
Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities 1994

Twenty-Seventh Annual Report

U.S. Nuclear Regulatory Commission

Office of Nuclear Regulatory Research

M. L. Thomas, D. Hagemeyer



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Twenty-Seventh Annual Report

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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.
NUREG-0713	Occupational Radiation Exposure At Commercial Nuclear Power Reactors and Other Facilities 1991, Vol. 13, U.S. Nuclear Regulatory Commission, July 1993.
NUREG-0713	Occupational Radiation Exposure At Commercial Nuclear Power Reactors and Other Facilities 1992, Vol. 14, U.S. Nuclear Regulatory Commission, December 1993.
NUREG-0713	Occupational Radiation Exposure At Commercial Nuclear Power Reactors and Other Facilities 1993, Vol. 14, U.S. Nuclear Regulatory Commission, January 1995.

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 compiled from the 1994 annual reports submitted by six of the seven categories¹ of NRC licensees subject to the reporting requirements of 10 CFR 20.2206. Since there are no geologic repositories for high level waste currently licensed, only six categories will be considered in this report.

Annual reports for 1994 were received from a total of **303** NRC licensees, of which **109** were operators of nuclear power reactors in commercial operation. Compilations of the reports submitted by the 303 licensees indicated that **152,028** individuals were monitored, **79,780** of whom received a measurable dose (Table 3.1). The collective dose incurred by these individuals was **24,740** person-cSv (person-rem)² which represents a **15% decrease** from the 1993 value. The number of workers receiving a measurable dose also decreased, resulting in the average measurable dose of **0.31** cSv (rem) for 1994. The average measurable dose is defined to be the total collective dose (TEDE) divided by the number of workers receiving a measurable dose. These figures have been adjusted to account for transient reactor workers.

In 1994, the annual collective dose per reactor for light water reactor licensees (LWRs) was **198** person-cSv (person-rem). This represents a **18% decrease** from the 1993 value of 242 person-cSv (person-rem). The annual collective dose per reactor for boiling water reactors (BWRs) was **327** person-cSv (person-rem) and, for pressurized water reactors (PWRs), it was **131** person-cSv (person-rem).

Analyses of transient worker data indicate that **18,178** individuals completed work assignments at two or more licensees during the monitoring year. The dose distributions are adjusted each year to account for the duplicate reporting of transient workers by multiple licensees. In 1994, the average measurable dose calculated from reported data was **0.28** cSv (rem). The corrected dose distribution resulted in an average measurable dose of **0.31** cSv (rem).

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 five-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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FOREWORD

Based on information received from 303 licensees required to submit annual reports, collective doses decreased by 15% in 1994 as compared to 1993 figures. The annual collective dose decreased by 10% at light-water reactors from the 1993 data. Collective doses reported by manufacturers and distributors and industrial radiographers showed a decrease, whereas low-level waste disposal and fuel fabrication and processing showed an increase. These increases are accounted for by the implementation of the revised 10 CFR Part 20 which includes a requirement to report internal as well as external exposure.

NUREG-0713, Volume 16, summarizes the occupational exposure data for 1994 that are maintained in the U.S. Nuclear Regulatory Commission's Radiation Exposures 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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PREFACE

A number of NRC licensees have inquired as to how the occupational radiation exposure data that are compiled from the individual exposure reports required by § 20.2206 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, facility/facility, 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.

Occupational Radiation Exposure
at Commercial Nuclear Power Reactors and Other Facilities
Twenty-seventh Annual Report, 1994

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 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 10 CFR 20 requiring the reporting of certain occupational radiation exposure information to a central repository at AEC Headquarters. This information was required of the four categories³ 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 ensures that they are kept indefinitely and facilitates 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.

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

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

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 Office of Health, a division of Environment, Safety and Health, in 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.

In May of 1991, the revised 10 CFR 20 "Standards for Protection Against Radiation; Final Rule" was published in the Federal Register. The revision redefined the radiation monitoring and reporting requirements of NRC licensees. Instead of summary annual reports (§ 20.407) and termination reports (§ 20.408), licensees are now required to submit an annual report of the dose received by each monitored worker (§ 20.2206). Licensees were required to implement the new requirements on or before January of 1994. This report is the first compilation of radiation exposure information collected under the revised 10 CFR 20. Certain sections of the report have been modified to account for the change in the reporting of exposure information. Readers are encouraged to comment on these changes. Recommendations for further analysis or for different presentation of information are welcome.

1.1 Radiation Exposure Information on the Internet

In May of 1995, the NRC began pursuing the dissemination of radiation exposure information via a World Wide Web site on the Internet. This allows interested parties with the appropriate equipment to access the data electronically rather than through the published NUREG-0713 document. A web site was created for radiation exposure and linked into the main NRC web page. The web site contains up-to-date information on radiation exposure, as well as information and guidance on reporting radiation exposure information to the NRC. Interested parties may read the documents on-line or down-load information to their systems for further analysis. Software, such as REMIT, is also available for downloading via the web site. There are also links to other web sites dealing with the topics of radiation and health physics. The NRC intends to continue pursuing the dissemination of radiation exposure information via the World Wide Web and will focus more resources on the electronic distribution of information rather than the published hard copy reports.

The main web address for the NRC is:

<http://www.nrc.gov>

Look for the radiation exposure information hyper link currently under the "What's New at the NRC" menu selection.

Comments on this report or the NRC's web page should be directed to:

REIRS Project Manager
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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 20.1502, which requires licensees to monitor individuals who receive or are likely to receive a dose in any calendar quarter in excess of 10% of the applicable limits. For most adults, the annual limit for the whole body is 5 cSv (rem), so 0.5 cSv (rem) per year is the level above which monitoring is required. Separate dose limits have been established for minors and pregnant workers. Monitoring is required for any individual entering a high or very high radiation area. 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 doses 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).

The revised 10 CFR 20 was published in the Federal Register on May 21, 1991. With the revision of 10 CFR 20, licensees report the monitoring results for each individual. This has eliminated the need for the staff to calculate collective dose from the statistical distributions and has improved the accuracy of the collective dose information presented in this report. Licensees were required to implement the new reporting requirements as of January 1, 1994. Certain licensees began reporting under these new requirements during 1993, and that data has been included in the analyses presented here.

Another impact of the revised 10 CFR 20 is the change from whole body dose to total effective dose equivalent (TEDE). The TEDE includes both external and internal dose. The TEDE is determined by summing the deep dose equivalent (DDE) from external radiation exposure and the committed effective dose equivalent (CEDE) from internal exposures. In previous reports, only the whole body dose (equivalent to the DDE) was reported and analyzed. In the 1994

report, the TEDE is presented and analyzed in all graphs and tables unless otherwise noted. Readers should be aware of this change from external whole body dose to the TEDE. For most licensed activities, the internal dose is not a significant contributor to the TEDE. However, workers at Fuel Fabrication facilities receive significant exposures from internal exposure. This change in reporting requirements can be seen in the 1994 data for this licensee category.

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 for the year (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 attention to the differences between all power reactors [including the high temperature gas reactor (HTGR), the pressurized water reactors (PWRs), and the boiling water reactors (BWRs)]. 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 States⁴ 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 nonoccupational 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 1/1/95, there are 29 Agreement States.



3 ANNUAL PERSONNEL MONITORING REPORTS - 10 CFR 20.2206

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 categories⁵ of licensees to submit an annual statistical report indicating the distribution of the whole body doses incurred by workers whom they monitored for exposure to radiation. Since the regulations do not require these licensees to report the collective dose incurred by the workers 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).

The revised 10 CFR 20 was published in the Federal Register on May 21, 1991. Section 20.2206 of the revised rule requires licensees to report the radiation exposure monitoring results for each individual for the monitoring year. All licensees were required to implement the new reporting requirements on or before January 1, 1994.

Under the new requirements, the individual's total effective dose equivalent (TEDE as defined in § 20.1003) is reported, so that the dose distributions may be determined directly from the individual's exposure. The TEDE was summed per individual and tabulated into the appropriate dose range to generate the dose distribution for each licensee. The total collective dose is considered more accurate using this method, since the licensee reported the dose to each individual and the total collective dose was calculated from the sum of these doses and not statistically derived from the distribution (see Section 3.1.4). The TEDE includes the dose contribution from the committed effective dose equivalent (CEDE) for those workers who had intakes that required monitoring and reporting of internal dose. Reports submitted under formerly applicable 10 CFR 20.407 did not include the whole body contribution from internal dose.

3.1.2 Number of Monitored Workers

The number of monitored workers refers to the total number of workers that the NRC licensees, who are covered by 10 CFR 20.1502, reported as being monitored for exposure to external and internal radiation during the year. This number includes all workers for whom monitoring is required, and may include visitors, service representatives, contract workers, clerical workers, and any other workers for whom the licensee feels that monitoring devices should be provided.

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.

For licensees submitting under the revised 10 CFR 20.2206, the total number of workers was determined from the number of unique identification numbers submitted per licensee. Uniqueness is defined by the combination of identification number and identification type. [Ref. 18]

3.1.3 Number of Workers with Measurable Doses

Under the revised 10 CFR 20.2206, the number of workers with measurable dose includes any individual with a TEDE greater than zero cSv (rem). This does not include workers with a TEDE reported as zero, not detectable (ND), or not required to be reported (NR). [Ref. 18]

3.1.4 Collective Dose

The concept of collective dose is used in this report to denote the summation of the Total Effective Dose Equivalent (TEDE) received by all monitored workers and has the units person-cSv (person-rem).⁶ The revised 10 CFR 20.2206 requires that the TEDE be reported, so the collective dose is calculated by summing the TEDE for all monitored workers. The phrase "collective dose" is used throughout this report to mean the collective TEDE, unless otherwise specified.

It should be noted that the collective dose in past years was, in some cases, calculated from the dose distributions by summing the products obtained from multiplying the number of workers reported in each of the dose ranges by the midpoint of the corresponding dose 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 workers 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. Care should be taken when comparing the actual collective dose calculated for 1994 with the collective dose for previous years due to this change in methodology. In addition, past years only included the external whole body dose. Although the contribution of internal dose to the TEDE is minimal for most licensees, it should be taken into consideration when comparing the 1994 collective dose with the collective dose for prior years. One noted exception is for fuel fabrication licensees where the committed effective dose equivalent (CEDE) in some cases contributes the majority of the TEDE. See Section 3.3.5.

⁶ 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.

3.1.5 Average Individual Dose

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

3.1.6 Average Measurable Dose

The average measurable dose is obtained by dividing the collective TEDE 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 workers receiving zero or minimal doses, many of whom were monitored for convenience or identification purposes.

3.1.7 Number of Licensees Reporting

The number of licensees refers to the 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 20.2206. The third column in Table 3.1 shows the number of licensees that have filed such reports during the last ten years. Agreement State licensees do not submit such reports to the NRC and are not included in this report.

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 workers whose annual doses exceed 1.5 cSv 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. A CR of 0.50 means that 50% of the collective dose is due to individual doses that exceed 1.5 cSv (rem).

Prior to 1994, the value of CR was calculated from the statistical distributions that were submitted under 10 CFR 20.407. For this calculation, it was assumed that the doses were uniformly distributed between each dose range interval. The number of people in each dose range above 1.5 cSv was multiplied by the midpoint of the dose range to estimate the collective dose attributed to each dose range. The collective dose of workers with doses exceeding 1.5 cSv in the 1 to 2 cSv range was calculated by assuming that half of the collective dose incurred by workers with doses between 1 and 2 cSv was due to doses greater

TABLE 3.1
ANNUAL EXPOSURE DATA FOR CERTAIN CATEGORIES OF LICENSEES
1985 - 1994

License Category*	Calendar Year	Number of Licensees Reporting	Number of Monitored Individuals	Number of Workers With Measurable TEDE	Collective TEDE (person-cSv or person-rem)	Average TEDE (cSv or rem)	Average Measurable TEDE per Worker (cSv or rem)	CR**
Industrial Radiography	1994	139	3,230	2,351	1,415	0.44	0.60	0.51
	1993	176	4,721	3,007	1,596	0.34	0.53	0.45
	1992	246	6,703	4,265	1,864	0.28	0.44	0.37
	1991	248	6,820	4,649	2,160	0.32	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	0.27	0.41	0.39
	1985	340	8,476	5,550	2,374	0.28	0.43	0.45
Manufacturing and Distribution	1994	44	2,941	1,251	580	0.20	0.46	0.59
	1993	58	4,913	2,254	660	0.14	0.30	0.47
	1992	67	5,210	2,250	784	0.15	0.35	0.54
	1991	59	4,930	1,952	722	0.15	0.37	0.59
	1990	58	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
Low-Level Waste Disposal	1994	2	202	83	22	0.11	0.27	0.15
	1993	2	432	76	21	0.05	0.27	0.22
	1992	2	467	82	37	0.08	0.45	0.34
	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	884	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
Independent Spent Fuel Storage	1994	1	156	89	42	0.27	0.47	0.44
	1993	2	135	52	14	0.10	0.26	0.11
	1992	2	290	85	11	0.04	0.13	0.00
	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	0.32	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
Fuel Fabrication and Processing	1994	8	3,596	2,847	1,147	0.32	0.40	0.40
	1993	8	9,649	2,611	339	0.04	0.13	0.08
	1992	11	8,439	5,061	545	0.06	0.11	0.03
	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
Commercial Light Water Reactors***	1994	109	141,901	73,159	21,534	0.15	0.29	0.08
	1993	114	169,862	86,187	26,365	0.16	0.31	0.22
	1992	114	183,900	94,317	29,298	0.16	0.31	0.24
	1991	115	179,043	91,085	28,528	0.16	0.31	0.26
	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
Grand Totals and Averages	1994	303	152,028	79,780	24,740	0.16	0.31	0.13
	1993	360	189,712	94,187	29,014	0.15	0.31	0.24
	1992	442	205,009	106,060	32,538	0.16	0.31	0.25
	1991	437	203,441	101,786	31,831	0.16	0.31	0.27
	1990	447	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	47,500	0.23	0.44	0.46

* These categories consist only of NRC licensees. Agreement State licensed organizations do not report occupational exposure data to the NRC.

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

*** Includes all LWRs in commercial operation, although some of them may not have been in operation for a full year. 1994 data is for only reactors that completed a full year of operation during 1994. Reactor data has been corrected to account for the multiple counting of transient reactor workers. (see Section 5)

than 1.5 cSv. This value was then added to the collective dose incurred by workers in the higher ranges. This was known to yield a conservative CR value, but was a useful indicator when consistently applied to the data from year to year.

With the implementation of the Revised 10 CFR 20 in 1994, licensees were required to submit dose records for each individual. This allowed the NRC to determine the CR value directly by summing the collective dose for individuals with a total TEDE greater than or equal to 1.5 cSv and divide it by the collective TEDE for the licensee. This method yielded a large reduction in the CR for certain licensees. For example, the CR value for Reactors dropped 64% from 0.22 in 1993 to 0.08 in 1994. Using the previous methodology, the CR value would have been calculated to be 0.19 for 1994. The change in methodology reduced the CR for other licensees by only 10-15% due to the smaller numbers of personnel in the higher dose ranges.

The last column in Table 3.1 shows the values of CR for the different types of licensees. It should be noted that the CR value for 1994 was determined directly from the dose records submitted under 10 CFR 20.2206. 1994 is the first year within the last ten years that the CR has equaled or exceeded the 0.50 value recommended by UNSCEAR for Radiography and Manufacturing and Distribution licensees. However, the overall average CR for all licensees remained below 0.50, and in fact, decreased to a value of 0.13 in 1994 primarily due to the large decrease in CR at power reactor licensees.

3.2 Annual TEDE Dose Distributions

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

Under the regulatory limits of the revised 10 CFR 20.1201, annual TEDE in excess of 5 cSv (rem) for occupationally exposed adults is, by definition, exposures in excess of regulatory limits (See Section 6).

Table 3.3 gives a summary of the annual exposures reported to the Commission by certain categories of NRC licensees as required by 10 CFR 20.2206. Table 3.3 shows that about 95% of the exposures have consistently remained less than 2 cSv (rem) between 1968 and 1984. For the past 8 years the percentage of workers with less than 2 cSv (rem) has been greater than or equal to 98%. The number of workers receiving an annual exposure in excess of 5 cSv (rem) has been less than 0.01% since 1985.

TABLE 3.2
DISTRIBUTION OF ANNUAL COLLECTIVE TEDE BY LICENSE CATEGORY
1994

LICENSE CATEGORY (Number of sites reporting)	*Number of Individuals with TEDE in the Ranges (cSv or rem)													TOTAL NUMBER MONITORED	NUMBER WITH MEAS. DOSE	TOTAL COLLECTIVE DOSE (TEDE) (person-cSv)	
	No Meas.	Meas. <0.1	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				
INDUSTRIAL RADIOGRAPHY																	
Single Location (29)	241	46	13	8	5	0	10	4	2	1				330	89	44	
Multiple Location (111)	638	625	409	385	213	172	299	115	33	10	0	1	2,900	2,262	1,371		
Total (139)	879	671	422	393	218	172	309	119	35	11		1	3,230	2,351	1,415		
MANUFACTURING AND DISTRIBUTION																	
"A" - Broad (8)	1,256	402	104	78	51	39	100	74	29				2,133	877	544		
Limited (36)	434	302	35	22	8	5	2						808	374	36		
Total (44)	1,690	704	139	100	59	44	102	74	29				2,941	1,251	580		
LOW-LEVEL WASTE DISPOSAL																	
Total (2)	119	42	17	10	6	3	5						202	83	22		
INDEPENDENT SPENT FUEL STORAGE																	
Total (1)	69	33	22	6	7	5	11	4	1				158	89	42		
FUEL FABRICATION																	
Total (8)	749	1,423	373	326	197	117	306	92	13				3,596	2,847	1,147		
COMMERCIAL POWER REACTORS**																	
Boiling Water (37)	30,322	15,898	8,036	6,754	3,719	2,191	2,306	198	6				69,430	39,106	12,092		
Pressurized Water (72)	54,823	20,630	10,597	7,492	3,081	1,311	1,017	17					98,968	44,145	9,442		
Total (109)	85,145	36,528	18,633	14,246	6,800	3,502	3,323	215	6				168,398	83,253	21,534		
GRAND TOTALS	88,651	39,401	19,606	15,081	7,287	3,843	4,056	504	84	11	0	1	178,525	89,874	24,740		

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

** Includes all reactors in commercial operation for a full year during 1994.

These values have not been adjusted for the multiple counting of transient reactor workers (see Section 5).

TABLE 3.3
SUMMARY OF ANNUAL DOSE DISTRIBUTIONS FOR CERTAIN NRC LICENSEES
1968-1994

Year	Total Number of Monitored Persons		Percent of Individuals With Doses < 2 cSv*	Percent of Individuals With Doses < 5 cSv*	Number of Individuals With Doses >12 cSv*
	Reported Number	Corrected Number			
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	234,045	214,781	98.9%	>99.99% (3)	0
1991	219,229	206,732	99.4%	>99.99% (2)	0
1992	222,728	205,009	99.4%	>99.99% (1)	0
1993	209,386	189,711	99.5%	>99.99% (2)	0
1994	178,525	151,556	99.5%	>99.99% (1)	0

* Data for 1977-1994 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 cSv is shown in parentheses from 1985-1994.

3.3 Summary of Occupational Exposure Data by License Category

3.3.1 Industrial Radiography Licenses, Single and Multiple Locations

Industrial radiography 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 that 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 139 radiography licensees in 1994. Table 3.4 summarizes the reported data for the two types of radiography licenses for 1994 and for the previous two years for comparison purposes.

For the years prior to 1994, the average measurable dose for workers performing radiography at a single location ranged from 20 to 40 percent of 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 1994, the average measurable dose for single location radiographers was much closer to the value for multiple location licensees. In order to see the contribution that each

TABLE 3.4
ANNUAL EXPOSURE INFORMATION FOR INDUSTRIAL RADIOGRAPHERS
1992 - 1994

Year	Type of License	Number of Licenses	Number of Monitored Workers	Workers with Measurable Dose	Collective Dose (person-cSv, rem)	Average Measurable Dose (cSv or rem)
1994	Single Location	29	330	89	44	0.50
	Multiple Locations	111	2,900	2,262	1,371	0.61
	Total	139	3,230	2,351	1,415	0.60
1993	Single Location	39	673	183	23	0.13
	Multiple Locations	137	4,046	2,824	1,572	0.56
	Total	176	4,721	3,007	1,596	0.53
1992	Single Location	48	771	182	37	0.20
	Multiple Locations	198	5,932	4,082	1,827	0.45
	Total	246	6,703	4,265	1,864	0.44

radiography licensee made to the total collective dose, a summary of the information reported by each of these licensees in 1994 is presented in Appendix A in descending order of average measurable dose.

High exposures in radiography can be directly attributable to the type and location of the radiography field work. For example, locations such as oil drilling platforms and aerial tanks offer the radiographer little available shielding. In these situations, there may not be an opportunity to use distance as a means of minimizing exposure and achieving ALARA. While these licensed activities usually result in average measurable doses that are higher than other licensees, they involve a relatively small number of exposed workers.

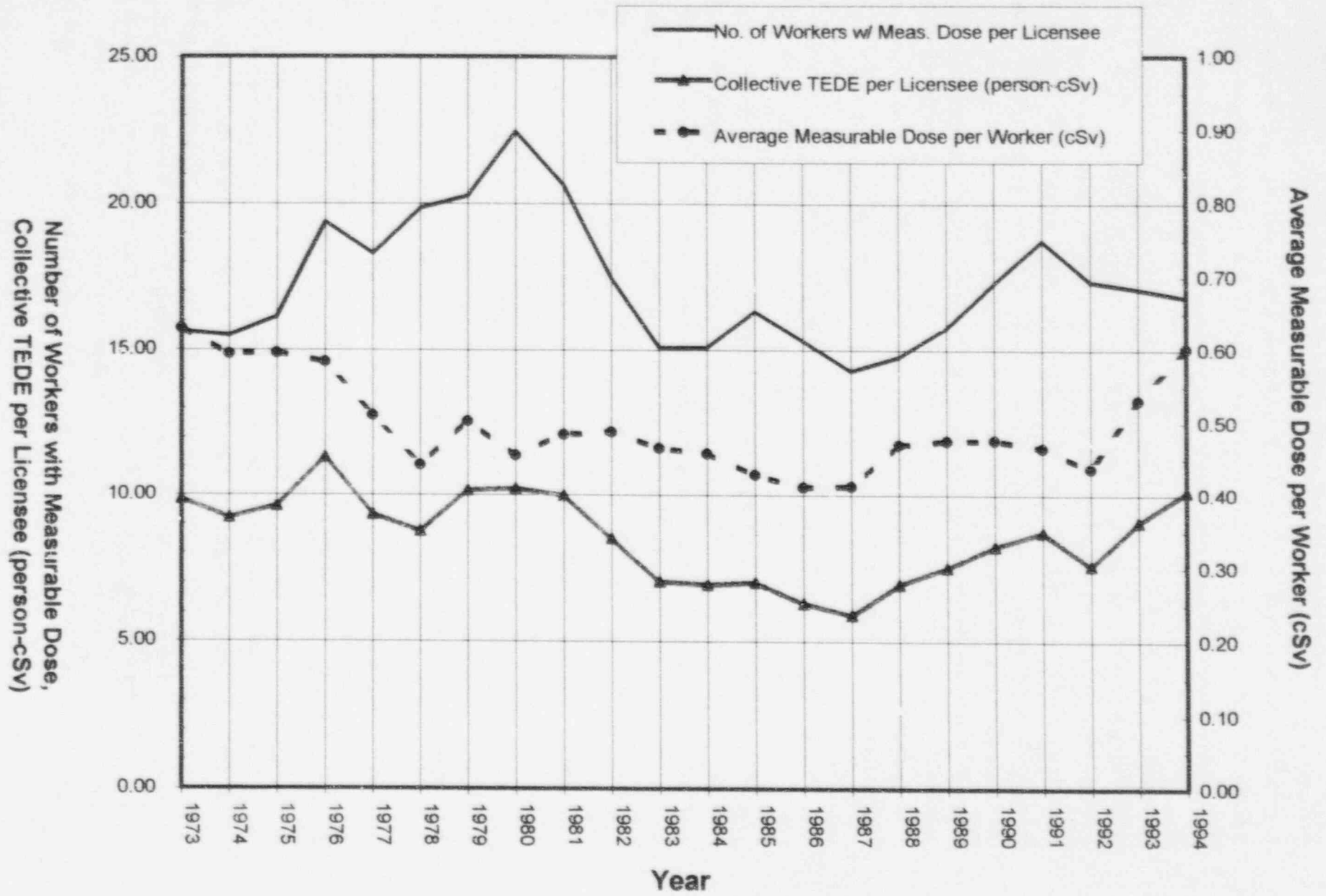
Figure 3.1 shows the number of workers with measurable dose per licensee, the total collective dose per licensee, and the average measurable dose per worker for both types of industrial radiography facilities from 1973 through 1994.

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 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 nonmedical research. However, only those NRC licensees that possess or use at any one time specified quantities of the nuclides listed in paragraph 20.2206(a)(7) are required to submit reports to the NRC.

Table 3.5 presents the annual data that were reported by the two types of licensees for 1994 and the previous two years. Looking at the information shown separately for the Type "A" Broad and Limited licensees, it can be seen that the values of all of the parameters remain higher for the Broad licensees. However, when attempting to examine trends in the data presented for this category of licensees, it should be noted 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

FIGURE 3.1
Average Annual Values at Industrial Radiography Facilities 1973 - 1994



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.

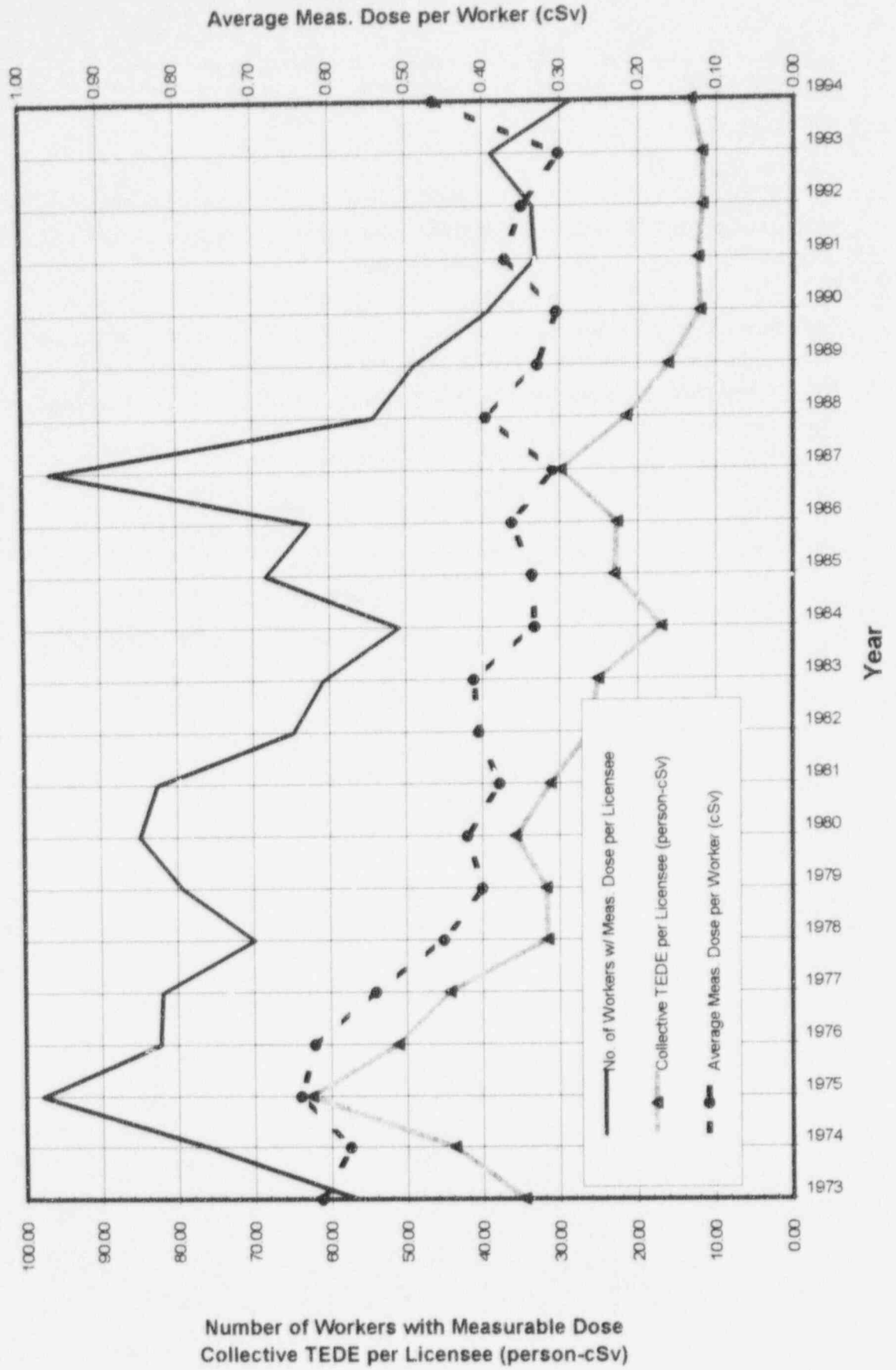
Figure 3.2 shows the number of workers with measurable dose per licensee, the total collective dose per licensee, and the average measurable dose per worker for both Type "A" Broad and Limited manufacturing and distribution facilities.

In order to see the contribution that each of these licensees made toward the total values of the number of workers 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 1994.

TABLE 3.5
ANNUAL EXPOSURE INFORMATION FOR MANUFACTURERS AND DISTRIBUTORS
1992 - 1994

Year	Type of License	Number of Licenses	Number of Monitored Workers	Workers with Measurable Dose	Collective Dose (person-cSv, rem)	Average Measurable Dose (cSv or rem)
1994	M & D-"A"-Broad	8	2,133	877	544	0.62
	M & D-Limited	36	808	374	36	0.10
	Total	44	2,941	1,251	580	0.46
1993	M & D-"A"-Broad	8	2,455	925	512	0.55
	M & D-Limited	50	2,458	1,329	168	0.13
	Total	58	4,913	2,254	680	0.30
1992	M & D-"A"-Broad	11	3,632	1,674	712	0.43
	M & D-Limited	56	1,578	576	72	0.13
	Total	67	5,210	2,250	784	0.35

FIGURE 3.2
Average Annual Values at Manufacturing and Distribution Facilities 1973 - 1994



3.3.3 Low-Level Waste Disposal Licenses

Low-level waste disposal 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 1984 through 1994. Appendix A summarizes the exposure information reported by these two licensees in 1994.

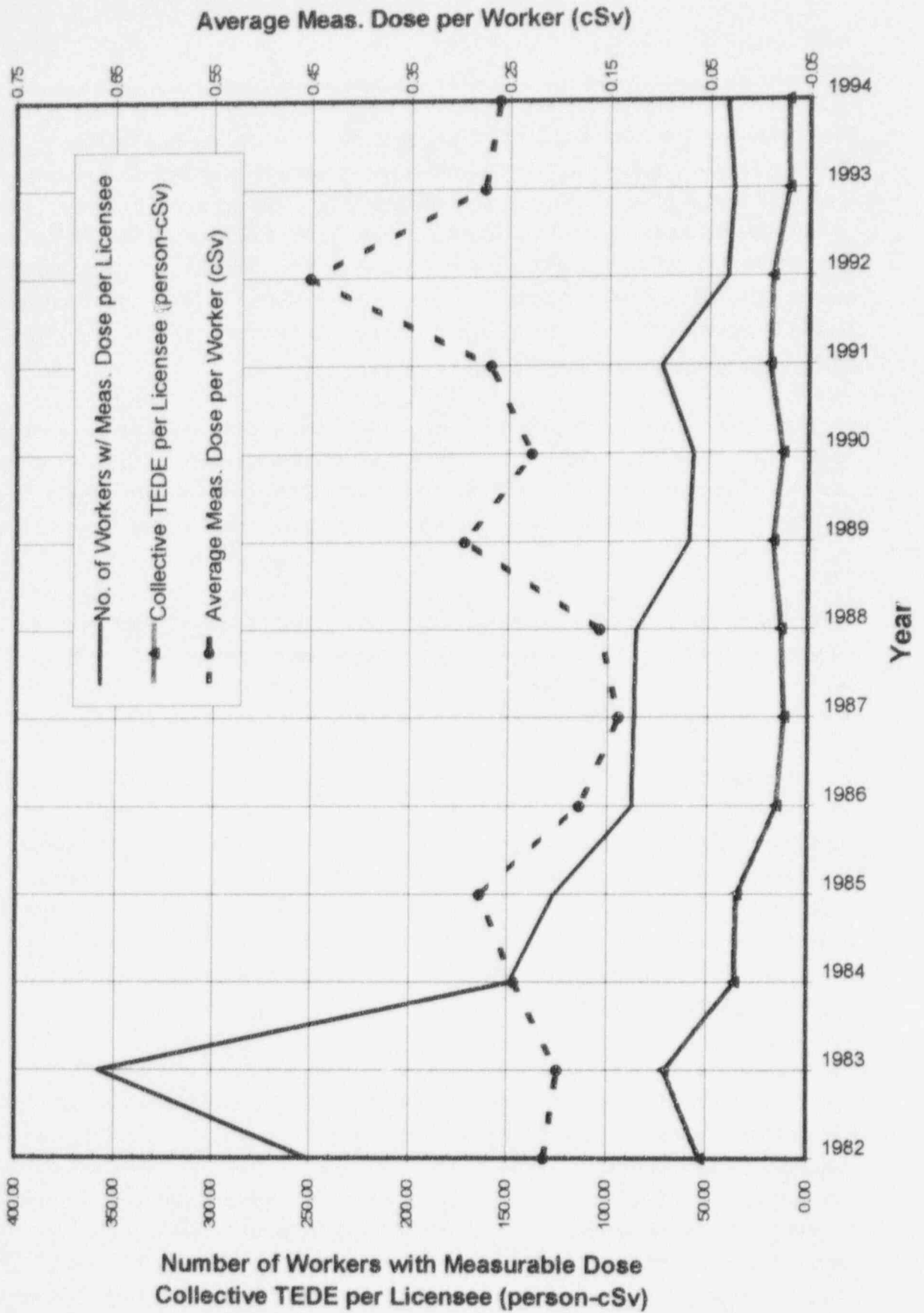
Figure 3.3 shows the number of workers with measurable dose per licensee, the total collective dose per licensee, and the average measurable dose per worker for low-level waste disposal facilities from 1982 through 1994. Since only two licensees have been involved in this activity over the past ten years, the numbers have remained fairly stable from 1984 through 1994.

