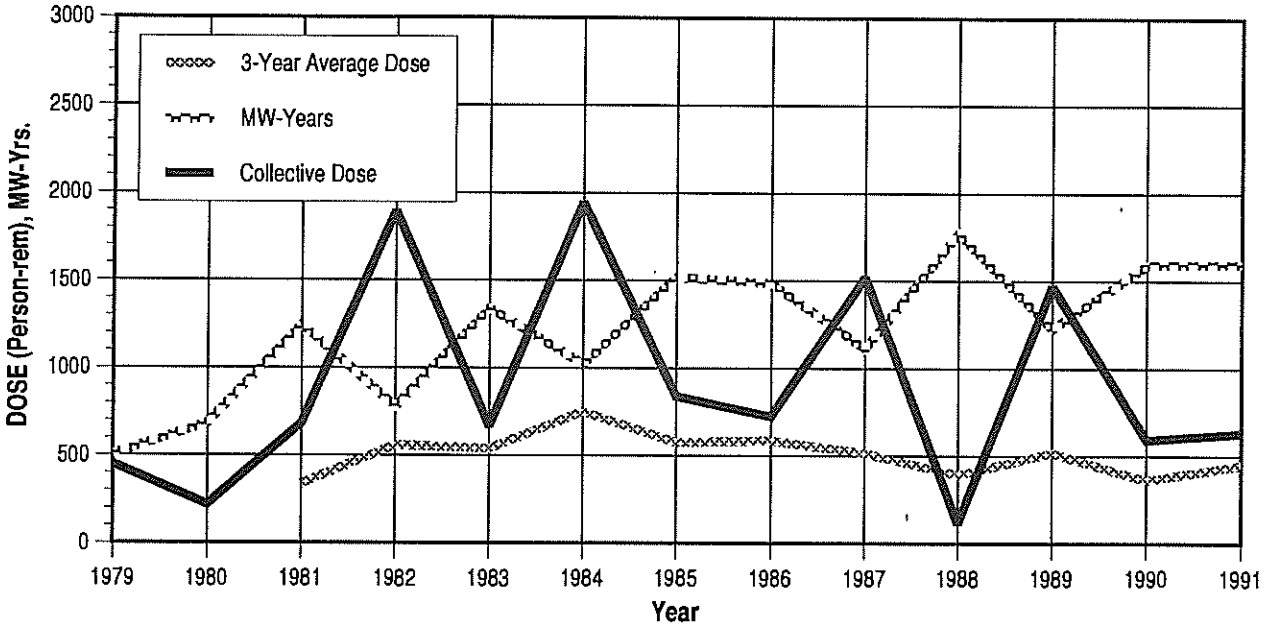


APPENDIX E (continued)

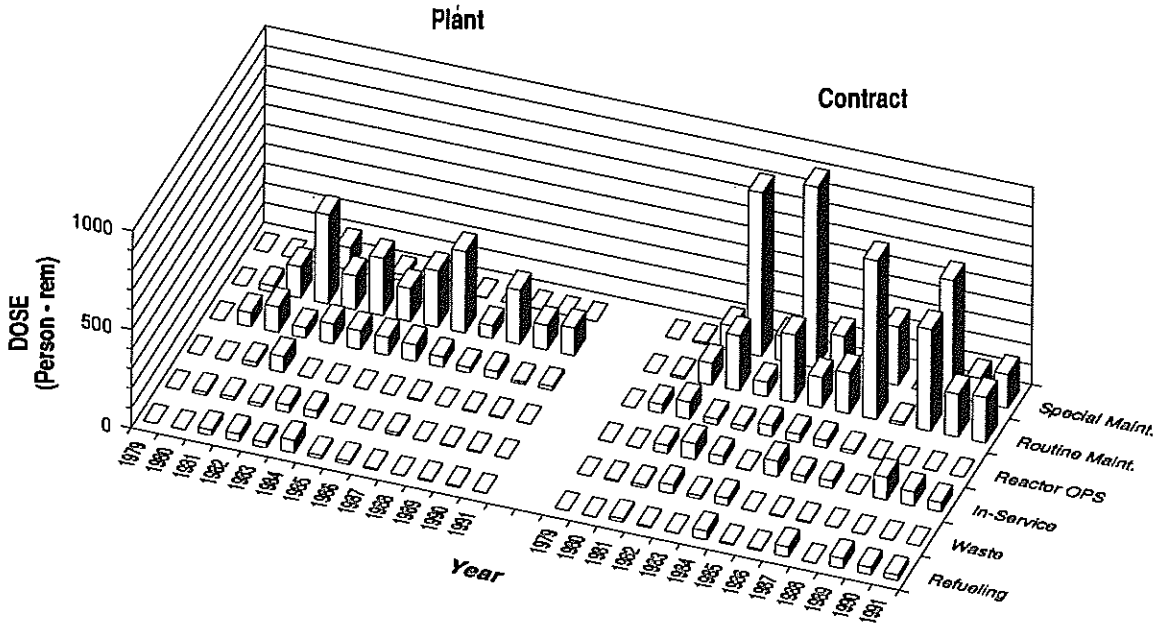
NORTH ANNA 1, 2

Dose-Performance Indicators

PWR



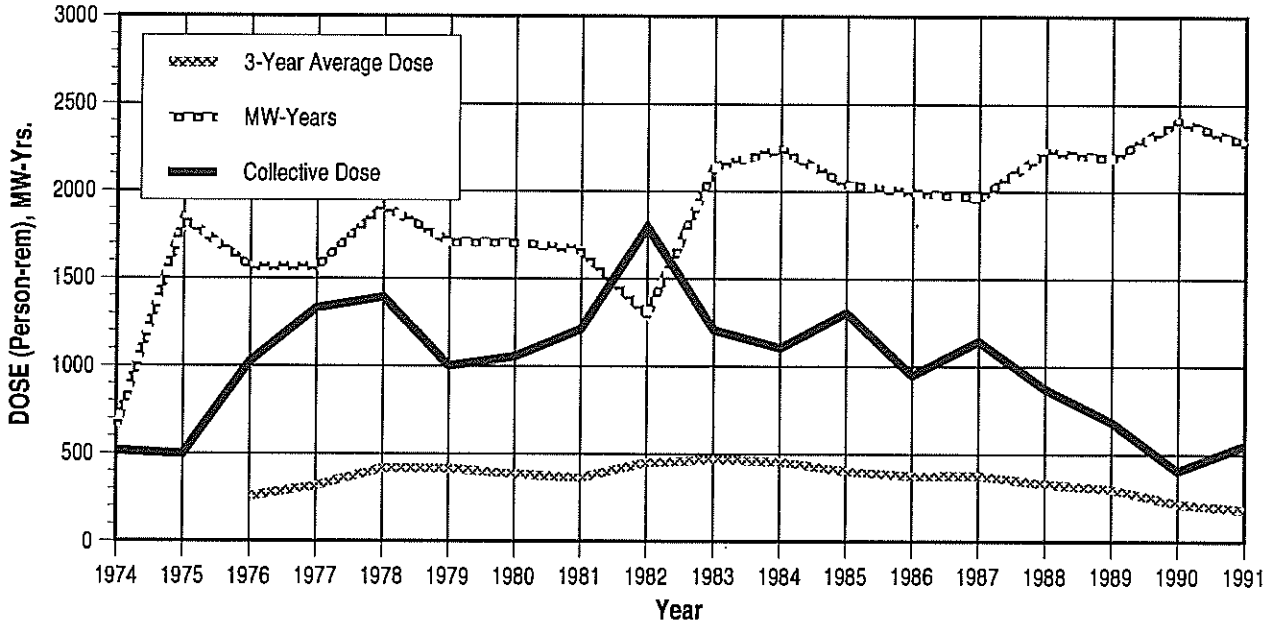
Breakdown by Job Function



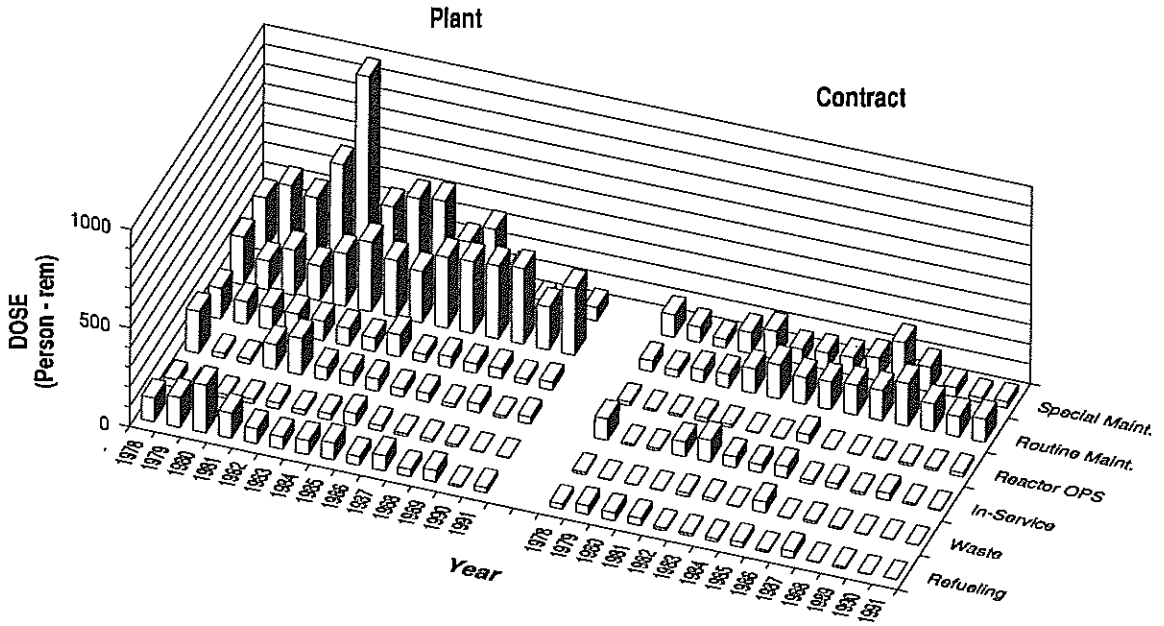
APPENDIX E (continued)

OCONEE 1, 2, 3

Dose-Performance Indicators **PWR**



Breakdown by Job Function

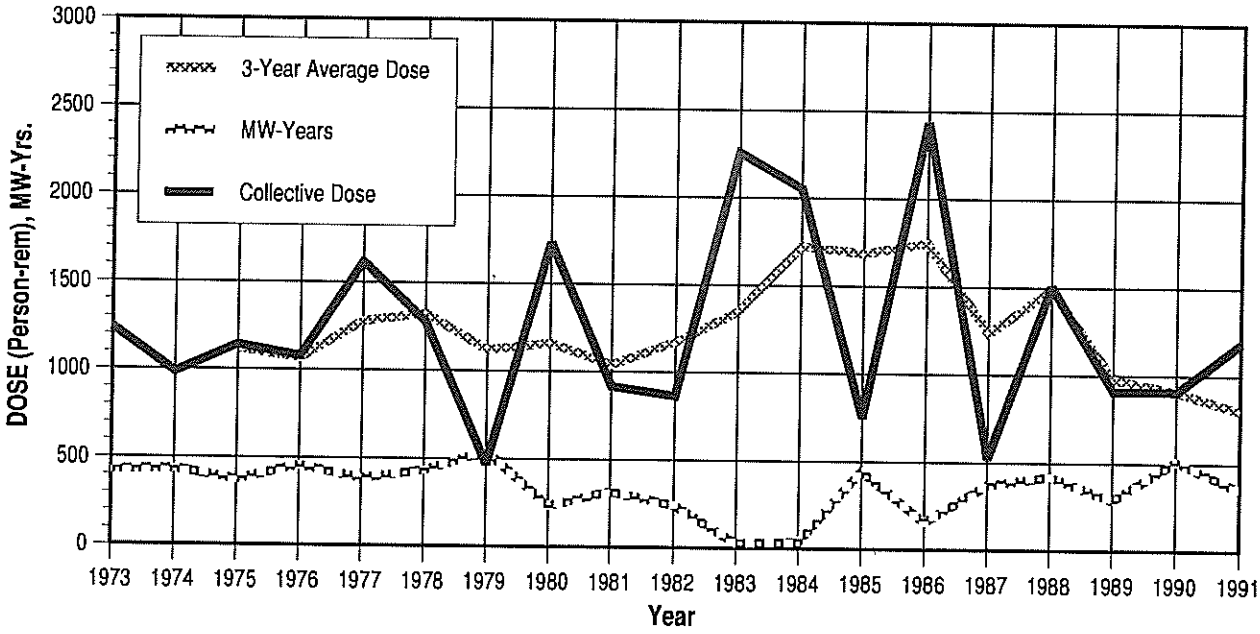


APPENDIX E (continued)

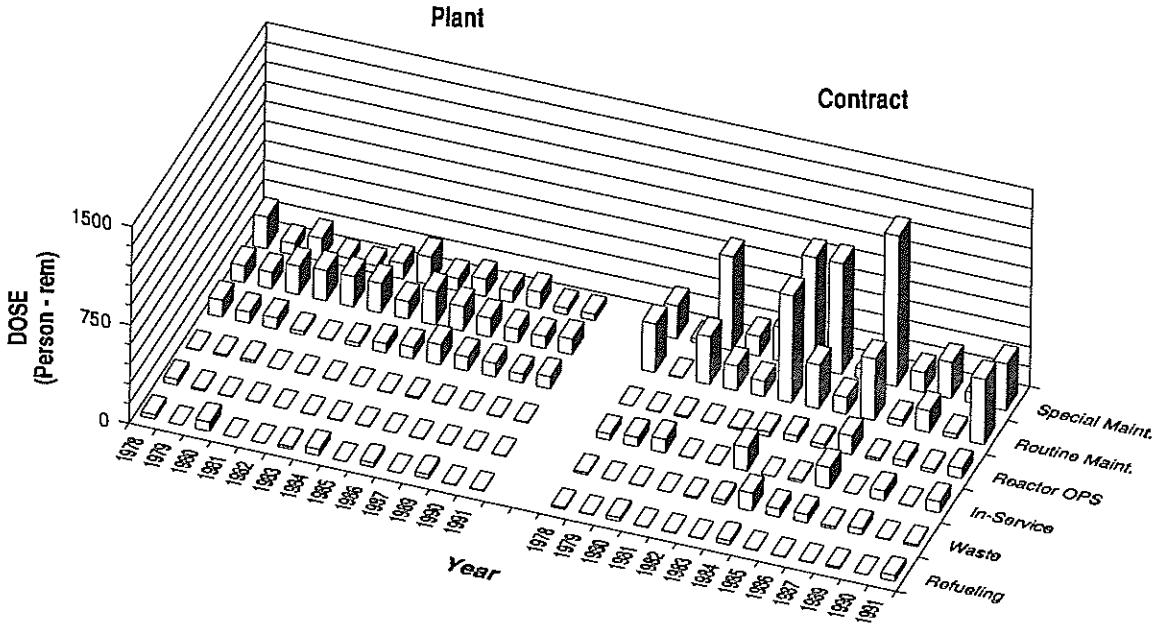
OYSTER CREEK

Dose-Performance Indicators

BWR



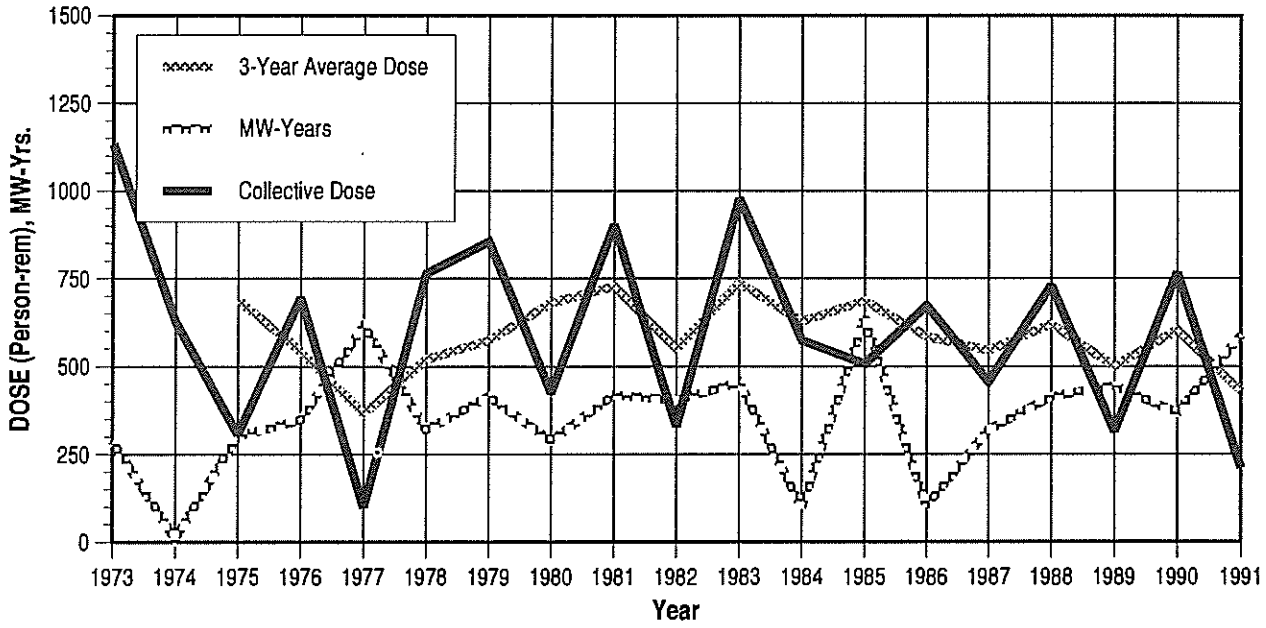
Breakdown by Job Function



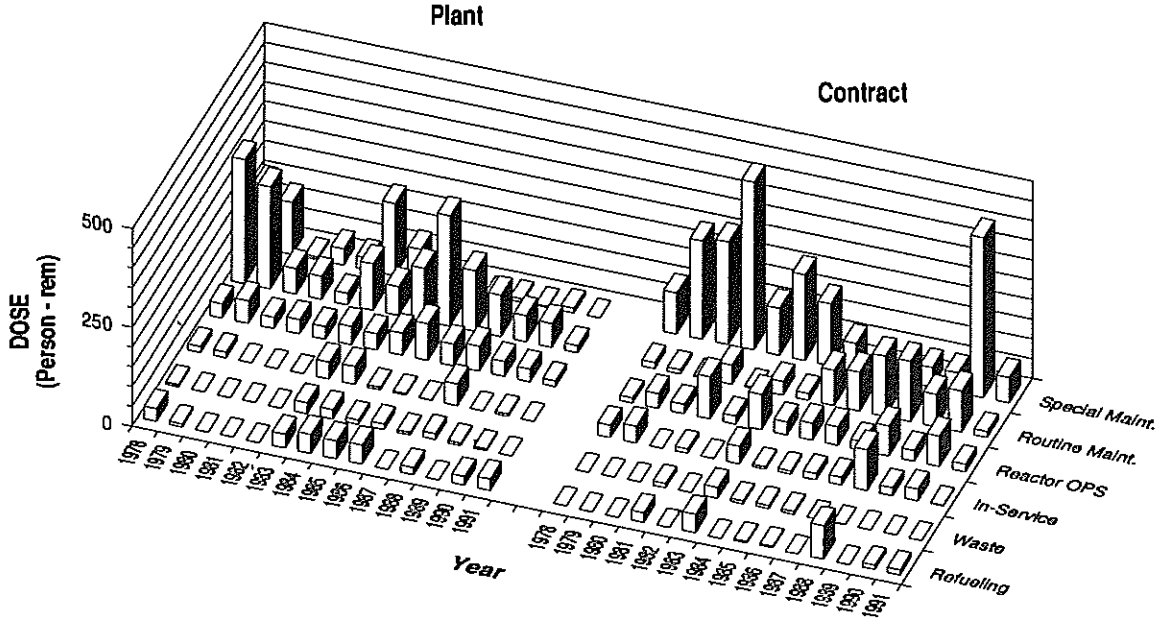
APPENDIX E (continued)