3.3.4 Independent Spent Fuel Storage Installation Licenses

Independent spent fuel storage installation 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.

Five licenses have been issued for these activities: four at nuclear power plants and one at an independent facility. Three of the reactor facilities reported the exposure information for the fuel storage activities along with other activities performed at the site. Only the one licensee that reported dose information separately is included in this analysis of independent spent fuel storage installation facilities for 1994. Appendix A summarizes the exposure information reported by these two installations. 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 workers for whom monitoring was provided. This had a tendency to

FIGURE 3.3
Average Annual Values at Low Level Waste Disposal Facilities
1982 - 1994



result in the calculation of a higher average dose.

Figure 3.4 shows the number of workers with measurable dose per licensee, the total collective dose per licensee, and the average measurable dose per worker for independent spent fuel storage facilities. The large increase in the collective dose per licensee and number of workers per licensee was mainly due to the fact that only one licensee reported separately for 1994, rather than the two licensees that reported in prior years. The average measurable dose parameter is not based on the number of licensees and experienced only a slight increase in 1994.

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 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.

Figure 3.5 shows the number of workers with measurable dose per licensee, the total collective dose per licensee, and the average measurable dose per worker for fuel fabrication licensees. In addition to the TEDE collective and average measurable dose, the Deep Dose Equivalent (DDE) collective dose and DDE average measurable dose are also shown. Prior to 1994, only the "whole body" dose values were given, which were equivalent to the DDE. In 1994, the revised 10 CFR 20 went into effect, requiring the calculation of the committed effective dose equivalent (CEDE) and the summation of the DDE and CEDE into the TEDE. For Fuel Fabrication facilities, the CEDE is a significant contribution to the TEDE. In order to accurately reflect the exposure history for these facilities, it was necessary to continue to plot the old "whole body" external dose, now called DDE, in addition to the TEDE which includes the CEDE contribution. The difference between the DDE and TEDE plots represents the CEDE contribution.

Appendix A lists each of the licensees reporting in 1994, with the number of workers monitored, the number of workers receiving measurable external doses, and the collective dose for each licensee in descending order of average measurable dose.

Table 3.6 shows that there were 8 licensed fuel fabrication facilities in 1994. 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.

Fuel reprocessing licenses are issued to allow the separation of useable 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 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. Therefore, since 1982 the NRC license has been suspended, and no reports have been filed with the NRC.

TABLE 3.6
ANNUAL EXPOSURE INFORMATION FOR FUEL FABRICATORS
1992 - 1994

Year	Type of License	Number of Licenses	Number of Monitored Workers	Workers with Measurable Dose	Collective TEDE (person-cSv, rem)	Average Measurable Dose (cSv or rem)	Collective CEDE (person-cSv, rem)	Average CEDE (cSv or rem)
1994	Uranium Fuel Fab	8	3,596	2,847	1,147	0.40	867	0.30
1993	Uranium Fuel Fab	8	9,349	2,611	339	0.13		
1992	Uranium Fuel Fab	11	8,439	5,061	545	0.11		

FIGURE 3.4
Average Annual Values at Independent Spent Fuel Storage Facilities
1982 - 1994

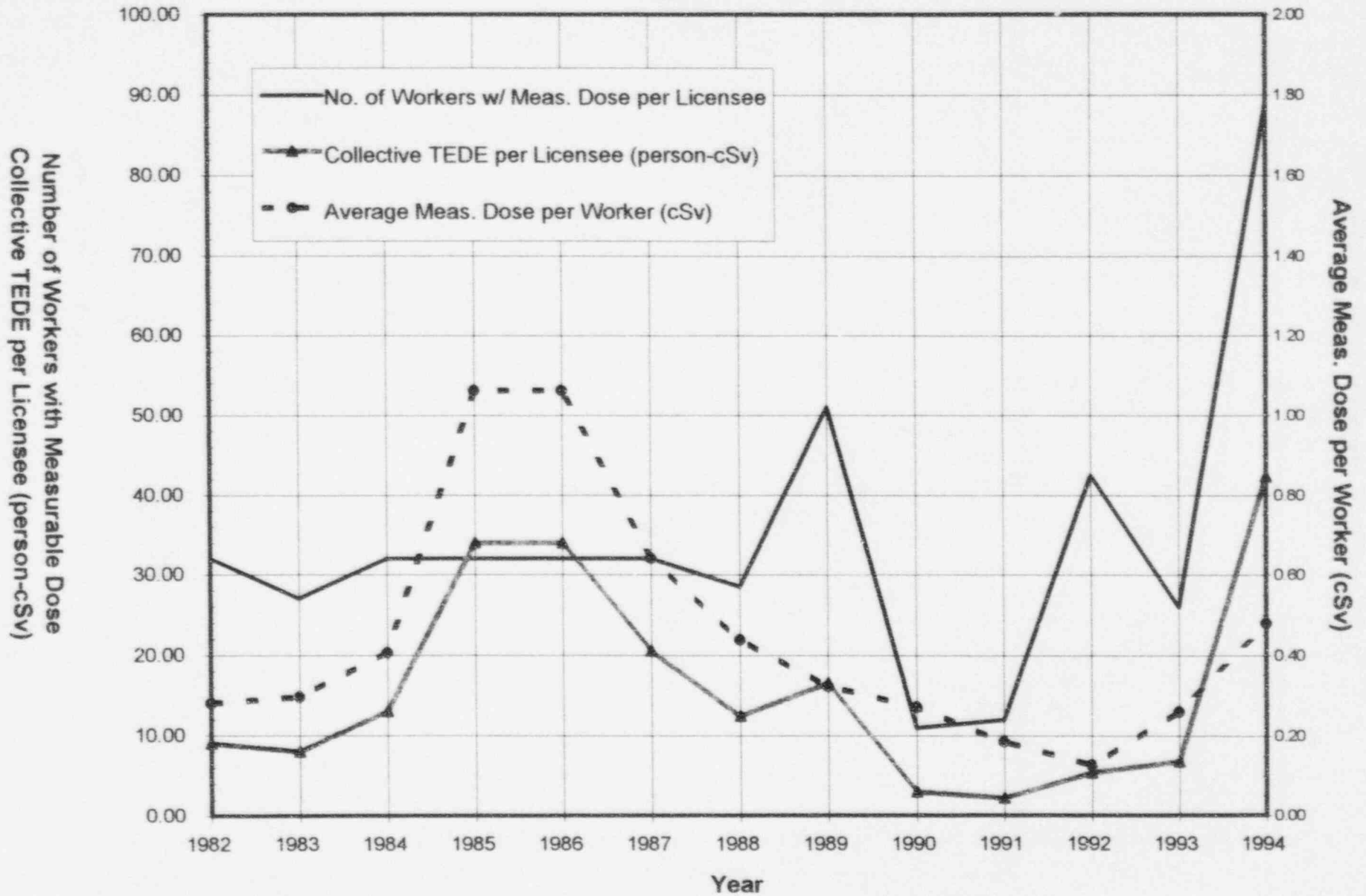
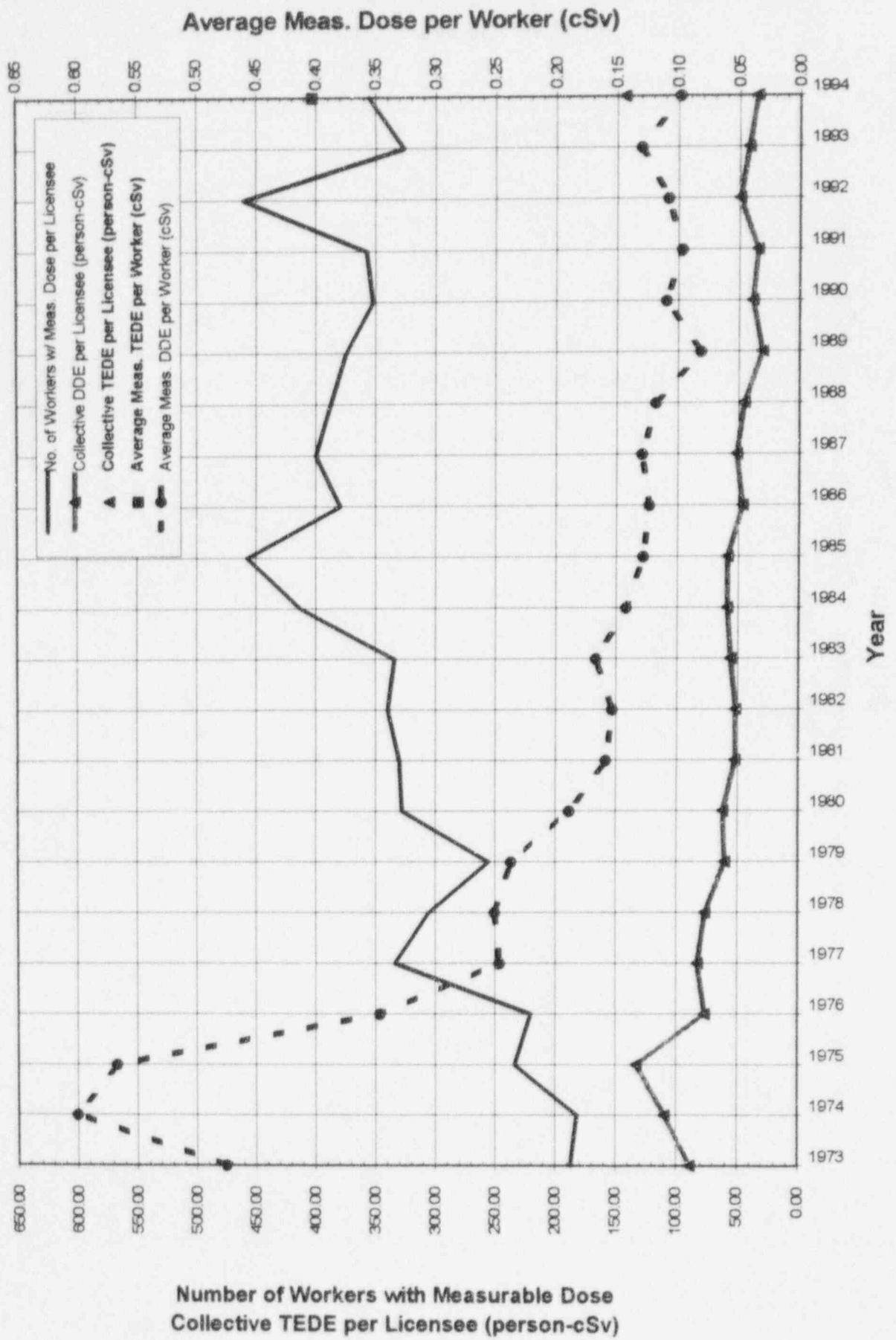


FIGURE 3.5
Average Annual Values at Fuel Fabrication and Processing Facilities 1973 - 1994



3.3.6 Light-Water-Cooled Power Reactor (LWR) Licenses

LWR licenses are issued to utilities to allow them to use special nuclear material in a reactor that produces heat to generate 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 workers, the number of workers with measurable dose, the total collective dose, and average dose per worker for all reports received from reactor facilities that were in commercial operation for the years 1985 through 1994. This table includes reactors that may not have been in commercial operation for a full year. Data for 1985 through 1988 included all reactors that reported, even though some of them were shut down. Data for 1989 through 1994 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 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. Table 3.7 shows the annual whole body doses incurred by workers at the plant. Since 1992, the doses have increased significantly due to decontamination and decommissioning operations.

TABLE 3.7
ANNUAL EXPOSURE INFORMATION FOR FORT ST. VRAIN
1974 - 1994

Year	No. of individuals in Dose Ranges (cSv or rem)				Number of Monitored Workers	Annual Collective Dose (person-cSv person-rem)	Gross Electricity Generated (MW-yr)	Average Measurable Dose (cSv or rem)
	No Meas'ble Dose	Meas'ble Dose < 0.10	0.10 - 0.25	0.25 - 3.00				
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	0.03
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
1992	520	144	36	34	734	25.4	0.0	0.12
1993	657	51	37	78	823	75.2	0.0	0.45
1994	390	89	33	79	591	78.0	0.0	0.39

3.4 Summary of Intake Data by License Category

With the revision of 10 CFR 20 in 1994, licensees were required to report additional data to the NRC concerning intakes of radioactive material. Licensees were required to list for each intake the radionuclide that was taken into the body, the pulmonary clearance class, intake mode, and amount of the intake in microcuries. An NRC Form 5 report containing this information is required to be completed and submitted to the NRC under 10 CFR 20.2206.

Tables 3.8 and 3.9 summarize the intake data reported to the NRC during 1994. The data are categorized by licensee type and are listed in order of radionuclide and pulmonary clearance class. Table 3.8 lists the intakes where the mode of intake into the body was recorded as ingestion. Table 3.9 lists the intakes where the mode of intake was inhalation from ambient airborne radioactive material in the workplace. The pulmonary clearance class is recorded as D, W, or Y corresponding to the its clearance half-time in the order of **days**, **weeks**, or **years** from the pulmonary region of the lung into the blood and gastrointestinal tract. The amount of material taken into the body is given in microcuries, a unit of measure of the quantity of radioactive material. For each category of licensee, the maximum number of intake records and the maximum intake is highlighted in bold for ease of reference.

**TABLE 3.8
INTAKE BY LICENSEE TYPE AND RADIONUCLIDE
MODE OF INTAKE - *INGESTION*
1994**

Licensee Type	Program Code	Radio-nuclide	Number of Intake Records*	Intake in microcuries	Intake in microcuries (sci. notation)
Reactors - BWRs	41111	Co-58	1	0.00	1.70E-08
		Co-60	5	2.05	2.05E+00
		Cs-134	1	0.01	1.43E+02
		Cs-137	1	0.01	1.01E-02
		Mn-54	2	0.02	2.23E-02
Reactors - PWRs	41111	Co-58	15	1.30	1.30E+00
		Co-60	14	1.55	1.55E+00
		I-131	3	0.00	2.02E-03
		Zr-95	1	2.10	2.10E+00

* An intake event may involve multiple nuclides, and individuals may incur multiple intakes during the year. The number of intake records shown here indicates the number of separate intake reports that were submitted on NRC Form 5 reports under 10 CFR 20.2206.

TABLE 3.9
 INTAKE BY LICENSEE TYPE AND RADIONUCLIDE
 MODE OF INTAKE - *INHALATION*
 1994

Licensee Type	Program Code	Radio-nuclide	Pulmonary Clearance Class	Number of Intake Records*	Intake in microcuries	Intake in microcuries (sci. notation)
Industrial Radiography - Multiple Location	03320	Mo-99	D	1	0.340	3.40E-01
Manufacturing and Distribution - Broad	03211	C-14	D	2	1.130	1.13E+00
Manufacturing and Distribution - Broad	03211	Ce-141	W	1	0.620	6.20E-01
Manufacturing and Distribution - Broad	03211	Co-57	Y	1	0.070	7.00E-02
Manufacturing and Distribution - Broad	03211	Fe-55	W	1	24.300	2.43E+01
Manufacturing and Distribution - Broad	03211	H-3	D	1	0.600	6.00E-01
Manufacturing and Distribution - Broad	03211	I-125	D	44	0.893	8.93E-01
Manufacturing and Distribution - Broad	03211	Mo-99	D	4	30.160	3.02E+01
Manufacturing and Distribution - Broad	03211	Na-22	D	1	0.400	4.00E-01
Manufacturing and Distribution - Broad	03211	Ni-63	D	5	6.935	6.94E+00
Manufacturing and Distribution - Broad	03211	P-32	D	3	2.900	2.90E+00
Manufacturing and Distribution - Broad	03211	S-35	D	3	11.600	1.16E+01
Manufacturing and Distribution - Broad	03211	Tc-99m	D	2	72.600	7.26E+01
Manufacturing and Distribution - Other	03214	I-131	D	3	0.236	2.36E-01
Nuclear Pharmacies	02500	I-125	D	5	0.095	9.50E-02
Nuclear Pharmacies	02500	I-131	D	11	0.387	3.87E-01
Power Reactor - BWR	41111	Am-241	W	26	0.004	4.40E-03
Power Reactor - BWR	41111	Ba-140	D	3	0.081	8.07E-02
Power Reactor - BWR	41111	Co-65	Y	1	0.110	1.10E-01
Power Reactor - BWR	41111	Cm-242	W	8	0.000	8.00E-06
Power Reactor - BWR	41111	Cm-243	W	25	0.001	5.13E-04
Power Reactor - BWR	41111	Co-58	Y	2	0.185	1.85E-01
Power Reactor - BWR	41111	Co-60	W	6	0.027	2.74E-02
Power Reactor - BWR	41111	Co-60	Y	93	5.402	5.40E+00
Power Reactor - BWR	41111	Cs-134	D	1	0.002	2.00E-03
Power Reactor - BWR	41111	Cs-137	D	2	0.004	4.08E-03
Power Reactor - BWR	41111	Cs-137	D	1	0.023	2.30E-02
Power Reactor - BWR	41111	La-140	W	2	0.080	7.97E-02
Power Reactor - BWR	41111	Mn-54	D	3	0.011	1.09E-02
Power Reactor - BWR	41111	Mn-54	W	21	37.917	3.79E+01
Power Reactor - BWR	41111	Mn-54	Y	1	0.086	8.60E-02
Power Reactor - BWR	41111	Pu-238	W	26	0.002	2.14E-03
Power Reactor - BWR	41111	Pu-239	W	26	0.002	1.97E-03
Power Reactor - BWR	41111	Zn-65	Y	25	277.183	2.77E+02

TABLE 3.9 (Continued)
 INTAKE BY LICENSEE TYPE AND RADIONUCLIDE
 MODE OF INTAKE - *INHALATION*
 1994

Licensee Type	Program Code	Radio-nuclide	Pulmonary Clearance Class	Number of Intake Records*	Intake in microcuries	Intake in microcuries (sci. notation)
Power Reactor - PWR	41111	Am-241	W	41	0.001	6.32E-04
Power Reactor - PWR	41111	Cm-242	W	19	0.000	0.00E+00
Power Reactor - PWR	41111	Cm-243	W	40	0.000	6.42E-05
Power Reactor - PWR	41111	Co-58	D	2	0.180	1.80E-01
Power Reactor - PWR	41111	Co-58	Y	31	168.357	1.68E+02
Power Reactor - PWR	41111	Co-60	Y	62	3.686	3.69E+00
Power Reactor - PWR	41111	Cr-51	Y	3	2.127	2.13E+00
Power Reactor - PWR	41111	Cs-134	D	7	3.487	3.49E+00
Power Reactor - PWR	41111	Cs-137	D	36	471.484	4.71E+02
Power Reactor - PWR	41111	Fe-59	Y	1	0.160	1.60E-01
Power Reactor - PWR	41111	H-3	V	7	125.060	1.25E+02
Power Reactor - PWR	41111	I-131	D	55	5.673	5.67E+00
Power Reactor - PWR	41111	I-132	D	2	0.038	3.85E-02
Power Reactor - PWR	41111	I-133	D	1	0.002	2.38E-03
Power Reactor - PWR	41111	Mn-54	W	7	0.295	2.95E-01
Power Reactor - PWR	41111	Nb-95	Y	2	0.170	1.70E-01
Power Reactor - PWR	41111	Pu-238	Y	41	0.008	8.12E-03
Power Reactor - PWR	41111	Pu-239	Y	41	0.001	1.41E-03
Power Reactor - PWR	41111	Pu-241	Y	31	0.028	2.81E-02
Power Reactor - PWR	41111	Zr-95	Y	1	0.032	3.20E-02
Uranium Fuel Processing Plants	21210	Co-60	W	1	0.000	1.36E-07
Uranium Fuel Processing Plants	21210	Co-60	Y	14	0.002	1.60E-03
Uranium Fuel Processing Plants	21210	Pu-239	W	35	0.001	1.03E-03
Uranium Fuel Processing Plants	21210	Pu-239	Y	6	0.001	6.88E-04
Uranium Fuel Processing Plants	21210	Th-228	W	16	0.000	4.34E-06
Uranium Fuel Processing Plants	21210	Th-228	Y	320	0.002	1.84E-03
Uranium Fuel Processing Plants	21210	Th-230	W	16	0.000	3.69E-06
Uranium Fuel Processing Plants	21210	Th-230	Y	320	0.001	8.45E-04
Uranium Fuel Processing Plants	21210	Th-232	W	16	0.000	4.49E-06
Uranium Fuel Processing Plants	21210	Th-232	Y	355	0.005	5.36E-03
Uranium Fuel Processing Plants	21210	Th-234	W	7	0.000	1.93E-06
Uranium Fuel Processing Plants	21210	Th-234	Y	12	0.000	2.18E-05
Uranium Fuel Processing Plants	21210	U-234	D	218	0.753	7.53E-01
Uranium Fuel Processing Plants	21210	U-234	W	7	0.000	2.09E-06
Uranium Fuel Processing Plants	21210	U-234	Y	1,231	2.637	2.64E+00
Uranium Fuel Processing Plants	21210	U-235	Y	357	0.003	3.04E-03
Uranium Fuel Processing Plants	21210	U-238	D	217	0.115	1.15E-01
Uranium Fuel Processing Plants	21210	U-238	W	7	0.000	2.09E-06
Uranium Fuel Processing Plants	21210	U-238	Y	1,079	0.409	4.09E-01
Uranium Hexafluoride Production Plants	11400	U-Nat.	D	401	0.598	5.98E-01
Uranium Hexafluoride Production Plants	11400	U-Nat.	Y	401	1.324	1.32E+00

*An intake event may involve multiple nuclides, and individuals may incur multiple intakes during the year. The number of intake records given here indicates the number of separate intake reports that were submitted on NRC Form 5 reports under 10 CFR 20.2206

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 are 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 taken from 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 not been included in the data analysis since 1988. 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 electricity generated (in megawatt-years) that is presented in Tables 4.1, 4.2, and 4.3 is the summation of electricity generated by the number of reactors included in each year. These sums are divided by the number of reactors included in each year to yield the average amount of electric energy generated 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.

TABLE 4.1

SUMMARY OF INFORMATION REPORTED BY COMMERCIAL BOILING WATER REACTORS

1973 - 1994

Year	Number of Reactors Included	Annual Collective Dose (person-cSv or person-rem)	No. of Workers With Measurable Dose**	Gross Electricity Generated (MW-yr)	Average Measurable Dose Per Worker (cSv or rem)**	Average Collective Dose Per Reactor (person-cSv or person-rem)	Average No Personnel With Measurable Doses Per Reactor**	Average Collective Dose per MW-yr (person-cSv /MW-yr)	Average Electricity Generated Per Reactor (MW-yr)	Average Maximum Dependable Capacity Net (MWe)	Percent of Maximum Dependable Capacity Achieved
1973	12	4,564	5,340	3,393.9	0.85	380	445	1.34	283	438	65%
1974	14	7,095	8,769	4,060.2	0.81	507	626	1.75	290	485	60%
1975	18	12,611	14,607	5,786.4	0.86	701	812	2.18	321	595	54%
1976	22	12,300	16,604	8,137.9	0.74	559	755	1.51	370	630	59%
1977	23	19,041	21,388	9,102.5	0.89	828	930	2.09	396	637	62%
1978	25	15,273	20,278	11,856.0	0.75	611	811	1.29	474	660	72%
1979	25	18,325	25,245	11,671.0	0.73	733	1,010	1.57	467	660	71%
1980	26	29,530	34,094	10,868.2	0.87	1,136	1,311	2.72	418	663	63%
1981	26	25,472	34,755	10,899.2	0.73	980	1,337	2.34	419	663	63%
1982	26	24,437	32,235	10,614.6	0.76	940	1,240	2.30	408	663	62%
1983	26	27,455	33,473	9,730.1	0.82	1,056	1,287	2.82	374	663	56%
1984	27	27,097	41,105	10,019.2	0.66	1,004	1,522	2.70	371	754	49%
1985	29	20,573	38,237	12,284.0	0.54	709	1,319	1.67	424	775	55%
1986	30	19,349	37,928	12,102.1	0.51	645	1,264	1.60	403	786	51%
1987	32	16,717	41,737	15,109.0	0.40	522	1,304	1.11	472	832	57%
1988	34	17,983	40,305	16,665.4	0.45	529	1,185	1.08	490	845	58%
1989	36	15,549	44,360	17,543.5	0.35	432	1,232	0.89	487	857	57%
1990	37	15,780	41,577	21,336.1	0.38	426	1,124	0.74	577	862	67%
1991	37	12,005	38,492	21,505.8	0.31	324	1,040	0.56	581	860	68%
1992	37	13,309	42,095	20,592.2	0.32	360	1,138	0.65	557	859	65%
1993	37	12,221	39,352	21,995.6	0.31	330	1,064	0.56	594	798	74%
1994	37	12,092	39,108	22,139.0	0.31	327	1,057	0.55	598	801	75%

* 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.

** Figures are not adjusted for the multiple reporting of transient individuals. See Section 5.

TABLE 4.2

SUMMARY OF INFORMATION REPORTED BY COMMERCIAL PRESSURIZED WATER REACTORS

1973 - 1994

Year	Number of Reactors Included	Annual Collective Dose (person-cSv or person-rem)	No. of Workers With Measurable Dose**	Gross Electricity Generated (MW-yrs)	Average Measurable Dose Per Worker (cSv or rem)**	Average Collective Dose Per Reactor (person-cSv or person-rem)	Average No. Personnel With Measurable Doses Per Reactor**	Average Collective Dose per MW-yr (person-cSv / MW-yr)	Average Electricity Generated Per Reactor (MW-yr)	Average Maximum Dependable Capacity Net (MWe)	Percent of Maximum Dependable Capacity Achieved
1973	12	9,398	9,440	3,770.2	1.00	783	787	2.49	314	544	58%
1974	19	6,555	9,370	6,530.7	0.70	345	493	1.00	344	591	58%
1975	26	8,268	10,884	11,982.5	0.76	318	419	0.69	461	647	71%
1976	30	13,807	17,588	13,325.0	0.79	460	586	1.04	444	701	63%
1977	34	13,467	20,878	17,345.8	0.65	396	614	0.78	510	688	74%
1978	39	16,528	25,700	19,840.5	0.64	424	659	0.83	509	706	72%
1979	42	21,657	38,828	18,255.0	0.56	516	924	1.19	435	746	58%
1980	42	24,267	46,237	18,289.3	0.52	578	1,101	1.33	435	746	58%
1981	44	28,673	47,351	20,553.7	0.61	652	1,076	1.40	467	752	62%
1982	48	27,754	52,146	22,140.6	0.53	578	1,086	1.25	461	777	59%
1983	49	29,017	52,173	23,195.5	0.56	592	1,065	1.25	473	785	60%
1984	51	28,138	56,994	26,478.4	0.49	552	1,118	1.06	519	809	64%
1985	53	22,469	54,633	29,470.7	0.41	424	1,031	0.76	556	820	68%
1986	60	23,032	62,995	33,593.0	0.37	384	1,050	0.69	560	878	64%
1987	64	23,684	62,597	37,007.3	0.38	370	978	0.64	578	900	64%
1988	68	22,786	62,921	42,929.7	0.36	335	925	0.53	631	885	71%
1989	71	20,381	63,894	44,679.5	0.32	287	900	0.46	629	897	70%
1990	73	20,812	67,081	46,955.6	0.31	285	919	0.44	643	907	71%
1991	74	16,510	60,269	51,942.6	0.27	223	814	0.32	702	913	77%
1992	73	15,985	61,048	53,419.8	0.26	219	836	0.30	732	923	79%
1993	72	14,142	56,588	50,480.6	0.25	196	786	0.28	701	932	75%
1994	72	9,442	44,145	54,618.3	0.21	131	613	0.17	759	932	81%

* 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.

** Figures are not adjusted for the multiple reporting of transient individuals. See Section 5.

TABLE 4.3
SUMMARY OF INFORMATION REPORTED BY COMMERCIAL LIGHT WATER REACTORS
1973 - 1994

Year	Number of Reactors included	Annual Collective Dose (person-cSv or person-rem)	No. of Workers With Measurable Dose**	Gross Electricity Generated (MW-yrs)	Average Measurable Dose Per Worker (cSv or rem)**	Average Collective Dose Per Reactor (person-cSv or person-rem)	Average No. Personnel With Measurable Doses Per Reactor**	Average Collective Dose per MW-yr (person-cSv /MW-yr)	Average Electricity Generated Per Reactor (MW-yr)	Average Maximum Dependable Capacity Net (MW _e)	Percent of Maximum Dependable Capacity Achieved
1973	24	13,962	14,780	7,164.1	0.94	582	616	1.95	299	491	61%
1974	33	13,650	18,139	10,590.9	0.75	414	550	1.29	321	546	59%
1975	44	20,879	25,491	17,768.9	0.82	475	579	1.18	404	626	65%
1976	52	26,107	34,192	21,462.9	0.76	502	658	1.22	413	671	62%
1977	57	32,508	42,266	26,448.3	0.77	570	742	1.23	464	667	70%
1978	64	31,801	45,978	31,696.5	0.69	497	718	1.00	495	688	72%
1979	67	39,982	64,073	29,926.0	0.62	597	956	1.34	447	714	63%
1980	68	53,797	80,331	29,157.5	0.67	791	1,181	1.85	429	714	60%
1981	70	54,145	82,106	31,452.9	0.66	774	1,173	1.72	449	719	63%
1982	74	52,191	84,381	32,755.2	0.62	705	1,140	1.59	443	737	60%
1983	75	56,472	85,646	32,925.6	0.66	753	1,142	1.72	439	743	59%
1984	78	55,235	98,099	36,497.6	0.56	708	1,258	1.51	468	790	59%
1985	82	43,042	92,870	41,754.7	0.46	525	1,133	1.03	509	804	63%
1986	90	42,381	100,923	45,695.1	0.42	471	1,121	0.93	508	847	60%
1987	96	40,401	104,334	52,116.3	0.39	421	1,087	0.78	543	877	62%
1988	102	40,769	103,226	59,595.1	0.39	400	1,012	0.68	584	871	67%
1989	107	35,930	108,254	62,223.0	0.33	336	1,012	0.58	582	883	66%
1990	110	36,592	108,658	68,291.7	0.34	333	988	0.54	621	892	70%
1991	111	28,515	98,761	73,448.4	0.29	257	890	0.39	662	895	74%
1992	110	29,294	103,143	74,012.0	0.28	266	938	0.40	673	901	75%
1993	109	26,363	95,940	72,476.2	0.27	242	880	0.36	665	887	75%
1994	109	21,534	83,253	76,757.3	0.26	198	764	0.28	704	888	79%

* 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.

** Figures are not adjusted for the multiple reporting of transient individuals. See Section 5.

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 (TEDE) to the number of megawatt-years of electricity generated. The ratio was calculated by dividing the total collective dose in person-cSv (person-rem) 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.

4.2.5 Percent of Maximum Dependable Capacity Achieved

The *percent of maximum dependable capacity achieved* is shown for all LWRs in Table 4.3. This parameter gives an indication of the overall power generation performance of LWRs as compared to the maximum capacity that could be obtained in a given year. It is calculated by dividing the average electricity generated per reactor by the average maximum dependable capacity for each year.

From 1973 to 1978 this indicator exhibited an increasing trend as a number of new reactors began producing power at higher efficiencies. Following the accident at Three Mile Island, reactor operations personnel concentrated on improving safety systems and complying with the new regulations for these systems. During this time period, from 1979 to 1987, the percent of maximum dependable capacity remained around 61%. Following the completion of most of these mandated repairs, reactors have increased the percent of maximum dependable capacity from 62% in 1987 to 79% in 1994, a gain of 17% in 7 years.

4.3 Annual TEDE Distributions

Table 4.4 summarizes the distribution of the annual TEDE doses received by workers at all commercial LWRs during each of the years 1977 through 1994. 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 1994 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 total collective dose decreased by 21% to a value of 21,534 person-cSv (person-rem) in 1994. The value of CR decreased by 68% to a value of 0.07. This is primarily due to the change in methodology by which the CR value is determined (see Section 3.1.8). In 1994, the CR value was determined directly from the individual radiation exposure records submitted under 10 CFR 20.2206 (Form 5) rather than calculating the value indirectly from the statistical dose distribution summary as is prior years. (The determination of CR from the statistical dose distribution for 1994 resulted in a calculated value of 0.19.) This is the tenth year in a row that the value of CR has been less than 0.50.

4.4 Average Annual TEDE 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 1994, the average collective dose per reactor dropped by 75%. In 1994, the collective dose per reactor for PWRs decreased from 196 person-cSv (person-rem) in 1993 to 131 person-cSv (person-rem) in 1994. The collective dose per reactor for BWRs decreased from 330 person-cSv (person-rem) in 1993, to 327 person-cSv (person-rem) in 1994. The overall collective dose per reactor for LWRs decreased from 242 person-cSv (person-rem) in 1993 to 198 person-cSv (person-rem) in 1994. The number of workers with measurable dose per reactor has decreased to 1,057 for BWRs and decreased to 613 for PWRs in 1994. The overall decreasing trend in average reactor collective doses since 1983 indicates that licensees are continuing to successfully implement ALARA dose reduction features at their facilities.

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 18% from a value of 26,363 person-cSv (person-rem) in 1993 to 21,534 person-cSv (person-rem) in 1994. Together with the decrease in the number of workers with measurable dose, this resulted in the average measurable dose per worker decreasing to 0.26 cSv (rem) in 1994. Figure 4.2 shows that in 1994 the gross electricity generated increased, surpassing the 1992 level after experiencing a decrease in 1993.

TABLE 4.4

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

1977 - 1994

Year	Number of Individuals with Whole Body Doses in the Ranges (cSv or rem)																	Total Number Monitored	Number with Measurable Exposure	Collective Dose** (person-cSv or rem)	CR***
	No Meas'ble Exposure	Meas'ble <0.10	0.10-0.25	0.25-0.5	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				
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	38,658	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	8,903	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	8,834	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	87,250	42,587	16,764	13,184	7,187	4,194	5,975	938	219	17								178,315	91,065	28,527	0.27
1992	87,717	41,934	17,822	14,777	8,134	4,520	6,076	808	85	4								181,877	94,160	29,294	0.24
1993	83,069	37,331	17,235	13,733	7,562	4,289	5,322	638	76	5								169,260	86,191	26,363	0.22
1994	68,742	30,867	15,573	12,279	6,311	3,619	4,075	415	20									141,901	73,159	21,534	0.08

*Summary of reports submitted in accordance with 10 CFR 20.407 (or Revised 20.2206 for 1994) 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 multiple reporting of transient individuals (see Section 5).

** The collective dose, when not reported by the licensee, was calculated by the NRC staff using methods described in Section 3.1.4.

***CR is the ratio of annual collective dose delivered at individual doses exceeding 1.5 cSv (rem) to the total annual collective dose. For 1994, CR was determined directly from individual dose records submitted under 10 CFR 20.2206.

Figure 4.1
Average Collective Dose and Number of Workers per Reactor 1973 – 1994

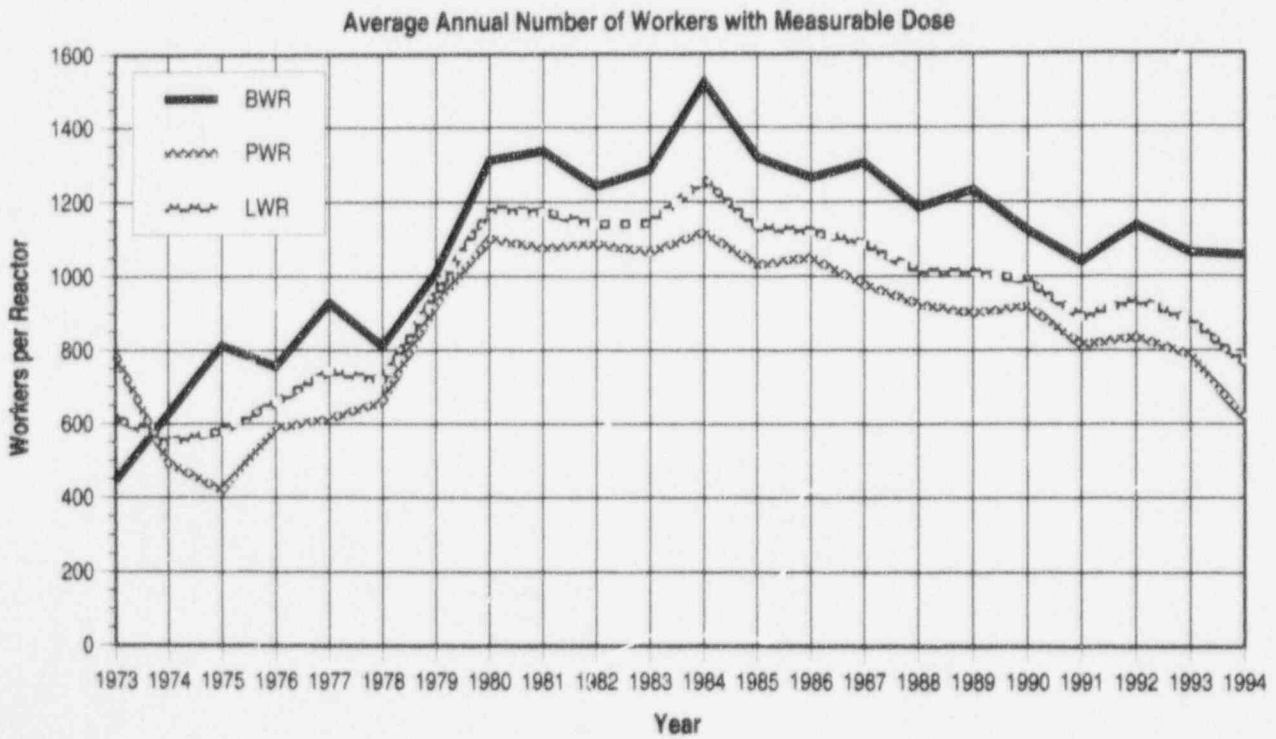
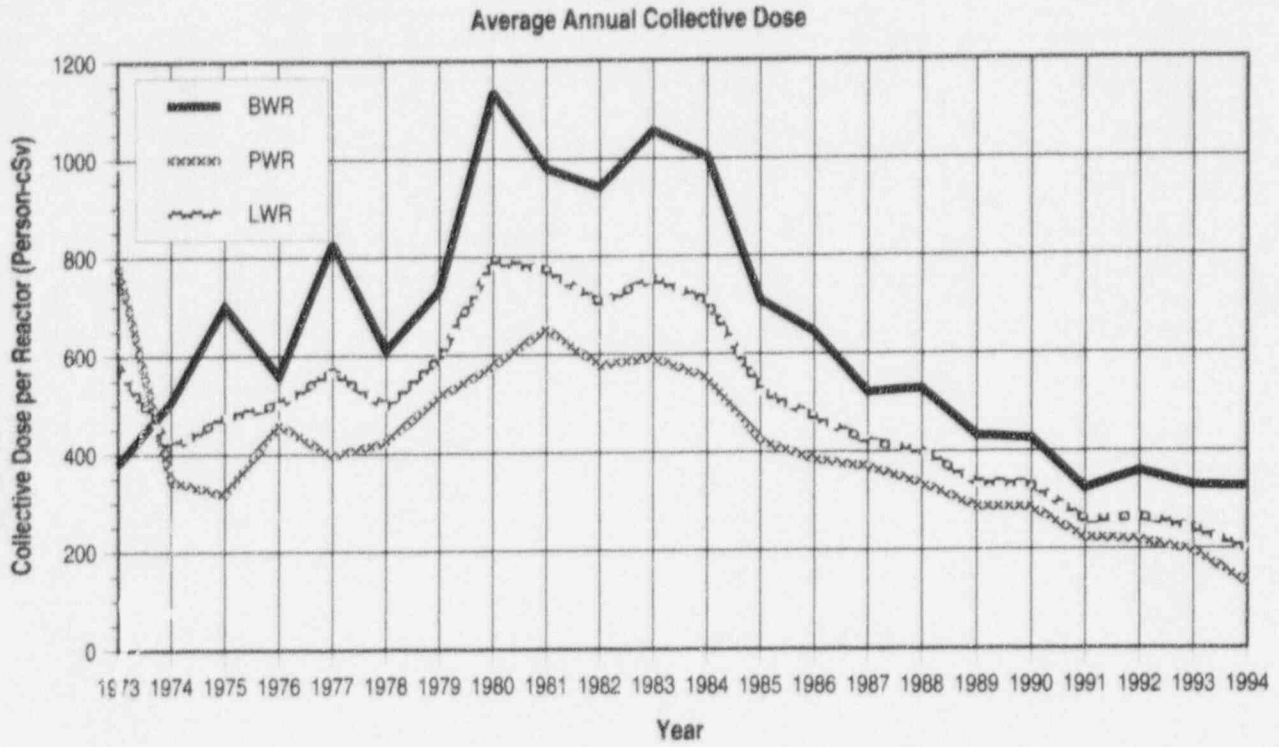


Figure 4.2
 Number of Operating Reactors and Gross Electricity Generated 1973 - 1994

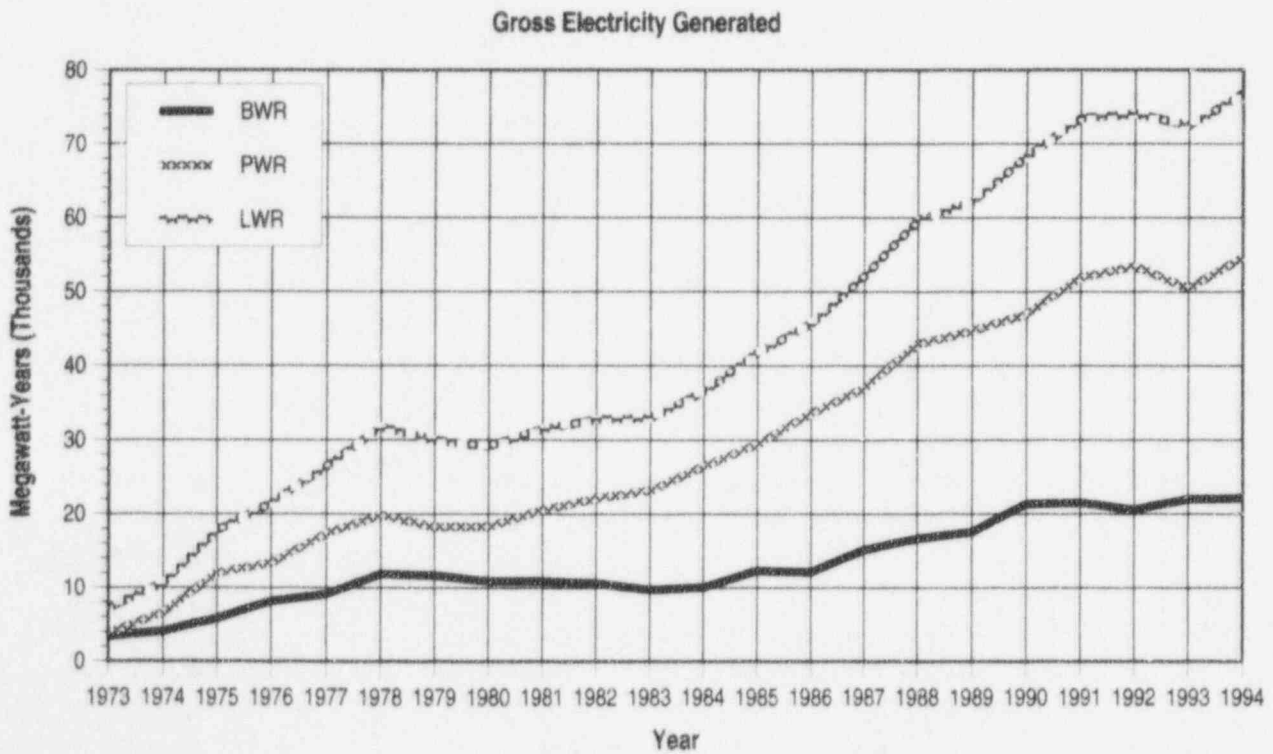
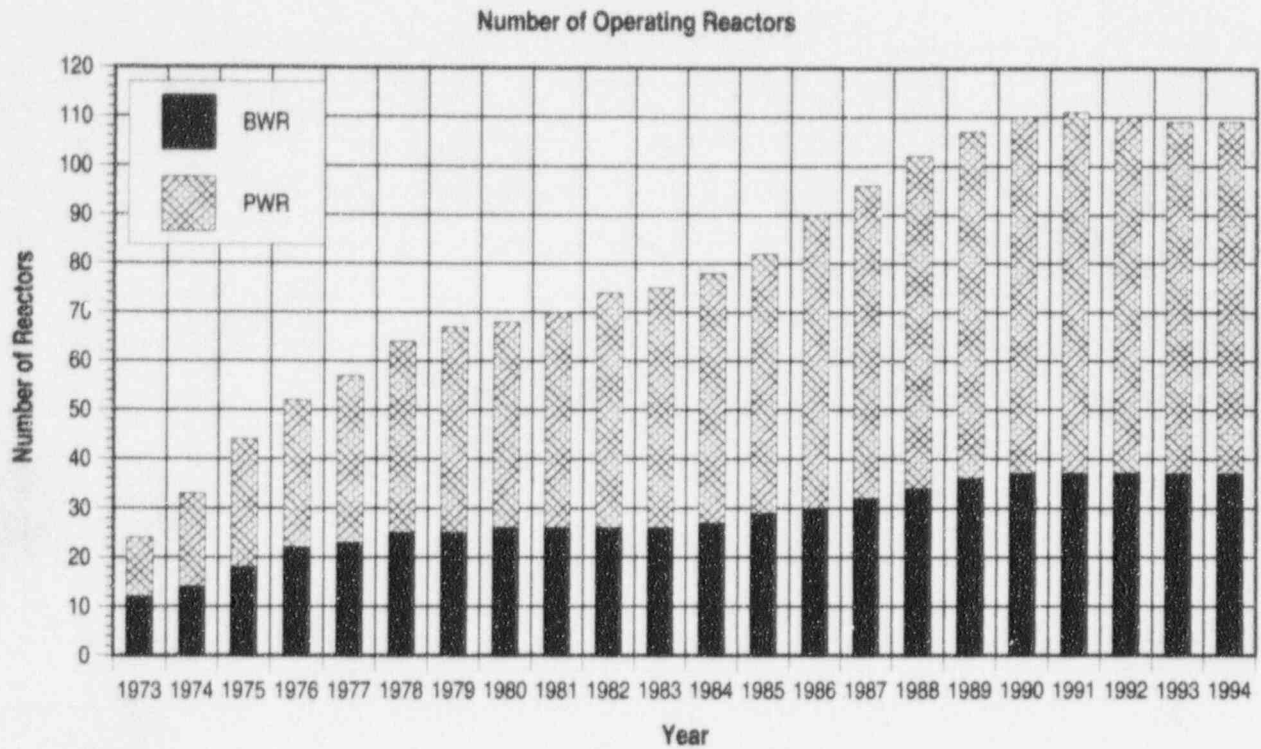
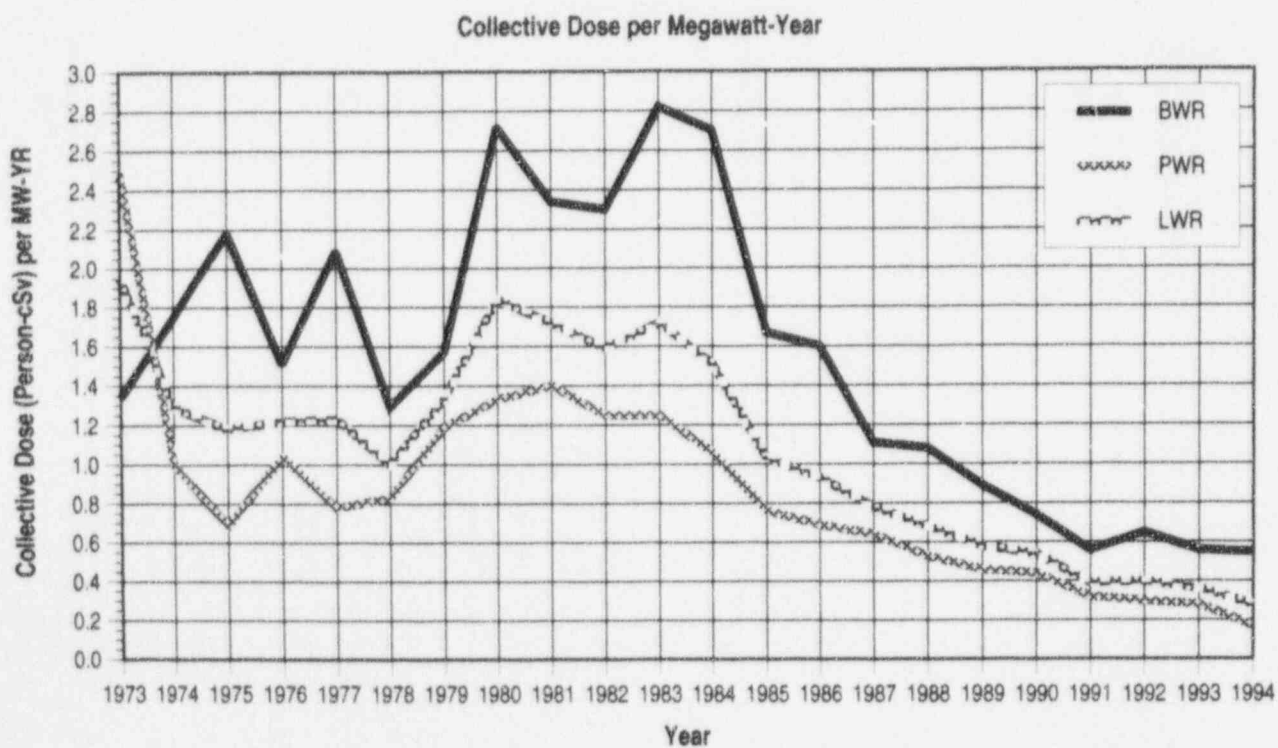
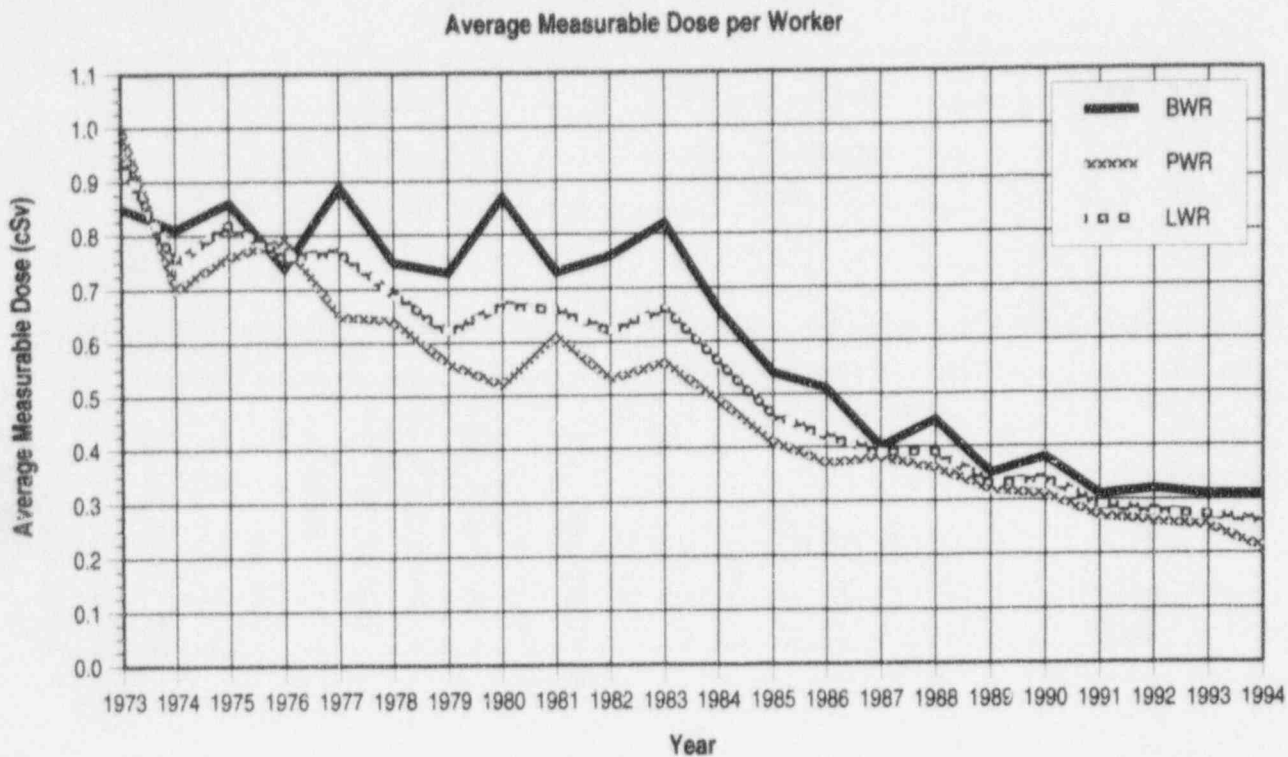


Figure 4.3

Average Measurable Dose per Worker and Collective Dose per Megawatt-Year 1973 - 1994

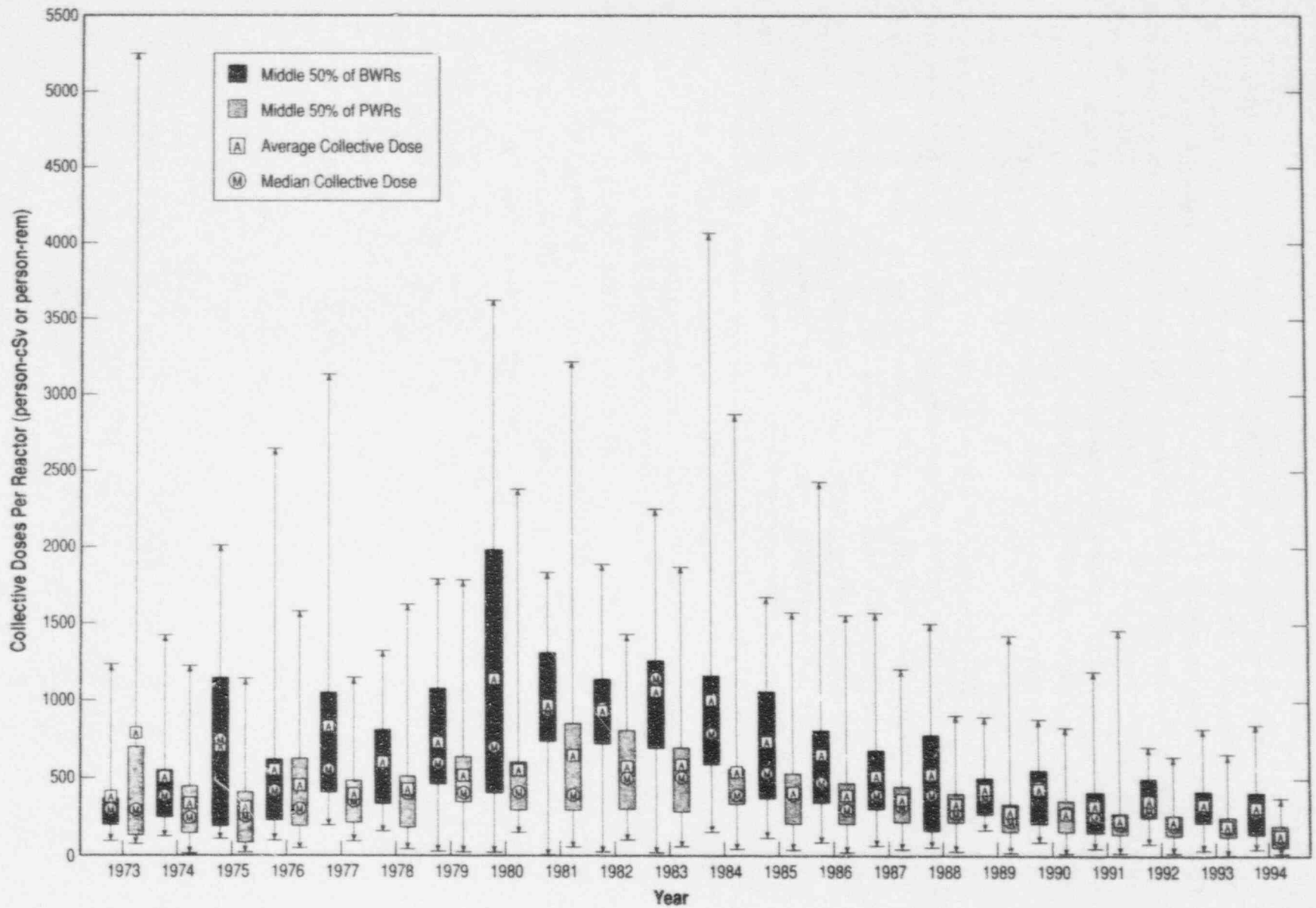


The fluctuations in the parameters for the years following the accident at the Three Mile Island plant in 1979 may reflect some of the impact that this incident had on the nuclear power industry. The decrease seen in dose trends since 1983 may be attributable to several factors. Utilities have completed 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 is continually being stressed, and most utilities have established programs to collect and share information relative to tasks, techniques, and exposures.

To further assist in the identification of any trends that might exist, Figure 4.4 displays the average and median⁹ values of the collective dose per reactor for BWRs and for PWRs for the years 1973 through 1994. 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 192 person-cSv (person-rem) in 1993 to 135 person-cSv (person-rem) in 1994. At BWRs, the median fluctuates more from year to year, and in 1994 the median collective dose decreased to 290 person-cSv (person-rem). Figure 4.4 also shows that, in 1994, 50% of the PWRs reported collective doses between 63 and 189 person-cSv (person-rem) while 50% of the BWRs reported collective doses between 138 and 432 person-cSv (person-rem). 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).

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 - 1994



4.5 Plant Rankings by Collective Dose per Reactor

Since the number of reactors from which data have been collected is still statistically rather small, 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 1990 through 1994. 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 cSv (rem) to the total annual collective dose. The value of CR has continued to decline for most plants, and in 1994, the CR for all the U.S. LWRs fell between 0.05 and 0.50, the range recommended by the UNSCEAR [Ref. 10]. Note that in 1994, the CR value was determined directly from the individual radiation exposure records submitted under 10 CFR 20.2206 (Form 5) rather than calculating the value from the statistical dose distribution summary. (see Section 3.1.8)

In 1994, the five BWR sites with the highest collective doses all exceeded 519 person-cSv (person-rem) per reactor (Table 4.5). These reactors were Washington Nuclear 2, Oyster Creek, Perry, Quad Cities 1 and 2, and River Bend 1. Although the six reactors at these five sites represented only 16% of the 37 BWRs, they contributed 35% of the total collective dose incurred at BWRs in 1994.

Some of the activities which contributed to the collective dose accumulated at the BWR site with the highest collective dose per reactor [WNP-2 with 866 person-cSv (person-rem)] were the Mechanical Stress Improvement Program activities, valve work, work performed under the reactor vessel, refueling activities, in-service inspection and non-destructive exams, control rod drive mechanism refurbishment, and shielding in the drywell.

In 1994, the five PWR sites with the highest collective doses all exceeded 238 person-cSv (person-rem) per reactor (Table 4.6). These reactors were Summer, Diablo Canyon 1 and 2, St. Lucie 1 and 2, Cook 1 and 2, and Turkey Point 3 and 4. Although representing 13% of the 72 PWRs included in 1994, they contributed 27% of the total collective dose at PWRs. Much of the collective dose accumulated at the plant with the highest dose per reactor in 1994 [Summer 1 with 374 person-cSv (person-rem)] was attributed to the steam generator replacement project. Other high dose jobs included removal/replacement of platform interferences, and snubber/hanger inspections.

TABLE 4.5
BOILING WATER REACTORS LISTED IN ASCENDING ORDER OF COLLECTIVE DOSE PER REACTOR***
1990 - 1994

1990				
Site Name	Collective Dose per Site*	Dose per Worker	Dose per MW-Yr	CR**
FERMI 2	83	0.18	0.1	0.01
LIMERICK 1,2	175	0.12	0.1	0.01
MONTECELLO	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	961	0.59	2.3	0.31
FITZPATRICK	884	0.58	1.6	0.47

1991				
Site Name	Collective Dose per Site*	Dose per Worker	Dose per MW-Yr	CR**
LIMERICK 1,2	106	0.36	0.1	0.04
GRAND GULF	84	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
NINE MILE POINT 1,2	292	0.19	0.2	0.10
PERRY	146	0.24	0.1	0.10
DUANE ARNOLD	202	0.60	0.4	0.58
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	0.6	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
MONTECELLO	465	0.48	1.1	0.29
PEACH BOTTOM 2,3	834	0.35	0.6	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

1992				
Site Name	Collective Dose per Site*	Dose per Worker	Dose per MW-Yr	CR**
COOPER STATION	84	0.16	0.1	0.07
MILLSTONE POINT 1	99	0.28	0.2	0.47
MONTECELLO	114	0.25	0.2	0.19
LIMERICK 1,2	330	0.21	0.2	0.06
BROWNS FERRY 1,2,3	516	0.19	0.5	0.04
FERMI 2	245	0.20	0.3	0.01
PEACH BOTTOM 2,3	502	0.26	0.3	0.16
HATCH 1,2	550	0.34	0.4	0.16
BIG ROCK POINT	277	0.56	8.5	0.52
PILGRIM	281	0.21	0.5	0.02
NINE MILE POINT 1,2	563	0.31	0.6	0.17
DRESDEN 2,3	619	0.34	0.7	0.22
BRUNSWICK 1,2	623	0.23	1.7	0.16
SUSQUEHANNA 1,2	724	0.38	0.5	0.23
VERMONT YANKEE	381	0.41	0.9	0.19
CLINTON	431	0.36	0.7	0.12
HOPE CREEK 1	436	0.26	0.5	0.18
GRAND GULF	484	0.24	0.5	0.14
DUANE ARNOLD	502	0.48	1.2	0.28
PERRY	571	0.38	0.7	0.15
QUAD CITIES 1,2	1,157	0.48	1.2	0.31
LASALLE 1,2	1,167	0.48	0.8	0.32
WASHINGTON NUCLEAR 2	612	0.41	0.9	0.24
OYSTER CREEK	857	0.24	1.2	0.16
FITZPATRICK	674	0.28	—	0.24
RIVER BEND 1	710	0.35	2.1	0.21

1993				
Site Name	Collective Dose per Site*	Dose per Worker	Dose per MW-Yr	CR**
FERMI 2	35	0.10	0.0	0.00
MILLSTONE POINT 1	81	0.27	0.1	0.15
HOPE CREEK 1	98	0.14	0.1	0.05
LIMERICK 1,2	217	0.17	0.1	0.02
BIG ROCK POINT	152	0.36	3.0	0.26
SUSQUEHANNA 1,2	335	0.23	0.2	0.05
RIVER BEND 1	180	0.21	0.3	0.14
VERMONT YANKEE	217	0.26	0.5	0.08
FITZPATRICK	232	0.16	0.4	0.14
PEACH BOTTOM 2,3	552	0.31	0.3	0.17
PERRY	278	0.23	0.6	0.03
BROWNS FERRY 1,2,3	870	0.24	1.3	0.08
NINE MILE POINT 1,2	633	0.27	0.5	0.14
GRAND GULF	332	0.18	0.4	0.07
HATCH 1,2	669	0.39	0.6	0.18
COOPER STATION	391	0.35	0.9	0.20
DUANE ARNOLD	407	0.39	1.0	0.34
OYSTER CREEK	416	0.16	0.8	0.07
QUAD CITIES 1,2	849	0.39	0.9	0.24
LASALLE 1,2	854	0.50	0.6	0.33
PILGRIM	435	0.33	0.8	0.03
BRUNSWICK 1,2	872	0.30	1.9	0.17
WASHINGTON NUCLEAR 2	469	0.34	0.6	0.19
MONTECELLO	494	0.52	1.1	0.30
CLINTON	498	0.40	0.7	0.09
DRESDEN 2,3	1,655	0.60	1.7	0.38

1994				
Site Name	Collective Dose per Site*	Dose per Worker	Dose per MW-Yr	CR**
VERMONT YANKEE	38	0.17	0.1	0.00
GRAND GULF	56	0.12	0.0	0.03
CLINTON	63	0.15	0.1	0.00
NINE MILE POINT 1,2	149	0.19	0.1	0.02
COOPER STATION	74	0.24	0.3	0.00
BIG ROCK POINT	119	0.38	2.4	0.14
DUANE ARNOLD	120	0.24	0.2	0.03
LIMERICK 1,2	275	0.18	0.1	0.00
PILGRIM	200	0.26	0.4	0.00
FERMI 2	213	0.19	—	0.00
SUSQUEHANNA 1,2	442	0.28	0.2	0.02
BROWNS FERRY 1,2,3	655	0.26	1.0	0.05
PEACH BOTTOM 2,3	579	0.27	0.3	0.09
FITZPATRICK	322	0.20	0.5	0.10
HOPE CREEK 1	326	0.18	0.4	0.05
LASALLE 1,2	726	0.40	0.5	0.08
MILLSTONE POINT 1	391	0.30	1.0	0.01
MONTECELLO	395	0.50	0.6	0.17
DRESDEN 2,3	833	0.36	1.2	0.05
HATCH 1,2	864	0.39	0.7	0.20
BRUNSWICK 1,2	999	0.33	0.8	0.05
RIVER BEND 1	519	0.23	0.9	0.06
QUAD CITIES 1,2	1,128	0.52	1.7	0.31
PERRY	691	0.33	1.3	0.03
OYSTER CREEK	844	0.35	2.0	0.24
WASHINGTON NUCLEAR 2	866	0.46	1.1	0.20

* 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 cSv (rems) to the collective dose. For 1994 data, the CR value was determined from the individual Form 5 submittals.