PALISADES

Dose-Performance Indicators **PWR**



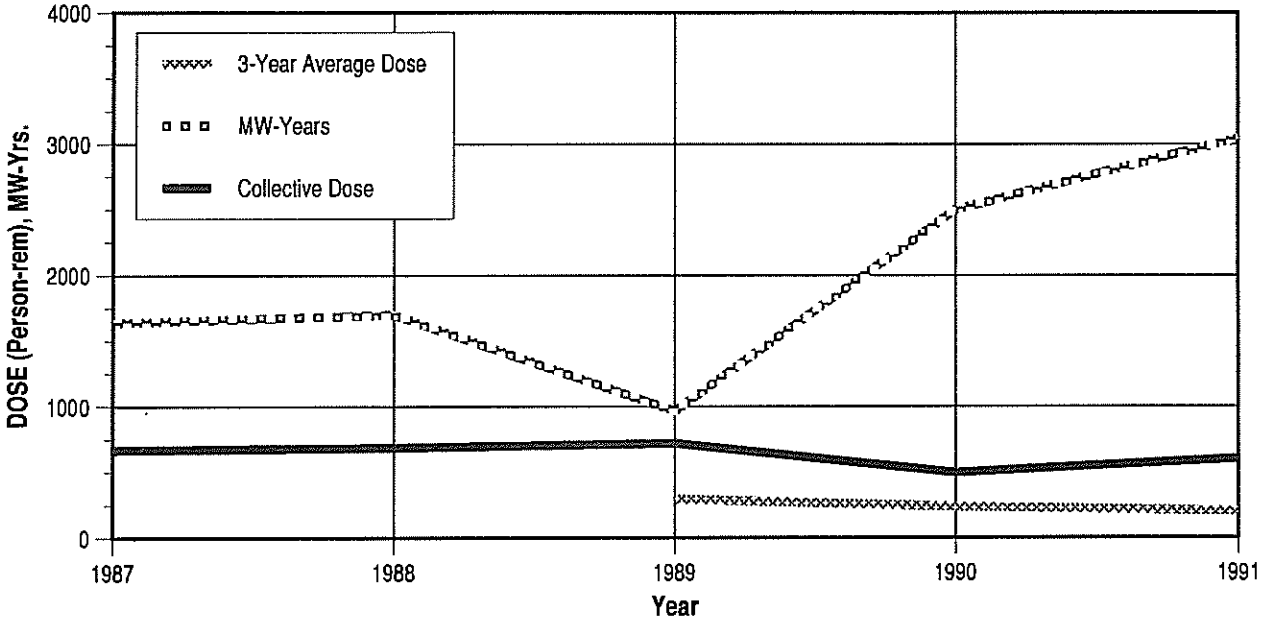
Breakdown by Job Function



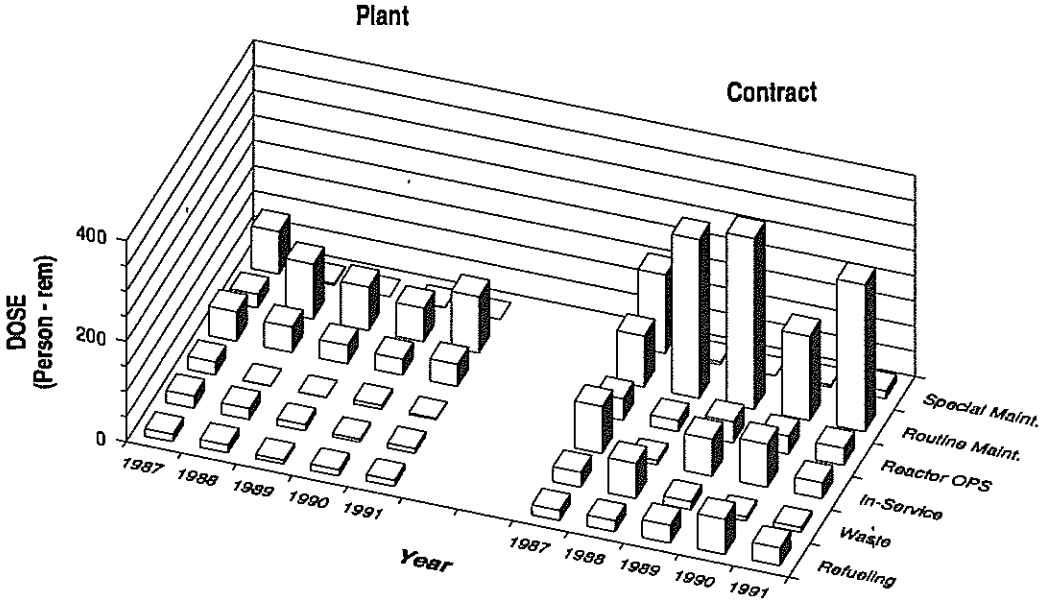
APPENDIX E (continued)

PALO VERDE 1, 2, 3

Dose-Performance Indicators **PWR**



Breakdown by Job Function

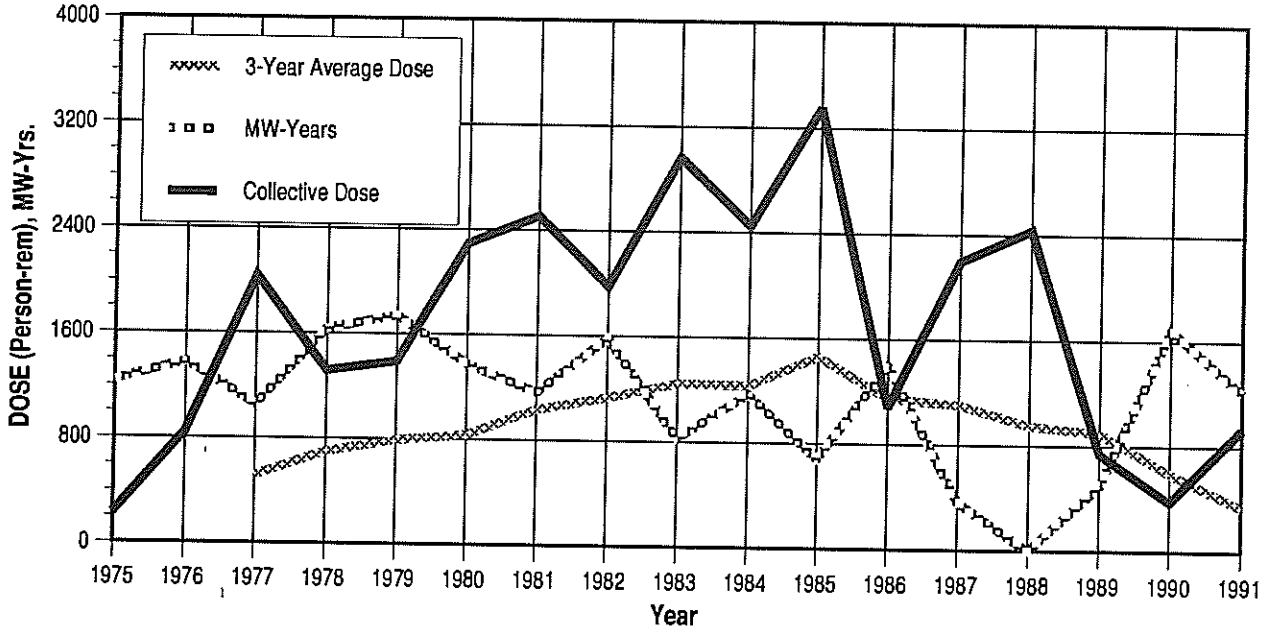


APPENDIX E (continued)

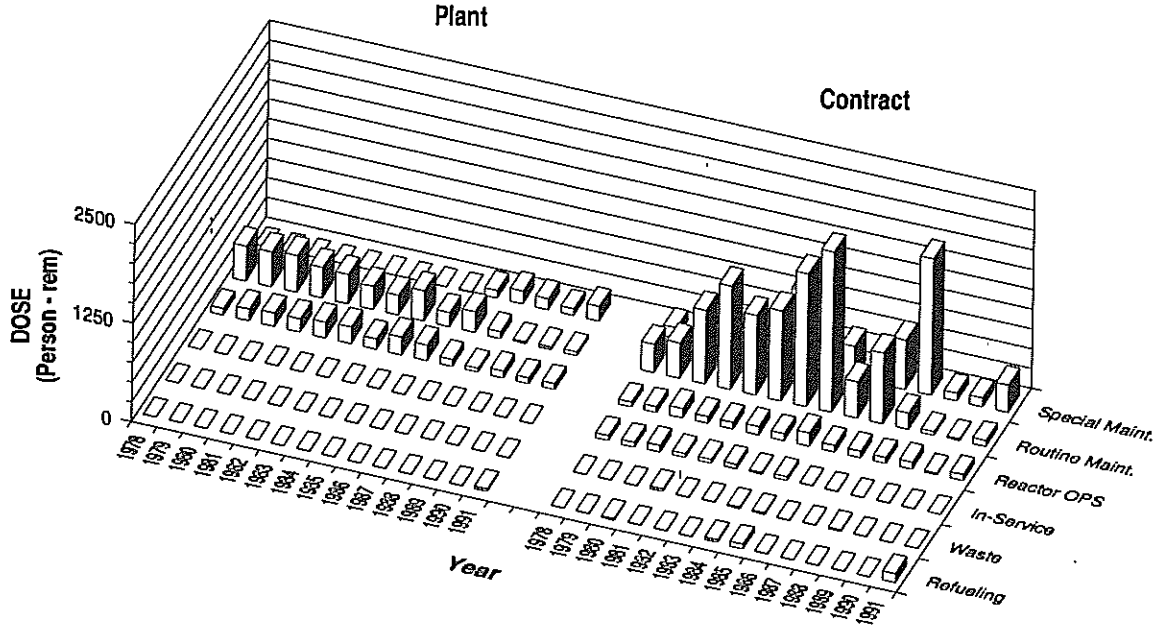
PEACH BOTTOM 2, 3

Dose-Performance Indicators

BWR



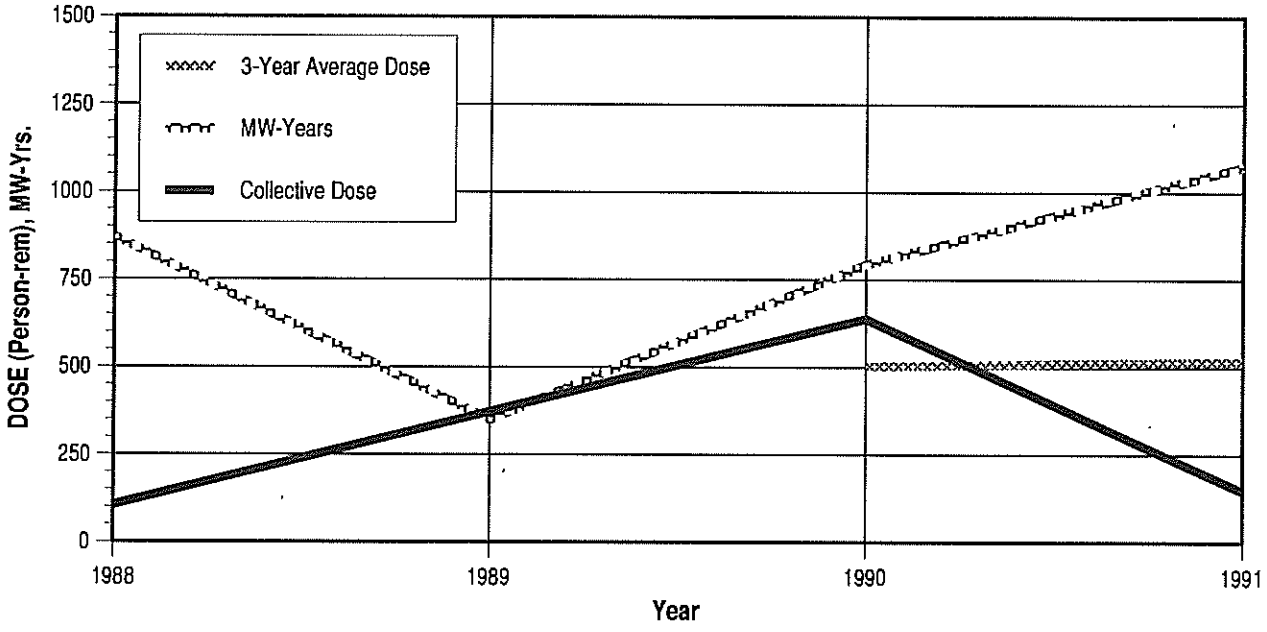
Breakdown by Job Function



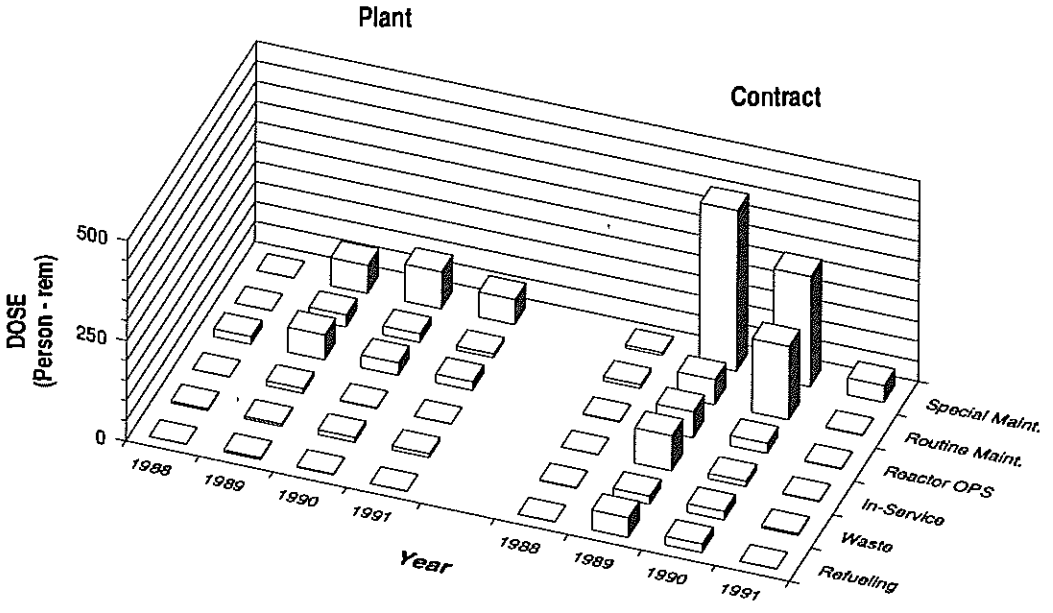
APPENDIX E (continued)

PERRY

Dose-Performance Indicators **BWR**



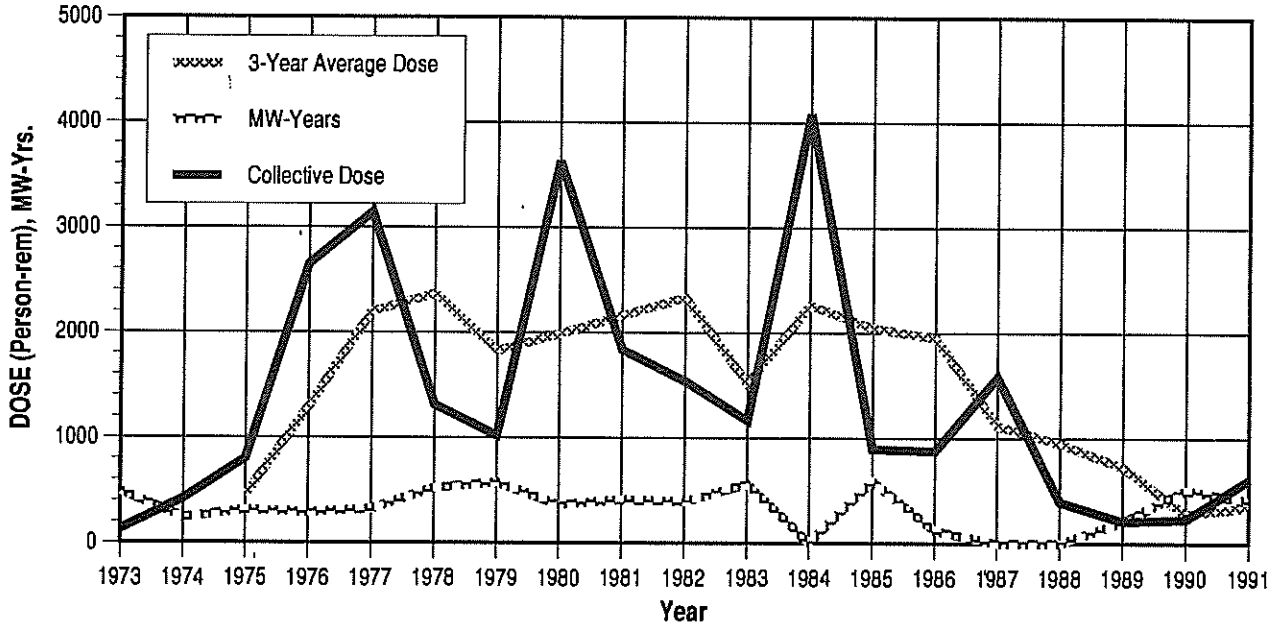
Breakdown by Job Function



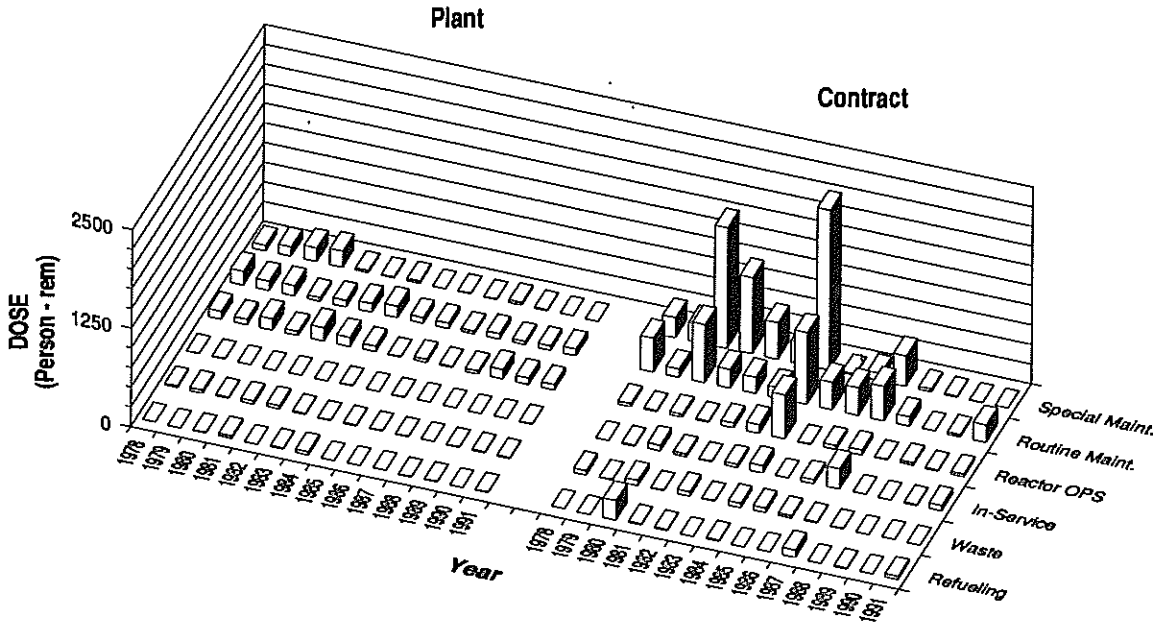
APPENDIX E (continued)

PILGRIM

Dose-Performance Indicators **BWR**



Breakdown by Job Function

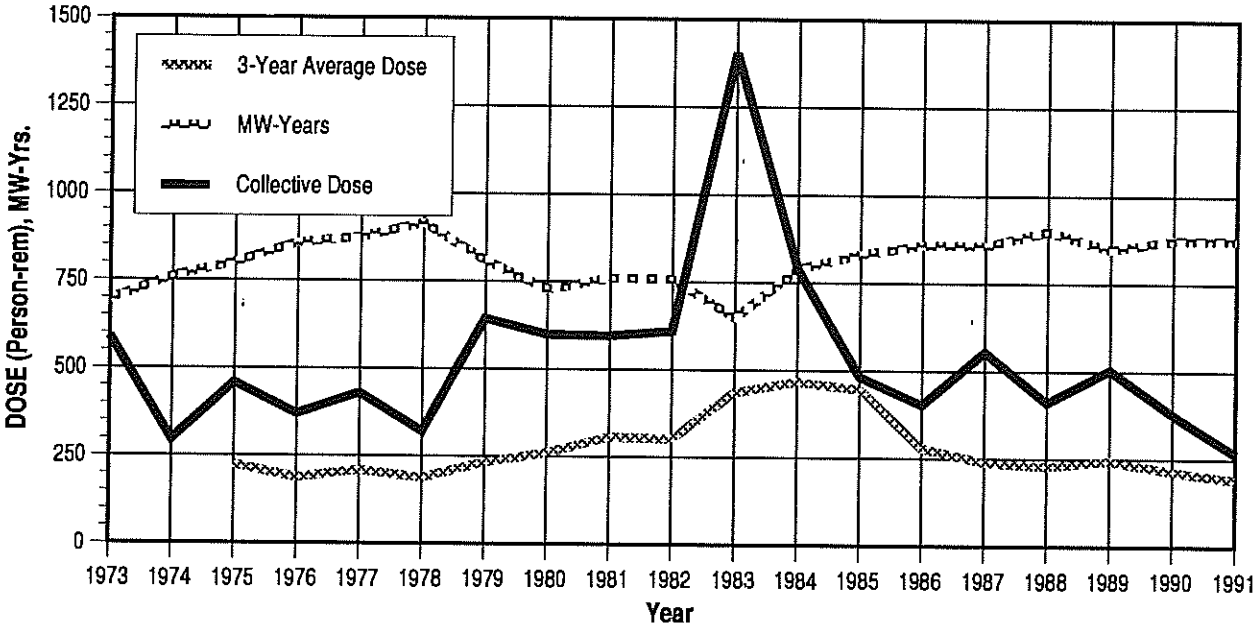


APPENDIX E (continued)

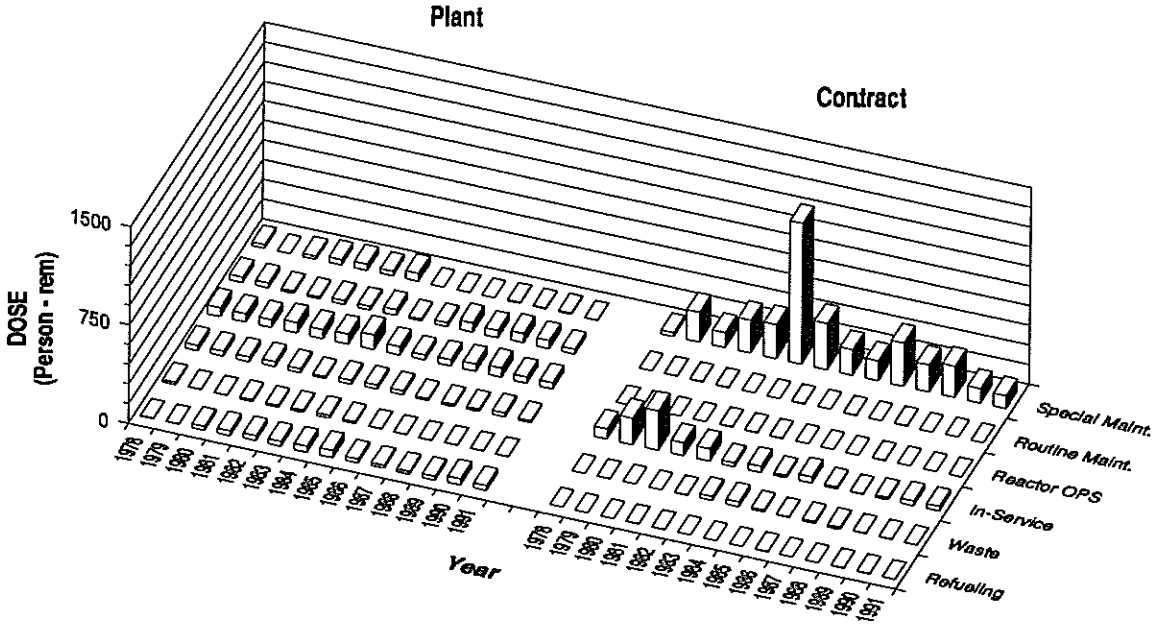
POINT BEACH 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