*** All doses are in cSv (rems).

TABLE 4.6
PRESSURIZED WATER REACTORS LISTED IN ASCENDING ORDER OF COLLECTIVE DOSE PER REACTOR**
1990 - 1994

Site Name	1990			
	Collect Dose per Site*	Dose per Worker	Dose per MW-Yr	CR**
RANDH BECO	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	188	0.17	0.1	0.01
PRAIRIE ISLAND 1,2	189	0.26	0.2	0.07
SOUTH TEXAS 1,2	206	0.16	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
KEWALNEE	145	0.30	0.3	0.12
CALVERT CLIFFS 1,2	304	0.16	1.9	0.12
DIABLO CANYON 1,2	323	0.22	0.2	0.04
PALO VERDE 1,2,3	469	0.25	0.2	0.16
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	126	0.24	0.2	0.06
BYRON 1,2	434	0.31	0.3	0.21
FARLEY 1,2	467	0.27	0.3	0.26
VOGTLE 1,2	489	0.29	0.3	0.12
YANKEE-ROWE	240	0.36	2.4	0.19
TROJAN	260	0.22	0.4	0.09
THREE MILE ISLAND 1	264	0.20	0.4	0.12
SURRY 1,2	675	0.30	0.6	0.21
COOK 1,2	580	0.31	0.4	0.16
FORT CALHOUN	260	0.39	1.0	0.21
NORTH ANNA 1,2	660	0.27	0.4	0.37
SAN ONOFRE 1,2,3	885	0.40	0.4	0.28
MILLSTONE POINT 2,3	593	0.36	0.4	0.24
GINNA	347	0.36	0.8	0.17
ZION 1,2	686	0.50	0.8	0.31
INDIAN POINT 3	360	0.34	0.6	0.16
MCGUIRE 1,2	727	0.32	0.6	0.20
TURKEY POINT 3,4	730	0.36	0.8	0.19
SUMMER 1	376	0.34	0.6	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	800	0.37	0.6	0.24
HADDAM NECK	421	0.43	3.0	0.36
ROBINSON 2	437	0.27	1.1	0.14
CALLAWAY 1	442	0.36	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	600	0.57	1.0	0.51
MAINE YANKEE	662	0.60	1.2	0.29
PALISADES	795	0.32	2.1	0.28
SEQUOYAH 1,2	1,678	0.67	1.0	0.44

Site Name	1991			
	Collect Dose per Site*	Dose per Worker	Dose per MW-Yr	CR**
CALLAWAY 1	21	0.07	0.0	0.00
COOK 1,2	89	0.08	0.0	0.00
INDIAN POINT 3	40	0.13	0.0	0.00
YANKEE-ROWE	40	0.26	0.3	0.07
PRAIRIE ISLAND 1,2	88	0.17	0.1	0.03
FORT CALHOUN	67	0.20	0.1	0.07
CALVERT CLIFFS 1,2	130	0.07	0.1	0.02
ZION 1,2	173	0.19	0.2	0.03
SEABROOK	82	0.13	0.1	0.00
CRYSTAL RIVER 3	104	0.13	0.2	0.01
MAINE YANKEE	105	0.26	0.1	0.09
SOUTH TEXAS 1,2	267	0.22	0.1	0.06
POINT BEACH 1,2	285	0.37	0.3	0.22
BYRON 1,2	298	0.26	0.1	0.07
SAN ONOFRE 1,2,3	412	0.23	0.2	0.07
COMANCHE PEAK	148	0.16	0.2	0.02
ARKANSAS 1,2	361	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	561	0.28	0.2	0.18
MILLSTONE POINT 2,3	391	0.36	0.6	0.18
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	606	0.27	0.2	0.16
PALISADES	211	0.16	0.4	0.01
DAVIS-BESSE	216	0.22	0.3	0.11
KEWALNEE	221	0.46	0.6	0.46
HARRIS	226	0.26	0.3	0.09
SALEM 1,2	468	0.11	0.3	0.23
CATAWBA 1,2	462	0.26	0.3	0.10
ST. LUCIE 1,2	479	0.37	0.3	0.18
BEAVER VALLEY 1,2	485	0.29	0.4	0.19
SURRY 1,2	610	0.33	0.4	0.18
DIABLO CANYON 1,2	646	0.27	0.3	0.10
BRAIDWOOD 1,2	650	0.34	0.4	0.16
SUMMER 1	291	0.30	0.6	0.14
NORTH ANNA 1,2	625	0.30	0.4	0.36
FARLEY 1,2	649	0.36	0.4	0.36
GINNA	328	0.36	0.8	0.14
WOLF CREEK 1	331	0.33	0.6	0.10
SEQUOYAH 1,2	698	0.36	0.4	0.26
WATERFORD 3	364	0.28	0.4	0.11
TURKEY POINT 3,4	639	0.46	3.6	0.30
TROJAN	687	0.38	3.1	0.31
HADDAM NECK	560	0.61	1.3	0.36
INDIAN POINT 2	1,489	0.81	3.2	0.41

Site Name	1992			
	Collect Dose per Site*	Dose per Worker	Dose per MW-Yr	CR**
DAVIS-BESSE	19	0.07	0.0	0.00
SUMMER 1	27	0.11	0.0	0.00
THREE MILE ISLAND 1	34	0.06	0.0	0.00
SOUTH TEXAS 1,2	147	0.16	0.1	0.01
WOLF CREEK 1	78	0.17	0.1	0.12
TROJAN	84	0.16	0.2	0.03
INDIAN POINT 2	97	0.20	0.1	0.13
BYRON 1,2	189	0.19	0.1	0.02
PRAIRIE ISLAND 1,2	211	0.26	0.3	0.10
SAN ONOFRE 1,2,3	304	0.20	0.1	0.02
BRAIDWOOD 1,2	228	0.22	0.1	0.06
KEWALNEE	122	0.27	0.3	0.07
POINT BEACH 1,2	266	0.41	0.3	0.24
ST. LUCIE 1,2	264	0.21	0.2	0.04
BEAVER VALLEY 1,2	289	0.20	0.2	0.06
SEABROOK	147	0.18	0.2	0.01
TURKEY POINT 3,4	305	0.24	0.3	0.11
CALVERT CLIFFS 1,2	330	0.17	0.3	0.18
PALO VERDE 1,2,3	541	0.27	0.2	0.19
COMANCHE PEAK	188	0.17	0.2	0.02
MCGUIRE 1,2	386	0.24	0.2	0.13
CATAWBA 1,2	364	0.26	0.2	0.06
HADDAM NECK	302	0.25	0.4	0.08
INDIAN POINT 3	212	0.21	0.4	0.04
HARRIS	213	0.23	0.3	0.07
VOGTLE 1,2	428	0.34	0.2	0.10
SALEM 1,2	431	0.10	0.4	0.06
OCONEE 1,2,3	648	0.33	0.3	0.10
WATERFORD 3	226	0.19	0.2	0.06
DIABLO CANYON 1,2	466	0.26	0.2	0.09
SEQUOYAH 1,2	466	0.27	0.3	0.06
COOK 1,2	492	0.26	0.6	0.12
GINNA	261	0.31	0.6	0.08
SURRY 1,2	539	0.32	0.4	0.15
FORT CALHOUN	272	0.34	0.9	0.10
NORTH ANNA 1,2	678	0.27	0.4	0.27
PALISADES	266	0.23	0.6	0.18
CALLAWAY 1	336	0.36	0.3	0.12
ROBINSON 2	362	0.28	0.7	0.09
FARLEY 1,2	806	0.40	0.6	0.26
CRYSTAL RIVER 3	424	0.30	0.7	0.16
ARKANSAS 1,2	878	0.28	0.6	0.18
MAINE YANKEE	461	0.36	0.7	0.17
ZION 1,2	1,043	0.60	0.9	0.44
MILLSTONE POINT 2,3	1,280	0.40	1.1	0.33

Site Name	1993			
	Collect Dose per Site*	Dose per Worker	Dose per MW-Yr	CR**
SEABROOK	6	0.06	0.0	0.00
WATERFORD 3	16	0.08	0.0	0.00
COOK 1,2	44	0.07	0.0	0.00
HARRIS	31	0.06	0.0	0.00
PRAIRIE ISLAND 1,2	106	0.20	0.1	0.00
COMANCHE PEAK 1,2	100	0.12	0.1	0.03
CRYSTAL RIVER 3	80	0.06	0.1	0.00
INDIAN POINT 3	80	0.13	0.4	0.00
OCONEE 1,2,3	237	0.16	0.1	0.00
POINT BEACH 1,2	186	0.33	0.2	0.16
KEWALNEE	106	0.24	0.2	0.06
SOUTH TEXAS 1,2	261	0.22	1.6	0.04
ARKANSAS 1,2	288	0.14	0.2	0.01
BRAIDWOOD 1,2	273	0.26	0.1	0.03
TURKEY POINT 3,4	276	0.22	0.2	0.09
DIABLO CANYON 1,2	261	0.19	0.1	0.03
FORT CALHOUN	167	0.22	0.4	0.01
FARLEY 1,2	333	0.26	0.2	0.12
WOLF CREEK 1	183	0.19	0.2	0.01
VOGTLE 1,2	397	0.27	0.2	0.11
SEQUOYAH 1,2	372	0.23	0.9	0.08
SURRY 1,2	363	0.27	0.5	0.06
GINNA	183	0.23	0.6	0.09
PALO VERDE 1,2,3	662	0.26	0.2	0.16
CATAWBA 1,2	386	0.26	0.2	0.07
CALVERT CLIFFS 1,2	405	0.28	0.3	0.14
SALEM 1,2	408	0.11	0.3	0.07
THREE MILE ISLAND 1	206	0.11	0.3	0.01
BYRON 1,2	432	0.32	0.2	0.08
CALLAWAY 1	226	0.20	0.2	0.02
MCGUIRE 1,2	483	0.27	0.3	0.14
ST. LUCIE 1,2	482	0.34	0.4	0.16
SAN ONOFRE 1,2,3	767	0.36	0.4	0.14
MILLSTONE POINT 2,3	667	0.27	0.4	0.16
PALISADES	289	0.32	0.7	0.13
SUMMER 1	267	0.26	0.4	0.08
BEAVER VALLEY 1,2	621	0.30	0.6	0.12
ZION 1,2	643	0.36	0.4	0.22
ROBINSON 2	337	0.28	0.7	0.11
DAVIS-BESSE	346	0.29	0.6	0.11
MAINE YANKEE	377	0.37	0.6	0.13
HADDAM NECK	408	0.41	0.9	0.26
NORTH ANNA 1,2	808	0.33	0.6	0.28
INDIAN POINT 2	676	0.46	1.0	0.23

Site Name	1994			
	Collect Dose per Site*	Dose per Worker	Dose per MW-Yr	CR**
CALLAWAY 1	14	0.07	0.0	0.00
SAN ONOFRE 2,3	30	0.06	0.0	0.00
BEAVER VALLEY 1,2	44	0.09	0.0	0.00
FORT CALHOUN	23	0.11	0.0	0.00
SOUTH TEXAS 1,2	47	0.07	0.0	0.00
THREE MILE ISLAND 1	40	0.09	0.1	0.00
FARLEY 1,2	89	0.21	0.1	0.00
COMANCHE PEAK 1,2	90	0.09	0.1	0.02
INDIAN POINT 2	48	0.13	0.1	0.06
PRAIRIE ISLAND 1,2	109	0.23	0.1	0.00
INDIAN POINT 3	66	0.11	—	0.00
PALISADES	60	0.16	0.1	0.00
ROBINSON 2	63	0.16	0.1	0.00
KEWALNEE	74	0.20	0.2	0.00
MAINE YANKEE	84	0.28	0.1	0.02
POINT BEACH 1,2	170	0.31	0.2	0.01
ARKANSAS 1,2	172	0.13	0.1	0.00
MILLSTONE POINT 2,3	188	0.16	0.1	0.01
SALEM 1,2	188	0.20	0.1	0.06
NORTH ANNA 1,2	193	0.19	0.1	0.00
CATAWBA 1,2	207	0.16	0.1	0.01
VOGTLE 1,2	217	0.21	0.1	0.01
SEABROOK	113	0.13	0.2	0.00
HADDAM NECK	136	0.29	0.4	0.17
GINNA	136	0.20	0.3	0.00
BYRON 1,2	280	0.29	0.1	0.02
DAVIS-BESSE	144	0.17	0.2	0.00
SEQUOYAH 1,2	260	0.19	0.2	0.02
BRAIDWOOD 1,2	268	0.24	0.2	0.01
ZION 1,2	306	0.26	0.2	0.02
PALO VERDE 1,2,3	462	0.23	0.2	0.07
OCONEE 1,2,3	637	0.28	0.3	0.08
SURRY 1,2	378	0.26	0.3	0.00
WATERFORD 3	191	0.16	0.2	0.00
MCGUIRE 1,2	367	0.24	0.2	0.07
HARRIS	222	0.20	0.3	0.00
CALVERT CLIFFS 1,2	464	0.31	0.3	0.00
CRYSTAL RIVER 3	229	0.21	0.3	0.02
WOLF CREEK 1	236	0.22	0.2	0.01
TURKEY POINT 3,4	476	0.32	0.4	0.03
COOK 1,2	476	0.27	0.4	0.06
ST. LUCIE 1,2	606	0.27	0.4	0.06
DIABLO CANYON 1,2	580	0.26	0.5	0.06
SUMMER 1	374	0.24	0.7	0.00

* 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 1.6 cSv (rems) to the collective dose. For 1994 data, the CR value was determined from the individual Form 5 submittals.

*** All doses are in cSv (rems).

Tables 4.7a and b list the sites that had been in commercial operation for at least five years as of December 31, 1994, and show the values of several parameters for each of the sites. They also give averages for the two types of reactors. Based on the 185 reactor-years of operation accumulated by the 37 BWRs listed, the average annual collective dose per reactor was found to be 354 person-cSv (person-rem), the average measurable dose per worker was 0.33 cSv (rem), and the average collective dose per megawatt-year was 0.6.

Based on the 349 reactor-years of operation at the 70 PWRs listed, the average annual collective dose per reactor, average measurable dose per worker, and average collective dose per megawatt-year were found to be 214 person-cSv (person-rem), 0.27 cSv (rem), and 0.3 person-cSv/megawatt-year, respectively. All of these values, at both types of facilities, are lower than those found for the five year period ending in 1993, with the exception of the average measurable dose at BWRs, which remained the same.

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, 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.

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. Jobs that were large contributors to BWR doses in 1994 included valve maintenance work, in-service inspections, pump maintenance, repair and refurbishment of control rod drive mechanisms, and refueling activities. At PWR facilities, the major contributors to the collective dose were steam generator related work, area and system decontamination, refueling activities, in-service inspections, and valve related maintenance work.

A complete breakdown of the activities contributing to the collective dose at the ten sites with the highest dose per reactor ranking in 1994 (from Tables 4.5 and 4.6) is given in Tables 4.8a and 4.8b for BWRs and PWRs respectively. The outage dose and duration is shown as well as the collective dose for each activity.

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

1990 - 1994

Site Name*	Number of Reactor Years	Annual Collective Dose per Reactor	Total Coll. Dose per Site (cSv)	Workers with Meas. Doses	Avg. Meas. Dose (cSv)	Total Mega-watt-years	Average Collective Dose per MW-yr
LIMERICK 1,2	10	110	1,103	6,962	0.16	8937.6	0.1
FERMI 2	5	161	804	4,388	0.18	3445.8	0.2
BIG ROCK POINT	5	201	1,006	2,011	0.50	243.8	4.1
VERMONT YANKEE	5	212	1,061	3,133	0.34	2290.3	0.5
MILLSTONE POINT 1	5	222	1,111	3,493	0.32	2275.1	0.5
NINE MILE POINT 1,2	10	234	2,336	8,900	0.26	5842.7	0.4
SUSQUEHANNA 1,2	10	245	2,448	8,488	0.29	8645.6	0.3
BROWNS FERRY 1,2,3	15	260	3,905	14,083	0.28	2960.2	1.3
COOPER STATION	5	268	1,338	4,199	0.32	2597.6	0.5
HOPE CREEK 1	5	286	1,429	7,255	0.20	4592.0	0.3
GRAND GULF	5	290	1,448	6,758	0.21	5017.3	0.3
PEACH BOTTOM 2,3	10	294	2,944	10,088	0.29	7992.9	0.4
MONTICELLO	5	312	1,562	3,496	0.45	2423.1	0.6
PILGRIM	5	349	1,746	8,152	0.21	2438.1	0.7
CLINTON	5	356	1,778	5,301	0.34	3333.0	0.5
RIVER BEND 1	5	408	2,042	7,474	0.27	3068.7	0.7
DUANE ARNOLD	5	418	2,092	4,375	0.48	2179.6	1.0
LASALLE 1,2	10	450	4,501	9,746	0.46	8160.7	0.6
PERRY	5	465	2,324	6,957	0.33	3753.1	0.6
QUAD CITIES 1,2	10	467	4,671	10,634	0.44	4810.6	1.0
HATCH 1,2	10	470	4,699	11,001	0.43	6192.8	0.8
BRUNSWICK 1,2	10	482	4,820	14,428	0.33	4058.7	1.2
FITZPATRICK	5	489	2,445	8,201	0.30	2091.5	1.2
DRESDEN 2,3	10	551	5,512	11,178	0.49	4305.7	1.3
WASHINGTON NUCLEAR 2	5	574	2,870	7,180	0.40	3528.9	0.8
OYSTER CREEK	5	682	3,412	12,743	0.27	2383.3	1.4
Grand Totals and Averages	185		65,407	200,624	0.33	107,568.7	0.6
Averages Per Reactor-Year			354	1,084		581.5	

* Sites where not all reactors had completed five full years of commercial operation as of 12/31/94 are not included.

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

1990 - 1994

Site Name*	Number of Reactor Years	Annual Collective Dose per Reactor	Total Coll Dose per Site (cSv)	Workers with Meas. Doses	Avg. Meas. Dose (cSv)	Total Mega-watt-years	Average Collective Dose per MW-yr
PRAIRIE ISLAND 1,2	10	71	712	3,178	0.22	4,735.5	0.2
SOUTH TEXAS 1,2	10	91	908	5,002	0.18	7,204.9	0.1
PACIFIC BEACH 1,2	10	126	1,255	3,065	0.41	4,442.5	0.3
KEWAUNEE	5	133	666	2,235	0.30	2,314.7	0.3
INDIAN POINT 3	5	146	728	3,375	0.22	2,160.3	0.3
THREE MILE ISLAND 1	5	148	742	5,688	0.13	3,691.7	0.2
BRAIDWOOD 1,2	10	154	1,535	6,061	0.25	8,568.7	0.2
HARRIS	5	155	777	3,671	0.21	3,816.8	0.2
OCCONEE 1,2,3	15	159	2,378	9,290	0.26	11,334.4	0.2
FORT CALHOUN	5	160	799	2,770	0.29	1,847.0	0.4
BYRON 1,2	10	161	1,613	5,826	0.28	9,010.9	0.2
CALVERT CLIFFS 1,2	10	163	1,625	8,916	0.18	5,321.5	0.3
COOK 1,2	10	166	1,664	6,955	0.24	6,949.7	0.2
WATERFORD 3	5	169	843	4,308	0.20	4,845.5	0.2
SAN ONOFRE 1,2,3	14	173	2,420	8,410	0.29	10,188.7	0.2
SALEM 1,2	10	176	1,757	16,722	0.11	7,023.6	0.3
BEAVER VALLEY 1,2	10	180	1,797	7,352	0.24	6,652.9	0.3
PALO VERDE 1,2,3	15	180	2,699	10,631	0.25	14,151.8	0.2
VOGTLE 1,2	10	184	1,838	6,607	0.28	9,955.8	0.2
WOLF CREEK 1	5	204	1,022	4,311	0.24	4,616.3	0.2
CALLAWAY 1	5	208	1,038	3,864	0.27	5,320.6	0.2
DIABLO CANYON 1,2	10	220	2,199	9,156	0.24	9,599.1	0.2
CATAWBA 1,2	10	227	2,268	8,392	0.27	9,271.9	0.2
FARLEY 1,2	10	233	2,332	7,061	0.33	7,302.4	0.3
MCGUIRE 1,2	10	233	2,334	8,953	0.26	8,300.6	0.3
SURRY 1,2	10	239	2,385	8,086	0.29	6,548.6	0.4
ARKANSAS 1,2	10	243	2,429	11,013	0.22	7,488.6	0.3
DAVIS-BESSE	5	243	1,216	4,769	0.25	3,616.7	0.3
ST. LUCIE 1,2	10	252	2,517	7,767	0.32	6,945.5	0.4
GINNA	5	253	1,267	4,305	0.29	2,075.4	0.6
CRYSTAL RIVER 3	5	258	1,292	5,427	0.24	3,218.8	0.4
SUMMER 1	5	273	1,365	4,993	0.27	3,530.1	0.4
TURKEY POINT 3,4	10	275	2,745	8,320	0.33	4,577.9	0.6
ROBINSON 2	5	276	1,382	5,419	0.26	2,525.6	0.5
ZION 1,2	10	286	2,861	6,967	0.41	5,798.0	0.5
NORTH ANNA 1,2	10	290	2,896	10,209	0.28	7,736.6	0.4
MILLSTONE POINT 2,3	10	300	2,999	9,239	0.32	6,631.3	0.5
PALISADES	5	324	1,621	6,301	0.26	2,501.8	0.6
MAINE YANKEE	5	342	1,709	4,287	0.40	3,400.4	0.5
HADDAM NECK	5	351	1,756	4,411	0.40	1,956.5	0.9
SEQUOYAH 1,2	10	351	3,515	9,862	0.36	7,301.4	0.5
INDIAN POINT 2	5	579	2,896	5,255	0.55	3,616.0	0.8
Grand Totals and Averages	349		74,790	278,429	0.27	248,097.0	0.3
Averages Per Reactor-Year			214	798		710.9	

* Sites where not all reactors had completed five full years of commercial operation as of 12/31/94 are not included.

TABLE 4.8a
ACTIVITIES CONTRIBUTING TO HIGH COLLECTIVE
DOSES AT SELECTED PLANTS IN 1994

BWR's with High Collective Doses

<p>Oyster Creek (844 rem)</p> <p>Outage dose/duration: 705 rem/110 days Average daily outage dose: 6.41 rem/day Average daily operating dose: 0.55 rem/day</p> <p>-Inspections (Total of 109.9 rem) Reactor Vessel Nozzles - 59.6 rem Drywell IGSCC (intergranular stress corrosion cracking) - 50.3 rem</p> <p>-Recirculation pump work (Total of 74.8 rem) Repair of B recirc. pump - 33.1 rem Repair of E recirc. pump - 31.2 rem Replacement of recirc. pump seals - 10.5 rem</p> <p>-Scaffolding installation/removal (63.7 rem)</p> <p>-MSIP (mechanical stress improvement program) drywell (43.9 rem)</p> <p>-Drywell insulation (38.2 rem)</p> <p>-Valve work (Total of 33.5 rem) Replacement of EMRV/SRV (electromagnetic and safety relief valve) in drywell - 17.8 rem Maintenance of MSIV (main steam isolation valve) - 15.7 rem</p> <p>-CRD (control rod drive) changeout (24.6 rem)</p> <p>-Drywell fan modification (22.1 rem)</p> <p>-Drywell shielding (16.7 rem)</p> <p>-Condenser cleaning at power (12.5 rem)</p> <p>-Maintenance of HCU's (Hydrogen control units) (11.2 rem)</p> <p>-Instrument and Control work (maintenance on low power range monitors/transverse incore probes/control rod drive position indicator probes) (11.1 rem)</p>
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<p>Perry (691 rem)</p> <p>Outage dose/duration: 656 rem/190 days Average daily outage dose: 3.45 rem/day Average daily operating dose: 0.2 rem/day</p> <p>-Under vessel work (Total of 75.4 rem) CRD (control rod drive) changeout, work on low power range monitors, transverse incore probes, and CRD position indicator probes - 70.1 rem Inspection/rebuilding of CRD mechanisms - 5.2 rem</p> <p>-Special maintenance (Total of 64.4 rem) Recirculation pump work - 52.6 rem Reactor water clean up system work - 11.8 rem</p> <p>-Routine maintenance (miscellaneous) (57.7 rem)</p> <p>-Valve maintenance/testing/repair (55.3 rem)</p> <p>-ISI (in-service inspection) (Total of 52.9 rem) Reactor feedwater nozzles - 18.9 rem Piping supports - 15.1 rem Drywell components - 8.3 rem Reactor internals - 5.5 rem</p> <p>-Refueling (Total of 43.5 rem) Reactor head disassembly/assembly, cavity decon, ISI of reactor vessel head - 34.3 rem Fuel unloading/loading - 9.1 rem</p> <p>-Shielding (36.3 rem)</p> <p>-HP coverage and decon (Total of 35.9 rem) Drywell and containment - 27.6 rem Balance of plant - 8.3 rem</p> <p>-Snubber testing, valve work (35.0 rem)</p> <p>-Insulation removal/replacement (14.9 rem)</p> <p>-Scaffolding installation/removal (8.7 rem)</p> <p>-Pump repair (5.3 rem)</p>
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<p>River Bend (519 rem)</p> <p>Outage dose/duration: 414 rem/137 days Average daily outage dose: 3.02 rem/day Average daily operating dose: 0.44 rem/day</p> <p>-ISI (in-service inspection)(Total of 71.1 rem) Welds - 39.1 rem Reactor Pressure Vessel - 53.2 rem Snubbers - 9.4 rem</p> <p>-Operations and surveillance (70.0 rem)</p> <p>-Valve maintenance (56.4 rem)</p> <p>-Pump maintenance (38.6 rem)</p> <p>-Refueling (37.5 rem)</p> <p>-Reactor pressure vessel internal work (28.9 rem)</p> <p>-Man-rem reduction program (16.1 rem)</p>

TABLE 4.8a (Continued)
 ACTIVITIES CONTRIBUTING TO HIGH COLLECTIVE
 DOSES AT SELECTED PLANTS IN 1994

BWR's with High Collective Doses

Quad Cities 1,2 (1128 rem)
 Outage dose/duration (U1): 865 rem/259 days
 Outage dose/duration (U2): 29 rem/99 days
 Average daily outage dose (U1): 3.34 rem/day
 Average daily outage dose (U2): 0.29 rem/day
 Average daily operating dose (U1+2): 0.63 rem/day

Unit 1

- Torus recoat (Total of 232.6 rem)
 - Grit blasting - 168.4 rem
 - Painting - 25.4 rem
 - Equipment setup - 17.7 rem
 - Sludge removal - 16.5 rem
- Valve work (Total of 49.6 rem)
 - MSIV (main steam isolation valve) repair - 51.8 rem
 - MOV (motor-operated valve) repair - 18.4 rem
 - Other valve work - 9.4 rem
- Pump (Recirculation and RHR) work (16.6 rem)
- Decontamination/housekeeping (12.8 rem)
- RHR (residual heat removal) heat exchanger work (11.1 rem)
- Shielding in drywell (8.9 rem)
- Snubber work (7.5 rem)
- Reactor reassembly (6.2 rem)
- Insulation removal/replacement (6.0 rem)
- Turbine overhaul (6.0 rem)

Unit 2

- Valve work (Total of 22.5 rem)
 - MSIV repair - 15.4 rem
 - Turbine bypass valve repair - 7.1 rem
- Decontamination/housekeeping (10.5 rem)

Unit 1/2

- Routine surveillance/walkdowns (48.4 rem)
- Installation of sparger supports (27.7 rem)
- Radiation protection tasks, surveys (23.7 rem)
- Decontamination/housekeeping (21.0 rem)
- Fire watch surveillance (14.8 rem)
- Radwaste (13.1 rem)
- Preventive maintenance (10.3 rem)
- Scaffolding installation/removal (8.1 rem)

Washington Nuclear 2 (866 rem)

Outage dose/duration: 742 rem/91 days
 Average daily outage dose: 8.15 rem/day
 Average daily operating dose: 0.45 rem/day

- MSIP (mechanical stress improvement program) activities (131.2 rem)
- Valve work (Total of 96.6 rem)
 - Miscellaneous valve work - 49.8 rem
 - MOVATS (motor-operated valve acceptance tests) - 32.3 rem
 - MSRV (main steam relief valve) work - 14.4 rem
- Work under reactor vessel (Total of 74.2 rem)
 - Undervessel support - 44.5 rem
 - Repair/refurbish CRDMs (control rod drive mechanisms) - 23.0 rem
 - Work on LPRMs (low power range monitors) - 6.7 rem
- Miscellaneous drywell tasks (57.1 rem)
- Refueling (Total of 51.8 rem)
 - Reactor vessel disassembly/reassembly - 20.0 rem
 - Reactor vessel floor support - 15.3 rem
 - In-vessel maintenance - 9.4 rem
 - Reactor cavity decontamination - 7.1 rem
- ISI (in-service inspection) and non-destructive exams (47.0 rem)
- CRDM work (not undervessel) (Total of 43.1 rem)
 - Rebuilding of CRDMs - 38.4 rem
 - Work on CRD accumulators - 4.7 rem
- Shielding in drywell (24.0 rem)
- Health physics coverage in drywell (21.7 rem)
- Visual surveillance for leaks around flanges (20.0 rem)
- Snubber testing/optimization (15.0 rem)
- Labor support (12.7 rem)
- Electrical penetration work (10.3 rem)

TABLE 4.8b
ACTIVITIES CONTRIBUTING TO HIGH COLLECTIVE
DOSES AT SELECTED PLANTS IN 1994

PWR's with High Collective Doses

Diablo Canyon 1,2 (590 rem)

Outage dose/duration (U1): 349 rem/57 days
Outage dose/duration (U2): 192 rem/34 days
Average daily outage dose (U1): 6.12 rem/day
Average daily outage dose (U2): 5.65 rem/day
Average daily operating dose: 0.08 rem/day

Unit 1

- RTD (resistance temperature device) bypass modifications (100.4 rem)
- Steam generator work (Total of 67.6 rem)
 - Primary side - 59.4 rem
 - Secondary side - 8.2 rem
- Valve maintenance (24.7 rem)
- Reactor head disassembly/assembly (17.3 rem)
- Scaffolding installation/removal (15.6 rem)
- Decontamination (Total of 13.1 rem)
 - plant decon - 8.1 rem
 - cavity decon - 5.0 rem
- ISI (in-service inspection) (11.9 rem)
- Radiation protection (11.3 rem)
- Temporary shielding (9.8 rem)
- RCP (Reactor coolant Pump) work (Total of 9.2 rem)
 - RCP motor repair - 6.5 rem
 - RCP seals - 2.7 rem
- Fuel shuffle (9.0 rem)
- Routine containment access (6.5 rem)
- Snubber activities (5.8 rem)

Unit 2

- RTD bypass modifications (49.6 rem)
- Steam generator work (Total of 37.2 rem)
 - Primary side - 32.3 rem
 - Secondary side - 4.9 rem
- Reactor head disassembly/assembly (16.0 rem)
- Valve maintenance (12.7 rem)
- ISI (9.6 rem)
- Scaffolding installation/removal (9.3 rem)
- Decontamination (Total of 9.2 rem)
 - cavity decon - 4.7 rem
 - plant decon - 4.5 rem
- Fuel shuffle (7.5 rem)
- Radiation protection (7.0 rem)
- Routine containment access (4.9 rem)
- Temporary shielding (4.6 rem)

Turkey Point 3,4 (468 rem)

Outage dose/duration (U3): 163 rem/44 days
Outage dose/duration (U4): 220 rem/42 days
Average daily outage dose (U3): 3.70 rem/day
Average daily outage dose (U4): 5.24 rem/day
Average daily operating dose: 0.13 rem/day

Unit 3

- Reactor head/fuel movement (36.3 rem)
- Steam generator work (31.3 rem)
- ISI (in-service inspection)/snubbers (23.6 rem)
- Inspections and surveys (22.5 rem)
- Miscellaneous and outside containment work (21.1 rem)
- Instrumentation and control work/reactor coolant pump work/painting (18.1 rem)
- Valve work (15.2 rem)
- Flux mapper/seal table work (13.6)
- Decontamination/shielding (7.5 rem)

Unit 4

- Miscellaneous and outside containment work (37.4 rem)
- ISI/snubbers (35.1 rem)
- Reactor head/fuel movement (32.7 rem)
- Steam generator work (28.5 rem)
- Inspections and surveys (26.7 rem)
- Flux mapper/seal table work (21.0 rem)
- Valve work (20.1 rem)
- Instrumentation and control work/reactor coolant pump work/painting (19.1 rem)
- decontamination/shielding (13.8 rem)

Summer (374 rem)^a

Outage dose/duration: 336 rem/135 days
Average daily outage dose: 2.49 rem/day
Average daily operating dose: 0.17 rem/day
^aSummer replaced its steam generators in 1994

- SGRP (Steam generator replacement project) (Total of 224.1 rem)
 - Cut/weld reactor coolant system piping and associated supports - 44.8 rem
 - Scaffolding installation/removal - 23.8 rem
 - Rigging activities to support SGRP - 15.2 rem
 - Cut/weld associated supports - 13.4 rem
 - Pipe end decon of hot legs and crossover leg - 10.9 rem
 - Insulation removal/replacement - 9.9 rem
 - Miscellaneous labor support - 8.8 rem
- Remove/replace platform interferences (20.0 rem)
- Snubber/hanger inspections (reactor building)(18.3 rem)
- Routine radiological surveillance (14.3 rem)
- Miscellaneous engineering support (7.7 rem)
- Reactor vessel head work (7.5 rem)
- Initial and routine decontamination of reactor building (6.0 rem)

TABLE 4.8b (Continued)
 ACTIVITIES CONTRIBUTING TO HIGH COLLECTIVE
 DOSES AT SELECTED PLANTS IN 1994

PWR's with High Collective Doses

Cook 1,2 (479 rem)

Outage dose/duration (U1): 248 rem/105 days
 Outage dose/duration (U2): 209 rem/97 days
 Average daily outage dose (U1): 2.36 rem/day
 Average daily outage dose (U2): 2.15/day
 Average daily operating dose: 0.05 rem/day

UNIT 1

- Scaffolding installation/removal (containment) (31.9 rem)
- Steam generator related work (Total of 31.7 rem)
 - Eddy current testing and tube plugging (primary) - 20.3 rem
 - Sludge lancing and foreign object retrieval - 11.4 rem
- Reactor head work (Total of 20.5 rem)
 - Weld repair on reactor head thermocouple - 12.2 rem
 - Conoseal replacement - 8.3 rem
- Insulation removal/replacement (14.8 rem)
- Refueling (14.7 rem)
- ISI (in-service inspection) (Total of 13.6 rem)
 - Reactor coolant pump seal inspections - 8.3 rem
 - Weld inspections - 5.3 rem
- HP coverage in containment (13.1 rem)
- Valve repairs (lower containment) (12.8 rem)
- Decontamination (Total of 10.2 rem)
 - RTD loop - 5.6 rem
 - Containment and reactor cavity - 4.6 rem
- CRDM (control rod drive mechanism) ductwork modifications (5.3 rem)

Unit 2

- Scaffolding installation/removal (containment) (23.2 rem)
- Reactor head work (Total of 22.4 rem)
 - Conoseal replacement - 12.8 rem
 - Reactor head funnel inspection/repair - 9.7 rem
- ISI (Total of 19.3 rem)
 - Weld inspections - 9.7 rem
 - RCP (Reactor coolant pump) stator inspections - 5.2 rem
 - RCP seal inspections - 4.4 rem
- Refueling (16.0 rem)
- Valve repairs (lower containment) (15.4 rem)
- Steam generator related work (Total of 13.6 rem)
 - Tube end repairs - 9.7 rem
 - Sludge lancing and foreign object retrieval - 3.8 rem
- Insulation removal/replacement (13.0 rem)
- HP coverage in containment (10.8 rem)
- Decontamination (Total of 9.6 rem)
 - RTD loop - 5.4 rem
 - Containment and reactor cavity - 4.2 rem

St. Lucie 1,2 (505 rem)

Outage dose/duration (U1): 252 rem/35 days
 Outage dose/duration (U2): 144 rem/67 days
 Average daily outage dose (U1): 7.20 rem/day
 Average daily outage dose (U2): 2.15 rem/day
 Average daily operating dose: 0.17 rem/day

Unit 1

- General entry and inspections (65.3 rem)
- Steam generator work (Total of 58.9 rem)
 - Primary side - 51.0 rem
 - Secondary side - 7.9 rem
- Reactor head work (30.9 rem)
- Special maintenance (30.2 rem)
- Decontamination and clean-up (18.6 rem)
- Plant modifications (16.1 rem)
- Routine maintenance (11.6 rem)
- Reactor coolant pump work (6.1 rem)
- Refueling (5.4 rem)

Unit 2

- Reactor head work (33.3 rem)
- General entry and inspections (32.5 rem)
- Special maintenance (25.9 rem)
- Decontamination and clean-up (15.1 rem)
- Steam generator work (Total of 14.5 rem)
 - Primary side - 12.1 rem
 - Secondary side - 2.4 rem
- Plant modifications (9.1 rem)
- Refueling (3.7 rem)

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.

From the above analysis, one can see that the largest contributor to the collective dose is usually associated with outages at a site. In analyzing collective dose trends, it is useful to examine the outage data for reactors to look for a relationship between the collective dose and the outage information for the reactors. Figure 4.5a&b display the total number of outage days for BWRs and PWRs respectively. The collective dose and average measurable dose are also plotted to allow for the comparison of outage duration to collective dose.

4.6 Collective Dose by Work Function and Employee Type

Each plant is required by its Technical Specifications to submit an annual statistical report which 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 4.9 through 4.14 summarize the 1994 data for BWRs, PWRs, and LWRs. Table 4.9 shows that, at both BWRs and PWRs, about 63% 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 Specifications of each plant require 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 dosimeter of record (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 4.10 shows that workers performing special maintenance prior to 1987 incurred the largest portion (35%-45%) of the collective dose and that workers performing routine maintenance activities usually incurred between 25% and 35% of the total. For the past eight 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.

Figure 4.5a
BWR Outage Days, Average Dose, and Collective Dose

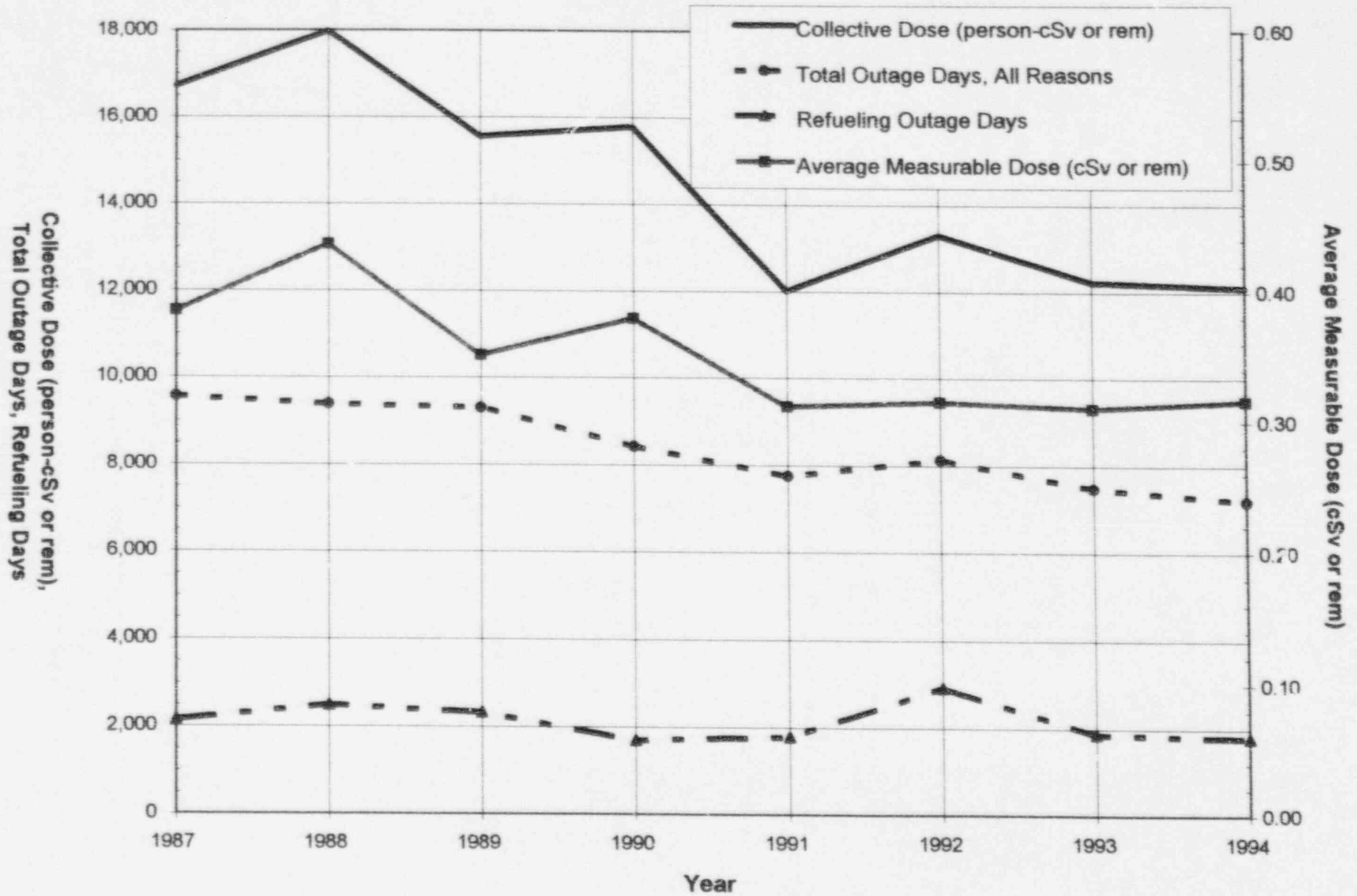


Figure 4.5b
PWR Outage Days, Average Dose, and Collective Dose

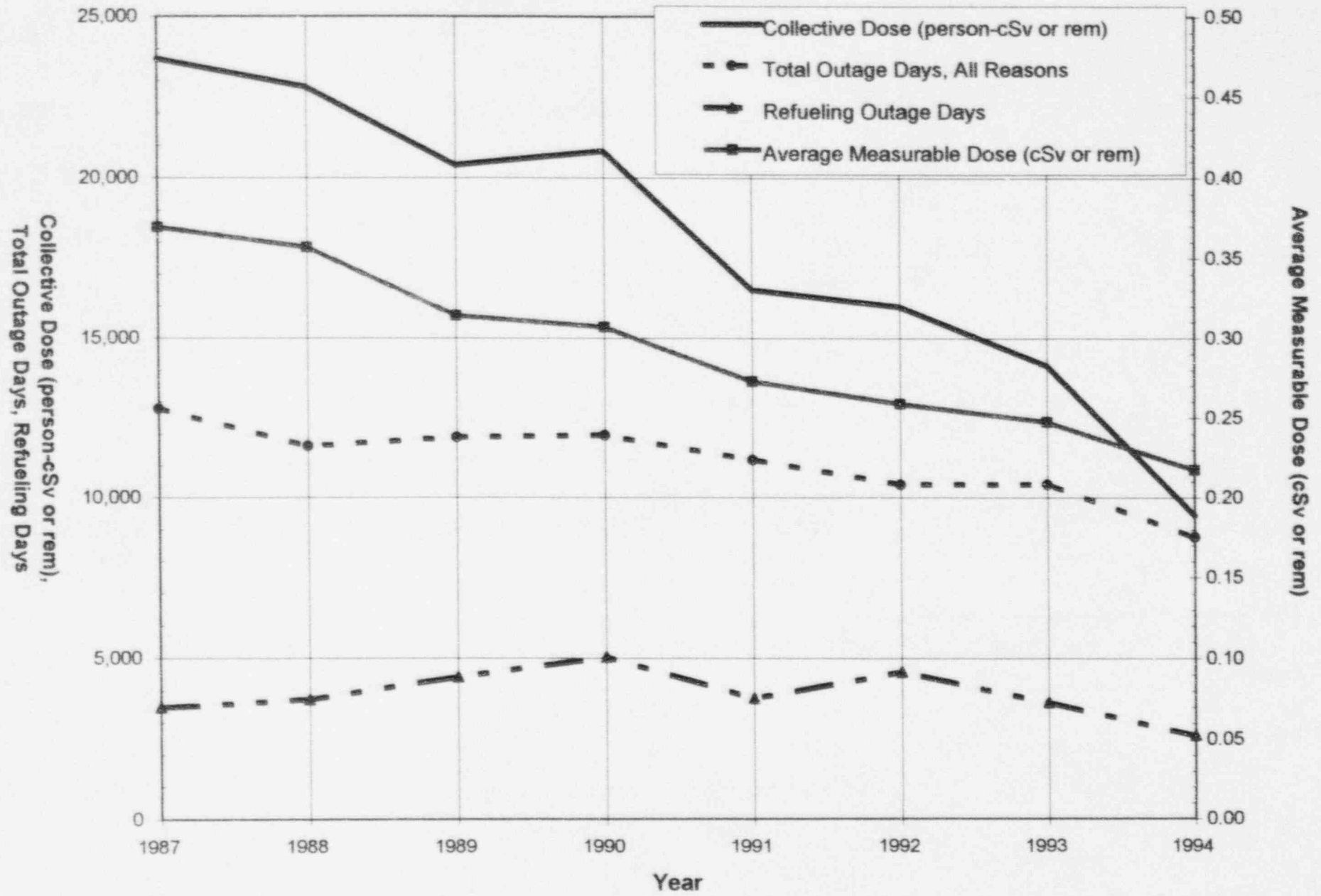


TABLE 4.9
ANNUAL COLLECTIVE DOSE
BY WORK FUNCTION AND PERSONNEL TYPE

1994

WORK AND JOB FUNCTION	STATION EMPLOYEES		UTILITY EMPLOYEES		CONTRACT WORKERS		TOTAL PER WORK FUNCTION	
	PERSON-cSv	% OF TOTAL	PERSON-cSv	% OF TOTAL	PERSON-cSv	% OF TOTAL	PERSON-cSv	% OF TOTAL
<u>BOILING WATER REACTORS</u>								
REACTOR OPS & SURV	1,268	10.4%	58	0.5%	503	4.1%	1,829	15.0%
ROUTINE MAINTENANCE	1,711	14.0%	173	1.4%	3,190	26.1%	5,074	41.6%
IN-SERVICE INSPECTION	93	0.8%	41	0.3%	868	7.1%	1,002	8.2%
SPECIAL MAINTENANCE	471	3.9%	91	0.7%	1,960	16.1%	2,522	20.7%
WASTE PROCESSING	119	1.0%	16	0.1%	148	1.2%	284	2.3%
REFUELING	399	3.3%	119	1.0%	973	8.0%	1,491	12.2%
TOTAL	4,062	33.3%	498	4.1%	7,642	62.6%	12,201	100.0%
<u>PRESSURIZED WATER REACTORS</u>								
REACTOR OPS & SURV	578	6.4%	29	0.3%	295	3.3%	901	9.9%
ROUTINE MAINTENANCE	1,420	15.7%	433	4.8%	2,157	23.8%	4,010	44.3%
IN-SERVICE INSPECTION	91	1.0%	75	0.8%	648	7.2%	814	9.0%
SPECIAL MAINTENANCE	408	4.5%	137	1.5%	1,170	12.9%	1,715	18.9%
WASTE PROCESSING	128	1.4%	7	0.1%	147	1.6%	282	3.1%
REFUELING	385	4.3%	120	1.3%	833	9.2%	1,338	14.8%
TOTAL	3,009	33.2%	801	8.8%	5,250	57.9%	9,060	100.0%
<u>ALL LIGHT WATER REACTORS</u>								
REACTOR OPS & SURV	1,846	8.7%	87	0.4%	798	3.8%	2,730	12.8%
ROUTINE MAINTENANCE	3,131	14.7%	606	2.8%	5,347	25.1%	9,084	42.7%
IN-SERVICE INSPECTION	184	0.9%	117	0.5%	1,516	7.1%	1,816	8.5%
SPECIAL MAINTENANCE	879	4.1%	228	1.1%	3,130	14.7%	4,237	19.9%
WASTE PROCESSING	247	1.2%	23	0.1%	296	1.4%	566	2.7%
REFUELING	784	3.7%	239	1.1%	1,806	8.5%	2,829	13.3%
TOTAL	7,071	33.3%	1,299	6.1%	12,892	60.6%	21,261	100.0%

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TABLE 4.10

PERCENTAGES OF ANNUAL COLLECTIVE
DOSE AT LWRs BY WORK FUNCTION
1983 - 1994

WORK FUNCTION	PERCENTAGE OF COLLECTIVE DOSE EACH YEAR											
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
REACTOR OPERATIONS AND SURVEILLANCE	10.1%	11.4%	12.8%	12.8%	11.9%	11.0%	12.2%	12.3%	14.0%	11.6%	11.2%	12.8%
ROUTINE MAINTENANCE	29.7%	26.9%	34.6%	33.2%	35.0%	37.7%	36.2%	36.5%	36.1%	38.7%	42.0%	42.7%
INSERVICE INSPECTION	7.6%	6.3%	8.6%	8.3%	8.0%	8.7%	9.5%	8.8%	8.9%	9.2%	10.8%	8.5%
SPECIAL MAINTENANCE	43.9%	45.4%	32.5%	35.5%	33.2%	30.1%	31.3%	31.6%	28.2%	25.8%	22.0%	19.9%
WASTE PROCESSING	4.6%	3.6%	5.1%	4.0%	3.9%	3.6%	3.4%	3.0%	3.1%	3.1%	2.5%	2.7%
REFUELING	4.1%	6.4%	6.5%	6.2%	8.1%	8.8%	7.3%	7.7%	9.7%	11.5%	11.4%	13.3%

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 1992 through 1994, when it increased to over 11%) is due to the fact that some sites include doses other than those directly associated with fuel movement in this category.

Figure 4.6 graphically shows the trends in the collective dose by work function and type of personnel for the years 1990 through 1994 for BWRs and PWRs separately. The general decrease in collective dose is also apparent among most of these activities.

Table 4.11 presents the distribution of the collective dose for 1994 at all LWRs among five occupational categories. As in past years, maintenance personnel incurred the majority (67%) 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 1987 through 1993. The collective doses shown in Tables 4.9 and 4.11 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 that had been required to be submitted pursuant to 10 CFR 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 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 obtained from the § 20.2206 annual reports. 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 § 20.2206 annual reports to yield the collective dose shown in this column of Appendix C.

TABLE 4.11
ANNUAL COLLECTIVE DOSE
BY OCCUPATION AND PERSONNEL TYPE
1994

OCCUPATION	STATION EMPLOYEES		UTILITY EMPLOYEES		CONTRACT WORKERS		TOTAL PER WORK FUNCTION	
	PERSON-cSv	% OF TOTAL	PERSON-cSv	% OF TOTAL	PERSON-cSv	% OF TOTAL	PERSON-cSv	% OF TOTAL
<u>BOILING WATER REACTORS</u>								
MAINTENANCE	2,059	16.9%	345	2.8%	5,991	49.1%	8,394	68.8%
OPERATIONS	906	7.4%	31	0.3%	209	1.7%	1,146	9.4%
HEALTH PHYSICS	634	5.2%	22	0.2%	568	4.6%	1,215	10.0%
SUPERVISORY	240	2.0%	18	0.1%	312	2.6%	570	4.7%
ENGINEERING	222	1.8%	82	0.7%	572	4.7%	876	7.2%
TOTAL	4,062	33.3%	496	4.1%	7,642	62.6%	12,201	100.0%
<u>PRESSURIZED WATER REACTORS</u>								
MAINTENANCE	1,619	17.9%	685	7.6%	3,539	39.1%	5,844	64.5%
OPERATIONS	532	5.9%	21	0.2%	250	2.8%	802	8.9%
HEALTH PHYSICS	600	6.6%	45	0.5%	754	8.3%	1,399	15.4%
SUPERVISORY	121	1.3%	16	0.2%	207	2.3%	344	3.8%
ENGINEERING	137	1.5%	33	0.4%	500	5.5%	671	7.4%
TOTAL	3,009	33.2%	801	8.8%	5,250	57.9%	9,060	100.0%
<u>ALL LIGHT WATER REACTORS *</u>								
MAINTENANCE	3,678	17.3%	1,030	4.8%	9,530	44.8%	14,238	67.0%
OPERATIONS	1,436	6.8%	52	0.2%	459	2.2%	1,948	9.2%
HEALTH PHYSICS	1,234	5.8%	68	0.3%	1,312	6.2%	2,614	12.3%
SUPERVISORY	362	1.7%	33	0.2%	519	2.4%	915	4.3%
ENGINEERING	359	1.7%	115	0.5%	1,072	5.0%	1,547	7.3%
TOTAL	7,071	33.3%	1,299	6.1%	12,892	60.6%	21,261	100.0%

- (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 4.12 and 4.13 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 4.12 is still useful in showing the percentage of personnel associated with each of the six work functions shown. About 50% of the personnel performed routine or special maintenance functions, 26% were involved with reactor operations and surveillance, and the remaining 24% were divided among the other three work functions.

Table 4.13 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 12.8% at BWRs and 16.8% at PWRs. Overall, 51% of the personnel were contractors, 42% were station employees, and 7% were utility employees in 1994.

Table 4.14 presents the average annual dose incurred by workers in the five occupational categories in 1994. These averages were calculated by dividing the collective dose reported for these groups (see Table 4.11) by the number of individuals shown in Table 4.13. 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 4.14, 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 4.14; (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 cSv (rem) 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.

TABLE 4.12
NUMBER OF PERSONNEL*
BY WORK FUNCTION AND PERSONNEL TYPE
1994

WORK AND JOB FUNCTION	STATION EMPLOYEES		UTILITY EMPLOYEES		CONTRACT WORKERS		TOTAL PER WORK FUNCTION	
	NUMBER	% OF TOTAL	NUMBER	% OF TOTAL	NUMBER	% OF TOTAL	NUMBER	% OF TOTAL
<u>BOILING WATER REACTORS</u>								
REACTOR OPS & SURV	15,513	19.6%	1,147	1.5%	6,805	8.6%	23,465	29.7%
ROUTINE MAINTENANCE	9,472	12.0%	1,634	2.1%	15,279	19.3%	26,385	33.4%
IN-SERVICE INSPECTION	643	0.8%	272	0.3%	3,388	4.3%	4,303	5.4%
SPECIAL MAINTENANCE	2,520	3.2%	662	0.8%	7,737	9.8%	10,919	13.8%
WASTE PROCESSING	3,652	4.6%	301	0.4%	1,854	2.3%	5,807	7.3%
REFUELING	2,320	2.9%	861	1.1%	4,973	6.3%	8,154	10.3%
TOTAL	34,120	43.2%	4,877	6.2%	40,036	50.7%	79,033	100.0%
<u>PRESSURIZED WATER REACTORS**</u>								
REACTOR OPS & SURV	5,227	10.4%	1,514	3.0%	3,404	6.8%	10,145	20.2%
ROUTINE MAINTENANCE	7,821	15.6%	1,883	3.7%	10,002	19.9%	19,706	39.2%
IN-SERVICE INSPECTION	874	1.7%	678	1.3%	2,669	5.3%	4,221	8.4%
SPECIAL MAINTENANCE	2,296	4.6%	820	1.6%	4,157	8.3%	7,273	14.5%
WASTE PROCESSING	1,296	2.6%	123	0.2%	1,213	2.4%	2,632	5.2%
REFUELING	2,285	4.5%	637	1.3%	3,330	6.6%	6,252	12.4%
TOTAL	19,799	39.4%	5,655	11.3%	24,775	49.3%	50,229	100.0%
<u>ALL LIGHT WATER REACTORS</u>								
REACTOR OPS & SURV	20,740	16.0%	2,661	2.1%	10,209	7.9%	33,610	26.0%
ROUTINE MAINTENANCE	17,293	13.4%	3,517	2.7%	25,281	19.6%	46,091	36.7%
IN-SERVICE INSPECTION	1,517	1.2%	950	0.7%	6,057	4.7%	8,524	6.6%
SPECIAL MAINTENANCE	4,816	3.7%	1,482	1.1%	11,894	9.2%	18,192	14.1%
WASTE PROCESSING	4,948	3.8%	424	0.3%	3,067	2.4%	8,439	6.5%
REFUELING	4,605	3.6%	1,496	1.2%	8,303	6.4%	14,406	11.1%
TOTAL	53,919	41.7%	10,532	8.1%	64,811	50.1%	129,262	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 4.13
NUMBER OF PERSONNEL*
BY OCCUPATION AND PERSONNEL TYPE
1994

OCCUPATION	STATION EMPLOYEES		UTILITY EMPLOYEES		CONTRACT WORKERS		TOTAL PER WORK FUNCTION	
	NUMBER	% OF TOTAL	NUMBER	% OF TOTAL	NUMBER	% OF TOTAL	NUMBER	% OF TOTAL
<u>BOILING WATER REACTORS</u>								
MAINTENANCE	9,004	12.2%	1,818	2.5%	25,074	34.1%	35,896	48.8%
OPERATIONS	12,053	16.4%	377	0.5%	3,063	4.2%	15,493	21.1%
HEALTH PHYSICS	5,727	7.8%	1,074	1.5%	2,580	3.5%	9,381	12.8%
SUPERVISORY	2,421	3.3%	192	0.3%	2,885	3.9%	5,498	7.5%
ENGINEERING	2,876	3.9%	1,211	1.6%	3,164	4.3%	7,251	9.9%
TOTAL	32,081	43.6%	4,672	6.4%	36,766	50.0%	73,519	100.0%
<u>PRESSURIZED WATER REACTORS</u>								
MAINTENANCE	6,172	14.8%	1,857	4.5%	14,653	35.1%	22,682	54.4%
OPERATIONS	3,856	9.2%	256	0.6%	1,309	3.1%	5,421	13.0%
HEALTH PHYSICS	2,966	7.1%	573	1.4%	3,451	8.3%	6,990	16.8%
SUPERVISORY	1,882	4.5%	145	0.3%	1,271	3.0%	3,298	7.9%
ENGINEERING	1,411	3.4%	232	0.6%	1,696	4.1%	3,339	8.0%
TOTAL	16,287	39.0%	3,063	7.3%	22,380	53.6%	41,730	100.0%
<u>ALL LIGHT WATER REACTORS</u>								
MAINTENANCE	15,176	13.2%	3,675	3.2%	39,727	34.5%	58,578	50.8%
OPERATIONS	15,909	13.8%	633	0.5%	4,372	3.8%	20,914	18.1%
HEALTH PHYSICS	8,693	7.5%	1,647	1.4%	6,031	5.2%	16,371	14.2%
SUPERVISORY	4,303	3.7%	337	0.3%	4,156	3.6%	8,796	7.6%
ENGINEERING	4,287	3.7%	1,443	1.3%	4,860	4.2%	10,590	9.2%
TOTAL	48,368	42.0%	7,735	6.7%	59,146	51.3%	115,249	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.

TABLE 4.14
AVERAGE DOSES BY OCCUPATION
AND PERSONNEL TYPE*
1994

OCCUPATION	STATION			UTILITY			CONTRACT			TOTAL		
	COLL DOSE	NUMBER OF EMPLOYEES	AVG DOSE	COLL DOSE	NUMBER OF EMPLOYEES	AVG DOSE	COLL DOSE	NUMBER OF EMPLOYEES	AVG DOSE	COLL DOSE	NUMBER OF EMPLOYEES	AVG DOSE
<u>BOILING WATER REACTORS</u>												
MAINTENANCE	2,059	9,004	0.23	345	1,818	0.19	5,991	25,074	0.24	8,394	35,896	0.23
OPERATIONS	906	12,053	0.08	31	377	0.08	209	3,063	0.07	1,146	15,493	0.07
HEALTH PHYSICS	634	5,727	0.11	22	1,074	0.02	558	2,580	0.22	1,215	9,381	0.13
SUPERVISORY	240	2,421	0.10	18	192	0.09	312	2,885	0.11	570	5,496	0.10
ENGINEERING	222	2,876	0.06	82	1,211	0.07	572	3,164	0.18	876	7,251	0.12
TOTAL	4,062	32,081	0.13	498	4,672	0.11	7,642	36,766	0.21	12,201	73,519	0.17
<u>PRESSURIZED WATER REACTORS</u>												
MAINTENANCE	1,619	6,172	0.26	685	1,857	0.37	3,539	14,653	0.24	5,844	22,682	0.26
OPERATIONS	532	3,856	0.14	21	256	0.08	250	1,309	0.19	802	5,421	0.15
HEALTH PHYSICS	600	2,966	0.20	45	573	0.08	754	3,451	0.22	1,399	6,990	0.20
SUPERVISORY	121	1,882	0.06	16	145	0.11	207	1,271	0.16	344	3,296	0.10
ENGINEERING	137	1,411	0.10	33	232	0.14	500	1,696	0.29	671	3,339	0.20
TOTAL	3,009	16,287	0.18	801	3,063	0.26	5,250	22,360	0.23	9,060	41,730	0.22
<u>ALL LIGHT WATER REACTORS</u>												
MAINTENANCE	3,678	15,176	0.24	1,030	3,675	0.28	9,530	39,727	0.24	14,238	58,578	0.24
OPERATIONS	1,438	15,909	0.09	52	633	0.08	459	4,372	0.10	1,948	20,914	0.09
HEALTH PHYSICS	1,234	8,693	0.14	68	1,647	0.04	1,312	6,031	0.22	2,614	16,371	0.16
SUPERVISORY	362	4,303	0.08	33	337	0.10	519	4,156	0.12	915	8,796	0.10
ENGINEERING	359	4,287	0.08	115	1,443	0.08	1,072	4,860	0.22	1,547	10,590	0.15
TOTAL	7,071	48,368	0.15	1,299	7,735	0.17	12,892	59,146	0.22	21,261	115,249	0.18

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* 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.

4.8 Graphical Representation of Dose Trends in Appendix E

Each page of Appendix E presents two types of graphs for one site. One graph plots selected dose-performance indicators from 1973 through 1994, and the other indicates the collective dose by job function for 1978 through 1994. 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 1994. 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 reporting during those years. Data for years when the plant was not in commercial operation have been included when available. 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.

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 1994. 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 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 Atomic 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 1990. Based on this report, the 79,569 workers receiving the average dose of 0.31 cSv (rem) continuously during an entire working career (working from age 18 until age 65) or the maximum accidental dose of 6.5 cSv (rem) to the whole body during 1994 (see Section 6) might expect an increased cancer death risk of about 9 chances in a 1000 for the average dose and 5 chances per 1000 for the maximum dose.¹⁰ Should a worker receive 0.31 cSv (rem) 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 cSv (rem) would be approximately 21%.

The potential genetic effects from a worker population receiving 24,740 person-cSv (person-rem) (Table 3.1) are small compared to genetic damages that normally occur spontaneously in a population of this size. Approximately 100,000 serious genetic defects

¹⁰

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).

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 79,569 exposed workers would, according to NUREG/CR-4214 [Ref. 17], be an increase of about 8 cases (approximately 0.01%) compared to the expected 8,000 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.

¹¹

Assuming that, on the average, each exposed person will have one live-born child in the future, i.e., 79,569 children born to this worker population. The estimates were calculated from Table 4.1 of reference 17.

5 TRANSIENT WORKERS AT NRC LICENSED FACILITIES

5.1 Termination Reports

Under the revised 10 CFR 20, licensees are required to submit NRC Form 5s to the Commission for each individual that is required to be monitored at the end of the monitoring year or upon the individual's termination of employment at the facility. The "termination reports" submitted in accordance with the old § 20.408, listing the individual's complete dose history during employment at the facility, are no longer required.

However, the Form 5s submitted to the NRC upon an individual's termination of employment serve the same function as the previous requirements with regard to the analysis of transient workers at NRC-licensed facilities. The following analysis examines the workers that had more than one Form 5 dose record at more than one NRC-licensed facility during the monitoring year. These workers are defined to be transient in that they worked at more than one facility during the monitoring year.

The term "monitoring year" is used here in accordance with the definition of a year given in § 20.1003, which defines a year as "the period of time beginning in January used to determine compliance with the provisions of this part. The licensee may change the start date of the monitoring year used to determine compliance provided that the change is made at the beginning of the monitoring/calendar year and that no day is omitted or duplicated in consecutive years".

5.2 Transient Workers at NRC Facilities

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 facilities within one monitoring year. An examination of these data would allow one to determine the number and average dose for these "annual transients."

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 have on the annual summary (as reported in Appendices B and F) for all nuclear power facilities, and all NRC licensees combined (one of the problems mentioned in Section 2). Table 5.1 shows the "actual distribution" of transient worker doses as determined from the above-mentioned Form 5 termination reports and compares it with the reported distribution" of the doses of these workers as they would have appeared in a summation of the annual reports submitted by each of the licensees.

TABLE 5.1

EFFECTS OF TRANSIENT WORKERS ON ANNUAL STATISTICAL COMPILATIONS

1994

License Category	Number of Individuals with TEDE in the Ranges (cSv or rem)											Total Number Monitored	Number with Measurable Exposure	Collective TEDE (person-cSv or rem)	Average TEDE (cSv or rem)	Average Meas. TEDE (cSv or rem)
	No Meas'ble Exposure	Meas'ble <0.10	0.10-0.25	0.25-0.5	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					
POWER REACTORS																
FORM 5 SUMMATION ①	85,145	36,528	18,633	14,246	6,800	3,502	3,323	215	6			168,396	83,253	21,534	0.13	0.26
TRANSIENTS - AS REPORTED ②	21,806	9,141	5,299	4,396	2,039	987	888	53	2			44,611	22,805	6,193	0.14	0.27
TRANSIENTS- ACTUAL ③	5,403	3,480	2,239	2,429	1,550	1,104	1,640	253	16			18,114	12,711	6,193	0.34	0.49
CORRECTED DISTRIBUTION (1-(2-3))	68,742	30,867	15,573	12,279	6,311	3,619	4,075	415	20			141,901	73,159	21,534	0.15	0.29
ALL LICENSEES																
FORM 5 SUMMATION ①	88,651	39,401	19,606	15,081	7,287	3,843	4,056	504	84	11	1	178,525	89,874	24,740	0.14	0.28
TRANSIENTS - AS REPORTED ②	22,013	9,267	5,379	4,458	2,060	1,005	907	56	2	0		45,147	23,134	6,292	0.14	0.27
TRANSIENTS- ACTUAL ③	5,349	3,474	2,250	2,463	1,581	1,116	1,669	260	16	0		18,178	12,829	6,292	0.35	0.49
CORRECTED DISTRIBUTION (1-(2-3))	71,987	33,608	16,477	13,086	6,808	3,954	4,818	708	98	11	1	151,556	79,569	24,740	0.16	0.31

Since more than 95% of these transients are reported by nuclear power facilities, these data were considered separately. It is apparent from Table 5.1 that the power reactor transient data constitutes the vast majority of the transient worker exposure. The nonreactor licensees contribute only an additional 1.4% of the transient workforce with an additional 2% of the collective dose to all transient workers.