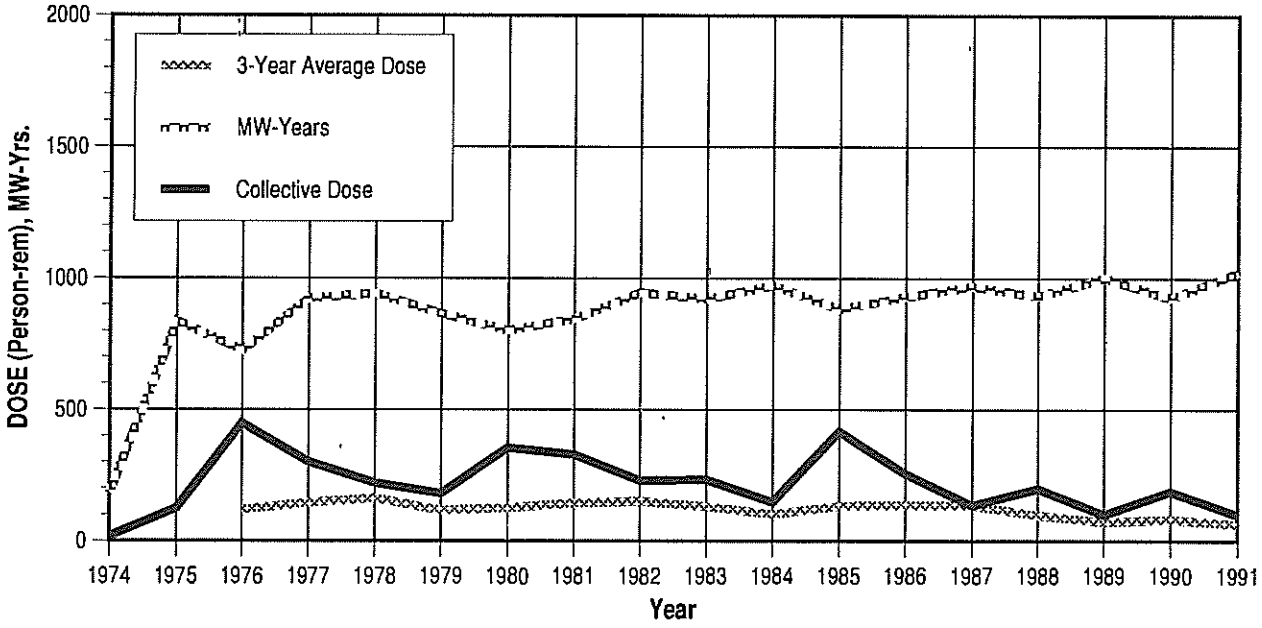


APPENDIX E (continued)

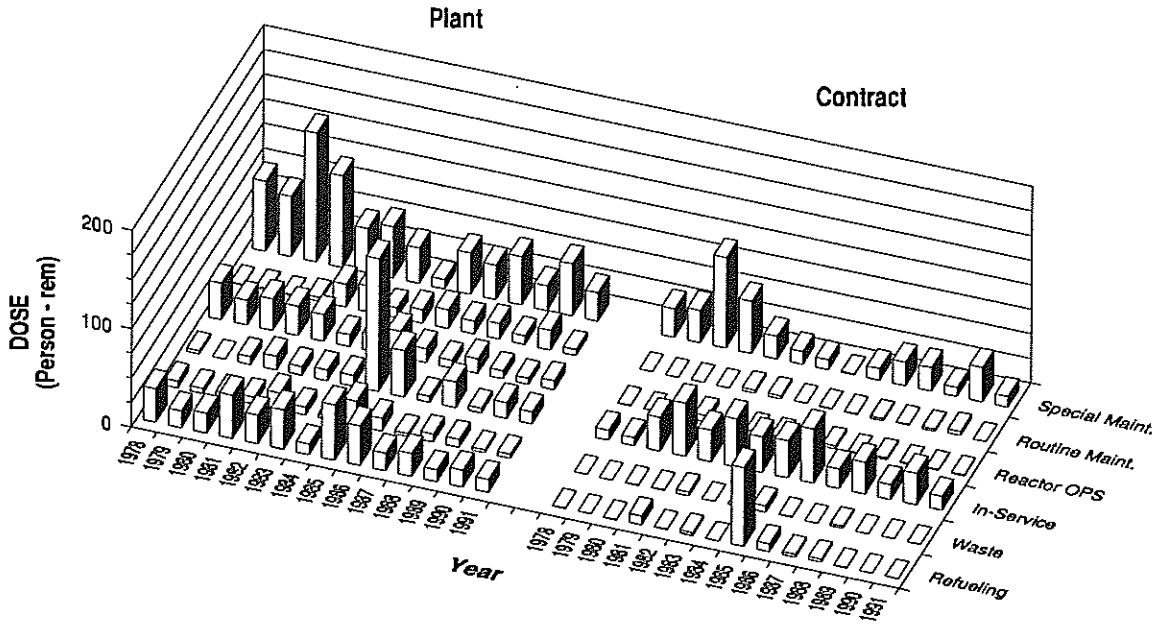
PRAIRIE ISLAND 1, 2

Dose-Performance Indicators

PWR



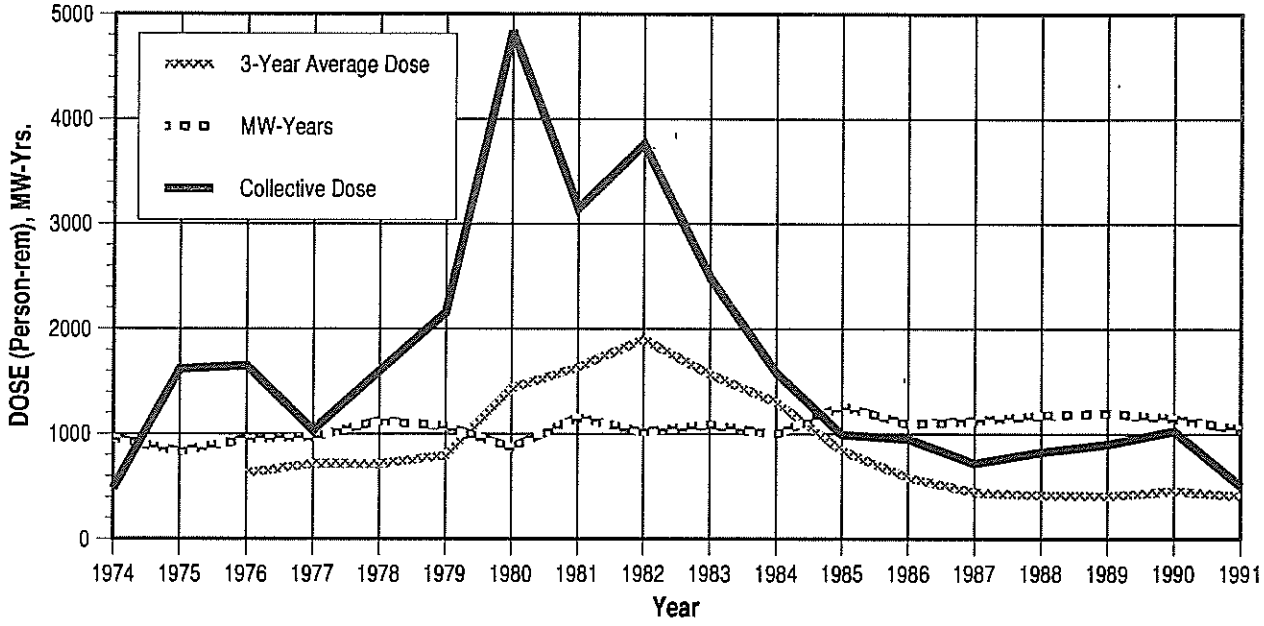
Breakdown by Job Function



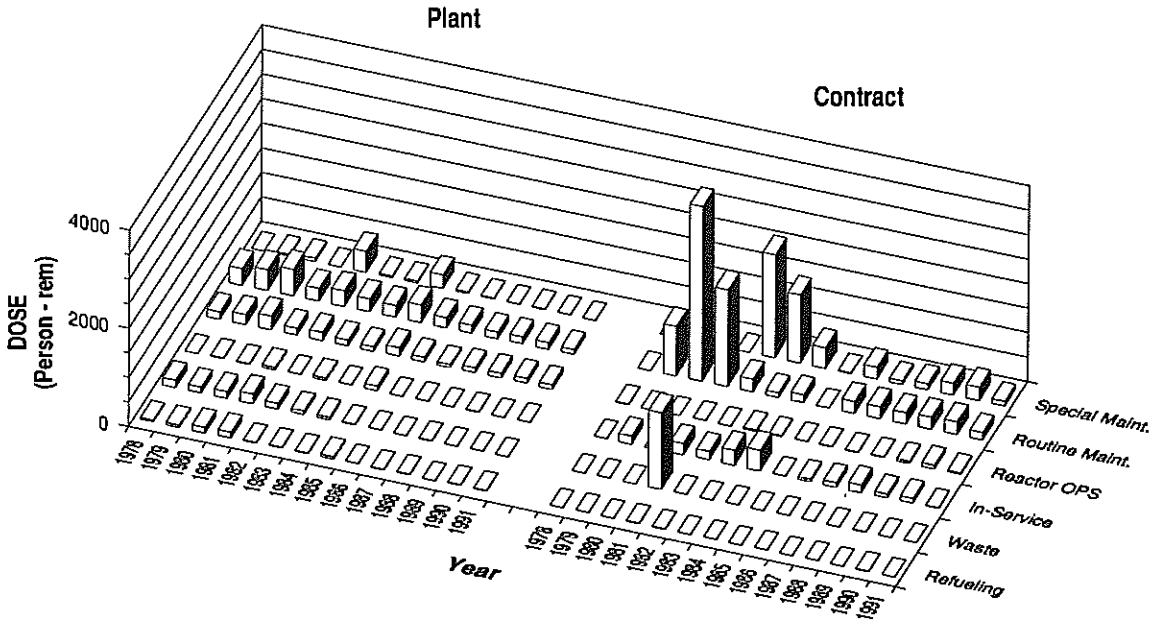
APPENDIX E (continued)

QUAD CITIES 1, 2

Dose-Performance Indicators **BWR**



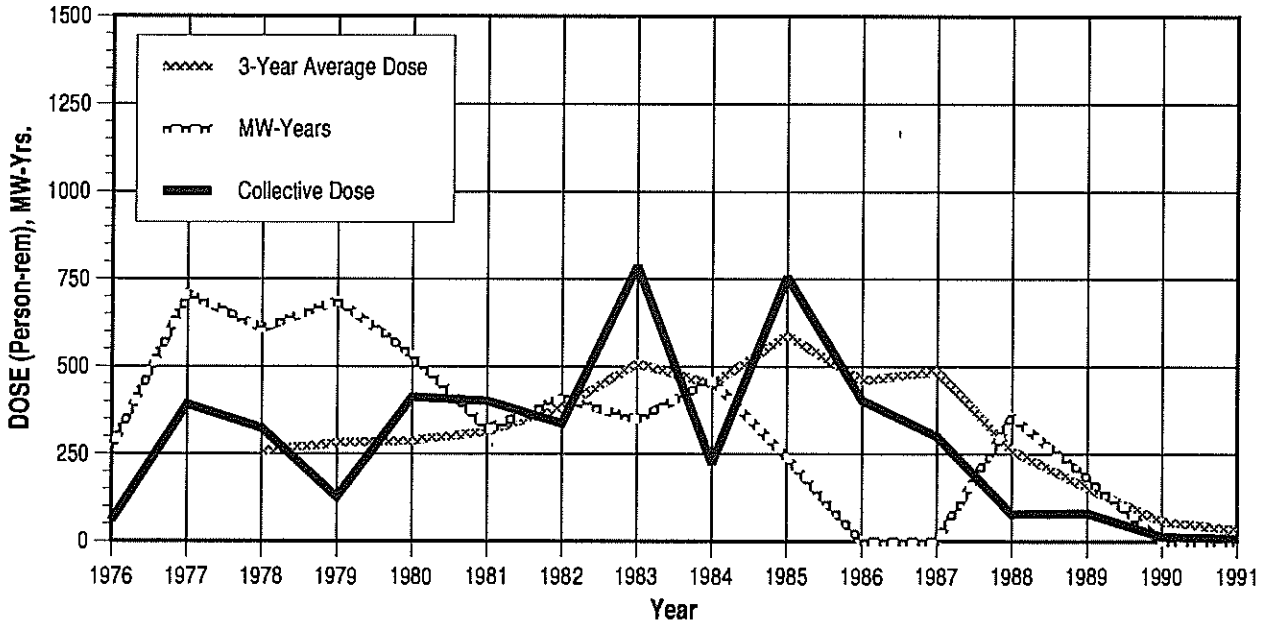
Breakdown by Job Function



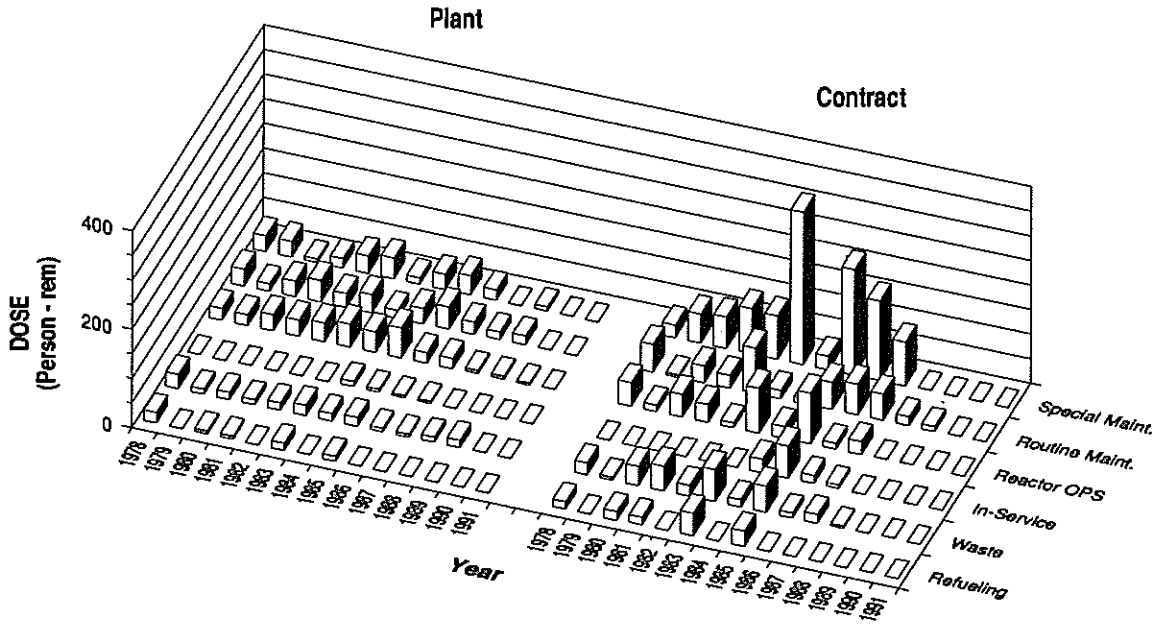
APPENDIX E (continued)

RANCHO SECO

Dose-Performance Indicators **PWR**



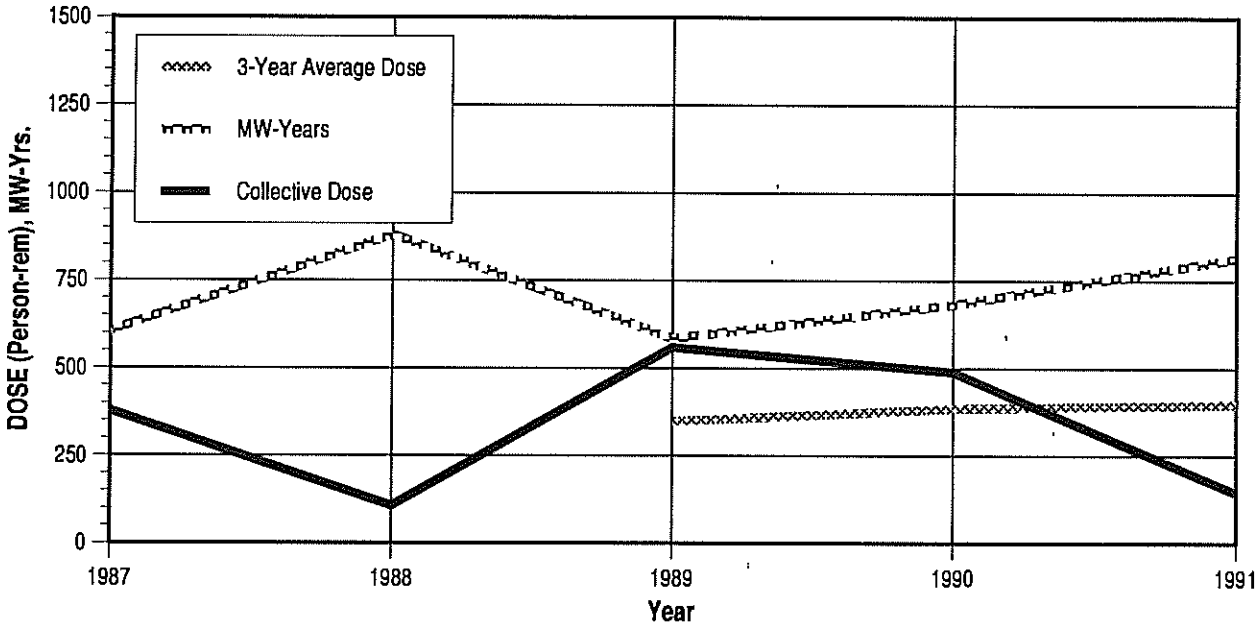
Breakdown by Job Function



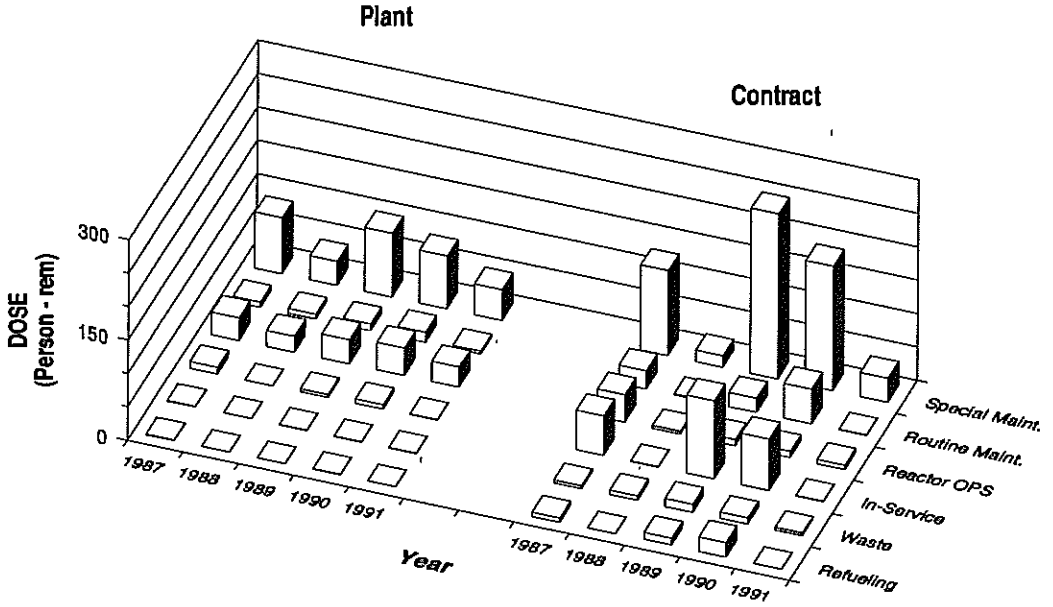
APPENDIX E (continued)