The following definitions apply to Table 5.1:

Form 5 Summation	The summation of the TEDE from each of the Form 5s submitted for the monitoring year. This is the summation of each dose record grouped by licensee and individual. This distribution takes into account multiple Form 5s for an individual at one NRC-licensed facility but <u>not</u> multiple exposures at multiple licensees.
Transients - As Reported	This distribution represents the population of transient workers as they were reported by each licensee. This distribution is the subset of all Form 5s where individuals were monitored at more than one licensee during the monitoring year. This is the summation of dose records grouped by <u>individual and by licensee</u> , so the distribution represents how the transient worker population would appear within the total distribution of all workers. This distribution takes into account multiple Form 5s for an individual at one NRC-licensed facility but <u>not</u> multiple exposures at multiple licensees.
Transients - Actual	This is the actual distribution for transient workers summed per individual. This represents the true number of individuals and places each individual in the correct dose range. This distribution accounts for multiple records per individual and multiple licensees.
Corrected Distribution	This distribution represents the correction of the reported distribution by subtracting the difference in the reported and actual distribution for transient workers. This represents the most accurate dose distribution for the licensee category and accounts for the multiple reporting of individuals.

Table 5.1 illustrates the impact that the multiple reporting of these transient individuals had on the staff's summation of the exposure reports for 1994. Since each licensee reports the doses received by workers while monitored by the particular licensee 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 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 1994, Table 5.1 shows that the summation of annual reports for reactor licensees indicated that 264 individuals received doses greater than 2 cSv (rem). After accounting for those individuals who were reported more than once, the corrected distribution indicated that there were really 383 workers who received doses greater than 2 cSv (rem).

One of the main purposes of the REIRS database that tracks occupational radiation exposures at NRC-licensed facilities is to identify individuals that may have exceeded the occupational radiation exposure limits due to multiple exposures at different facilities throughout the year. The REIRS database stores the radiation exposure information for an individual by their unique identification number and identification type [Ref. 13, Section 1.5] and sums the exposure for all facilities during the monitoring year. An individual exceeding the TEDE 5 cSv (rem) per year regulatory limit would be identified in Table 5.1 in one of the dose ranges above 5 rem. In 1994, no individual exceeded this dose limit, and since 1985, there have been no additional transient workers identified as having received a dose of greater than 5 cSv (rem) that have not appeared in 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 cSv (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.

In addition, it is interesting to note that transient workers receive considerably less internal exposure than for nontransient workers at NRC-licensed facilities. In 1994, the collective CEDE for all transient workers was 7.162 cSv (rem). The collective TEDE for this group was 5,927 cSv (rem), so that the internal dose was about one-tenth of one percent (0.1%) to the total collective TEDE. The percentage of internal dose to the collective TEDE for the entire workforce for all licensees was nearly 4%. This is due to the fact that the vast majority of transient workers were at reactor facilities where internal exposure is less likely than for non-reactor facilities. Also, the nature of temporary work at reactor facilities usually involves exposure to external sources of gamma radiation, such as spent fuel or radioactive components and equipment.

5.3 Career Dose Analysis

Career dose analysis has not been included in this draft report for 1994 and is not planned for inclusion in the final report. The reason is that the career dose information currently in the REIRS database is incomplete. Under the old § 20.408, termination reports were required when an individual terminated employment at a facility. The § 20.408 termination record contained the complete exposure history for an individual while employed at the facility. These records would usually span multiple years of employment, and taken together as a whole, would accurately reflect career dose information for the individual for NRC-licensed facilities that are required to report. Under the revised 10 CFR 20, only the current year dose information is required to be reported upon termination. Therefore, facilities are not required to submit the prior years' exposure records for individuals that have been employed at their

facilities for a number of years. This has resulted in a "gap" in the exposure records for the group of individuals that continue to be monitored at the same facility.

The NRC issued Generic Letter 94-04 to address this issue. The Generic Letter requests licensees to provide the NRC with a complete history of exposure for any individual who has not previously submitted information to REIRS. These exposure histories would be for any individuals who were monitored prior to the implementation of the revised 10 CFR 20, but who had not submitted under the old § 20.408 since he had not terminated employment. In other words, this would include anyone who was monitored at the licensee prior to January of 1994 and who continued employment (and monitoring) in 1994. The 1994 dose is required to be recorded and submitted under the revised 10 CFR 20, therefore only the dose information prior to implementation of the revised 10 CFR 20 (1/94) is requested. See Generic Letter 94-04 for more information.

Several licensees have submitted requests for extending the deadline for submitting information under Generic Letter 94-04. Due to the volume of records, voluntary nature of reporting, and extended deadlines for submission, complete career dose information is not yet available. When this information has all been processed in REIRS, an updated analysis of the career dose information will be included in the next subsequent report. This is anticipated to be included in the 1996 annual report.

6 EXPOSURES TO PERSONNEL IN EXCESS OF REGULATORY LIMITS

6.1 Control Levels

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, or may not, be the case.

The revised 10 CFR 20 was required to be implemented on January 1, 1994. The separate limits on internal and external exposure in the old 10 CFR 20 are no longer applicable. The revised 10 CFR 20 now includes requirements for summing internal and external dose equivalents to yield TEDE and to implement a similar limitation system for organs and tissues (such as the lung, liver, and bone surfaces). The dose equivalent limits for the skin of the whole body and for the extremities have been revised, and a new limit for dose equivalent to the lens of the eye has been added. The revised 10 CFR 20.1201 limits the TEDE of workers to ionizing radiation from licensed material and other sources of radiation within the licensee's control. The revised 10 CFR 20 no longer contains quarterly exposure limits but has reporting requirements for planned special exposures (PSEs). The annual TEDE limit for adult workers is 5 cSv (rem).

The revised 10 CFR 20.2202 and 10 CFR 20.2203 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 20.2202(a)(1) - a TEDE to any individual to 25 cSv (rem) or more; an eye dose equivalent of 0.75 Sv (75 rems) or more; or a shallow-dose equivalent to the skin or extremities of 2.5 Gy (250 rad) or more. The Commission must be notified immediately of these events.

(2) Category B

10 CFR 20.2202(b)(1) - a TEDE to any individual to 5 cSv (rem) or more; an eye dose equivalent of 0.15 Sv (15 rems) or more; or a shallow-dose equivalent to the skin or extremities of 0.5 Sv (50 rems) or more. The Commission must be notified within 24 hours of these events.

¹See 10 CFR 20.1206 and 10 CFR 20.2204 for more information on PSEs and their reporting requirements. Note that the scope of this chapter does not include PSEs.

(3) Category C

10 CFR 20.2203 - In addition to the notification required by 20.2202 (category A and B occurrences), each licensee must submit a written report within 30 days after learning of any of the following occurrences: (1) Any incident for which notification is required by 20.2202; or (2) Doses which exceed the limits in 20.1201, 20.1207, 20.1208, 20.1301 (for adults, minors, the embryo/fetus of a declared pregnant worker, and the public, respectively), or any applicable limit in the license; or (3) Levels of radiation or concentrations of radioactive material which exceed any applicable license limit for restricted areas or which, for unrestricted areas, are in excess of 10 times any applicable limit set forth in this part or in the license (whether or not involving exposure of any individual in excess of the limits in 20.1301); or (4) For licensees subject to the provisions of the Environmental Protection Agency's generally applicable environmental radiation standards in 40 CFR 190, levels of radiation or releases of radioactive material in excess of those standards, or of license conditions related to those standards.

6.2 Limitations of the Data

It is important to note that this summary of events includes *only*:

- Occupational radiation exposures in excess of regulatory limits
- Events at NRC-licensed facilities
- Final dose of record assigned to an individual

It *does not* include:

- Medical misadministrations to medical patients
- Exposures in excess of regulatory limits to the general public
- Agreement State-licensed activities
- Other radiation-related violations, such as high dose rate areas or effluent limits
- Exposures to dosimeters that, upon evaluation, have been determined to be high dosimeter readings only and are not assigned to an individual as the dose of record by the NRC

Care should be taken when comparing the summary information presented here with other reports and analyses published by the NRC or other agencies. Various reports may include other types of "overexposure" events, and it is important to note the distinctions.

The analysis and summary of incidents presented here involving exposures in excess of regulatory limits represent the status of events as of the publication of this report. Exposure events of this type typically undergo a long review and evaluation process by the licensee, the NRC inspector for the Regional office, and NRC headquarters. Preliminary dose estimates submitted by licensees are often conservatively high and do not represent the final (record) dose assigned for the event. It is therefore not uncommon for an "overexposure" event to be re-assessed and the final assigned dose to be categorized as not having been in excess of the regulatory limits. In other cases, the exposure may not be identified until a later date, such as during the next scheduled audit or inspection of the licensee's exposure records.

For these reasons, an attempt is made to keep current the exposure events summary presented here. An event that has been re-assessed and determined not to be an exposure in excess of the limits is not included in this report. In addition, events which are identified that occurred in prior years are added to the summary in the appropriate year of occurrence. It is important for the reader to note that the summary presented here represents a "snapshot" of the status of events as of the publication date of this report. Previous or future reports may not correlate in the exact number of events due to the review cycle and re-assessment of the events.

6.3 Summary of Exposures in Excess of Regulatory Limits

Table 6.1 summarizes the occupational exposures in excess of regulatory limits as reported by Commission licensees pursuant to 10 CFR 20.2202 and 10 CFR 20.2203 during 1994. Table 6.2 shows the data reported under 10 CFR 20.403 and 10 CFR 20.405 for the period 1985-1993. Note that the categorization criteria changed effective with the revised 10 CFR 20. The dose reporting thresholds have been revised, the skin of the whole body and the extremities now have the same dose limits, and a new set of dose limits has been added for the lens of the eye.

For the period 1990-1993, Table 6.2 shows the number of individuals who exceeded various limits while employed by one of several types of licensees. For the period 1985-1989, 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 1994, two workers received doses that exceeded the regulatory limit. In each of the past five years from 1990 through 1994, the highest external whole-body dose was 24, 3, 1.9, 6.0, and 6.5 cSv (rems), respectively.

In 1994 there were no occurrences in which individuals received an exposure of the magnitude described above as "Category A." One "Category B" occurrence was reported. It occurred during radiography operations but is not directly attributable to a single incident. The

licensee's dosimetry service notified them of an unusually high reading on the individual's film badge which appeared to have been the result of multiple exposures (rather than a single, stationary exposure). The dose has been reported and assigned as the dose of record for the individual.

TABLE 6.1
OCCUPATIONAL EXPOSURES IN EXCESS OF REGULATORY LIMITS
1994

YEAR	LICENSE CATEGORY	PERSONS AND DOSES (REM)	TYPES OF EXPOSURES AND DOSES								
			TEDE (cSv or rem)			Lens of the Eye (cSv or rem)			Skin/Extremity (cSv or rem)		
			<5	5-25	>25	<15	15-75	>75	<50	50-250	>250 rad
1994	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS SUM OF DOSES	1 6.5								
	POWER REACTORS	NO. OF PERSONS SUM OF DOSES							1 34		
	MEDICAL FACILITIES	NO. OF PERSONS SUM OF DOSES									
	MARKETING & MANUFACT.	NO. OF PERSONS SUM OF DOSES									
	OTHER	NO. OF PERSONS									
		SUM OF DOSES									

TABLE 6.2
OCCUPATIONAL EXPOSURES IN EXCESS OF REGULATORY LIMITS
1985 - 1993

YEAR	LICENSE CATEGORY	PERSONS AND DOSES (REM)	TYPES OF EXPOSURES AND DOSES								
			WHOLE BODY (REM)			SKIN (REMG)			EXTREMITY (REMG)		
			(<5)	(5-25)	(>25)	(>7.5<30)	(30-50)	(>150)	(>18.75<75)	(75-375)	(>375)
1993	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS SUM OF DOSES		1 6							
	POWER REACTORS	NO. OF PERSONS SUM OF DOSES									
	MEDICAL FACILITIES	NO. OF PERSONS SUM OF DOSES	1 1.3					3 ¹ 187.3			
	MARKETING & MANUFACT.	NO. OF PERSONS SUM OF DOSES	5 10.6								
	OTHER	NO. OF PERSONS SUM OF DOSES	2 ² 4.0	1 ³ 5.4						1 275	
1992	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS SUM OF DOSES									1 300-1000
	POWER REACTORS	NO. OF PERSONS SUM OF DOSES	1 1.9			4 57.7					
	MEDICAL FACILITIES	NO. OF PERSONS SUM OF DOSES						4 143.6	1 272		
	MARKETING & MANUFACT.	NO. OF PERSONS SUM OF DOSES									
	OTHER	NO. OF PERSONS SUM OF DOSES	1 ¹ 1.9			1 24.1			1 40.5		
1991	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS SUM OF DOSES	2 5.6								
	POWER REACTORS	NO. OF PERSONS SUM OF DOSES									
	MEDICAL FACILITIES	NO. OF PERSONS SUM OF DOSES	2 3.8								
	MARKETING & MANUFACT.	NO. OF PERSONS SUM OF DOSES						1 22.3			
	OTHER	NO. OF PERSONS SUM OF DOSES	1 2.4								
1990	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS SUM OF DOSES	3 7.2	3 ² 49.9				1 ¹ 6000		1 111	2 ¹ 3962
	POWER REACTORS	NO. OF PERSONS SUM OF DOSES							1 48.8		
	MEDICAL FACILITIES	NO. OF PERSONS SUM OF DOSES	3 ² 8.9								
	MARKETING & MANUFACT.	NO. OF PERSONS SUM OF DOSES									
	OTHER	NO. OF PERSONS SUM OF DOSES	1 2.3								
1989	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS SUM OF DOSES	3 8.1		1 93				1 72		
	ALL OTHER	NO. OF PERSONS SUM OF DOSES	4 8.6			1 9.2			2 105	1 176	
1988	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS SUM OF DOSES	3 8.1	1 6.1						1 118	
	ALL OTHER	NO. OF PERSONS SUM OF DOSES	7 19.34			4 66.8	1 61	1 278	1 58	1 127	
1987	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS SUM OF DOSES	1 3.1							1 180	
	ALL OTHER	NO. OF PERSONS SUM OF DOSES	2 2.8	1 7.5		5 126.4			3 72.0		1 650
1986	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS SUM OF DOSES	2 4.4								
	ALL OTHER	NO. OF PERSONS SUM OF DOSES	3 9.6						1 41.2	1 115	2 930
1985	INDUSTRIAL RADIOGRAPHY	NO. OF PERSONS SUM OF DOSES	6 16.7	3 32.6	1 27.0					1 288	
	ALL OTHER	NO. OF PERSONS SUM OF DOSES	7 11.8						3 60.2	1 93	

¹ Same individual exceeded 1.25 rem/qr limit twice during 1993.

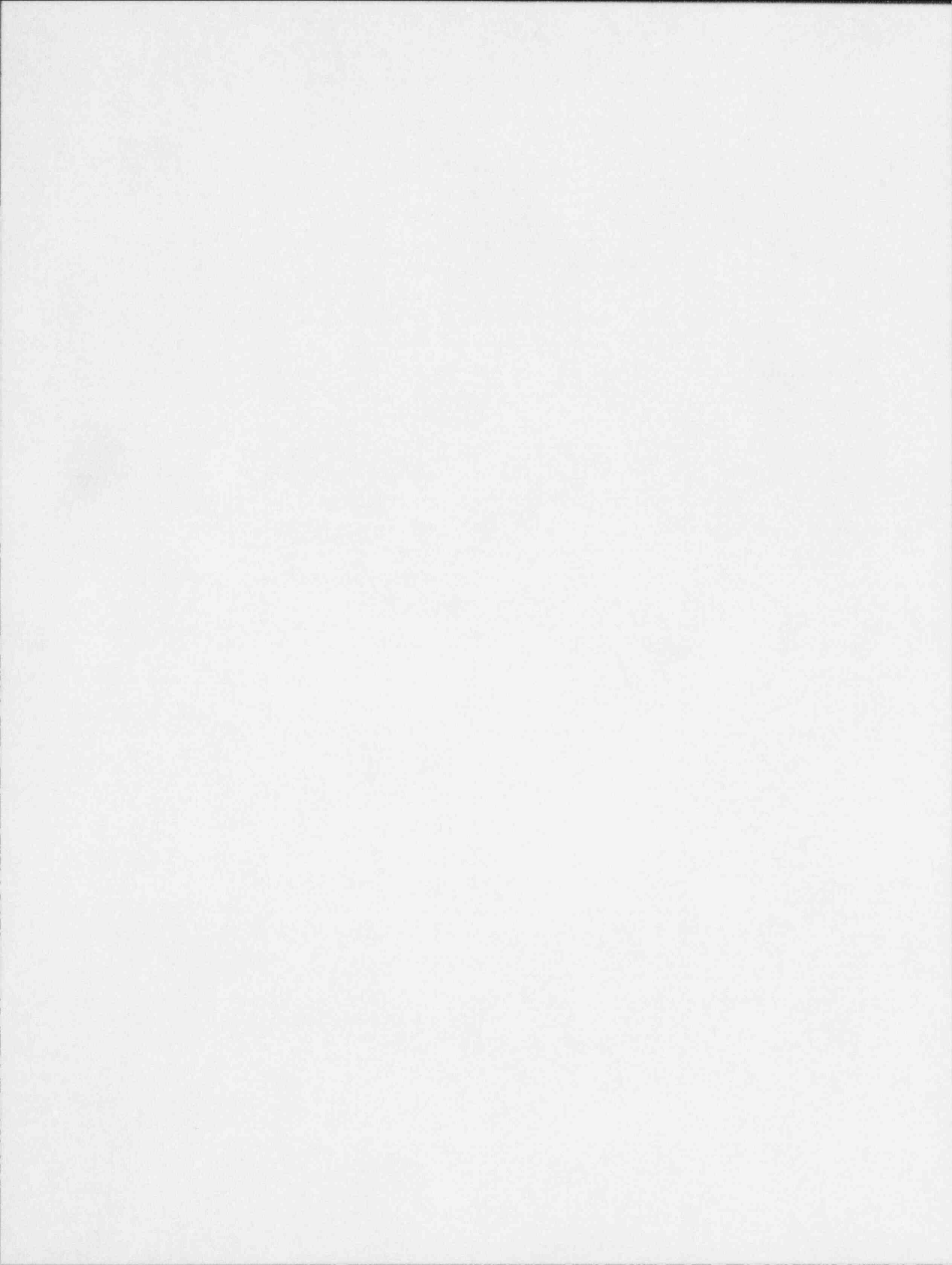
² This 1992 exposure was reported in 1994.

³ This individual received a whole-body dose of 24 rem in addition to a 6000 rem extremity dose.

⁴ One of these individuals received a 9 rem whole-body dose in addition to a 1070 rem extremity dose.

⁵ One of these individuals exceeded the quarterly whole-body dose limits three times in one calendar year.

An additional 1993 exposure was reported in 1994.



7 REFERENCES

1. U.S. Atomic Energy Commission, *Nuclear Power Plant Operating Experience During 1973*, USAEC Report 00E-ES-004, December 1974.*
2. U.S. Nuclear Regulatory Commission, *Nuclear Power Plant Operating Experience 1974-1975*, USNRC Report NUREG-0227, April 1977.*
3. U.S. Nuclear Regulatory Commission, *Nuclear Power Plant Operating Experience 1976*, USNRC Report NUREG-0366, December 1977.*
4. M.R. Beebe, *Nuclear Power Plant Operating Experience - 1977*, USNRC Report NUREG-0483, February 1979.*
5. *Nuclear Power Plant Operating Experience - 1978*, USNRC Report NUREG-0618, December 1979.*
6. *Nuclear Power Plant Operating Experience - 1979*, USNRC Report NUREG/CR-1496, May 1981.*
7. *Nuclear Power Plant Operating Experience - 1980*, USNRC Report NUREG/CR-2378, ORNL/NSIC-191, October 1982.*
8. *Nuclear Power Plant Operating Experience - 1981*, USNRC Report NUREG/CR-3430, ORNL/NSIC-215, Vol. 1, December 1983.*
9. *Nuclear Power Plant Operating Experience - 1982*, USNRC Report NUREG/CR-3430, ORNL/NSIC-215, Vol. 2, January 1985.*
10. United Nations, *Report of the Scientific Committee on the Effects of Atomic Radiation*, Annex H, General Assembly of Official Records, United Nations, New York, 1982.
11. A. Brodsky, R. Specht, B. Brooks, et al., *Log-Normal Distributions of Occupational Exposure in Medicine and Industry*. Presented at the 9th Midyear Topical Symposium of the Health Physics Society, 1976.
12. S. Kumazawa and T. Namakunai, *A New Theoretical Analysis of Occupational Dose Distributions Indicating the Effect of Dose Limits*, Health Physics, Vol. 41, No. 3, 1981.

13. S. Kumazawa and T. Namakunai, *A Method for Implementation of ALARA for Occupational Exposure Using the Hybrid Lognormal Model*. Presented at the 27th Annual Meeting of the Health Physics Society, July 1, 1982.
14. *Licensed Operating Reactors, Status Summary Report*, USNRC Report NUREG-0020, Vol. 19, No. 1. Data for 1994 provided on diskette by D. Hartfield, USNRC Office of Information Resources Management, Systems Development Branch.
15. L.A. Cross and A.P. Cross, *Trends in Nuclear Power Plant Man-Rem Per Megawatt-Year*. Presented to American Nuclear Society European Nuclear Society International Conference, Washington, DC, November 17-20, 1980.
16. National Research Council, *Health Effects of Exposure to Low Levels of Ionizing Radiation: BEIR V*, Committee on the Biological Effects of Ionizing Radiations, 1990. Available from the National Academy Press, 2101 Constitution Avenue NW., Washington, DC 20418.
17. *Health Effects Models for Nuclear Power Plant Accident Consequence Analysis, Part II: Scientific Basis for Health Effects Models*, USNRC Report NUREG/CR-4214, May 1989.
18. *Instructions for Recording and Reporting Occupational Radiation Exposure Data*, USNRC Regulatory Guide 8.7, Rev. 1, June 1992.

APPENDIX A

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

1994

APPENDIX A

INDUSTRIAL RADIOGRAPHERS

Single Location - 1994

Licensee Name	Program Code 03310	License Number	Total Number of Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-cSv)	Average Meas. Dose (cSv or rem)
BUCKEYE STEEL CASTINGS		34-06627-01	28	25	33.990	1.36
INDUSTRIAL NDT CO., INC.		39-24888-01	17	14	5.950	0.43
ARROW TANK & ENGINEERING CO.		22-13253-01	6	2	0.800	0.40
MINNESOTA VALLEY ENGINEERING		22-24393-01	5	5	1.170	0.23
MANOIR - ELECTRO ALLOYS, INC.		34-24346-01	7	5	0.990	0.20
DURALOY		37-02279-02	4	3	0.260	0.09
CARONDELET FOUNDRY COMPANY		24-26136-01	8	3	0.180	0.06
HIGH STEEL STRUCTURES, INC.		37-17534-01	12	6	0.350	0.06
ATLANTIC RESEARCH CORPORATION		45-02808-04	8	4	0.220	0.06
EMPIRE STEEL CASTINGS, INC.		37-02448-01	5	2	0.054	0.03
CONNEX PIPE SYSTEMS, INC.		34-00850-02	38	7	0.160	0.02
ARMY, DEPARTMENT OF THE		29-00047-06	1	1	0.015	0.02
BABCOCK & WILCOX CO.		34-02160-03	18	8	0.110	0.01
GENERAL MOTORS CORP.		21-08678-05	3	1	0.010	0.01
ARMY, DEPARTMENT OF THE		13-18235-01	30	3	0.020	0.01
HARRISON STEEL CASTINGS CO.		13-02141-01	6	0	0.000	0.00
NILES STEEL TANK CO.		21-04741-01	1	0	0.000	0.00
TRANS WORLD AIRLINES, INC.		24-05151-05	91	0	0.000	0.00
CITY METAL COMPANY D/B/A/ MI		24-15152-01	5	0	0.000	0.00
INGERSOLL-RAND CO.		29-02015-02	2	0	0.000	0.00
THE WILLIAM POWELL CO.		34-02963-01	3	0	0.000	0.00
GENERAL MOTORS CORPORATION		34-15315-02	9	0	0.000	0.00
SHAFFER VALVE COMPANY		34-21198-01	2	0	0.000	0.00
GREDE-PRYOR, INC.		35-18099-01	2	0	0.000	0.00
COPEL-VULCAN		37-19530-01	1	0	0.000	0.00
LYNCHBURG FOUNDRY COMPANY		45-17464-01	7	0	0.000	0.00
PELTON CASTEEL, INC.		48-02669-02	4	0	0.000	0.00
WAUKESHA FOUNDRY DIVISION		48-13776-01	4	0	0.000	0.00
GM POWERTRAIN		21-02392-01	3	0	0.000	0.00
			330	89	44.279	0.50

APPENDIX A (cont.)

INDUSTRIAL RADIOGRAPHERS

Multiple Location - 1994

Licensee Name	Program Code 03320	License Number	Total Number of Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-cSv)	Average Meas. Dose (cSv or rem)
INSPECTION MANAGEMENT CORP.		35-26824-01	8	7	17.570	2.51
WESTERN X-RAY COMPANY		35-19993-01	20	18	39.830	2.21
MIDWEST INSPECTION SERVICES		35-27005-01	33	30	54.500	1.82
PENN INSPECTION CO.		35-21144-01	11	11	19.705	1.79
CAPITAL X-RAY SERV., INC.		35-11114-01	26	26	43.530	1.67
MID AMERICAN INSPECTION SERV.		21-26060-01	11	11	15.640	1.42
H&G INSP. CO., INC.		42-26838-01	12	12	16.960	1.41
SIERRA TESTING, INC.		35-26950-01	24	24	32.694	1.36
MIDWEST INDUSTRIAL X-RAY, INC.		33-27427-01	7	6	8.080	1.35
INTERMOUNTAIN TESTING CO.		05-07872-01	21	21	28.030	1.34
MATTINGLY TESTING SERVICES, INC.		25-21479-01	7	7	9.055	1.29
DAYTON X-RAY CO.		34-06943-01	1	1	1.181	1.18
AKRON INDUSTRIAL SERV., INC.		34-24673-01	4	3	3.540	1.18
QSL INSPECTION, INC.		37-28085-01	36	35	40.275	1.15
SOUTHWEST X-RAY CORPORATION		49-27434-01	18	16	17.550	1.10
TULSA GAMMA RAY, INC.		35-17178-01	41	39	41.230	1.06
NON DESTRUCTIVE INSPECTION SERV.		47-11883-01	5	5	5.070	1.01
NORTH AMERICAN INSPECTION, INC.		37-23370-01	65	62	58.740	0.95
LONGVIEW INSPECTION, INC.		45-25279-01	10	9	8.440	0.94
MONTANA X-RAY, INC.		25-21134-01	3	3	2.800	0.93
H & H X-RAY SERV., INC.		17-19236-01	5	5	4.650	0.93
ST. LOUIS TESTING LABS., INC.		24-00188-02	14	11	10.180	0.93
TWIN CITY TESTING CORP.		22-01376-02	21	18	16.518	0.92
TWIN PORTS TESTING, INC.		48-23476-01	29	19	17.315	0.91
H. R. INSPECTION SERV., INC.		15-06209-01	9	7	6.270	0.90
JAN X-RAY SERVICES, INC.		21-16560-01	38	37	32.470	0.88
ALLIED INSPECTION SERV., INC.		21-18428-01	4	4	3.350	0.84
WISCONSIN INDUSTRIAL TESTING		48-17480-01	74	67	55.240	0.82
QUALITY INSPECTION AND TESTING		50-29038-01	5	5	4.100	0.82
CURTIS INSPECTION SERVICES, INC.		35-27438-01	10	10	8.048	0.81
ARROW NDE CO., INC.		35-23198-01	4	3	2.390	0.80
TEI ANALYTICAL SERVICES, INC.		37-28004-01	53	46	36.496	0.79
CALUMET TESTING SERV., INC.		13-16347-01	36	25	18.760	0.75
ALASKA INDUSTRIAL X-RAY		50-16084-01	8	7	5.250	0.75
NORTHWEST INSP. & TESTING SERV.		11-27394-01	5	5	3.731	0.75
COLBY & THIELMEIER TESTING CO.		24-13737-01	12	12	8.940	0.75
PROFESSIONAL SERV. INDUSTRIES		37-00276-25	10	9	6.410	0.71
BILL MILLER, INC.		35-19048-01	33	28	19.745	0.71
CONSOLIDATED NDE, INC.		29-21452-01	113	108	74.578	0.69
TECHNICAL WELDING LABORATORY		42-25214-01	17	14	9.600	0.69
DIAMOND H TESTING COMPANY		11-27316-01	19	15	9.432	0.63
TESTMASTER INSPECTION CO., INC.		34-24872-01	16	16	10.000	0.63
HUNTINGTON TESTING & TECHNOLOGY		47-23076-01	29	28	17.400	0.62
CONNELL LIMITED PARTNERSHIP		35-13735-01	3	2	1.230	0.62
TRI STATE ASSOCIATES, INC.		45-24967-01	4	3	1.770	0.59
EDWARDS PIPELINE TESTING, INC.		35-23193-01	172	162	93.941	0.58
GREAT LAKES TESTING, INC.		48-26484-01	8	8	4.620	0.58

APPENDIX A (cont.)

INDUSTRIAL RADIOGRAPHERS Multiple Location - 1994

Licensee Name	Program Code 03320	License Number	Total Number of Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-cSv)	Average Meas. Dose (cSv or rem)
TESTING TECHNOLOGIES, INC.		45-25007-01	19	16	8.879	0.56
ACCU-TECH EVALUATION SERVICE		29-28358-01	40	36	19.307	0.54
CENTURY INSPECTION, INC.		42-08456-02	106	94	50.348	0.54
SCIENTIFIC TECHNICAL, INC.		45-24882-01	5	5	2.610	0.52
ANVIL CORPORATION		46-23236-03	54	46	23.409	0.51
SAM-SON INSPECTION & TECH.SERV.		34-25898-01	19	18	9.030	0.50
BARNETT INDUSTRIAL X-RAY		35-26953-01	12	12	5.915	0.49
MQS INSPECTION, INC.		12-00622-07	306	224	109.871	0.49
VALLEY INSPECTION SERVICE, INC.		37-28385-01	11	6	2.900	0.48
ALLEGHENY LABORATORIES		37-20734-01	3	3	1.390	0.46
CONAM INSPECTION		12-16559-01	134	92	41.947	0.46
COMO TECH INSPECTION		15-26978-01	9	9	3.991	0.44
INDUSTRIAL NDT SERVICES DIV.		13-06147-04	16	11	4.750	0.43
X-RAY, INC.		46-03414-03	7	7	3.010	0.43
MET-CHEM TESTING LABS. OF UT		43-27362-01	30	21	8.691	0.41
PITT-DES MOINES, INC.		37-27878-01	20	18	7.300	0.41
BRAUN INTERTEC CORPORATION		22-16537-02	16	14	5.310	0.38
WESTERN STRESS, INC.		42-26900-01	28	14	5.040	0.36
SGS INDUSTRIAL SERVICES		04-29067-02	140	98	33.113	0.34
MATERIAL TESTING LABORATORIES		45-17151-01	19	10	3.324	0.33
SPEC CONSULTANTS, INC.		37-27891-01	18	14	4.592	0.33
VENEGAS INDUSTRIAL TESTING		28-14847-02	4	2	0.640	0.32
CTL ENGINEERING, INC.		34-08331-01	2	2	0.620	0.31
BRANCH RADIOGRAPHIC LABS., INC.		29-03405-02	21	16	4.409	0.28
GLITSCH FIELD SERVICES/NDE, INC.		34-14071-01	22	22	5.680	0.26
ADVEX CORPORATION		45-16452-01	8	7	1.770	0.25
MARYLAND Q.C. LABORATORIES		19-28683-01	28	24	5.940	0.25
X-R-I TESTING		21-05472-01	31	23	5.000	0.22
CRAMER & LINDELL ENGINEERS, INC.		06-20794-01	24	19	4.110	0.22
GENERAL DYNAMICS CORPORATION		06-01781-08	46	46	8.521	0.19
NON-DESTRUCTIVE TESTING CORP.		29-19742-01	13	8	1.460	0.18
GLOBE X-RAY SERV., INC.		35-15194-01	6	5	0.908	0.18
PROGRESS SERV., INC.		34-19592-01	12	6	0.950	0.16
BAKER TESTING SERV., INC.		20-19067-01	17	11	1.700	0.16
CONSUMERS POWER CO.		21-08606-03	18	14	2.145	0.15
CENTERIOR SERVICE COMPANY		34-23406-01	7	4	0.606	0.15
MAGNA CHEK, INC.		21-19111-02	29	7	1.030	0.15
ALONSO & CARUS IRON WORKS, INC.		52-21350-01	4	3	0.435	0.15
S. K. MCBRYDE, INC.		32-25137-01	6	4	0.570	0.14
CHICAGO BRIDGE AND IRON COMPANY		42-13553-02	72	50	7.120	0.14
NEWPORT NEWS SHIPBUILDING & DRYDOCK		45-09428-02	66	64	7.649	0.12
ARCTIC SLOPE INSP. SERVICES, INC.		50-29015-01	9	4	0.422	0.11
TENNESSEE VALLEY AUTHORITY		41-06832-06	22	13	1.369	0.11
INDESERV, INC.		45-25074-01	2	2	0.210	0.11
NOVA DATA TESTING LABS, INC.		45-24872-01	12	12	1.210	0.10
WALASHEK ENTERPRISES, INC.		53-23225-01	7	5	0.460	0.09
FROEHLING & ROBERTSON, INC.		45-08890-01	15	8	0.730	0.09

APPENDIX A (cont.)

INDUSTRIAL RADIOGRAPHERS

Multiple Location - 1994

Licensee Name	Program Code 03320	License Number	Total Number of Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-cSv)	Average Meas. Dose (cSv or rem)
PROFESSIONAL WELDING ASSOC., INC.		48-25806-01	5	5	0.450	0.09
TENNECO GAS PIPELINE COMPANY		42-09073-02	15	12	0.810	0.07
PSI ENERGY, INC.		13-15544-06	5	3	0.170	0.06
PRECISION COMPONENTS CORP.		37-16280-01	44	12	0.670	0.06
SENIOR ENGINEERING CO.		24-19500-01	4	4	0.190	0.05
NOOTER CORP.		24-03783-01	17	11	0.480	0.04
ASTROTECH, INC.		37-09928-01	9	7	0.280	0.04
EG&G FLORIDA, INC.		09-21233-01	43	14	0.490	0.04
WESTINGHOUSE ELECTRIC CORP.		37-05809-02	8	2	0.037	0.02
VERMONT NONDESTRUCTIVE TESTING		44-28509-01	5	2	0.030	0.02
HUTCHINSON TECHNICAL COLLEGE		22-15554-01	61	8	0.110	0.01
EBASCO SERVICES INCORPORATED		29-07056-03	7	1	0.010	0.01
AMERICAN AIRLINES, INC.		35-13964-01	27	11	0.110	0.01
VOITH HYDRO, INC.		37-16280-03	11	1	0.010	0.01
PHOENIX LABORATORIES, INC.		20-15102-01	3	0	0.000	0.00
AMERICAN FOUNDRY GROUP, INC.		35-26893-01	3	0	0.000	0.00
ANCHOR/DARLING VALVE COMPANY		37-15476-01	2	0	0.000	0.00
			2,900	2,262	1,371.092	0.61

APPENDIX A (cont.)

MANUFACTURERS AND DISTRIBUTORS - 1994

Licensee Name	Program Type	Code	License Number	Total Number of Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-cSv)	Average Meas. Dose (cSv or rem)
<u>A-BROAD</u>							
ADVANCED MEDICAL SYS., INC.	03211		34-19089-01	37	12	14.393	1.20
MALLINCKRODT, INC.	03211		24-04206-01	294	229	256.490	1.12
DU PONT MERCK PHARMACEUTICAL	03211		20-28598-01	848	519	259.004	0.50
AMERSHAM CORPORATION	03211		20-12836-01	46	23	7.213	0.31
RTS TECHNOLOGY, INC.	03211		20-27966-01	4	3	0.560	0.19
E. P. SQUIBB & SONS, INC.	03211		29-00139-02	859	79	6.243	0.08
ABB INDUSTRIAL SYSTEMS INC	03211		34-00255-03	3	3	0.150	0.05
NUCLEAR RESEARCH CORP.	03211		29-04236-01	42	9	0.190	0.02
				2133	877	544.243	0.62
<u>B-BROAD</u>							
FRONTIER TECHNOLOGY CORP.	03212		SNM-1957	8	6	2.700	0.45
BEST INDUSTRIES, INC.	03212		45-19757-01	56	14	2.980	0.21
OHMART CORP.	03212		34-00639-01	80	44	4.200	0.10
				144	64	9.880	0.15
<u>OTHER</u>							
SEAMAN NUCLEAR CORPORATION	03214		48-12016-01	5	5	3.650	0.73
CIS-US, INC.	03214		20-20973-01	22	18	4.577	0.25
BERTHOLD SYSTEMS, INC.	03214		37-21226-01	13	8	1.110	0.14
SCAN TECHNOLOGIES, INC.	03214		47-30052-01	5	5	0.540	0.11
DU PONT MERCK PHARMACEUTICAL	03214		20-00320-19	7	5	0.500	0.10
SMH (US) INC.	03214		37-03572-06	68	68	3.525	0.05
GENERAL NUCLEONICS, INC.	03214		04-12071-02	10	5	0.250	0.05
VARIAN/ASSOCIATES, CF AND RP	03214		20-02237-04	19	7	0.350	0.05
STOCKER AND YALE, INC.	03214		20-16532-01	23	23	1.150	0.05
PRINCETON GAMMA-TECH, INC.	03214		29-12783-01	41	4	0.180	0.05
QUAL-X, INC.	03214		34-16907-02	5	2	0.080	0.04
NUCLEAR RESEARCH CORPORATION	03214		37-02401-01	44	11	0.420	0.04
SAINT-GOBAIN/NORTON	03214		34-06558-05	15	6	0.110	0.02
HERLEY-MDI	03214		20-13270-01	13	1	0.010	0.01
INTERGRATED INDUSTRIAL SYS., INC.	03214		06-21253-01	20	0	0.000	0.00
LIFECODES CORPORATION	03214		06-28766-01	16	0	0.000	0.00
OXFORD ANALYTICAL, INC.	03214		20-19842-01	2	0	0.000	0.00
PYROTRONICS	03214		29-08864-03	4	0	0.000	0.00
E-BEAM SERVICES, INC.	03214		29-30028-01	5	0	0.000	0.00
ELIAS USA, INC.	03214		48-26355-01	1	0	0.000	0.00
THERATRONICS INTERNATIONAL LTD.	03214		54-28315-01	6	0	0.000	0.00
MEAD JOHNSON AND CO	03214		13-00772-02	13	0	0.000	0.00
COLLABORATIVE BIOMEDICAL PROD.	03214		20-28701-01	18	0	0.000	0.00
				375	168	16.452	0.10

APPENDIX A (cont.)

MANUFACTURERS AND DISTRIBUTORS - 1994

Licensee Name	Program Code 02500	License Number	Total Number of Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-cSv)	Average Meas. Dose (cSv or rem)
NUCLEAR PHARMACY OF IDAHO, INC.	PHARMACIES	11-27398-01MD	8	8	1.813	0.23
MALLINCKRODT MEDICAL, INC.	PHARMACIES	24-04206-14MD	4	4	0.490	0.12
PACIFIC RADIOPHARMACY LTD.	PHARMACIES	53-16991-01MD	9	6	0.500	0.08
NORTHERN VIRGINIA ISOTOPES, INC.	PHARMACIES	45-25221-01MD	14	11	0.810	0.07
SPECTRUM PHARMACY, INC.	PHARMACIES	13-26367-01	29	26	1.690	0.07
SYNCOR CORPORATION	PHARMACIES	34-16654-01MD	183	76	3.792	0.05
PREMIER PHARMACY SERVICES, P C.	PHARMACIES	13-26472-01MD	2	1	0.040	0.04
CAPITOL PHARMACY, INC.	PHARMACIES	21-26597-01MD	8	1	0.020	0.02
MID-AMERICA ISOTOPES, INC.	PHARMACIES	24-26241-01	14	2	0.030	0.02
OKLAHOMA, UNIVERSITY OF	PHARMACIES	35-03176-04MD	18	7	0.059	0.01
			289	142	9.244	0.07

APPENDIX A (cont.)

FUEL FABRICATORS AND PROCESSORS -1994

Licensee Name	Program Code 21210	License Number	Total Number of Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-cSv)	Average Meas. Dose (cSv or rem)
COMBUSTION ENGINEERING, INC.	21210	SNM-0033	252	208	173.727	0.84
WESTINGHOUSE ELECTRIC CORP.	21210	SNM-1107	637	606	456.286	0.75
BABCOCK & WILCOX CO.	21210	SNM-0042	307	266	161.340	0.61
GENERAL ELECTRIC CO.	21210	SNM-1097	566	414	128.214	0.31
SIEMENS POWER CORP.	21210	SNM-1227	775	699	177.131	0.25
GENERAL ATOMICS	21210	SNM-0696	151	50	5.845	0.12
B&W FUEL CO.	21210	SNM-1168	298	120	12.192	0.10
NUCLEAR FUEL SERVICES, INC.	21210	SNM-0124	610	484	31.945	0.07
			3,596	2,847	1,146.680	0.40

INDEPENDENT SPENT FUEL STORAGE INSTALLATION - 1994

Licensee Name	Program Code 23200	License Number	Total Number of Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-cSv)	Average Meas. Dose (cSv or rem)
GENERAL ELECTRIC CO.		SNM-2500	158	89	42.338	0.48
VIRGINIA ELECTRIC POWER*		SNM-2501	0	0	0.000	0.00
CAROLINA POWER & LIGHT CO **		SNM-2502	0	0	0.000	0.00
BALTIMORE GAS & ELECTRIC CO ***		SNM-2505	0	0	0.000	0.00
			158	89	42.338	0.48

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

** Reported with Robinson 2 DPR-23

*** Reported with Calvert Cliffs 1,2 DPR-53, 69

LOW LEVEL WASTE DISPOSAL FACILITIES - 1994

Licensee Name	Program Code 03231	License Number	Total Number of Individuals Monitored	Workers with Measurable Exposure	Collective Dose (person-cSv)	Average Meas. Dose (cSv or rem)
CHEM NUCLEAR SYSTEMS, INC.		12-13536-01	183	74	21.419	0.29
US ECOLOGY		16-19204-01	19	9	0.431	0.05
			202	83	21.850	0.26

APPENDIX B

Annual Whole Body Doses at Licensed Nuclear Power Facilities

1994

APPENDIX B
ANNUAL WHOLE BODY DOSES AT LICENSED NUCLEAR POWER FACILITIES
CY 1994

PLANT NAME	TYPE	Number of Individuals with Whole Body Doses in the Ranges (cSv or rems)													TOTAL NUMBER MONITORED	NUMBER WITH MEAS. DOSE	TOTAL COLLECTIVE DOSE (person-cSv, rem)		
		No Meas. Exposure	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	1772	816	355	144	40	5	1									3133	1361	172
BEAVER VALLEY 1,2	PWR	1753	336	106	44	1											2240	487	44
BIG ROCK POINT	BWR	152	133	34	56	24	21	42									462	310	119
BRADWOOD 1,2	PWR	1091	464	319	294	108	28	23		1							2328	1237	298
BROWNS FERRY 1,2,3	BWR	2469	1389	749	598	309	138	103		13							5768	3299	855
BRUNSWICK 1,2	BWR	1757	1203	539	534	288	276	209									4806	3049	999
BYRON 1,2	PWR	1342	315	204	266	118	34	25									2304	962	280
CALLAWAY 1	PWR	1004	147	31	12	1											1195	191	14
CALVERT CLIFFS 1,2	PWR	1640	564	294	273	182	93	76									3122	1482	454
CATAWBA 1,2	PWR	2206	575	423	218	42	6	4									3474	1268	207
CLINTON	BWR	956	199	113	92	5											1365	409	63
COMANCHE PEAK 1,2*	PWR	1579	683	209	75	2		1									2549	970	90
COOK 1,2	PWR	1262	709	354	342	177	109	57									3010	1748	479
COOPER STATION	BWR	653	144	71	70	21	20	7									986	333	79
CRYSTAL RIVER 3	PWR	1046	471	283	205	78	27	15									2125	1079	228
DAVIS-BESSE	PWR	985	430	260	106	34	26	5									1846	861	144
DIABLO CANYON 1,2	PWR	1877	1012	529	394	178	105	98		1							4194	2317	590
DRESDEN 2,3	BWR	1547	765	473	445	279	198	171		5							3883	2336	833
DUANE ARNOLD	BWR	772	231	95	92	33	24	18									1265	493	120
FARLEY 1,2	PWR	501	153	144	65	44	4	4									915	414	89
FERMI 2	BWR	1785	545	272	207	84	12	10									2915	1130	213
FITZPATRICK	BWR	950	920	305	158	92	54	66									2545	1595	322
FORT CALHOUN	PWR	721	133	53	19	6											932	211	23
GINNA	PWR	729	330	166	103	49	15	16									1408	679	138
GRAND GULF	BWR	1243	249	150	51	1		4									1698	455	56
HADDAM NECK	PWR	662	236	64	71	39	15	35		3							1125	463	135
HARRIS	PWR	1057	496	268	206	80	31	8									2146	1089	222
HATCH 1,2	BWR	974	708	478	409	277	154	197		20							3217	2243	864
HOPE CREEK 1	BWR	544	967	339	259	132	53	29									2323	1779	326
INDIAN POINT 2	PWR	877	256	72	35	8	6	4									1258	381	48
INDIAN POINT 3	PWR	1157	322	142	59	6											1686	529	58
KEWAUNEE	PWR	363	156	97	75	25	8	3									727	364	72
LASALLE 1,2	BWR	1042	541	354	320	256	176	159		6							2854	1812	726
LIMERICK 1,2	BWR	1909	787	375	250	81	44	6									3452	1543	275
MAINE YANKEE	PWR	608	111	89	41	18	24	14									905	297	84
MCGUIRE 1,2	PWR	1892	669	434	313	118	47	56									3529	1637	397
MILLSTONE POINT 1	BWR	1179	667	283	177	93	48	53									2500	1321	391
MILLSTONE POINT 2,3	PWR	1115	630	267	167	88	46	51									2364	1249	188
MONTICELLO	BWR	545	228	138	127	77	75	136		7							1333	788	395
NINE MILE POINT 1,2	BWR	1375	350	239	158	34	11	8									2175	800	149

* Indicates plants counted in 1994 after completing a full year of operation.

APPENDIX B (Continued)
ANNUAL WHOLE BODY DOSES AT LICENSED NUCLEAR POWER FACILITIES
CY 1994

PLANT NAME	TYPE	Number of Individuals with Whole Body Doses in the Ranges (cSv or rems)														TOTAL NUMBER MONITORED	NUMBER WITH MEAS. DOSE	TOTAL COLLECTIVE DOSE (person-cSv, rem)	
		No Meas. Exposure	Meas. <0.10	0.10-0.25	0.25-0.5	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				
NORTH ANNA 1,2	PWR	1340	476	296	181	49	21	13									2376	1036	193
OCONEE 1,2,3	PWR	1805	729	485	379	169	65	88	8								3728	1923	537
OYSTER CREEK	BWR	520	1030	419	343	228	106	216	35	5							2902	2382	844
PALISADES	PWR	581	214	99	67	12	4	1									978	397	60
PALO VERDE 1,2,3	PWR	2112	1001	442	305	151	80	69									4160	2048	462
PEACH BOTTOM 2,3	BWR	1532	895	499	375	165	97	93	9								3665	2133	579
PERRY	BWR	1214	551	492	548	333	91	83									3312	2098	691
PILGRIM	BWR	893	284	186	154	86	33	15									1651	758	200
POINT BEACH 1,2	PWR	485	175	132	108	75	34	23	1								1033	548	170
PRAIRIE ISLAND 1,2	PWR	624	185	131	105	44	9	4									1102	478	109
QUAD CITIES 1,2	BWR	1632	666	385	299	200	214	325	74								3795	2163	1128
RIVER BEND 1	BWR	755	1097	402	361	193	94	55	7								2964	2209	519
ROBINSON 2	PWR	1077	243	90	63	17	7										1497	420	63
SALEM 1,2	PWR	291	517	181	139	70	28	15									1241	950	188
SAN ONOFRE 2,3	PWR	4485	444	62	18	4											5013	528	32
SEABROOK	PWR	1214	490	227	108	21	4	2									2066	852	113
SEQUOYAH 1,2	PWR	1822	837	440	245	87	31	17									3479	1657	292
SOUTH TEXAS 1,2	PWR	2389	506	121	33		1										3050	661	47
ST. LUCIE 1,2	PWR	1325	762	463	355	149	75	92									3221	1896	505
SUMMER 1	PWR	965	615	383	322	137	64	28									2514	1549	374
SURRY 1,2	PWR	1096	678	305	322	120	48	54	3								2626	1530	378
SUSQUEHANNA 1,2	BWR	1710	594	338	361	154	74	59									3290	1580	442
THREE MILE ISLAND 1	PWR	419	325	78	29	2											853	434	40
TURKEY POINT 3,4	PWR	1143	435	352	365	195	84	58									2632	1489	476
VERMONT YANKEE	BWR	884	102	71	34	9	4										1104	220	38
VOGTLE 1,2	PWR	903	466	261	209	79	24	9									1951	1048	217
WASHINGTON NUCLEAR 2	BWR	1330	653	237	276	265	174	242	22	1							3200	1870	866
WATERFORD 3	PWR	1232	548	393	156	54	6	10									2399	1167	191
WOLF CREEK 1	PWR	733	505	259	179	74	46	19									1815	1082	235
ZION 1,2	PWR	1543	465	234	277	130	51	19									2719	1176	306
TOTALS: 72 PWRs		54,823	20,630	10,597	7,492	3,081	1,311	1,017	17								98,968	44,145	9,442
TOTALS: 37 BWRs		30,322	15,898	8,036	6,754	3,719	2,191	2,306	198	6							69,430	39,108	12,092
TOTALS: 109 LWRs		85,145	36,528	18,633	14,246	6,800	3,502	3,323	215	6							168,398	83,253	21,534

APPENDIX B (Continued)
ANNUAL WHOLE BODY DOSES AT LICENSED NUCLEAR POWER FACILITIES
FACILITIES NOT IN OPERATION OR IN OPERATION LESS THAN ONE YEAR
CY 1994

PLANT NAME	TYPE	Number of Individuals with Whole Body Doses in the Ranges (cSv or rems)													TOTAL NUMBER MONITORED	NUMBER WITH MEAS. DOSE	TOTAL COLLECTIVE DOSE (person-cSv, rem)		
		No Meas. Exposure	Meas. <0.10	0.10-0.25	0.25-0.5	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	5															5	0	0 **
DRESDEN 1 *	BWR	Reported with Dresden 2,3																	
FORT ST. VRAIN *	HTGR	390	89	33	34	10	6	25	4								591	201	78
HUMBOLDT BAY *	BWR	136	19	2													157	21	1 **
INDIAN POINT 1 *	PWR	Reported with Indian Point 2																	
LACROSSE *	BWR	63	35	22	7	1											128	65	8 **
RANCHO SECO *	PWR	159	15	2	1												177	18	1 **
SAN ONOFRE 1 *	PWR	Reported with San Onofre 2,3																	
THREE MILE ISLAND 2*	PWR	251	194	47	17	1											510	259	7
TROJAN *	PWR	245	28	10	7	6											296	51	9
WATTS BAR 1,2	PWR	741	9														750	9	0
YANKEE-ROWE *	PWR	301	47	34	31	32	18	40	19	1							523	222	156
TOTAL REPORTING:	10	2,291	436	150	97	50	24	65	23	1							3,137	846	260

* Indicates plants that are no longer in commercial operation.

** Indicates collective dose calculated by staff.

APPENDIX C*

Personnel, Dose, and Power Generation Summary

1969-1994

- * 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	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)					Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type			
						Opera- tions	Maint & Others	Con- tractor	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
	1992	1,352.1	77.4	3,114	876	21	855	719	157	0.28	0.6
	1993	1,606.0	91.3	1,981	268	9	259	194	74	0.14	0.2
	1994	1,662.8	93.6	1,361	172	80	91	122	49	0.13	0.1
BEAVER VALLEY 1,2	1977	355.6	57.0	331	878	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
	1992	1,441.9	89.1	1,414	289	29	260	203	86	0.20	0.2
	1993	1,157.9	73.1	2,087	621	59	562	490	131	0.30	0.5
	1994	1,514.6	88.6	487	44	9	34	5	38	0.09	0.0

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)					Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type			
						Opera- tions	Maint & Others	Con- tractor	Station & Utility		
BIG ROCK POINT Docket 50-155, DPR-6 1st commercial operation 3/63 Type - BWR Capacity - 67 MWe	1969	48.1		165	136					0.82	2.8
	1970	43.5		290	194					0.67	4.5
	1971	44.4		260	184					0.71	4.1
	1972	43.5		195	181					0.93	4.2
	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
	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	0.7	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	
1992	32.7	54.5	496	277	36	241	51	226	0.56	8.5	
1993	51.2	79.4	419	152	30	122	41	111	0.36	3.0	
1994	49.5	75.3	310	119	25	93	24	94	0.38	2.4	
BRAIDWOOD 1,2 Docket 50-456, 50-457, NPF-72, NPF-77 1st commercial operation 7/88, 10/88 Type - PWRs Capacity - 1120, 1120 MWe	1989	1,381.8	75.4	1,460	296	7	289	198	98	0.20	0.2
	1990	1,740.2	84.1	1,081	186	9	177	107	79	0.17	0.1
	1991	1,377.2	68.9	1,641	550	101	449	387	163	0.34	0.4
	1992	1,885.9	89.0	1,059	228	29	199	140	88	0.22	0.1
	1993	1,899.3	86.9	1,043	273	23	250	170	103	0.26	0.1
1994	1,666.1	77.2	1,237	298	17	2800	179	118	0.24	0.1	

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)					Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type			
						Opera- tions	Maint & Others	Con- tractor	Station & Utility		
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
	1992	979.9	32.2	2,658	516	85	431	299	217	0.19	0.5
	1993	675.1	66.8	3,594	870	78	792	600	270	0.24	1.3
	1994	860.2	83.4	3,299	855	54	800	649	205	0.26	0.9
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 - 767, 754 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	1,850	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	3,344	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
	1992	375.9	27.9	2,690	623	95	528	464	159	0.23	1.7
	1993	470.0	33.8	2,921	872	118	754	645	227	0.30	1.9
	1994	1,268.4	83.0	3,049	999	122	876	720	278	0.33	0.7

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Collective Dose	Per Work Function			Per Personnel Type		Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
						Opera- tions	Maint & Others	Con- tractor	Station & Utility			
BYRON 1,2 Docket 50-454, 50-455, NPF-37, NPF-66 1st commercial operation 9/85, 8/87 Type - PWRs Capacity - 1105, 1105	1986	894.5	88.6	1,081	76	12	64	47	29	0.07	0.1	
	1987	650.9	70.9	1,826	769	11	758	667	102	0.42	1.2	
	1988	1,534.7	86.3	1,222	459	0	459	333	126	0.38	0.3	
	1989	1,812.6	90.2	1,109	172	21	151	105	67	0.16	0.1	
	1990	1,567.3	78.8	1,396	434	38	395	266	168	0.31	0.3	
	1991	1,816.3	89.9	1,077	268	42	226	158	110	0.25	0.1	
	1992	1,888.4	90.1	1,021	199	43	156	118	81	0.19	0.1	
	1993	1,785.6	83.5	1,370	432	57	375	248	184	0.32	0.2	
	1994	1,953.3	90.7	962	280	17	262	164	115	0.29	0.1	
	CALLAWAY 1 Docket 50-483, NPF-30 1st commercial operation 12/84 Type - PWR Capacity - 1115 MWe	1985	967.4	90.0	964	36	16	20	7	29	0.04	0.0
		1986	865.2	81.3	1,052	225	53	172	129	96	0.21	0.3
		1987	759.0	71.1	1,082	393	89	304	249	144	0.36	0.5
		1988	1,069.2	93.4	353	27	12	15	2	25	0.08	0.0
		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	
1992		967.5	83.0	1,133	336	52	284	244	92	0.30	0.3	
1993		1,002.9	86.4	1,126	225	73	152	157	68	0.20	0.2	
1994		1,196.4	100.0	191	14	6	7	0	13	0.07	0.0	
CALVERT CLIFFS 1,2 Docket 50-317, 50-318, DPR-53, -69 1st commercial operation 5/75, 4/77 Type - PWRs Capacity - 835, 840 MWe		1976	753.4	95.2	507	74	28	46	8	66	0.15	0.1
		1977	583.0	72.1	2,265	547	36	511	224	323	0.24	0.9
		1978	1,186.5	75.8	1,391	500	13	487	143	357	0.36	0.4
		1979	1,161.0	74.0	1,428	805	32	773	426	379	0.56	0.7
	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	
	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		
1992	1,271.2	73.9	1,979	330	35	295	228	102	0.17	0.3		
1993	1,462.1	83.9	1,462	405	13	392	299	106	0.28	0.3		
1994	1,342.1	79.4	1,482	454	30	424	333	121	0.31	0.3		

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Opera- tions	Maint & Others	Con- tractor	Station & Utility			
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	
	1992	1,962.8	83.9	1,515	414	52	362	92	322	0.27	0.2	
	1993	1,896.1	81.5	1,564	396	29	367	59	337	0.25	0.2	
	1994	2,105.2	92.2	1,268	207	35	172	47	160	0.16	0.1	
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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	1992	589.7	68.6	1,195	431	63	368	287	144	0.36	0.7	
	1993	701.5	79.6	1,253	498	48	450	367	131	0.40	0.7	
	1994	883.3	94.8	409	63	1	62	7	56	0.15	0.0	
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COMANCHE PEAK 1,2	1991	644.4	82.2	985	148	13	135	111	37	0.15	0.2	
Docket 50-445, NPF-87	1992	830.8	84.0	1,128	188	28	160	158	30	0.15	0.2	
1st commercial operation 8/90, 8/93	1993	853.8	81.2	945	109	25	84	92	17	0.15	0.1	
Type - PWR	1994	1,750.0	93.7	970	90	22	68	75	15	0.15	0.1	
Capacity - 1150, 1150 MWe												
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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	1,845	718	45	673	454	264	0.50	0.5	
Capacity - 1000, 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	100	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	782	105	0.38	0.7	

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)							Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type					
						Operations	Maint & Others	Con- tractor	Station & Utility				
COOK 1,2 (continued)	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		
	1992	760.9	50.8	1,954	492	60	432	416	76	0.25	0.6		
	1993	1,927.7	98.5	587	44	10	34	29	15	0.07	0.0		
	1994	1,105.2	65.2	1,748	479	26	453	362	117	0.27	0.4		
COOPER STATION Docket 50-298, DPR-46 1st commercial operation 7/74 Type - BWR Capacity - 764 MWe	1975	456.4	83.6	579	117	30	87	19	98	0.20	0.3		
	1976	433.3	75.5	763	350	39	311	210	140	0.46	0.8		
	1977	538.2	86.2	315	198	50	147	66	131	0.63	0.4		
	1978	576.0	91.0	297	158	40	118	58	100	0.53	0.3		
	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		
1992	731.0	96.4	463	84	16	68	16	68	0.18	0.1			
1993	436.1	58.8	1,130	391	33	358	245	146	0.35	0.9			
1994	262.2	35.1	333	79	24	55	7	72	0.24	0.3			
CRYSTAL RIVER 3 Docket 50-302, DPR-72 1st commercial operation 3/77 Type - PWR Capacity - 818 MWe	1978	311.5	41.4	643	321	8	313	244	77	0.50	1.0		
	1979	453.0	58.9	1,150	495	29	466	346	149	0.43	1.1		
	1980	404.1	53.2	1,053	625	24	601	382	243	0.59	1.5		
	1981	490.4	62.2	1,120	408	18	390	236	172	0.36	0.8		
	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	0.1	0.1		
1989	352.8	48.8	880	234	5	229	128	106	0.27	0.7			

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)					Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type			
						Opera- tions	Maint & Others	Con- tractor	Station & Utility		
CRYSTAL RIVER 3 (continued)	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
	1992	632.1	76.1	1,403	424	7	417	333	91	0.30	0.7
	1993	722.4	85.0	683	60	4	56	31	29	0.09	0.1
	1994	711.9	84.3	1,079	228	7	221	156	72	0.21	0.3
DAVIS-BESSE 1 Docket 50-346, NPF-3 1st commercial operation 7/78 Type - PWR Capacity - 868 MWe	1978	326.4	48.7	421	48	13	35	14	34	0.11	0.1
	1979	381.0	67.0	304	30	8	22	5	25	0.10	0.1
	1980	256.4	36.2	1,283	154	4	150	121	33	0.12	0.6
	1981	531.4	67.4	578	58	1	57	32	26	0.10	0.1
	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
	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
	1992	915.2	100.0	287	19	10	9	0	19	0.07	0.0
1993	729.5	83.4	1,244	348	12	336	269	79	0.28	0.5	
1994	768.4	88.0	861	144	28	116	69	75	0.17	0.2	
DIABLO CANYON 1,2 Docket 50-275, 50-323, DPR-80, DPR-82 1st commercial operation 5/85, 3/86 Type - PWRs Capacity - 1073, 1087 MWe	1986	641.5	80.6	1,260	304	4	300	206	98	0.24	0.5
	1987	1,688.6	83.0	1,170	336	5	331	226	110	0.29	0.2
	1988	1,386.1	67.6	1,826	877	4	873	593	284	0.48	0.6
	1989	1,899.0	87.5	1,646	465	3	462	329	136	0.28	0.2
	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
	1992	1,995.7	90.9	1,850	459	0	459	303	156	0.25	0.2
	1993	2,008.6	91.4	1,508	281	0	281	182	99	0.19	0.1
1994	1,832.6	83.3	2,317	590	1	589	399	191	0.26	0.3	

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Collective Dose	Opera- tions	Maint & Others	Con- tractor	Station & Utility	Person-cSv (-rems)	
										Per Work Function	Per Personnel Type
DRESDEN 1 ¹ , 2, 3 Docket 50-010, 50-237, 50-249, DPR-2, -19, -25 1st commercial operation 7/60, 6/70, 11/71 Type - BWRs Capacity - 197, 772, 773 MWe	1969	99.7			286						2.9
	1970	163.1			143		796		595		0.9
	1971	394.5			1,662		3,152		1,605		1.8
	1972	1,243.7			715		1,452		1,171		0.6
	1973	1,112.2		1,341	939	143		344			0.8
	1974	842.5	54.9	1,594	1,662	271		57			2.0
	1975	708.1	54.6	2,310	3,423	228	3,152	2,252	1,171	1.04	4.8
	1976	1,127.2	80.8	1,746	1,680	316	1,452	749	931	1.48	1.5
	1977	1,132.9	77.0	1,862	1,694	359	1,377	693	1,000	0.96	1.5
	1978	1,242.2	79.5	1,946	1,529	191	1,170	619	1,529	0.91	1.2
	1979	1,013.0	74.7	2,407	1,800	236	1,609	641	1,159	0.75	1.8
	1980	1,074.4	55.0	2,717	2,105	120	1,869	1,093	1,012	0.77	2.0
	1981	1,035.7	51.5	2,331	2,802	136	2,682	1,850	952	1.20	2.7
	1982	1,085.3	77.9	2,572	2,923	176	2,787	1,731	1,192	1.14	2.7
	1983	913.6	65.6	2,854	3,582	153	3,406	2,127	1,455	1.26	3.9
	1984	789.8	55.3	2,261	1,774	474	1,621	815	959	0.78	2.2
	1985	903.0	64.5	2,817	1,686	268	1,212	879	807	0.60	1.9
	1986	740.5	52.6	3,111	2,668	241	2,400	2,009	659	0.86	3.6
	1987	933.9	74.0	2,052	1,145	215	904	593	552	0.56	1.2
1988	1,014.7	75.8	2,414	1,409	154	1,194	808	601	0.58	1.4	
1989	1,184.2	83.1	2,259	1,131	176	976	641	489	0.50	1.0	
1990	1,107.8	76.6	2,235	1,400	166	1,224	753	647	0.63	1.3	
1991	675.2	60.7	2,044	1,005	128	839	433	572	0.49	1.5	
1992	872.4	75.4	1,812	619	125	491	272	347	0.34	0.7	
1993	960.1	68.5	2,751	1,655	93	1,530	1,116	539	0.60	1.7	
1994	690.2	51.7	2,336	833		740	517	316	0.36	1.2	
DUANE ARNOLD Docket 50-331, DPR-49 1st commercial operation 2/75 Type - BWR Capacity - 515 MWe	1976	305.2	78.0	350	105	14	91	62	43	0.30	0.3
	1977	353.6	78.9	538	299	36	263	220	79	0.56	0.8
	1978	149.2	33.2	1,112	974	59	915	932	42	0.88	6.5
	1979	352.0	78.0	757	275	35	240	219	56	0.36	0.8
	1980	339.1	73.3	1,108	671	32	639	570	101	0.61	2.0
	1981	277.7	69.8	1,286	790	55	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	

¹ 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 (continued)
PERSONNEL, DOSE AND POWER GENERATION SUMMARY

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)					Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type			
						Operations	Maint & Others	Con- tractor	Station & Utility		
DUANE ARNOLD (continued)	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
	1992	416.5	81.9	1,043	502	123	379	276	226	0.48	1.2
	1993	393.4	79.5	1,043	407	86	321	299	108	0.39	1.0
	1994	498.6	94.0	493	120	14	106	24	96	0.24	0.2
C-10 FARLEY 1,2 Docket 50-348, 50-364, NPF-2, -8 1st commercial operation 12/77, 7/81 Type - PWR Capacity - 812, 822 MWe	1978	713.8	86.5	527	108	39	69	34	74	0.20	0.2
	1979	211.0	28.6	1,227	643	108	535	460	183	0.52	3.0
	1980	557.3	69.3	1,330	435	106	329	185	250	0.33	0.8
	1981	310.2	41.4	1,331	512	96	416	270	242	0.38	1.7
	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	0.6
	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
1992	1,331.7	81.8	2,018	805	121	684	570	235	0.40	0.6	
1993	1,455.5	88.3	1,284	333	22	311	224	109	0.26	0.2	
1994	1,587.2	93.0	414	89	10	79	54	35	0.21	0.1	
FERMI 2 Docket 50-341, NPF-43 1st commercial operation 1/88 Type - BWR Capacity - 1085 MWe	1989	624.0	68.5	1,270	255	35	220	182	73	0.20	0.4
	1990	848.2	84.7	462	83	31	52	14	69	0.18	0.1
	1991	739.0	77.0	1,223	228	53	175	151	77	0.19	0.3
	1992	874.3	81.3	1,213	245	50	195	151	94	0.20	0.3
	1993	984.3	92.9	360	35	23	12	7	28	0.10	0.0
1994	0.0	2.2	1,130	213	68	145	153	60	0.19	---	