RIVER BEND 1

Dose-Performance Indicators **BWR**



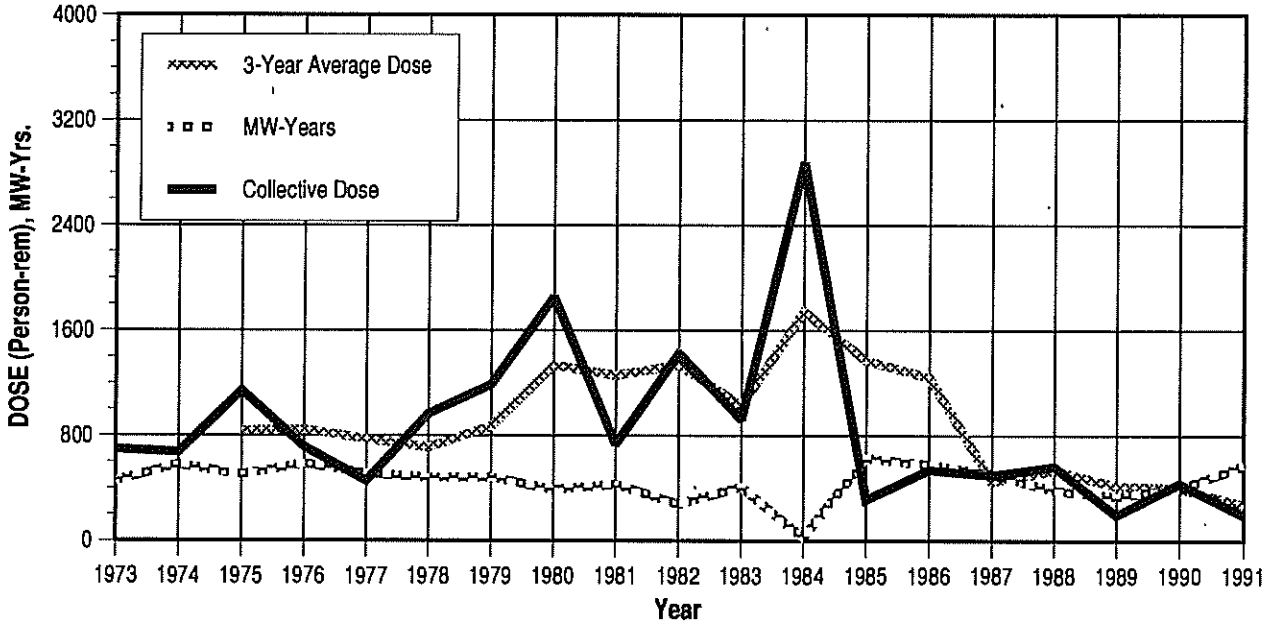
Breakdown by Job Function



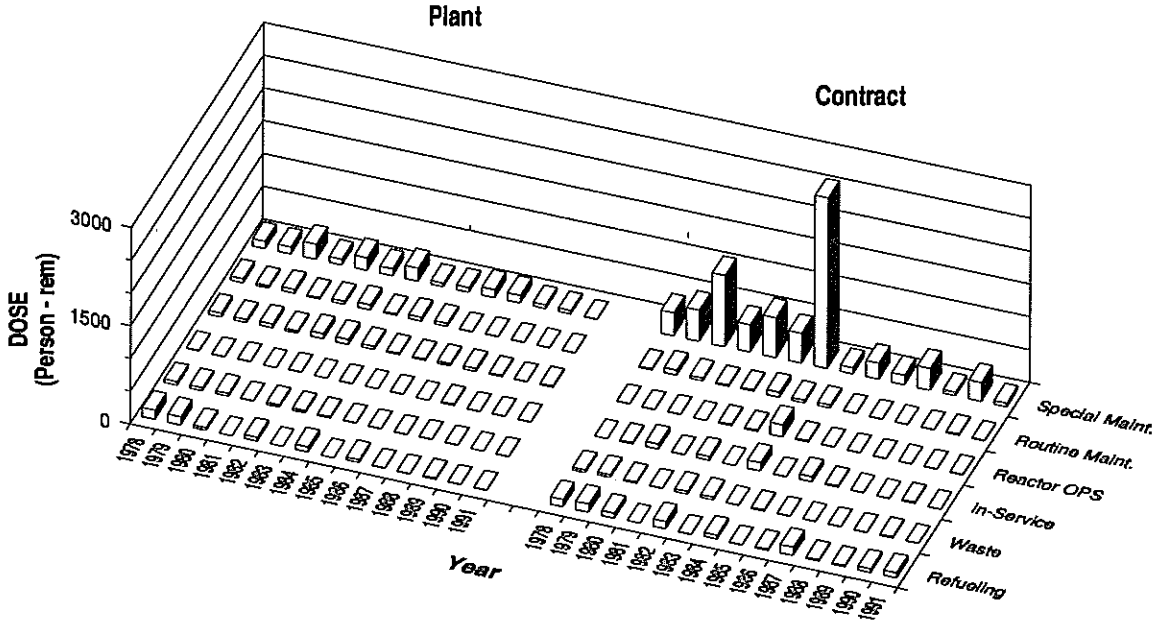
APPENDIX E (continued)

ROBINSON 2

Dose-Performance Indicators **PWR**



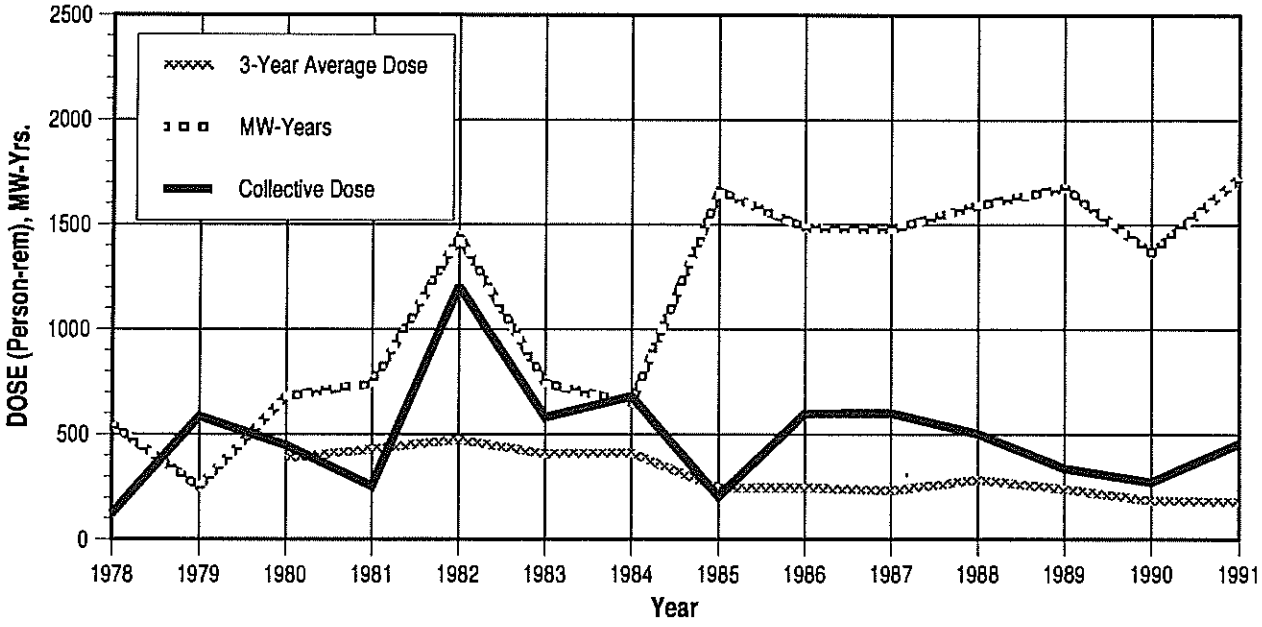
Breakdown by Job Function



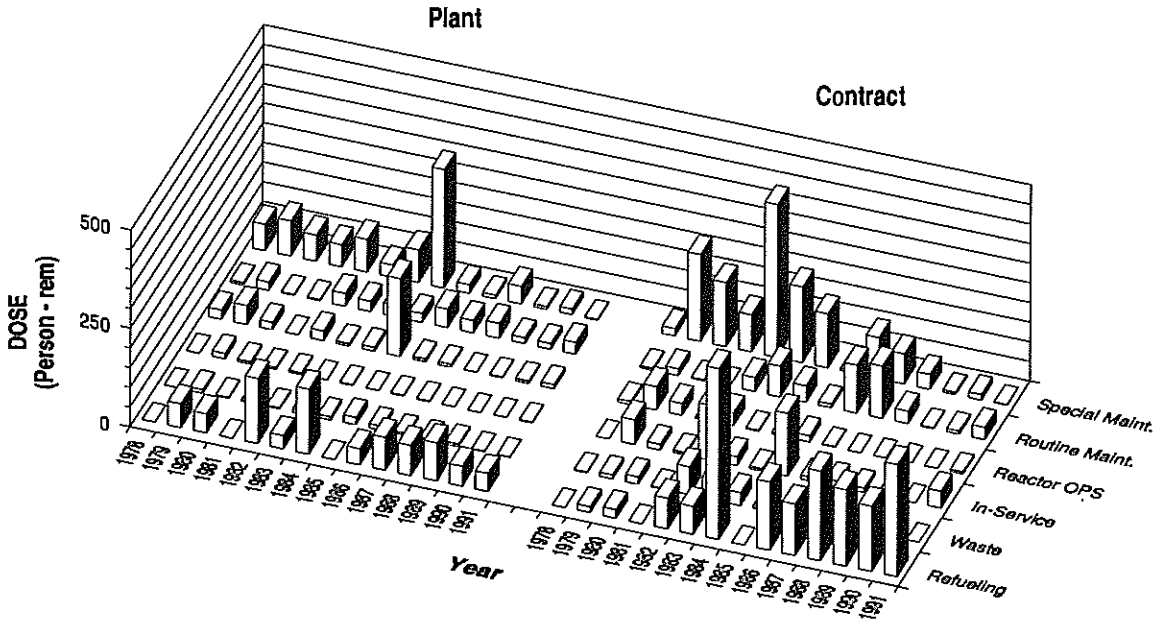
APPENDIX E (continued)

SALEM 1, 2

Dose-Performance Indicators **PWR**



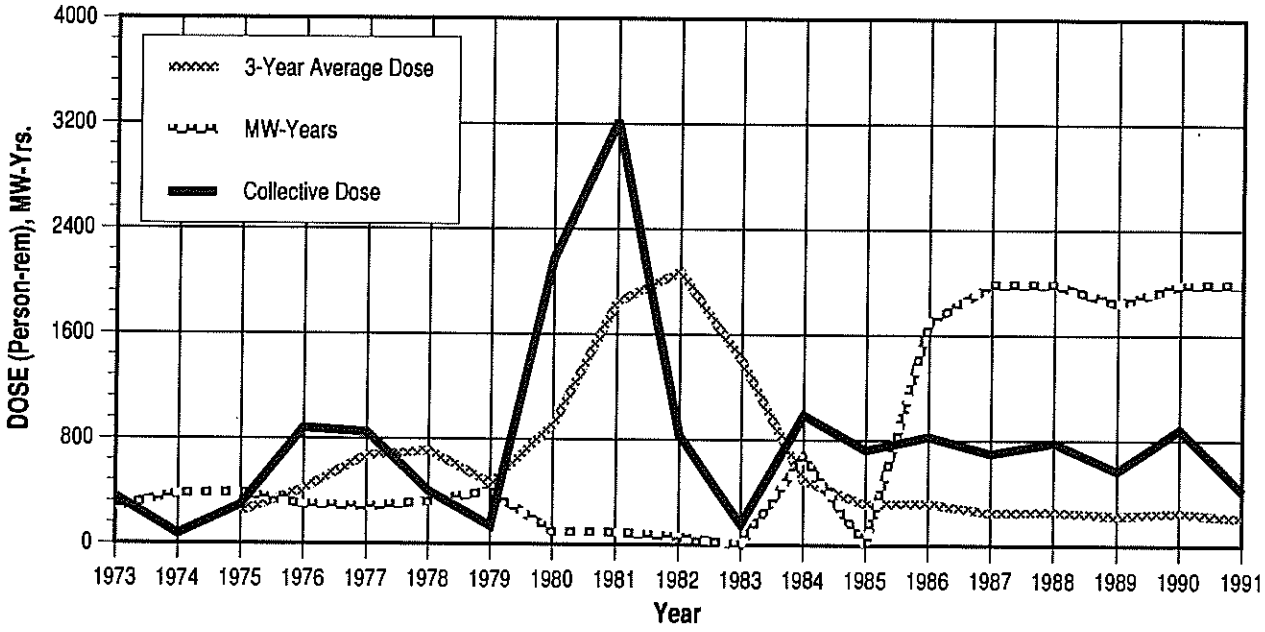
Breakdown by Job Function



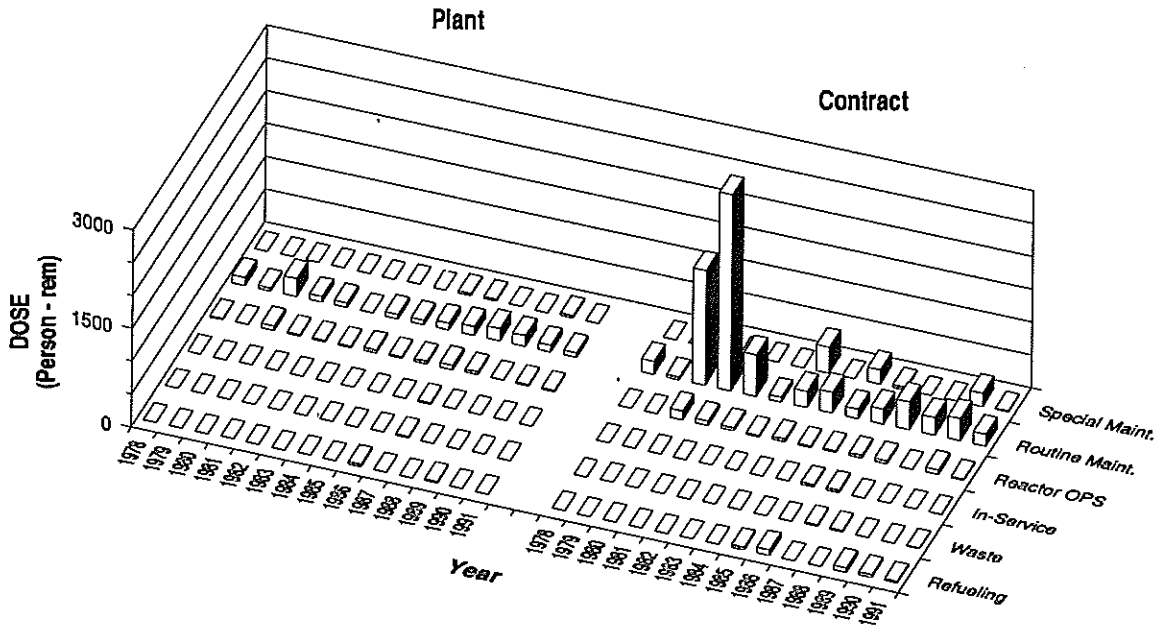
APPENDIX E (continued)

SAN ONOFRE 1, 2, 3

Dose-Performance Indicators **PWR**



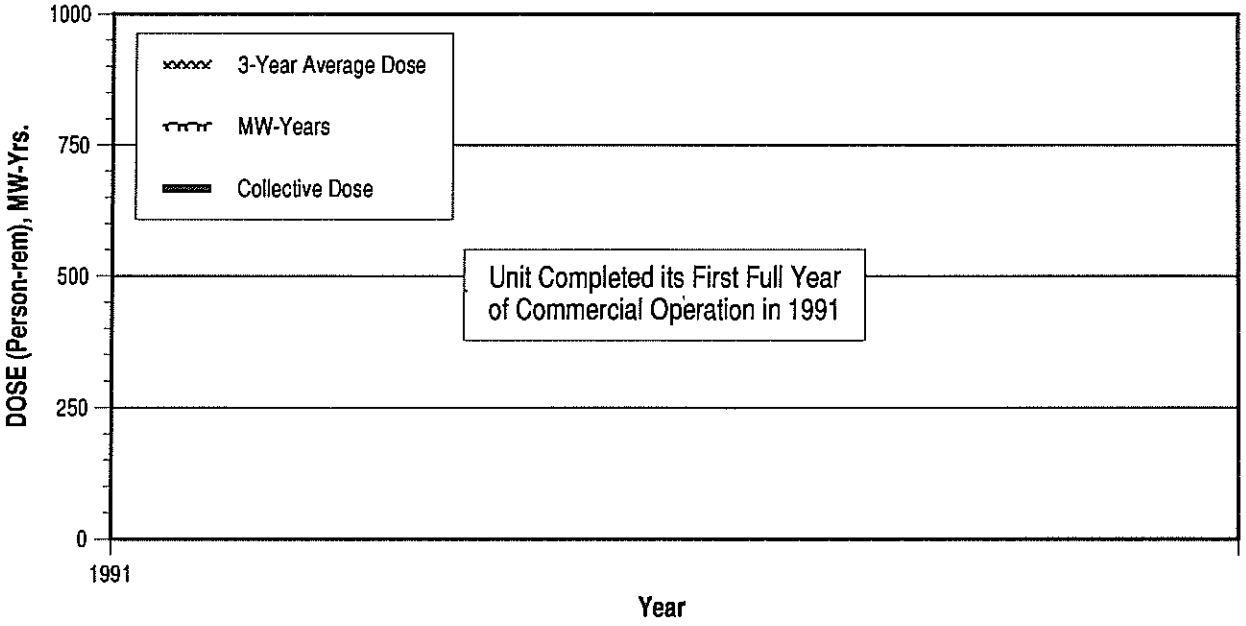
Breakdown by Job Function



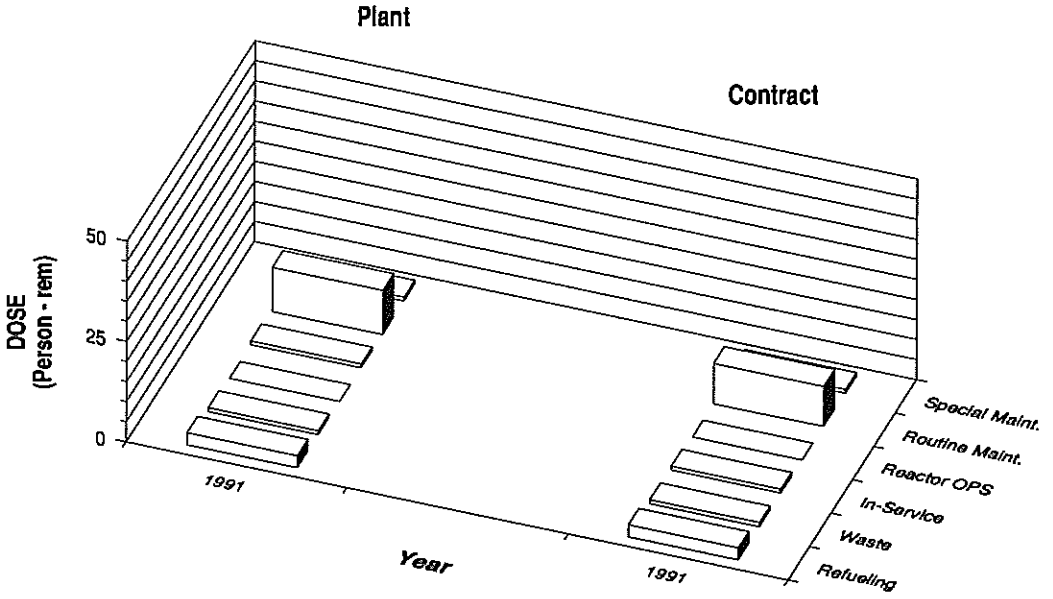
APPENDIX E (continued)

SEABROOK

Dose-Performance Indicators **PWR**



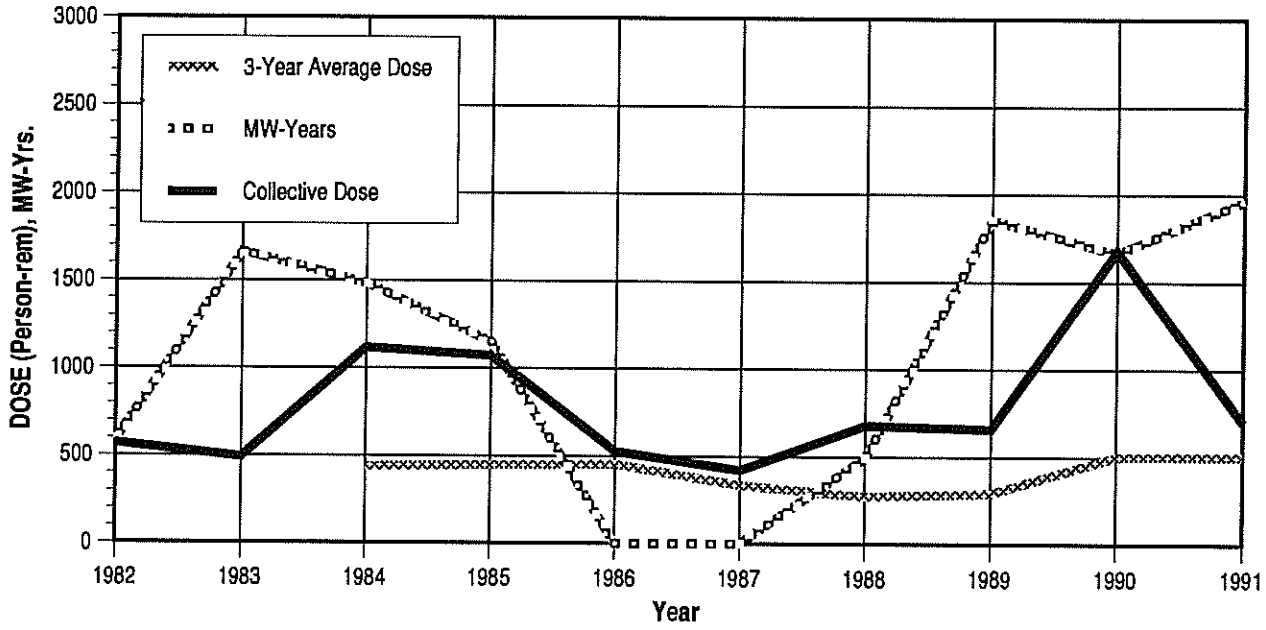
Breakdown by Job Function



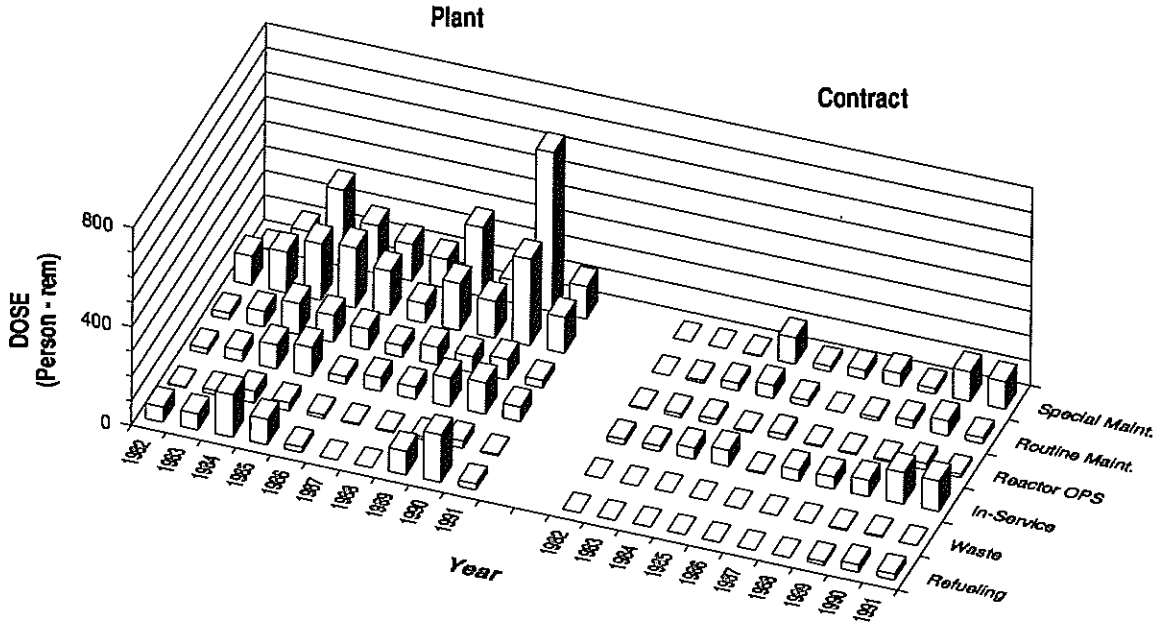
APPENDIX E (continued)

SEQUOYAH 1, 2

Dose-Performance Indicators **PWR**



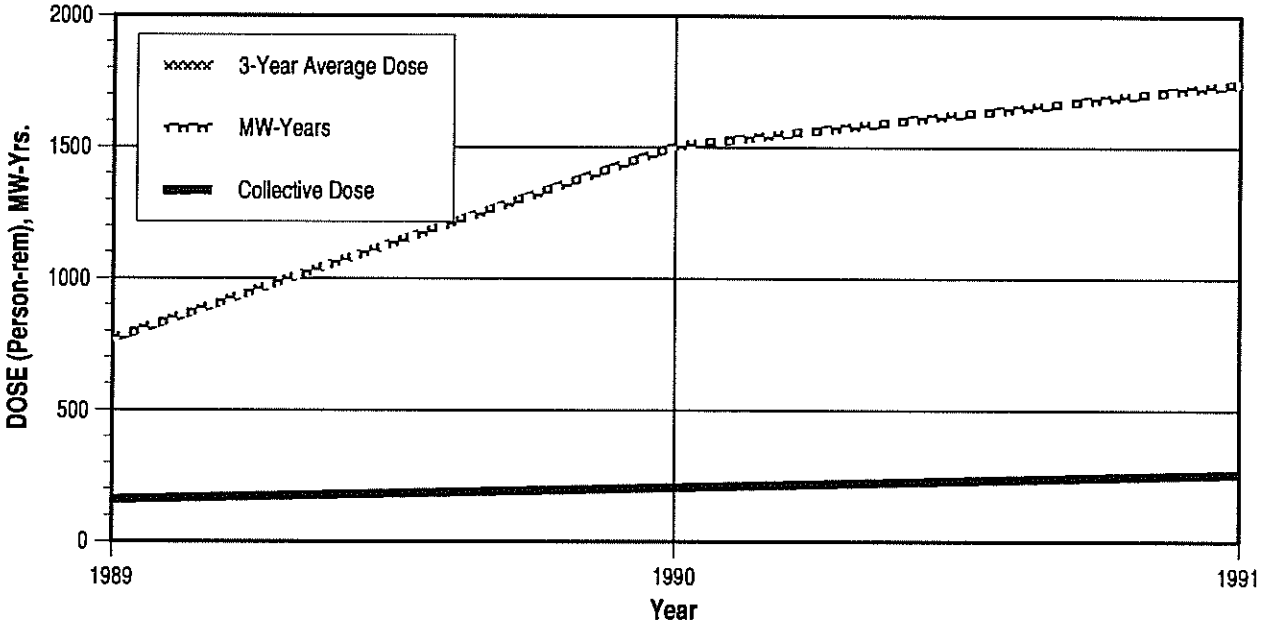
Breakdown by Job Function



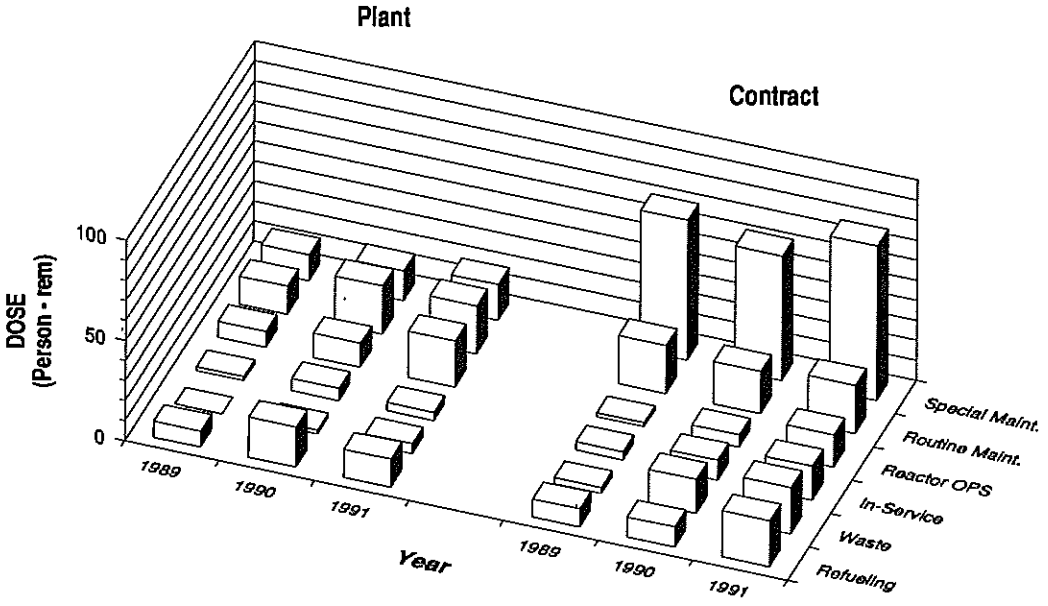
APPENDIX E (continued)

SOUTH TEXAS 1, 2

Dose-Performance Indicators **PWR**



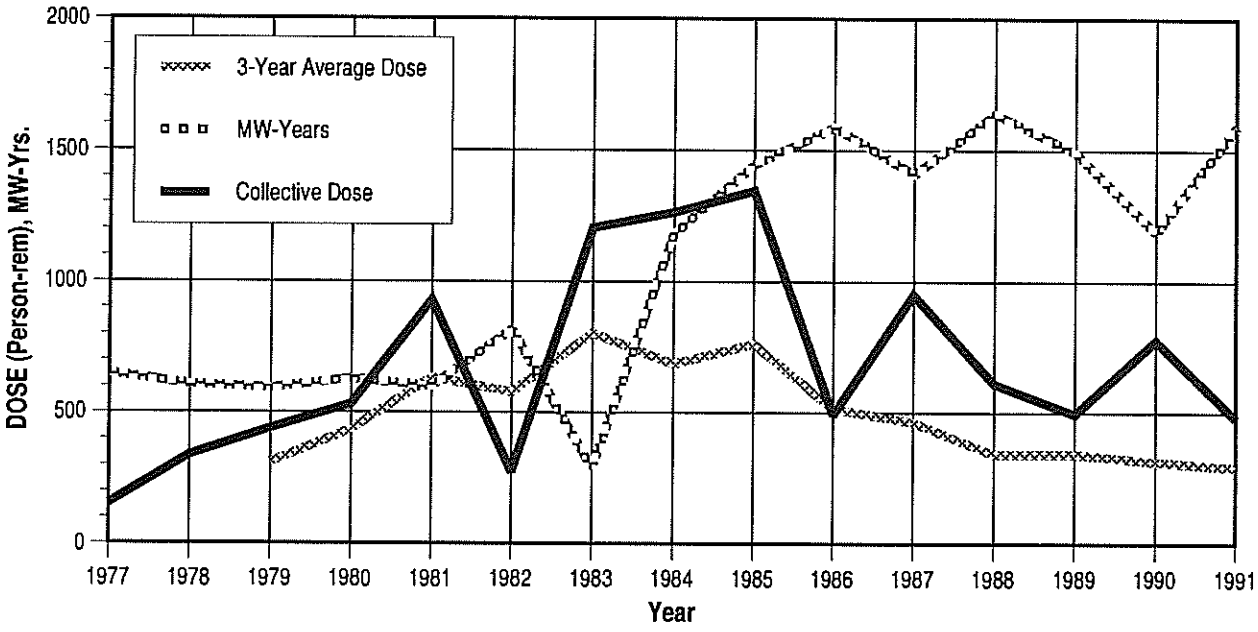
Breakdown by Job Function



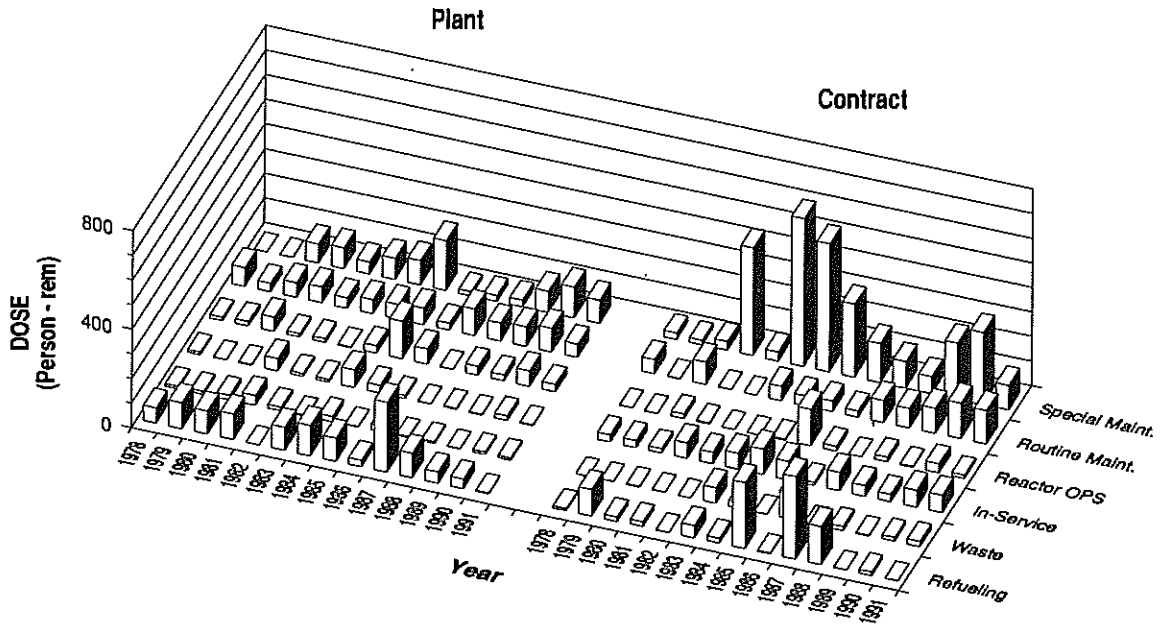
APPENDIX E (continued)

ST. LUCIE 1, 2

Dose-Performance Indicators **PWR**



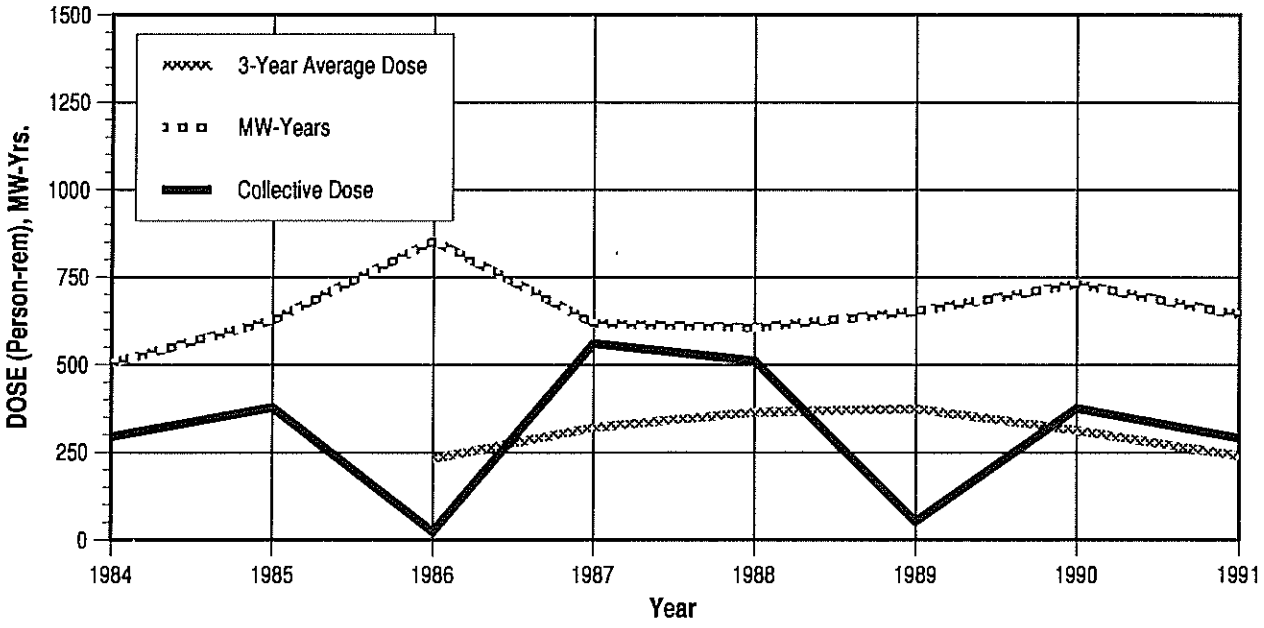
Breakdown by Job Function



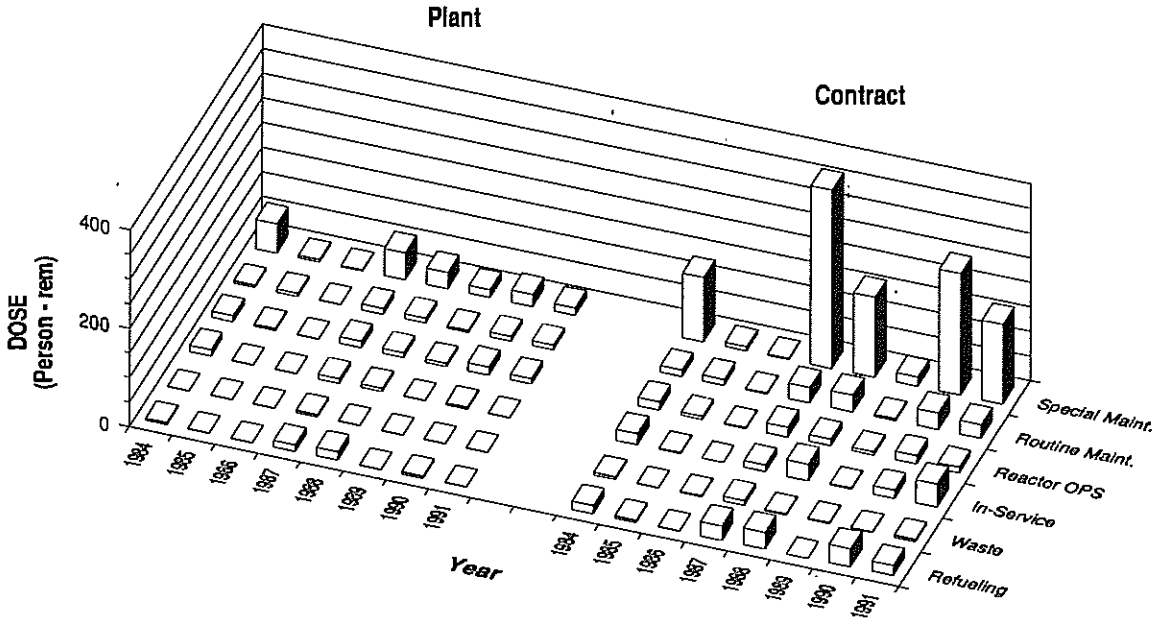
APPENDIX E (continued)

SUMMER 1

Dose-Performance Indicators **PWR**



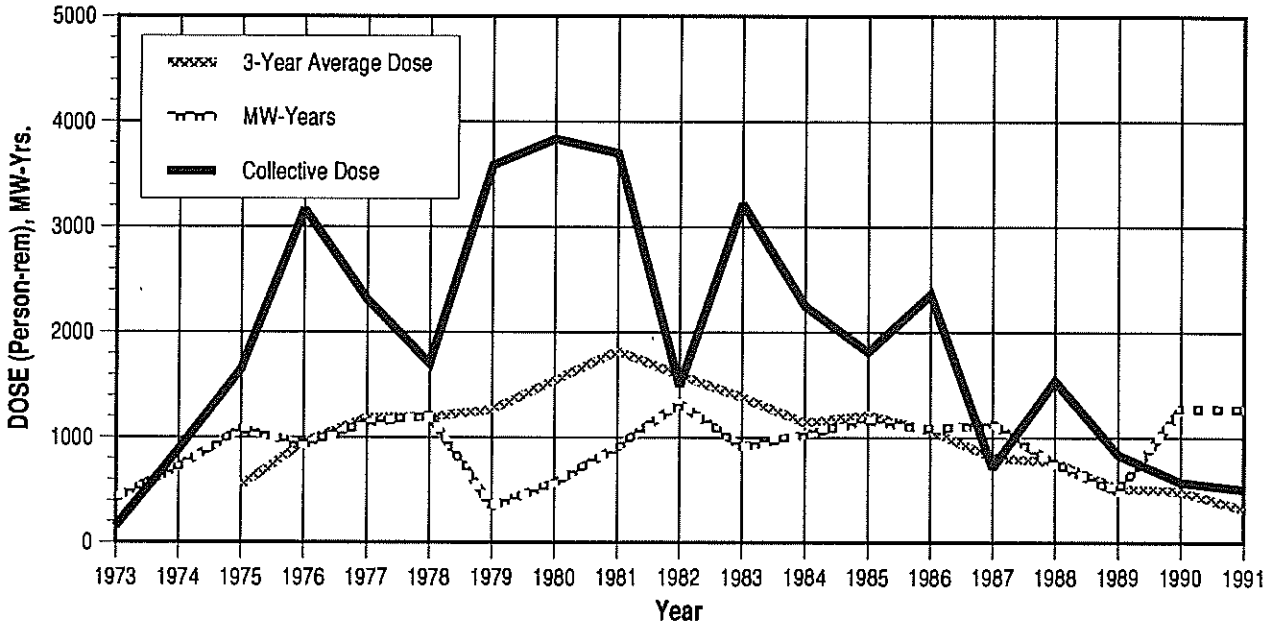
Breakdown by Job Function



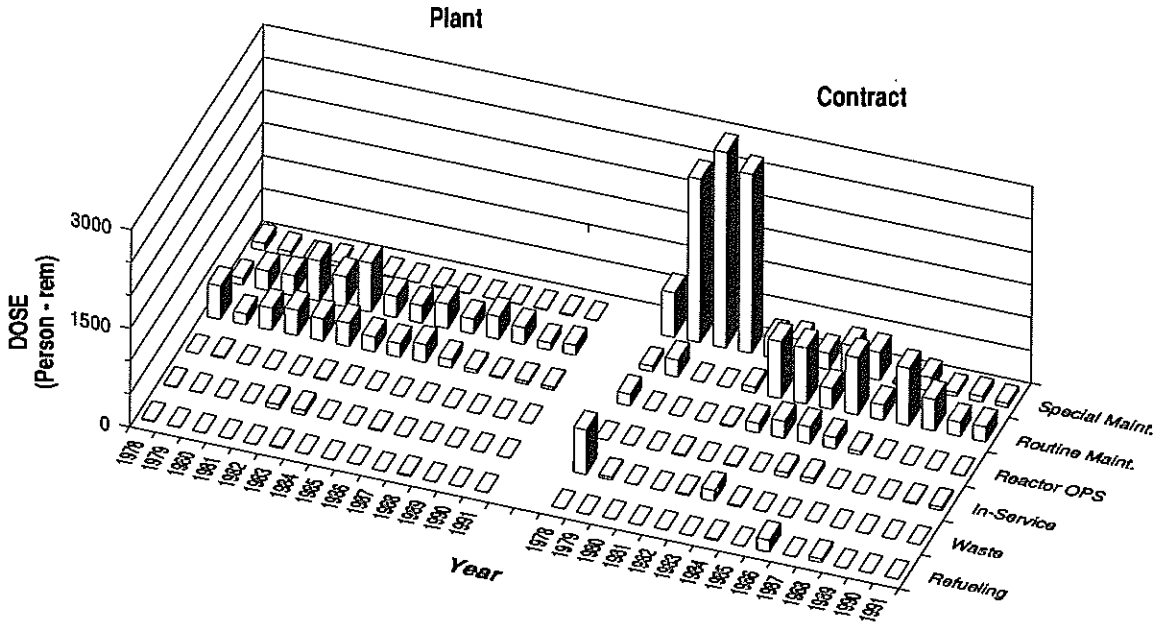
APPENDIX E (continued)

SURRY 1, 2

Dose-Performance Indicators **PWR**



Breakdown by Job Function

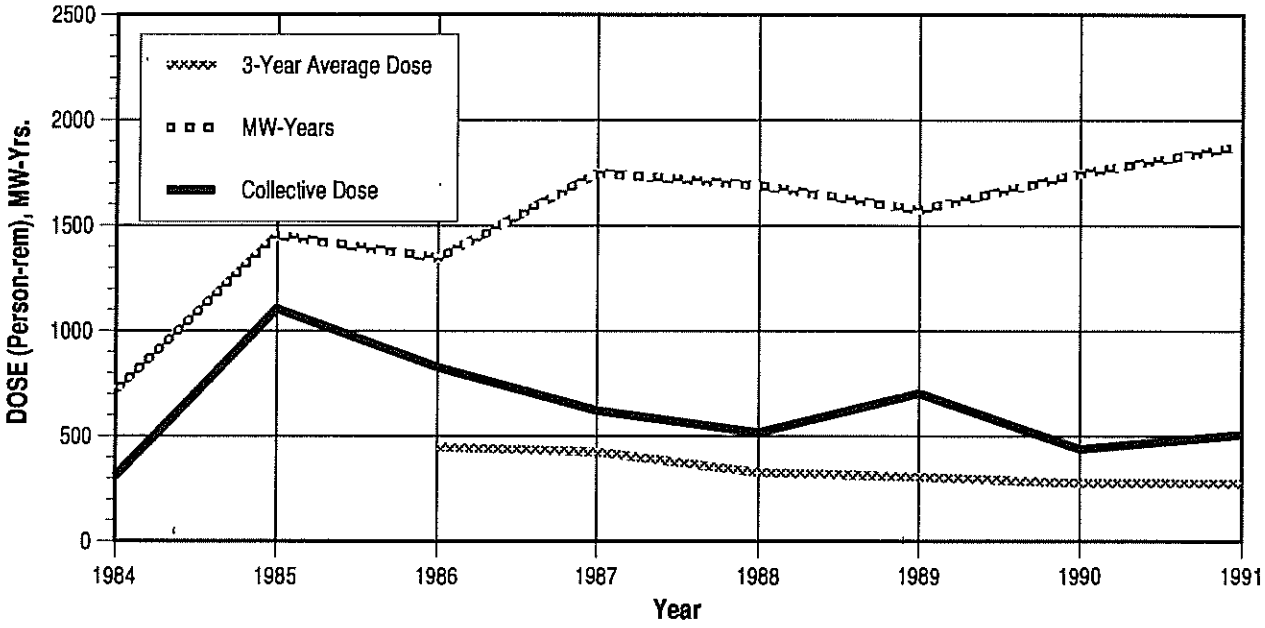


APPENDIX E (continued)

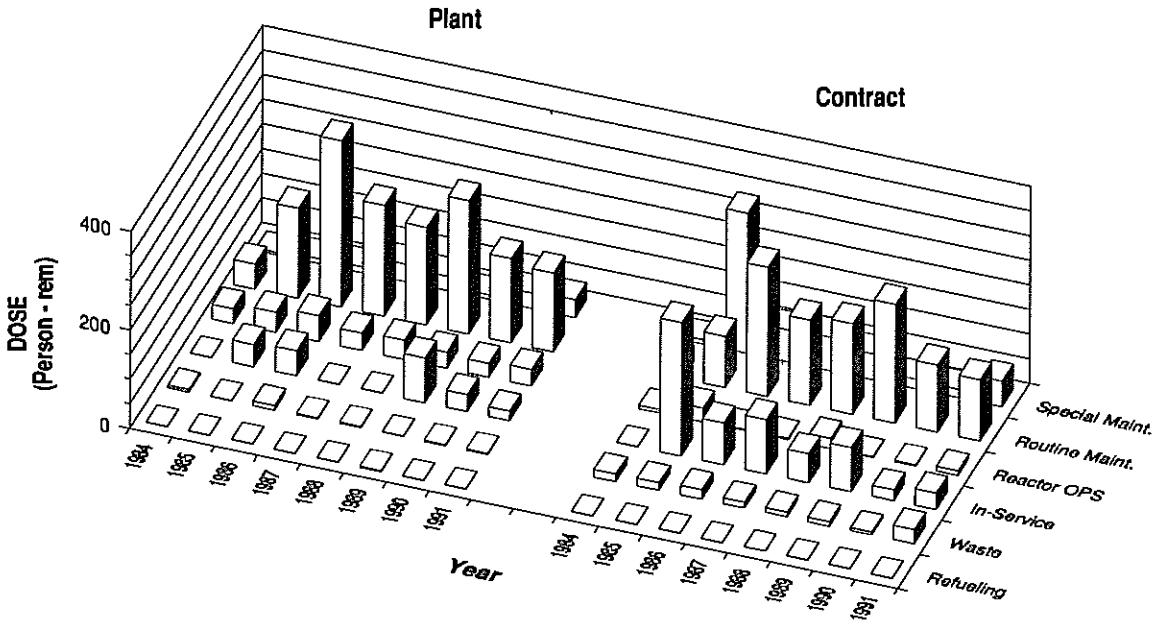
SUSQUEHANNA 1, 2

Dose-Performance Indicators

BWR



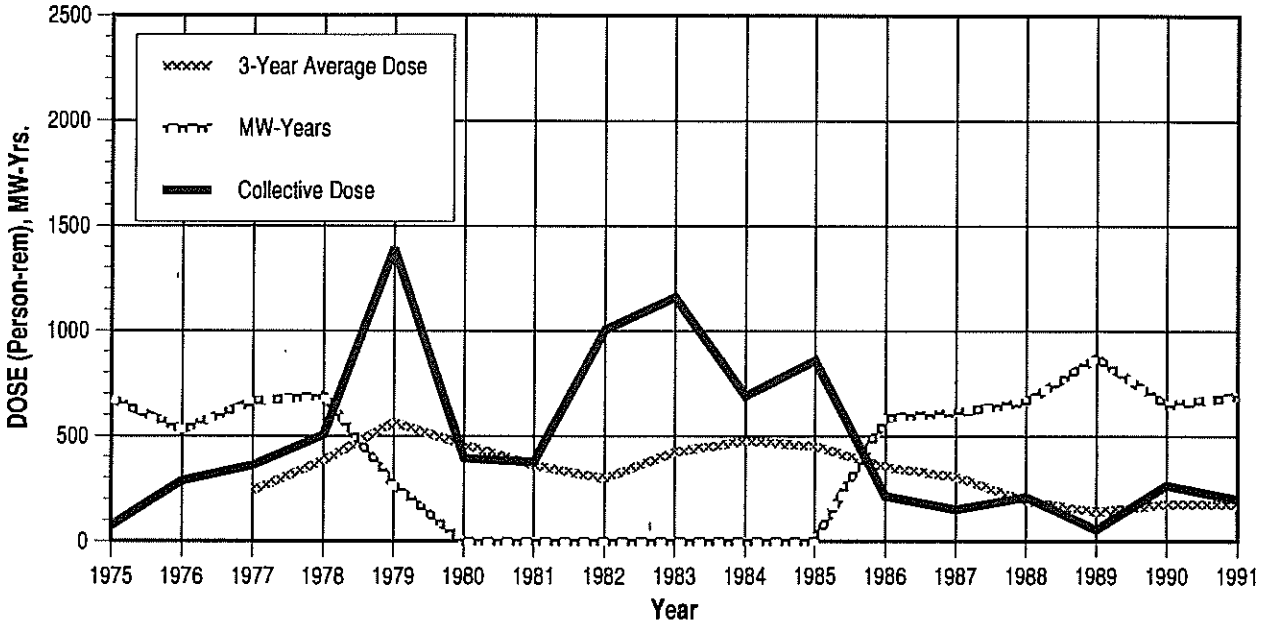
Breakdown by Job Function



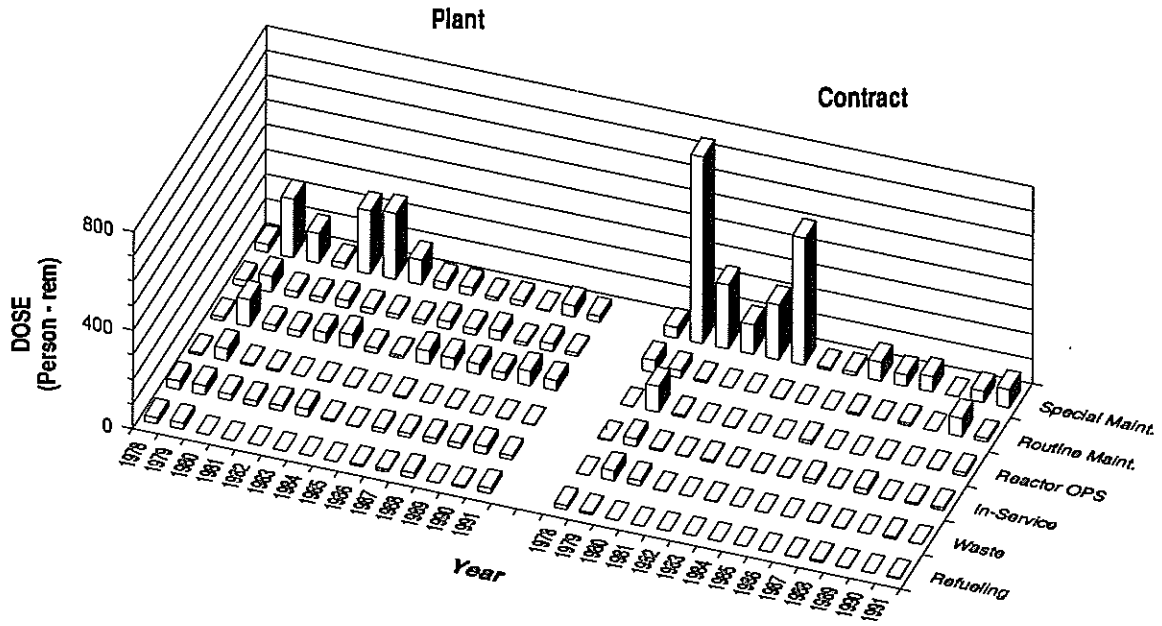
APPENDIX E (continued)

THREE MILE ISLAND 1

Dose-Performance Indicators **PWR**



Breakdown by Job Function

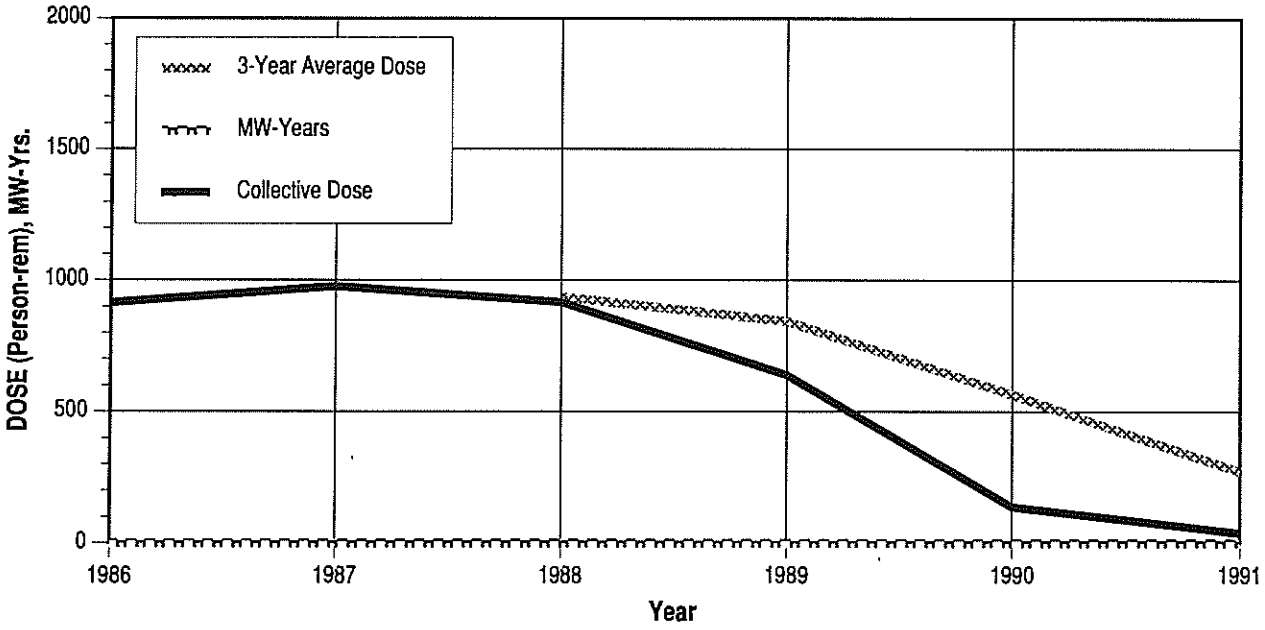


APPENDIX E (continued)

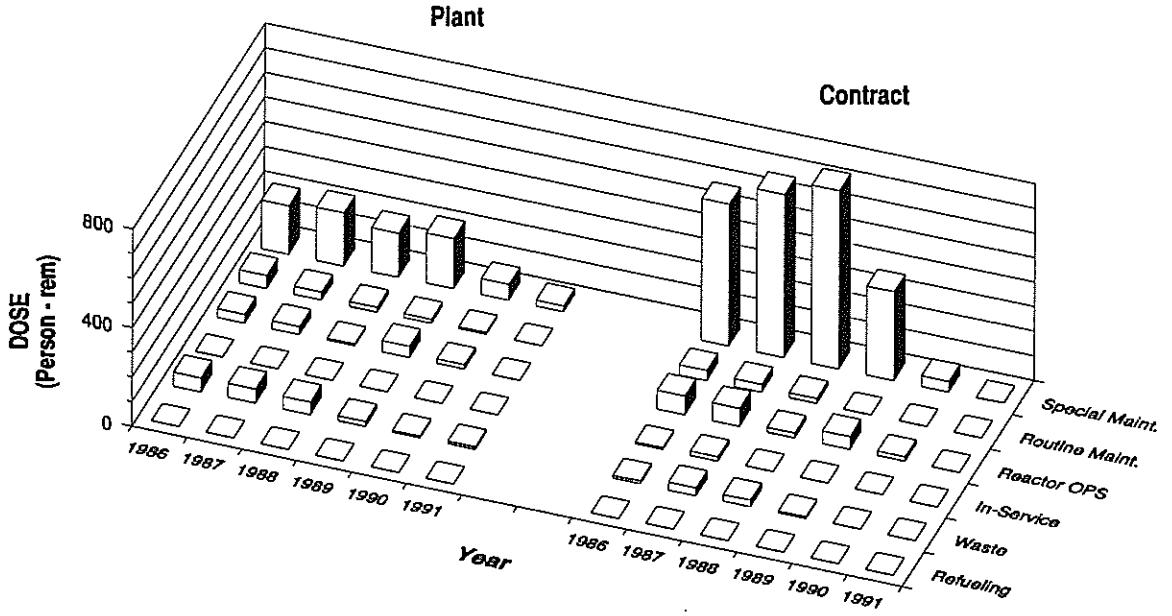
THREE MILE ISLAND 2

Dose-Performance Indicators

PWR



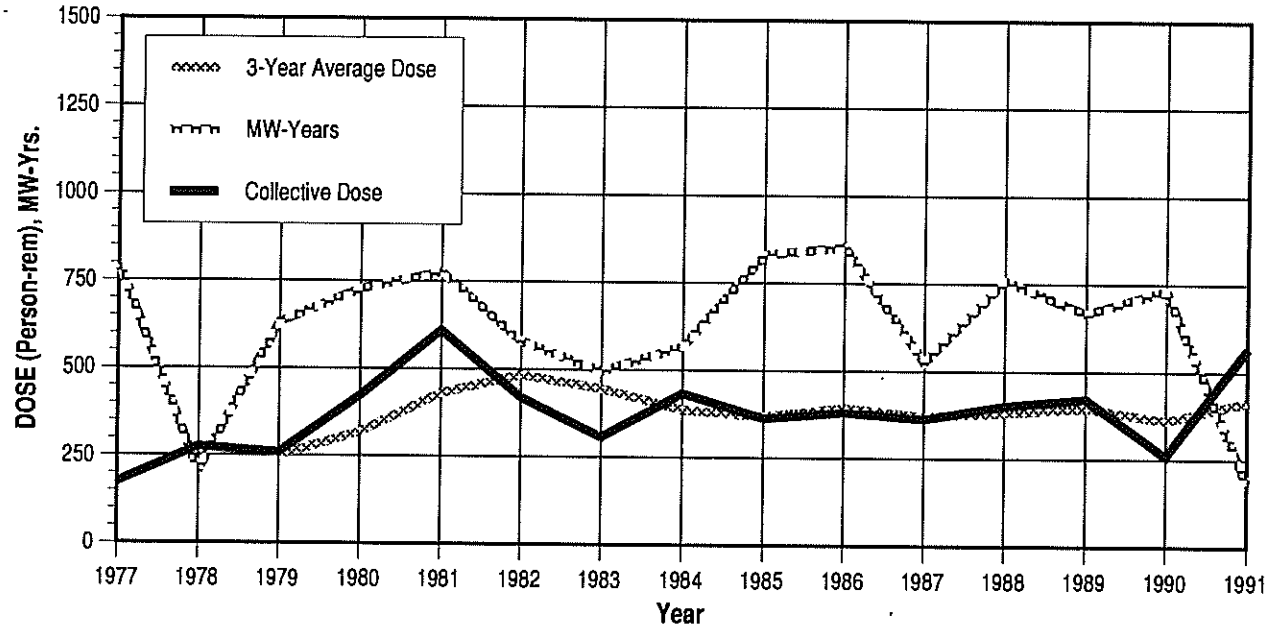
Breakdown by Job Function



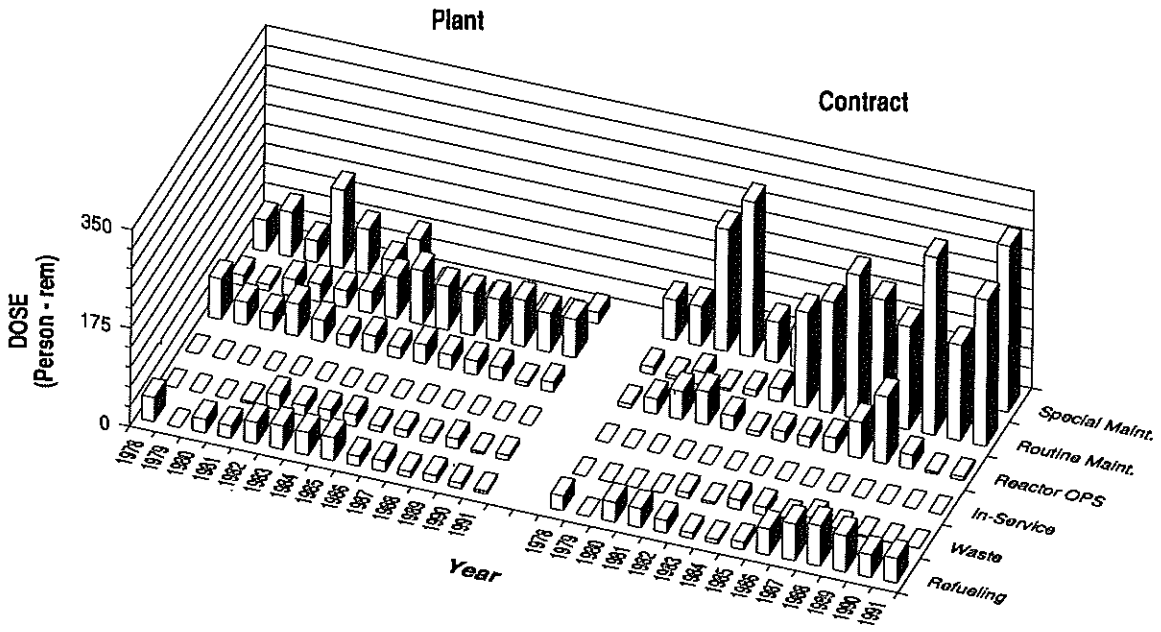
APPENDIX E (continued)

TROJAN

Dose-Performance Indicators **PWR**



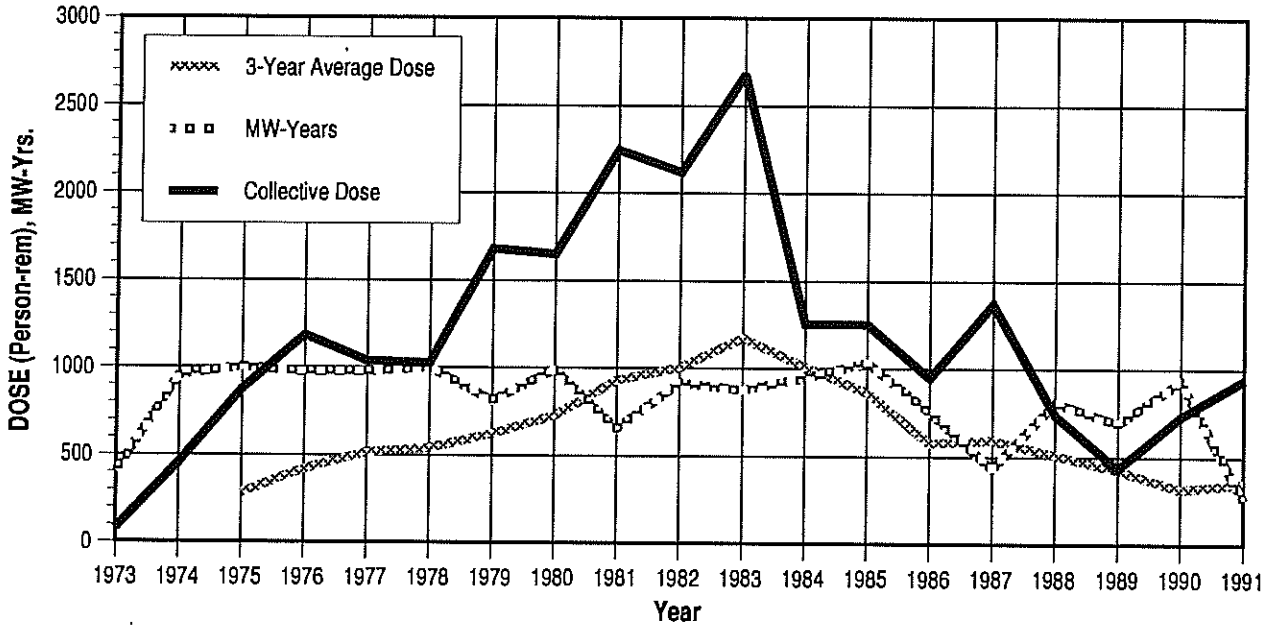
Breakdown by Job Function



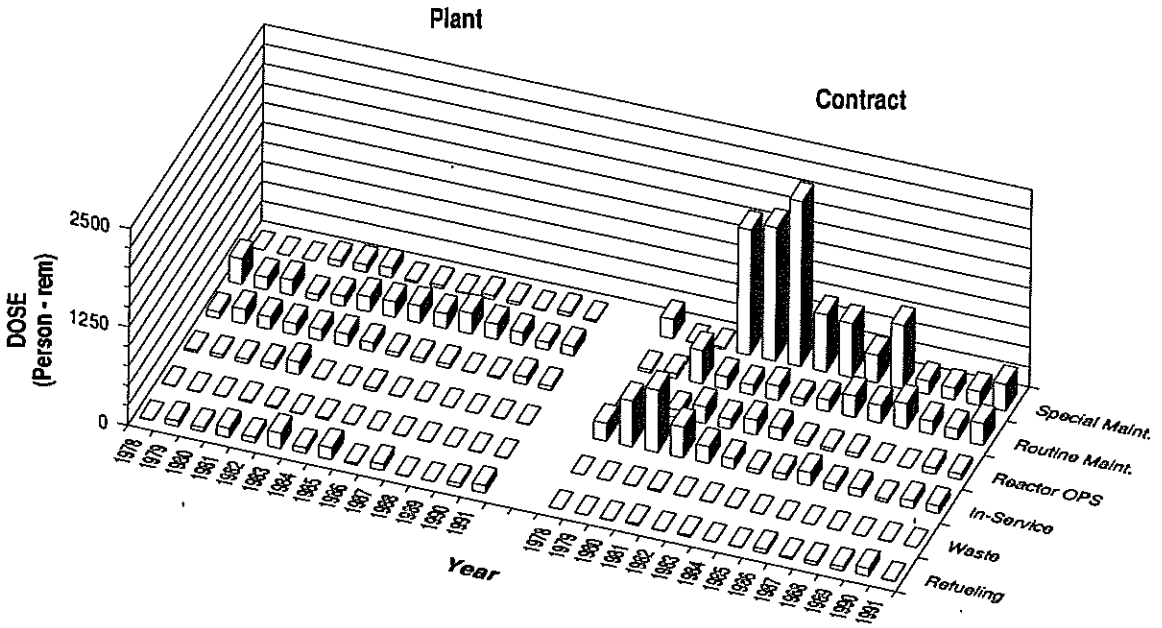
APPENDIX E (continued)

TURKEY POINT 3, 4

Dose-Performance Indicators **PWR**



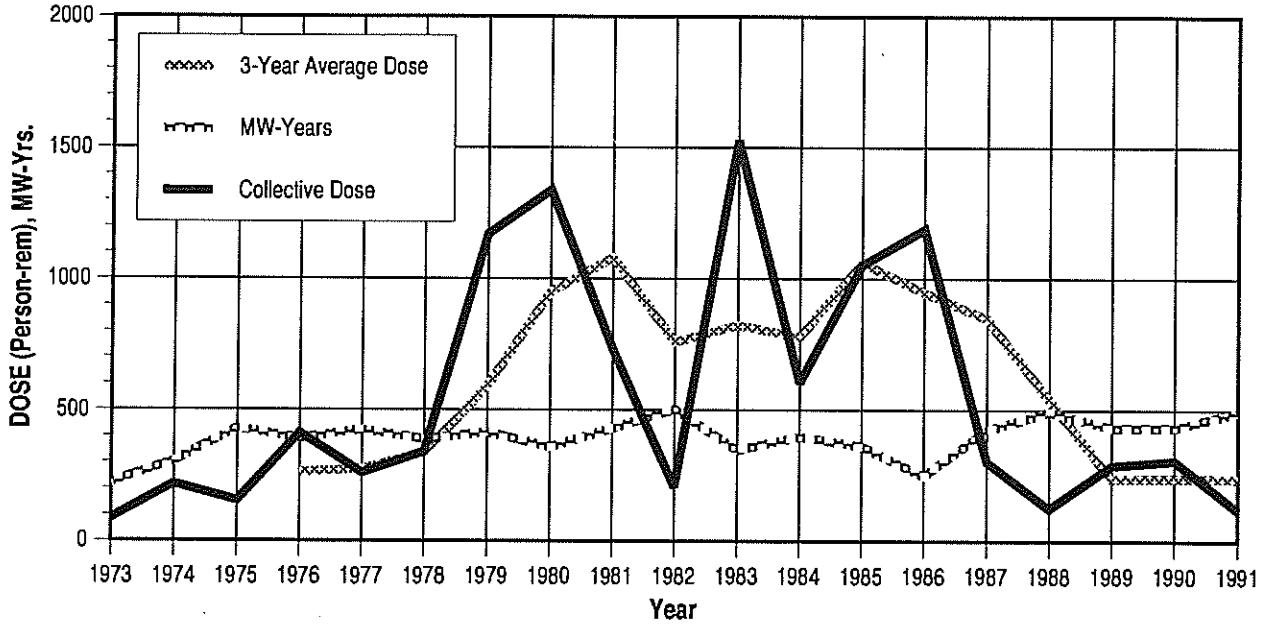
Breakdown by Job Function



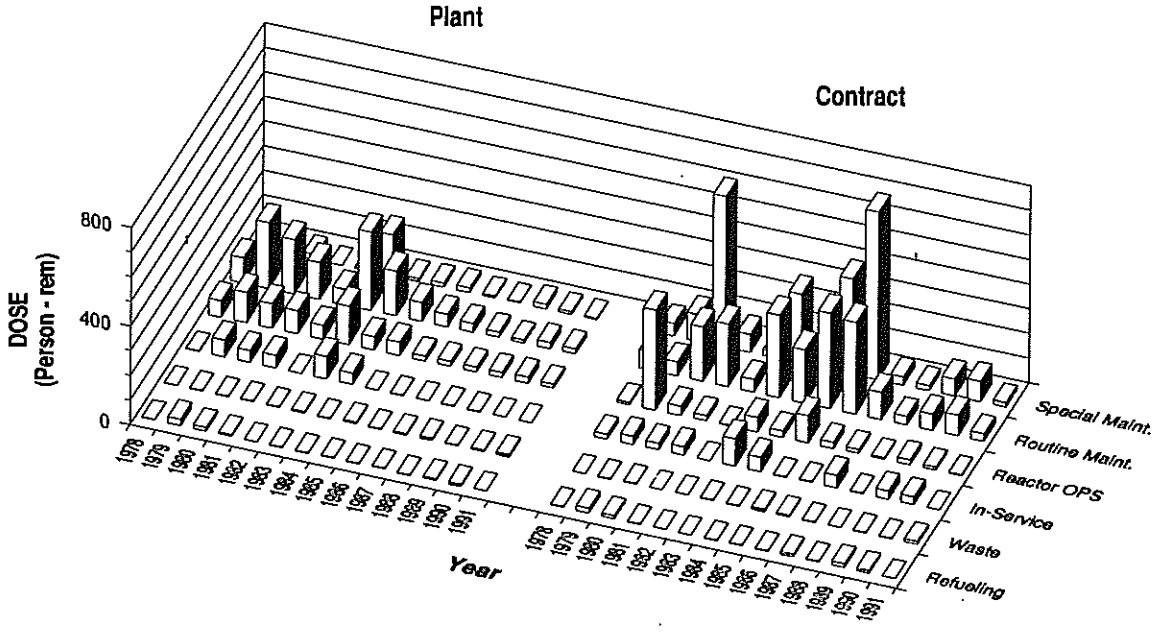
APPENDIX E (continued)

VERMONT YANKEE

Dose-Performance Indicators **BWR**



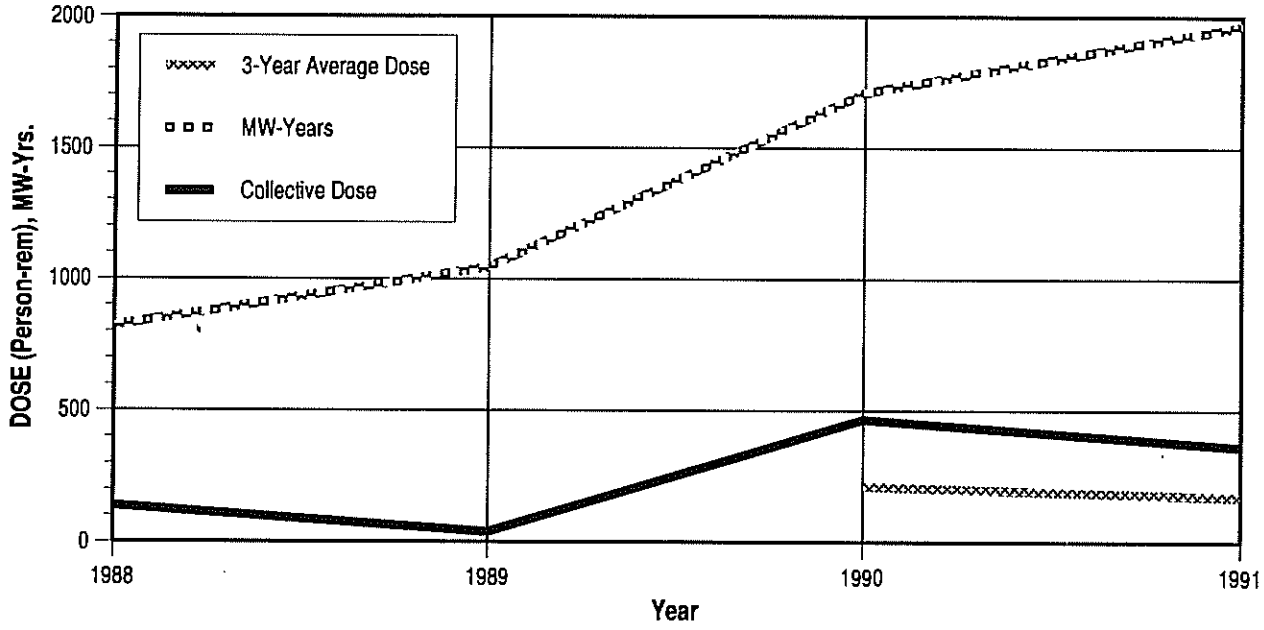
Breakdown by Job Function



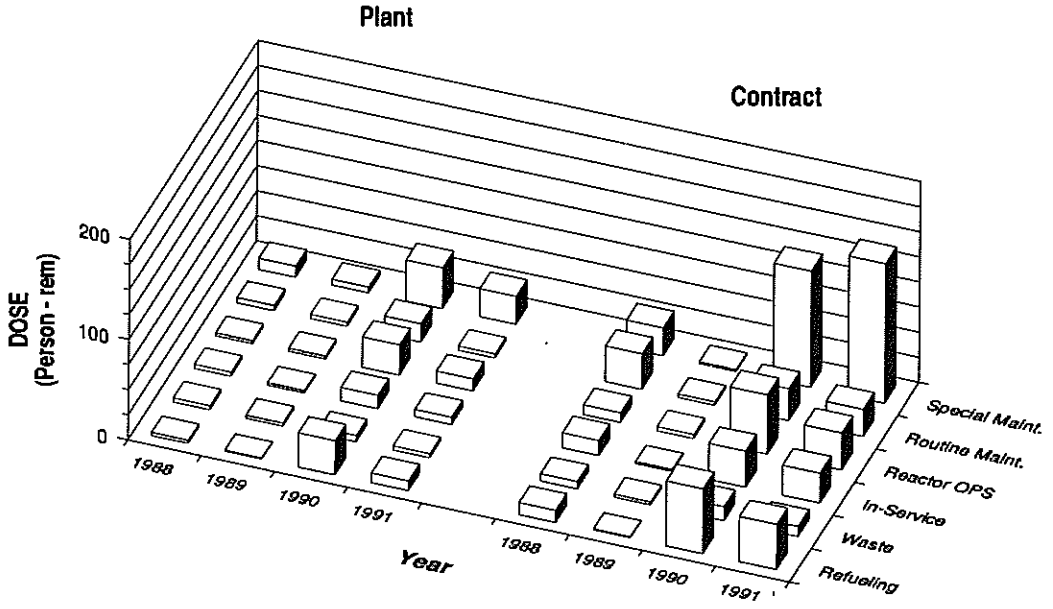
APPENDIX E (continued)

VOGTLE 1, 2

Dose-Performance Indicators **PWR**



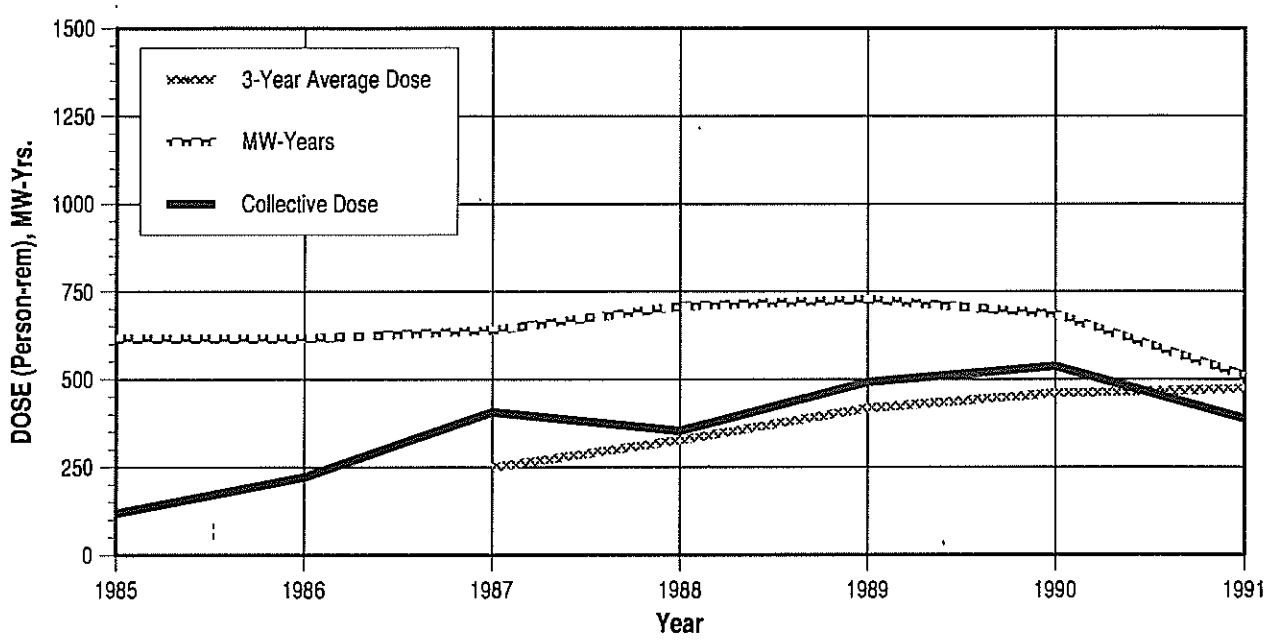
Breakdown by Job Function



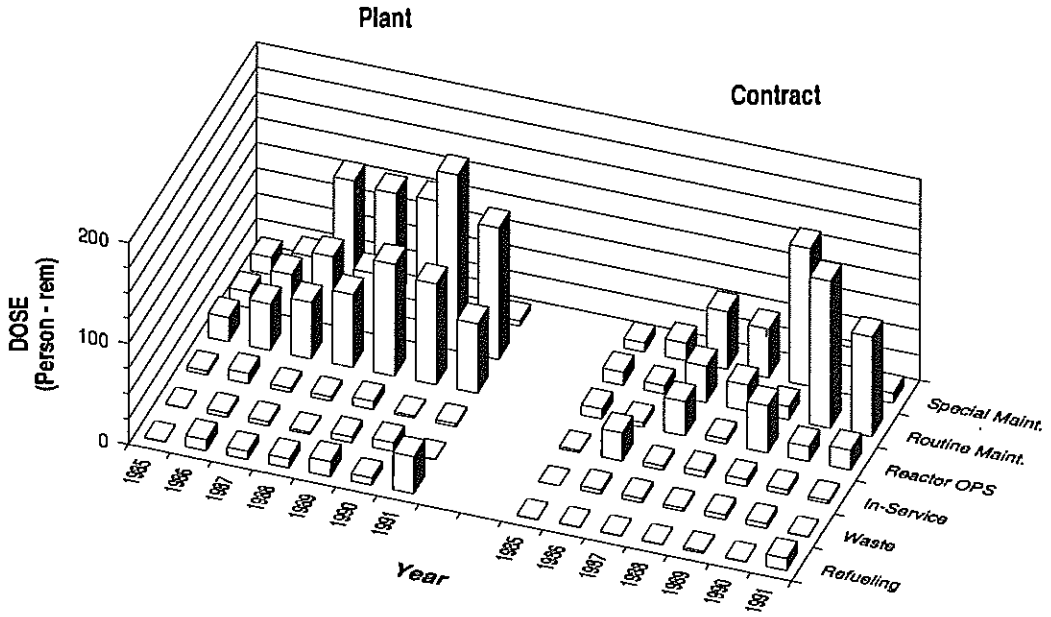
APPENDIX E (continued)

WASHINGTON NUCLEAR 2

Dose-Performance Indicators **BWR**



Breakdown by Job Function

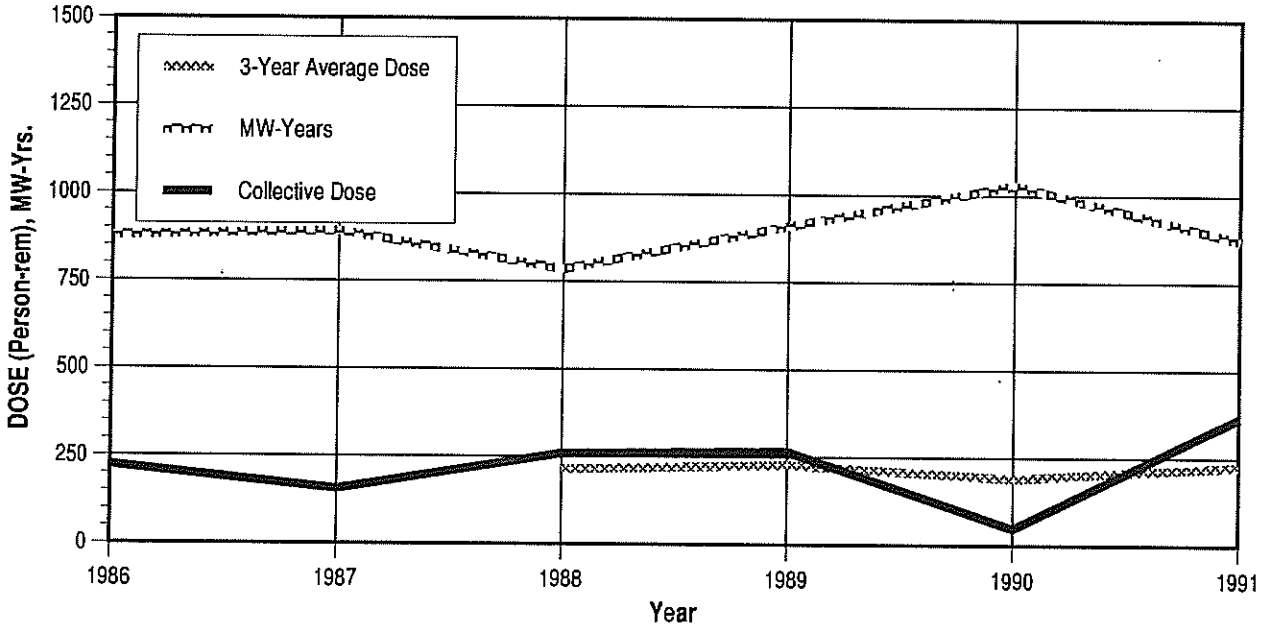


APPENDIX E (continued)

WATERFORD 3

· Dose-Performance Indicators

PWR



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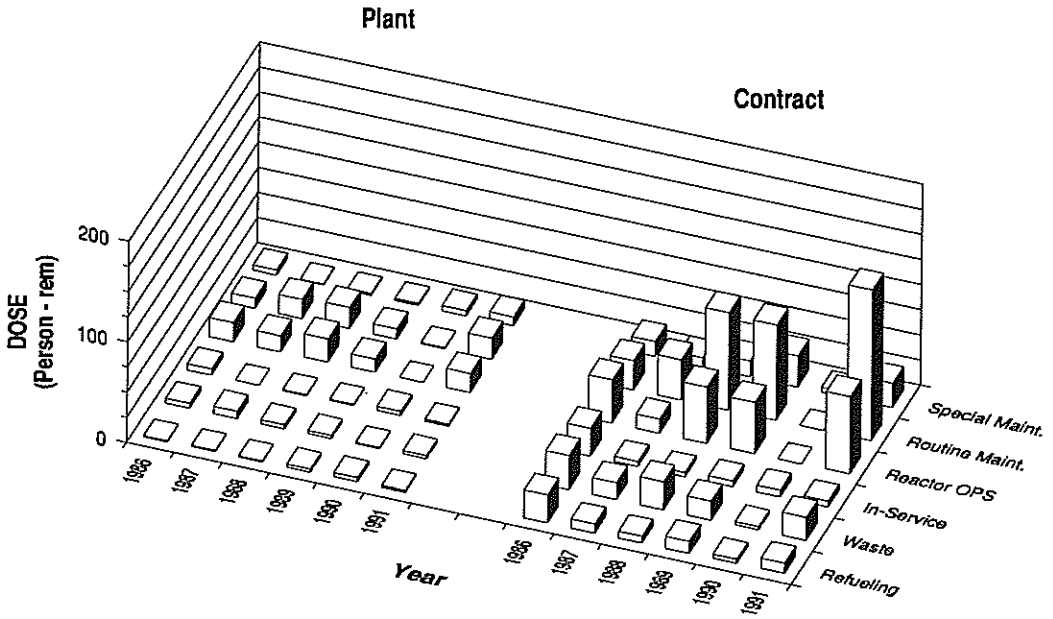
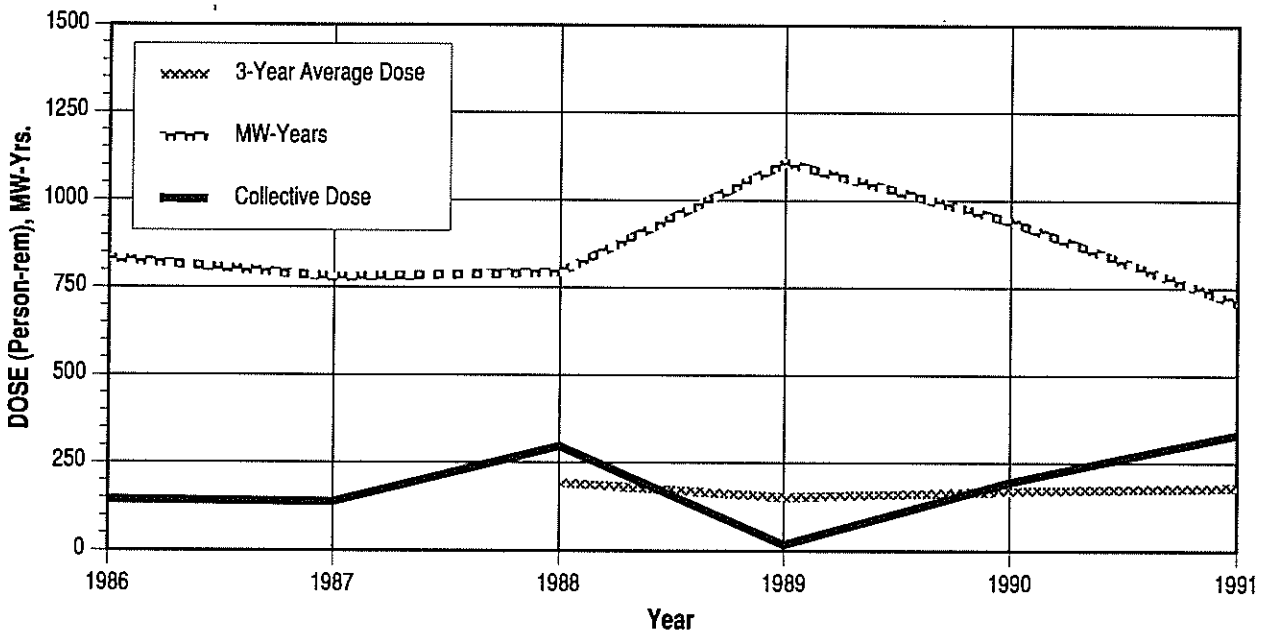


APPENDIX E (continued)

WOLF CREEK 1

Dose-Performance Indicators **PWR**



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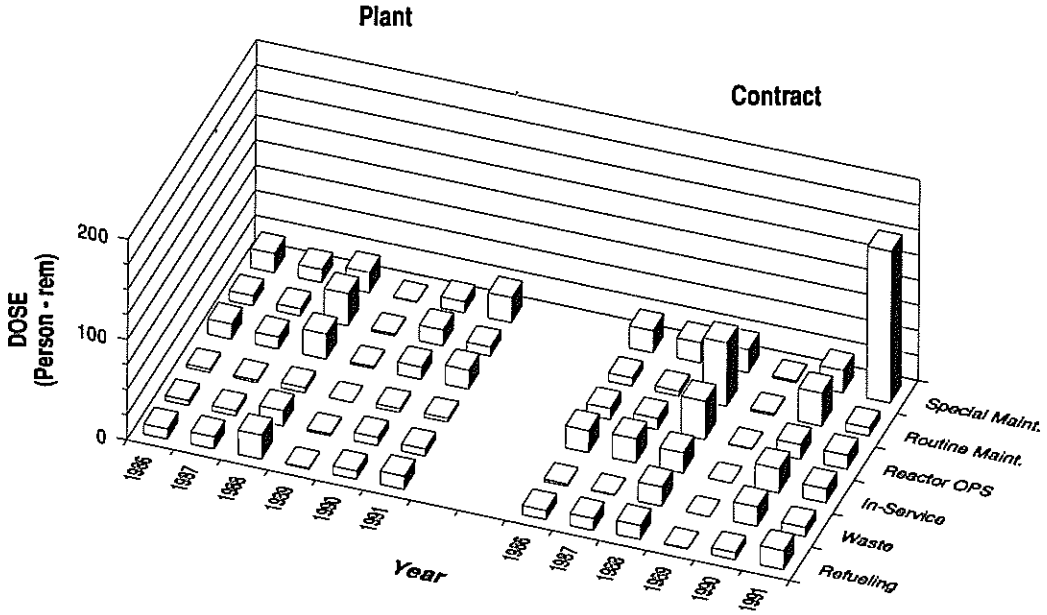
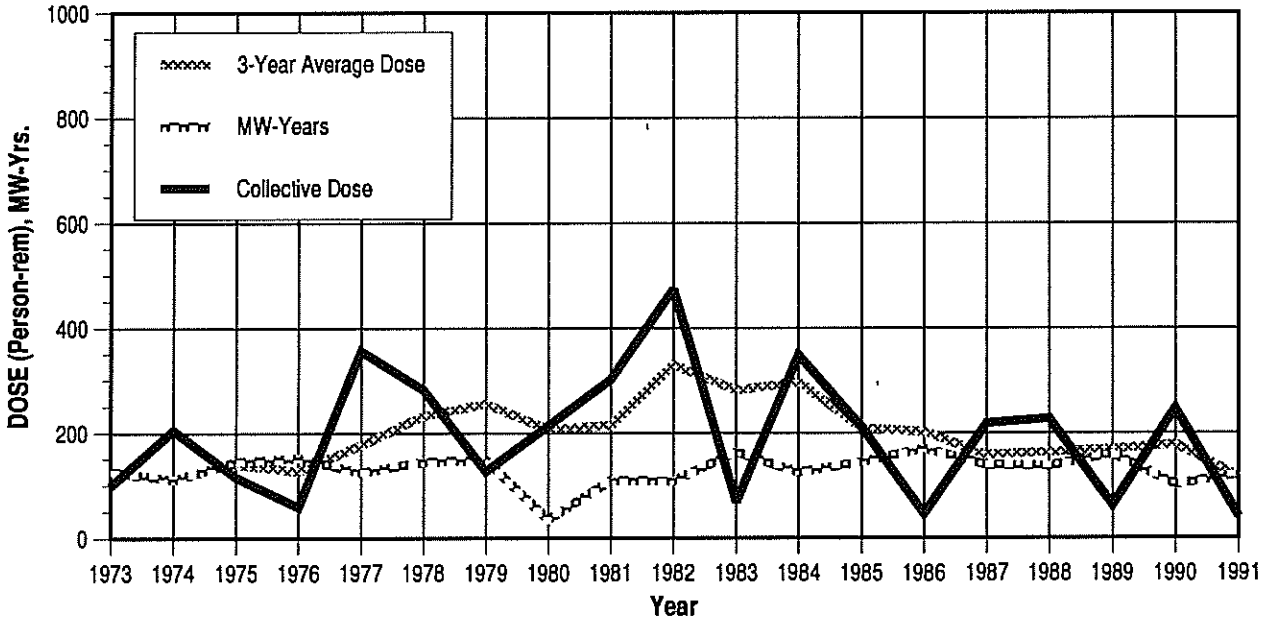


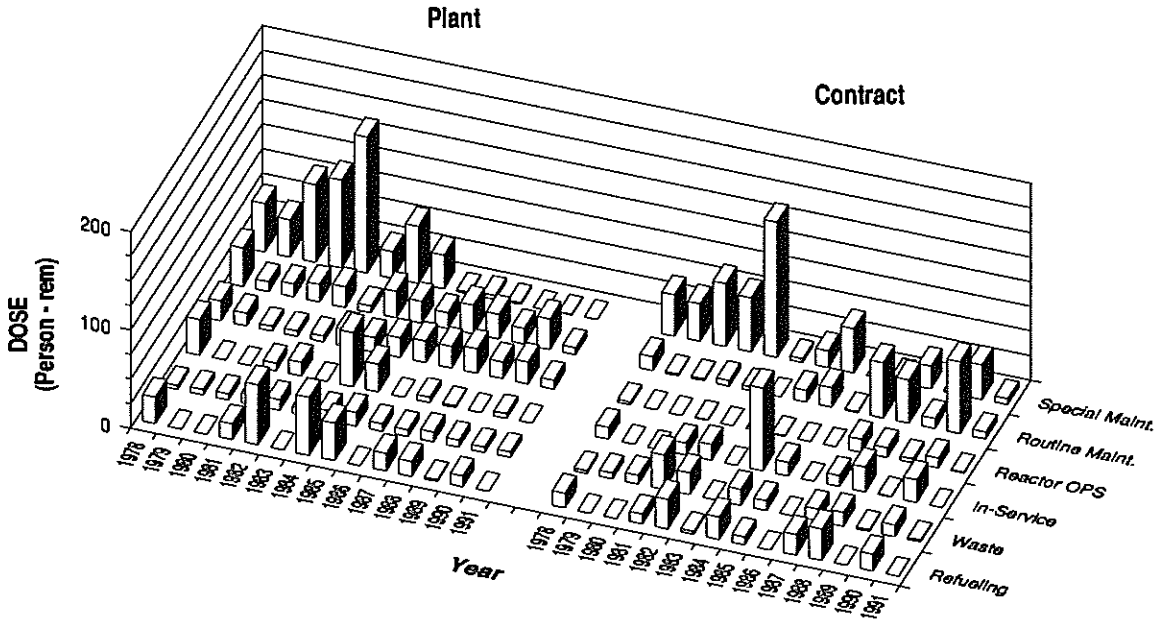
APPENDIX E (continued)

YANKEE-ROWE

Dose-Performance Indicators **PWR**



Breakdown by Job Function

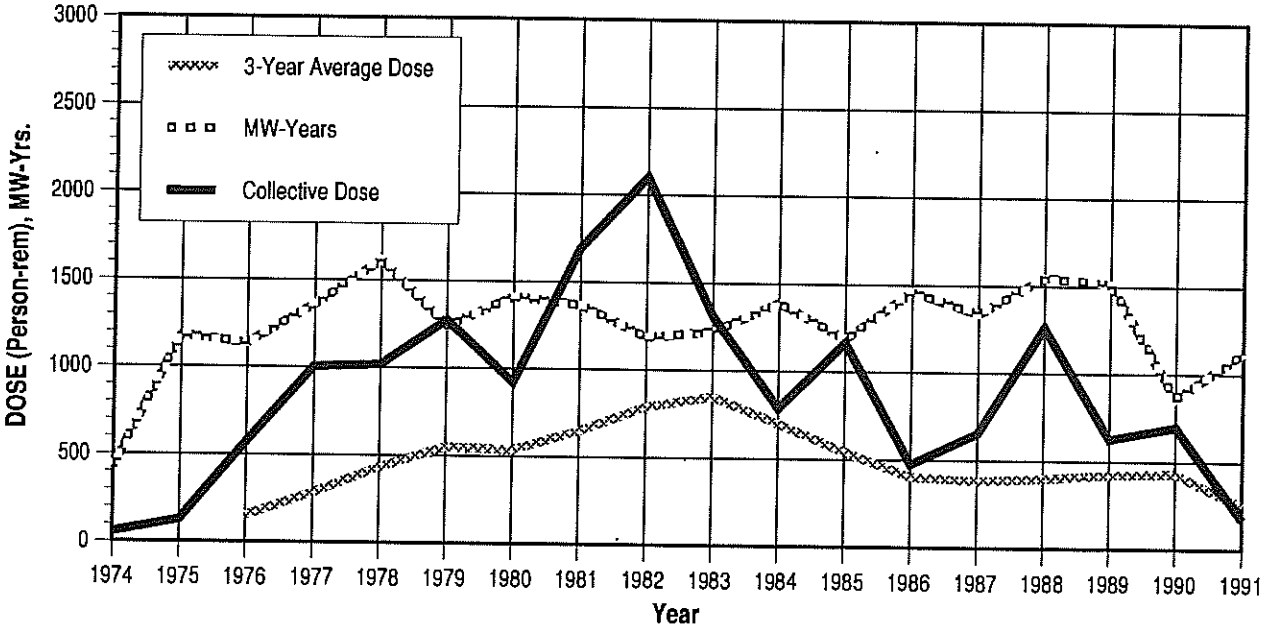


APPENDIX E (continued)

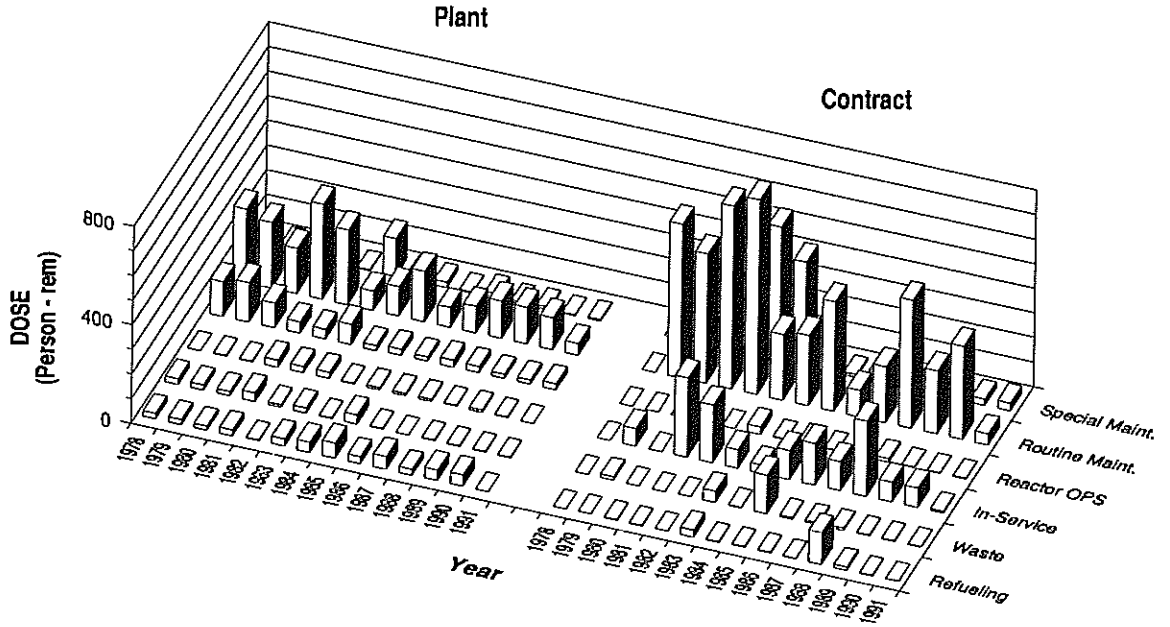
ZION 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function



APPENDIX F

Summary of Annual Whole Body Dose Distributions by Year and Reactor Type

1985-1991

APPENDIX F*
SUMMARY OF ANNUAL WHOLE BODY DOSE DISTRIBUTIONS BY YEAR AND REACTOR TYPE
1985-1991

YEAR AND REACTOR TYPE	Number of Individuals with Whole Body Doses in the Ranges (rems or cSv)																	TOTAL NUMBER MONI- TORED	NUMBER WITH MEAS. EXPOSURE	TOTAL COLLEC- TIVE OOSE
	No Mea- surable	Meas. <0.10	0.10- 0.25	0.25- 0.50	0.50- 0.75	0.75- 1.00	1.00- 2.00	2.00- 3.00	3.00- 4.00	4.0- 5.0	5- 6.0	6- 7.0	7- 8.0	8- 9.0	9- 10	10- 12	>12			
1991 - PWRs	57,815	28,514	11,876	9,387	4,657	2,462	2,972	371	30									118,084	60,269	16,522
1991 - BWRs	37,527	17,384	7,076	5,732	3,409	1,975	2,602	299	14	1								76,019	38,492	12,005
1991 - LWRs	95,342	45,898	18,952	15,119	8,066	4,437	5,574	670	44	1								194,103	98,761	28,527
1990 - PWRs	53,935	29,669	12,957	10,591	5,601	3,267	4,363	590	43									121,016	67,081	20,812
1990 - BWRs	39,102	17,210	7,336	5,992	3,717	2,493	4,162	625	41	1								80,679	41,577	15,780
1990 - LWRs	93,037	46,879	20,293	16,583	9,318	5,760	8,525	1,215	84	1								201,695	108,658	36,592
1989 - PWRs	51,701	29,419	11,591	9,336	5,061	2,997	4,739	674	66	11								115,595	63,894	20,381
1989 - BWRs	40,951	19,343	7,887	6,323	3,753	2,544	3,962	515	33									85,311	44,360	15,549
1989 - LWRs	92,652	48,762	19,478	15,659	8,814	5,541	8,701	1,189	99	11								200,906	108,254	35,930
1988 - PWRs	47,866	27,177	11,014	9,260	5,563	3,541	5,405	829	127	4		1						110,787	62,921	22,786
1988 - BWRs	47,679	16,044	6,736	5,609	3,311	2,397	4,859	1,129	215	5								87,984	40,305	17,983
1988 - LWRs	95,545	43,221	17,750	14,869	8,874	5,938	10,264	1,958	342	9		1						198,771	103,226	40,769
1987 - PWRs	48,870	27,070	10,796	8,828	5,152	3,442	6,187	988	124	10								111,467	62,597	23,684
1987 - BWRs	43,688	17,711	7,027	5,739	3,447	2,383	4,578	723	117	12								85,425	41,737	16,717
1987 - LWRs	92,558	44,781	17,823	14,567	8,599	5,825	10,765	1,711	241	22								196,892	104,334	40,401
1986 - PWRs	44,016	29,758	10,128	8,159	4,784	3,059	5,594	1,244	239	30								107,011	62,995	23,032
1986 - BWRs	29,232	15,075	5,865	4,962	2,996	2,121	5,084	1,426	354	45								67,160	37,928	19,349
1986 - LWRs	73,248	44,833	15,993	13,121	7,780	5,180	10,678	2,670	593	75								174,171	100,923	42,381
1985 - PWRs	42,409	25,545	8,158	6,761	4,107	2,602	5,584	1,586	248	42								97,042	54,633	22,469
1985 - BWRs	22,061	14,446	5,957	5,218	3,107	2,295	4,973	1,731	468	42								60,298	38,237	20,573
1985 - LWRs	64,470	39,991	14,115	11,979	7,214	4,897	10,557	3,317	716	84								157,340	92,870	43,042

* Figures contained herein are uncorrected for multiple reporting of transient individuals, and include only those reactors that have completed a full year of commercial operation in each of the years indicated.

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10. SUPPLEMENTARY NOTES

11. ABSTRACT *(200 words or less)*

This report summarizes the occupational radiation exposure information that has been reported to the NRC's Radiation Exposure Information Reporting System (REIRS) by nuclear power facilities and certain other categories of NRC licensees during the years 1969 through 1991. The bulk of the data presented in the report was obtained from annual radiation exposure reports submitted in accordance with the requirements of 10 CFR 20.407 and the technical specifications of nuclear power plants. Data on workers terminating their employment at certain NRC licensed facilities were obtained from reports submitted pursuant to 10 CFR 20.408. The 1991 annual reports submitted by about 436 licensees indicated that approximately 206,732 individuals were monitored, 182,334 of whom were monitored by nuclear power facilities. They incurred an average individual dose of 0.15 rem (cSv) and an average measurable dose of about 0.31 (cSv). Termination radiation exposure reports were analyzed to reveal that about 96,231 individuals completed their employment with one or more of the 436 covered licensees during 1991. Some 68,115 of these individuals terminated from power reactor facilities, and about 7,763 of them were considered to be transient workers who received an average dose of 0.52 rem (cSv).

12. KEY WORDS/DESCRIPTORS *(List words or phrases that will assist researchers in locating the report.)*

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power reactors
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average dose
transient workers
fuel fabricators

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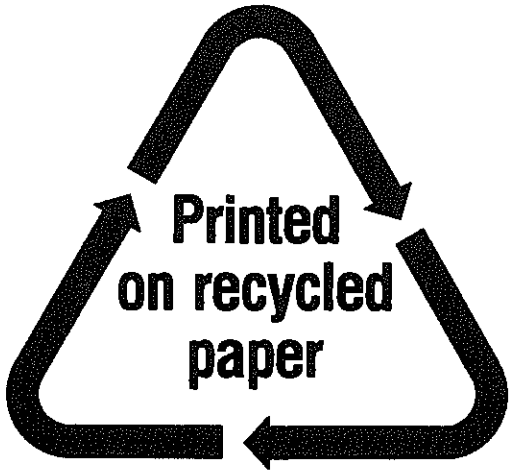

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