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type		Station & Utility		
						Operations	Maint & Others	Con- tractor				
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 - 774 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	643.8	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	
	1992	0.0	0.0	2,374	674	70	604	476	198	0.28	---	
	1993	559.6	81.7	1,427	232	33	199	81	151	0.16	0.4	
	1994	588.4	83.2	1,595	322	276	46	141	181	0.20	0.5	
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	350.4	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	
	1992	303.4	65.9	802	272	59	213	154	118	0.34	0.9	
	1993	369.7	80.8	713	157	16	141	87	70	0.22	0.4	
	1994	492.8	99.6	211	23	5	18	6	17	0.11	0.0	

**APPENDIX C (continued)
PERSONNEL, DOSE AND POWER GENERATION SUMMARY**

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Collective Dose	Per Work Function			Per Personnel Type		Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
						Opera- tions	Maint & Others	Con- tractor	Station & Utility			
GINNA Docket 50-244, DPR-18 1st commercial operation 7/70 Type - PWR Capacity - 470 MWe	1971	327.8		340	430	69	361	108	322	1.26	1.3	
	1972	293.6		677	1,032	71	961	278	754	1.52	3.5	
	1973	409.5		319	224	55	169	84	140	0.70	0.5	
	1974	253.7	62.4	884	1,225					1.39	4.8	
	1975	365.2	76.7	685	538	29	607	210	426	0.79	1.5	
	1976	248.6	58.2	758	636	15	386	120	281	0.84	2.6	
	1977	365.6	85.5	530	401	20	430	98	352	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		
1992	417.6	86.9	832	261	27	234	144	117	0.31	0.6		
1993	419.6	86.3	856	193	18	175	101	92	0.23	0.5		
1994	405.3	83.2	679	138	19	119	66	72	0.20	0.3		
GRAND GULF Docket 50-416, NPF-29 1st commercial operation 7/85 Type - BWR Capacity - 1143 MWe	1986	494.7	60.9	1,486	436	68	368	329	107	0.29	0.9	
	1987	920.7	82.2	1,358	420	106	314	303	117	0.31	0.5	
	1988	1,136.6	96.7	692	147	57	90	52	95	0.21	0.1	
	1989	932.6	80.0	1,972	498	93	405	333	165	0.25	0.5	
	1990	863.5	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	
	1992	969.0	83.7	2,032	484	68	416	349	135	0.24	0.5	
	1993	936.4	81.5	1,807	332	38	294	223	109	0.18	0.4	
	1994	1,143.2	96.6	455	56	31	25	13	43	0.12	0.0	
	HADDAM NECK Docket 50-213, DPR-61 1st commercial operation 1/68 Type - PWR Capacity - 560 MWe	1969	438.5		138	106			27	79	0.77	0.2
1970		424.7		734	689			463	226	0.94	1.6	
1971		502.2		289	342			166	176	1.18	0.7	
1972		515.6		355	325			181	144	0.91	0.6	
1973		293.1		951	697			544	153	0.73	2.4	

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Collective Dose	Person-cSv (-rems)			Station & Utility	Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr	
						Opera- tions	Maint & Others	Con- tractor				
HADDAM NECK (continued)	1974	521.4	91.2	550	201					0.37	0.4	
	1975	494.3	89.9	795	703					0.88	1.4	
	1976	482.9	82.5	644	449	20	683			0.70	0.9	
	1977	480.7	83.9	894	641	5	444	253	196	0.72	1.3	
	1978	563.4	98.6	216	117	59	582	440	201	0.54	0.2	
	1979	493.0	87.5	1,226	1,162	25	92	18	99	0.95	2.4	
	1980	426.8	75.0	1,860	1,353	74	1,088	783	379	0.73	3.2	
	1981	487.5	84.3	1,554	1,036	175	1,178	1,076	277	0.67	2.1	
	1982	543.9	93.4	559	1,26	174	862	809	227	0.23	0.2	
	1983	453.7	77.8	1,645	1,384	46	80	22	104	0.84	3.1	
	1984	404.0	71.7	1,430	1,216	107	1,277	1,022	362	0.85	3.0	
	1985	556.1	98.4	384	101	154	1,062	803	413	0.26	0.2	
	1986	294.8	53.6	1,945	1,567	21	80	22	7	0.81	5.3	
	1987	304.6	54.0	1,763	750	99	651	553	197	0.43	2.5	
	1988	397.4	70.3	735	237	179	1,388	1,274	293	0.32	0.6	
	1989	356.4	67.2	1,455	596	43	194	107	130	0.41	1.7	
	1990	142.7	32.2	979	421	63	528	472	124	0.43	3.0	
	1991	444.4	76.4	1,168	590	75	346	268	153	0.51	1.3	
	1992	465.2	80.1	797	202	80	510	463	127	0.25	0.4	
	1993	448.6	81.6	1,004	408	28	174	129	73	0.41	0.9	
	1994	455.6	77.7	463	135	42	366	312	96	0.29	0.3	
					0	0	0	0				
HARRIS 1 Docket 50-400, NPF-63 1st commercial operation 5/87 Type - PWR Capacity - 860 MWc	1988	652.9	75.0	721	169	29	140	118	51	0.23	0.3	
	1989	690.6	79.5	929	156	32	124	85	71	0.17	0.2	
	1990	776.4	89.6	453	85	13	72	47	38	0.19	0.1	
	1991	724.8	81.5	872	226	27	199	150	76	0.26	0.3	
	1992	661.8	74.9	930	213	34	179	134	79	0.23	0.3	
	1993	913.0	99.7	327	31	9	22	10	21	0.09	0.0	
	1994	740.8	82.7	1,089	222	22	200	167	55	0.20	0.3	
HATCH 1,2 Docket 50-321, 50-366, DPR-57, NPF-05 1st commercial operation 12/75, 9/79 Type - BWRs Capacity - 741, 765 MWc	1976	496.3	83.8	630	134	79	55	4	130	0.21	0.3	
	1977	446.8	66.3	1,303	465	96	369	220	245	0.36	1.0	
	1978	513.0	72.8	1,304	248	88	160	52	196	0.19	0.5	
	1979	401.0	54.6	2,131	582	85	497	381	201	0.27	1.5	
	1980	1,008.7	70.9	1,930	449	143	306	163	286	0.23	0.4	
	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	

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

Person-cSv (-rems)

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Collective Dose	Per Work Function		Per Personnel Type		Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
						Opera- tions	Maint & Others	Con- tractor	Station & Utility		
HATCH 1.2 (continued)	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
	1992	1,293.8	88.6	1,615	550	119	431	294	256	0.34	0.4
	1993	1,189.6	85.5	1,733	669	139	530	339	270	0.39	0.6
	1994	1,289.0	87.1	2,243	864	168	696	559	305	0.39	0.7
	HOPE CREEK 1 Docket 50-354, NPF-57 1st commercial operation 12/86 Type - BWR Capacity - 1031 MWe	1987	869.2	86.4	589	117	21	96	40	77	0.20
1988		832.7	80.7	1,734	287	38	249	163	124	0.17	0.3
1989		791.1	77.8	1,873	465	40	425	292	173	0.25	0.6
1990		966.4	91.6	1,394	196	26	170	89	107	0.14	0.2
1991		882.5	84.2	1,700	373	11	362	249	124	0.22	0.4
1992		841.9	80.8	1,694	436	9	427	304	132	0.26	0.5
1993		1,049.2	97.8	688	98	22	76	8	90	0.14	0.1
1994		852.0	81.2	1,779	326	34	292	194	132	0.18	0.3
HUMBOLDT BAY ² Docket 50-133, DPR-7 1st commercial operation 8/63 Type - BWR Capacity - 63 MWe	1969	44.6		125	164	69	95	12	152	1.31	3.7
	1970	49.3		115	209	130	79	37	172	1.82	4.2
	1971	39.6		140	292	114	178	65	227	2.09	7.4
	1972	43.1		127	253	81	172	57	196	1.99	5.9
	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	---	

² Humboldt Bay has been shutdown since 1976, 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.

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Collective Dose	Per Work Function			Per Personnel Type			Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
						Opera- tions	Maint & Others	Con- tractor	Station & Utility				
HUMBOLDT BAY ³ (continued)	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	---		
	1983	0.0	0.0	24	1	0	0	0	0	0.04	---		
	1994	0.0	0.0	21	1	0	0	0	0	0.05	---		
INDIAN POINT ^{4, 2, 3} Docket 50-3, 50-247, 50-286, DPR-5, -26, -64 1st commercial operation 10/62, 8/74, 8/76 Type - PWR Capacity - 0, 951, 965	1969	206.2			298						1.4		
	1970	43.3			1,639						37.8		
	1971	154.0			768						5.0		
	1972	142.3			967						6.8		
	1973	0.0		2,998	5,262	709	4,553	2,847	2,415	1.76	---		
	1974	556.1	59.4	1,019	910					0.89	1.6		
	1975	584.4	74.8	891	705	165	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		
	INDIAN POINT ^{1, 6, 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		

³ Humboldt Bay has been shutdown since 1976, 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.

⁴ Indian Point 1 was defuelled 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.

⁵ Indian Point 3 was purchased by a different utility and now reports separately.

⁶ Indian Point 1 was defuelled 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.

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Collective Dose	Person-cSv (-rems)			Station & Utility	Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr	
						Per Work Function	Per Personnel Type	Con- tractor				
						Opera- tions	Maint & Others					
INDIAN POINT 2 Docket 50-247, DPR-26 1st commercial operation 8/74 Type - PWR Capacity - 951 MWe	1984	416.7	51.9	2,919	2,644	650	1,994	1,863	781	0.91	6.3	
	1985	791.4	95.7	708	192	123	69	95	97	0.27	0.2	
	1986	457.5	56.2	1,926	1,250	350	900	349	901	0.65	2.7	
	1987	611.4	73.4	1,980	1,217	128	1,089	805	412	0.61	2.0	
	1988	719.3	86.9	890	235	51	184	117	116	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	
	1992	930.9	99.1	489	97	27	70	39	58	0.20	0.1	
	1993	702.1	75.7	1,514	675	77	598	480	195	0.45	1.0	
	1994	903.8	100.0	381	48	0	0	0	0	0.13	0.1	
	INDIAN POINT 3 ⁷ Docket 50-286, DPR-64 1st commercial operation 8/76 Type - PWR Capacity - 965 MWe	1979	574.0	66.5	808	636	63	573	482	154	0.79	1.1
		1980	367.3	53.2	977	308	47	261	210	98	0.32	0.8
		1981	367.5	59.8	677	364	46	318	255	109	0.54	1.0
1982		171.5	22.5	1,477	1,226	42	1,184	1,093	133	0.83	7.1	
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	
1992		561.7	61.4	1,003	212	53	159	132	80	0.21	0.4	
1993	140.5	14.9	478	60	23	37	19	41	0.13	0.4		
1994	0.0	0.0	529	58	36	22	28	30	0.11	---		
KEWAUNEE Docket 50-305, DPR-43 1st commercial operation 6/74 Type - PWR Capacity - 511 MWe	1975	401.9	88.2	104	28	1	27	12	16	0.27	0.1	
	1976	405.9	78.9	381	270	16	254	193	77	0.71	0.7	
	1977	425.0	79.9	312	140	8	131	76	63	0.45	0.3	
	1978	466.6	89.5	335	154	11	143	89	65	0.46	0.3	
	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		

⁷ Indian Point 3 was purchased by a different utility and now reports separately

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Collective Dose	Per Work Function			Station & Utility	Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr	
						Opera- tions	Maint & Others	Con- tractor				
KEWAUNEE (continued)	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	
	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	
	1992	471.4	88.0	450	122	3	119	88	34	0.27	0.3	
	1993	457.1	86.8	436	106	2	104	65	41	0.24	0.2	
	1994	475.6	88.8	364	72	2	70	38	34	0.20	0.2	
	LACROSSE ^B Docket 50-409, DPR-45 1t commercial operation 11/69 Type - BWR Capacity - 48 MWe	1970	15.3			111			40	71	0.72	7.2
		1971	323.1		218	158	172				1.14	4.8
		1972	29.2			151	221				1.41	5.9
		1973	24.4			157	89	50	6	133	1.21	9.1
		1974	37.9	81.0	115	139					1.42	3.7
		1975	32.0	69.6	165	234	40	71	6	105	0.93	7.3
1976		21.2	47.6	118	110	60	164	8	216	1.60	5.2	
1977		11.3	33.7	141	225	69	95	6	158	0.90	19.9	
1978		21.6	62.0	182	164	65	121	21	165	1.22	7.6	
1979		24.0	71.8	153	186	63	155	11	207	1.76	7.8	
1980		26.4	68.5	124	218	62	123	3	120	0.66	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	42	26	2	66	1.12	14.8	
1987		0.0	0.0	127	68	0	0	0	0	0.54	---	
1993		0.0	0.0	48	8	0	0	0	0	0.17	---	
1994		0.0	0.0	65	8	3	5	4	4	0.12	---	

^B 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 (continued)
PERSONNEL, DOSE AND POWER GENERATION SUMMARY

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Operations	Main* & Others	Con- tractor	Station & Utility			
LASALLE 1, 2	1984	677.8	77.8	1,245	252	29	223	82	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	943	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	
	1992	1,447.4	72.0	2,418	1,167	195	972	648	519	0.48	0.8	
	1993	1,542.0	76.0	1,701	854	204	650	387	467	0.50	0.6	
	1994	1,580.0	77.6	1,812	726	105	621	426	300	0.40	0.5	
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	
	1992	1,741.4	84.8	1,559	330	23	307	182	148	0.21	0.2	
	1993	1,913.2	91.6	1,287	217	33	184	113	104	0.17	0.1	
	1994	1,944.4	94.9	1,543	275	44	231	161	114	0.18	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 - 860 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	

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Opera- tions	Maint & Others	Con- tractor	Station & Utility			
MAINE YANKEE (continued)	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	
	1992	631.7	79.1	1,189	461	87	374	360	101	0.39	0.7	
	1993	674.8	79.8	1,016	377	74	303	309	68	0.37	0.6	
	1994	782.8	90.9	297	84	16	68	57	27	0.28	0.1	
MCGUIRE 1.2 Docket 50-369, -370, NPF-9, -17 1st commercial operation 12/81, 3/84 Type - PWRs Capacity - 1129, 1129 MWe	1982	524.9	80.4	1,560	169	26	143	29	140	0.11	0.3	
	1983	558.3	55.4	1,751	521	35	486	123	398	0.30	0.9	
	1984	764.1	68.5	1,663	507	35	472	106	401	0.30	0.7	
	1985	808.4	77.0	2,217	771	92	679	277	494	0.35	1.0	
	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	
	1992	1,696.8	74.4	1,619	418	38	380	114	304	0.26	0.2	
	1993	1,470.4	66.2	1,685	463	16	447	83	380	0.27	0.3	
	1994	1,848.0	80.2	1,637	397	7	390	80	317	0.24	0.2	
	MILLSTONE POINT 1 Docket 50-245, DPR-21 1st commercial operation 3/71 Type - BWR Capacity - 641 MWe	1972	377.6		612	596	50	546	340	256	0.97	1.6
1973		225.1		1,184	663	125	538	422	241	0.56	2.9	
1974		430.3	79.1	2,477	1,430					0.58	3.3	
1975		465.4	75.6	2,587	2,022					0.78	4.3	
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		

**APPENDIX C (continued)
PERSONNEL, DOSE AND POWER GENERATION SUMMARY**

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Collective Dose	Person-cSv (-rems)				Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
						Per Work Function		Per Personnel Type			
						Opera- tions	Maint & Others	Con- tractor	Station & Utility		
MILLSTONE POINT 1 (continued)	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
	1992	431.8	66.1	348	99	22	77	63	36	0.28	0.2
	1993	627.9	96.8	305	81	27	54	32	49	0.27	0.1
	1994	394.0	63.6	1,321	391	12	379	308	83	0.30	1.0
MILLSTONE POINT 2,3 Docket 50-336, 50-423, DPR-65, NPF-49 1st commercial operation 12/75, 4/86 Type - PWR Capacity - 873, 1137 MWe	1976	545.7	78.7	620	168	26	142	73	95	0.27	0.3
	1977	518.7	65.7	667	242	38	204	153	89	0.36	0.5
	1978	536.6	67.3	1,420	1,444	65	1,379	1,366	78	1.02	2.7
	1979	520.0	62.8	525	471	81	390	304	167	0.90	0.9
	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	0.68	0.7
	1982	595.9	70.6	2,083	1,413	27	1,386	1,219	194	0.79	2.4
	1983	294.0	34.2	2,383	1,881	170	1,711	1,548	333	0.79	6.4
	1984	762.7	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	0.42	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
	1992	1,115.1	59.9	3,190	1,280	35	1,245	1,173	107	0.40	1.1
	1993	1,525.2	79.7	2,064	557	29	528	234	323	0.27	0.4
	1994	1,556.6	73.1	1,249	188	35	153	123	65	0.15	0.1
	MONTICELLO Docket 50-263, DPR-22 1st commercial operation 6/71 Type - BWR Capacity - 536 MWe	1972	424.4		99	61	40	21	1	60	0.62
1973		389.5		401	176	48	128	67	109	0.44	0.5
1974		349.3	74.9	842	349			91	258	0.41	1.0
1975		344.8	72.2	1,353	1,353					1.00	3.9
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	7.1
1985	509.8	91.7	586	327	87	240	47	280	0.56	0.6	

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Operations	Maint & Others	Con- tractor	Station & Utility			
MONTICELLO (continued)	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	
	1992	528.3	97.5	454	114	46	68	10	104	0.25	0.2	
	1993	458.1	84.4	954	494	118	376	94	400	0.52	1.1	
	1994	471.3	87.0	788	395	83	312	102	293	0.50	0.8	
	C-21 NINE MILE POINT 1,2 Docket 50-220, 50-410, DPR-63, NPF-69 1st commercial operation 12/69, 4/88 Type - BWR Capacity - 565, 994 MWe	1970	227.0		821	44	12	32	17	27	0.05	0.2
1971		346.5		1,006	195	43	152	63	132	0.19	0.6	
1972		381.8		735	285	59	226	28	257	0.39	0.7	
1973		411.0		550	567	139	428	118	449	1.03	1.4	
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	
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		
1992	965.9	61.8	1,800	563	102	461	184	379	0.31	0.6		
1993	1,380.2	84.6	2,352	633	90	543	427	206	0.27	0.5		
1994	1,589.6	95.9	800	149	56	93	52	97	0.19	0.1		

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Opera- tions	Maint & Others	Con- tractor	Station & Utility			
NORTH ANNA 1,2 Docket 50-338, NPF-04, -09 1st commercial operation 6/78, 12/80 Type - PWRs Capacity - 900, 887 MWe	1979	507 0	61 7	2,025	449	78	371	190	259	0 22	0 9	
	1980	681 8	86 5	2,086	218	128	90	85	133	0 10	0 3	
	1981	1,241 9	71 5	2,416	680	188	492	343	337	0 28	0 5	
	1982	777 7	45 8	2,872	1,915	78	1,837	1,207	708	0 67	2 5	
	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	
	1992	1,403 2	84 1	2,159	576	15	561	413	163	0 27	0 4	
	1993	1,428 4	80 1	2,768	908	12	896	711	197	0 33	0 6	
1994	1,717 1	95 9	1,036	193	17	176	93	100	0 19	0 1		
OCONEE 1,2,3 Docket 50-269, 50-270, 50-287, DPR-38, -47, -55 1st commercial operation 7/73, 9/74, 12/74 Type - PWRs Capacity - 846, 846, 846 MWe	1974	650 6	60 1	844	517	18	499	144	373	0 61	0 8	
	1975	1,838 3	75 5	829	497	72	425	90	407	0 60	0 3	
	1976	1,561 4	63 0	1,215	1,026	65	961	219	807	0 84	0 7	
	1977	1,566 4	65 9	1,595	1,329	244	1,084	294	1,034	0 83	0 8	
	1978	1,909 0	75 8	1,636	1,393	179	1,214	340	1,053	0 85	0 7	
	1979	1,708 0	67 7	2,100	1,001	123	878	181	820	0 48	0 6	
	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		
1992	2,110 7	82 0	1,954	612	60	552	166	446	0 31	0 3		
1993	2,399 2	91 3	1,499	237	23	214	43	194	0 16	0 1		
1994	2,144 3	82 2	1,923	537	40	497	114	423	0 28	0 2		

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Opera- tions	Maint & Others	Con- tractor	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 - 619 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	
	1992	536.3	85.9	2,771	657	70	587	438	219	0.24	1.2	
	1993	551.9	87.8	2,560	416	60	356	238	178	0.16	0.8	
	1994	431.7	70.8	2,382	844	56	788	621	223	0.35	2.0	
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 (continued)
PERSONNEL, DOSE AND POWER GENERATION SUMMARY

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rams)						Average Measurable Dose (cSv or rams)	Person cSv (-rams) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Opera- tions	Maint & Others	Con- tractor	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	
	1992	581.9	76.1	1,267	295	37	258	211	84	0.23	0.5	
	1993	424.4	53.7	908	289	45	244	188	101	0.32	0.7	
	1994	541.8	67.0	397	60	17	43	21	39	0.15	0.1	
PALO VERDE 1,2,3 Docket 50-528, 50-529, 50-530, NPF-41, NPF-51, NPF-74 1st commercial operation 1/86, 9/86, 1/88 Type - PWRs Capacity - 1221, 1221, 1221 MWe	1987	1,638.1	66.1	1,792	669	101	568	437	232	0.37	0.4	
	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	
	1990	2,500.9	67.5	2,236	499	68	431	373	126	0.22	0.2	
	1991	3,043.9	78.9	2,242	605	79	526	422	183	0.27	0.2	
	1992	3,102.3	82.0	1,981	541	53	488	373	168	0.27	0.2	
	1993	2,677.1	74.3	2,124	592	51	541	435	157	0.28	0.2	
1994	2,827.6	79.1	2,048	462	40	422	310	152	0.23	0.2		
PEACH BOTTOM 2,3 Docket 50-277, 50-278, DPR-44, -56 1st commercial operation 7/74, 12/74 Type - BWR Capacity - 1093, 1035 MWe	1975	1,234.3	80.9	971	228					0.23	0.2	
	1976	1,379.2	73.0	2,136	840	180	660	434	406	0.39	0.6	
	1977	1,052.4	58.7	2,827	2,036	223	1,813	1,374	662	0.72	1.9	
	1978	1,636.3	84.0	2,244	1,317	162	1,155	709	608	0.59	0.8	
	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	
1992	1,516.6	78.7	1,911	502	121	381	256	246	0.26	0.3		
1993	1,654.0	81.9	1,757	552	135	417	292	260	0.31	0.3		
1994	1,927.4	93.8	2,133	579	97	482	374	205	0.27	0.3		

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Opera- tions	Maint & Others	Con- tractor	Station & Utility			
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 - 1166 MWe	1992	856.2	75.5	1,487	571	28	543	440	131	0.38	0.7	
	1993	479.2	48.2	1,235	278	30	248	106	172	0.23	0.6	
	1994	550.8	50.2	2,098	691	71	620	529	162	0.33	1.3	
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	
	1992	561.0	85.4	1,332	281	50	231	122	159	0.21	0.5	
	1993	513.7	80.9	1,328	435	54	381	283	152	0.33	0.8	
	1994	453.6	71.4	758	200	41	159	79	121	0.26	0.4	
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	

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

Person-cSv (-rems)

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Collective Dose	Per Work Function		Per Personnel Type		Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
						Opera- tions	Maint & Others	Con- tractor	Station & Utility		
POINT BEACH 1.2 (continued)	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
	1992	866.7	85.8	617	256	39	217	118	138	0.41	0.3
	1993	911.0	90.0	559	186	26	160	63	123	0.33	0.2
	1994	914.5	91.2	548	170	34	136	75	95	0.31	0.2
PRAIRIE ISLAND 1.2 Docket 50-282, 50-306, DPR-42, -60 1st commercial operation 12/73, 12/74 Type - PWRs Capacity - 513, 512 MWe	1974	181.9	43.9	150	18			5	13	0.12	0.1
	1975	836.0	83.3	477	123					0.26	0.1
	1976	725.2	76.6	818	447	68	379	235	212	0.55	0.6
	1977	922.9	87.2	718	300	73	227	60	240	0.42	0.3
	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	162	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	
1992	811.6	76.2	845	211	12	199	72	139	0.25	0.3	
1993	978.3	90.7	532	106	5	101	32	74	0.20	0.1	
1994	996.9	91.5	478	109	17	92	41	68	0.23	0.1	

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)					Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type			
						Opera- tions	Maint & Others	Con- tractor	Station & Utility		
QUAD CITIES 1,2 Docket 50-254, 50-265, DPR-29, -30 1st commercial operation 2/73, 3/73 Type - BWRs Capacity - 769, 769 MWe	1974	958.1	72.3	678	482			36	446	0.71	0.5
	1975	833.6	68.4	1,083	1,618	114	1,504	692	926	1.49	1.9
	1976	951.2	73.1	1,225	1,651	269	1,382	648	1,003	1.35	1.7
	1977	970.1	84.0	907	1,031	108	923	373	658	1.14	1.1
	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
	1992	960.8	68.0	2,413	1,157	168	989	754	403	0.48	1.2
	1993	974.9	67.0	2,150	849	131	718	491	358	0.39	0.9
	1994	681.5	48.7	2,163	1,128	144	984	789	339	0.52	1.7
RANCHO SECO ⁹ Docket 50-312, DPR-54 1st commercial operation 4/75 Type - PWR Capacity - 873 MWe	1976	268.1	30.4	297	58	6	52	17	41	0.20	0.2
	1977	706.4	77.1	515	391	61	329	248	142	0.76	0.6
	1978	607.7	80.5	508	323	76	247	176	147	0.64	0.5
	1979	687.0	91.1	287	126	27	99	54	62	0.44	0.2
	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

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⁹ Rancho Seco has been permanently shutdown.

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Opera- tions	Maint & Others	Con- tractor	Station & Utility			
RANCHO SECO (continued)	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	---	
	1992	0.0	0.0	70	7	4	3	0	7	0.10	---	
	1993	0.0	0.0	35	4	3	1	0	4	0.11	---	
	1994	0.0	0.0	18	1	1	0	0	1	0.06	---	
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	
	1992	336.1	39.7	2,022	710	77	633	580	130	0.35	2.1	
	1993	640.0	71.6	847	180	41	139	56	124	0.21	0.3	
	1994	595.7	64.9	2,209	519	73	446	369	150	0.24	0.9	
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 - 663 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	
	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	
	1992	487.2	66.8	1,267	352	51	301	260	92	0.28	0.7	
	1993	502.7	70.7	1,221	337	13	324	246	91	0.28	0.7	
	1994	560.3	79.5	420	63	9	54	17	46	0.15	0.1	

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)					Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type			
						Opera- tions	Maint & Others	Con- tractor	Station & Utility		
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
	1992	1,200.9	61.1	4,376	431	16	415	340	91	0.10	0.4
	1993	1,366.3	65.4	3,559	406	11	397	318	90	0.11	0.3
	1994	1,367.4	73.8	950	188	2	186	122	66	0.20	0.1
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	68.3	7,514	986	105	881	831	155	0.27	1.5
	1985	1,381.8	132.9	5,742	722	16	173	151	38	0.24	15.5
	1986	1,698.2	61.1	3,594	824	86	738	574	250	0.24	1.1
	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
	1989	1,840.8	64.9	2,237	567	23	544	357	210	0.25	0.3

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Opera- tions	Maint & Others	Con- tractor	Station & Utility			
SAN ONOFRE 1,2,3 (continued)	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	
	1992	2,228.6	87.1	1,651	324	5	319	229	95	0.20	0.1	
	1993	1,771.3	79.9	2,193	767	89	678	598	169	0.35	0.4	
	1994	2,220.7	100.0	528	32	7	25	10	22	0.06	0.0	
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	
	1992	932.4	81.3	806	147	0	147	128	19	0.18	0.2	
	1993	1,071.5	93.6	110	6	0	6	0	6	0.05	0.0	
	1994	736.4	63.5	852	113	28	85	87	26	0.13	0.2	
SEQUOYAH 1,2 Docket 50-327, -328, DPR-77, -79 1st commercial operation 7/81, 6/82 Type - PWR Capacity - 1111, 1106 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	
	1992	1,849.0	85.4	1,714	465	32	433	343	122	0.27	0.3	
	1993	405.7	21.8	1,629	372	29	343	272	100	0.23	0.9	
	1994	1,418.7	66.3	1,657	292	18	274	210	82	0.18	0.2	
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	
	1992	2,096.0	83.8	923	147	9	138	91	56	0.16	0.1	
	1993	163.1	8.3	1,138	251	12	239	197	54	0.22	1.5	
1994	1,700.2	70.6	661	47	11	36	26	21	0.07	0.0		

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Operations	Maint & Others	Con- tractor	Station & Utility			
ST. LUCIE 1,2	1977	649.1	84.7	445	152	26	126	92	60	0.34	0.2	
Docket 50-335, -389, DPR-67, NPF-16	1978	606.4	76.5	797	337	15	322	140	197	0.42	0.6	
1st commercial operation 12/76, 8/83	1979	592.0	74.0	907	438	25	413	209	229	0.48	0.7	
Type - PWRs	1980	627.9	77.5	1,074	532	82	450	195	337	0.50	0.8	
Capacity - 839, 839 MWe	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	
	1992	1,511.9	87.3	1,251	264	29	235	153	111	0.21	0.2	
	1993	1,227.6	77.7	1,462	492	36	456	304	188	0.34	0.4	
	1994	1,424.8	85.0	1,896	505	24	481	302	203	0.27	0.4	
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	
	1992	892.6	97.4	249	27	6	21	12	15	0.11	0.0	
	1993	728.3	84.0	1,121	297	11	286	253	44	0.26	0.4	
	1994	536.7	69.5	1,549	374	27	347	334	40	0.24	0.7	
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	

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Operations	Maint & Others	Con- tractor	Station & Utility			
SURRY 1,2 (continued)	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	
	1992	1,396.3	88.9	1,660	539	108	431	383	156	0.32	0.4	
	1993	1,283.1	84.6	1,402	383	72	311	241	142	0.27	0.3	
	1994	1,320.9	85.2	1,530	378	66	312	254	124	0.25	0.3	
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 - 1040, 1094 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	
	1992	1,604.2	79.7	1,885	724	29	695	356	368	0.38	0.5	
	1993	1,602.1	77.3	1,488	335	19	316	172	163	0.23	0.2	
	1994	1,814.4	85.4	1,580	442	20	422	246	196	0.28	0.2	
THREE MILE ISLAND 1,2	1975	675.9	82.2	131	73			18	55	0.56	0.1	
Docket 50-289, -320, DPR-50, -73	1976	530.0	65.4	819	286	23	263	69	217	0.35	0.5	
1st commercial operation 9/74, 12/78	1977	664.5	80.9	1,122	360	15	344	128	231	0.32	0.5	
Type - PWRs	1978	690.0	85.1	1,929	504	32	472	235	269	0.26	0.7	
Capacity - 786, 880 MWe	1979	266.0	21.9	3,975	1,392	197	1,195	907	485	0.35	5.2	
	1980	0.0	0.0	2,328	394	29	365	239	155	0.17	---	
	1981	0.0	0.0	2,103	376	50	326	190	186	0.18	---	
	1982	0.0	0.0	2,123	1,004	62	942	433	571	0.47	---	
	1983	0.0	0.0	1,592	1,159	85	1,074	633	526	0.73	---	
	1984	0.0	0.0	1,079	688	50	638	330	358	0.64	---	
	1985	103.6	10.6	1,890	857	230	627	266	591	0.45	8.3	

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type		Station & Utility		
						Operations	Maint & Others	Con- tractor				
THREE MILE ISLAND 1 ¹⁰	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 - 786 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	
	1992	836.8	100.0	558	34	15	19	5	29	0.06	0.0	
	1993	722.0	88.5	1,835	206	53	153	110	96	0.11	0.3	
	1994	798.7	95.5	434	40	19	21	1	39	0.09	0.1	
THREE MILE ISLAND 2 ¹¹	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	---	
	1992	0.0	0.0	315	157	7	150	99	58	0.50	---	
	1993	0.0	0.0	167	33	1	32	19	14	0.20	---	
	1994	0.0	0.0	259	7	0	7	2	5	0.03	---	
TROJAN ¹²	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	
	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	

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

¹¹ 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.

¹² Trojan ended commercial operation as of 1/93, and will not be put in commercial operation again. It is no longer included in the count of commercial reactors.

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Collective Dose	Opera- tions	Maint & Others	Per Personnel Type		Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr	
								Con- tractor	Station & Utility			
TROJAN (continued)	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	181.5	16.1	1,496	567	17	550	475	92	0.38	3.1	
	1992	553.9	68.4	567	84	8	76	52	32	0.15	0.2	
	1993	0.0	68.4	54	21	3	18	12	9	0.39	...	
	1994	0.0	0.0	51	9	2	7	6	3	0.18	...	
	TURKEY POINT 3.4 Docket 50-250, 50-251, DPR 31, -41 1st commercial operation 12/72, 9/73 Type - PWRs Capacity - 666, 666 MWe	1973	401.9		444	78	88	366	202	252	0.18	0.2
		1974	953.6		794	454	270	606	559	317	0.57	0.5
		1975	1,003.7	74.9	1,176	876	89	1,095	868	316	0.74	0.9
		1976	974.2	71.2	1,647	1,184	89	942	522	514	0.72	1.2
1977		979.5	72.1	1,319	1,036	90	942	546	486	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	583	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	
1992	968.9	75.5	1,374	325	32	293	173	152	0.24	0.3		
1993	1,244.8	91.0	1,271	275	6	269	164	111	0.22	0.2		
1994	1,172.9	87.2	1,489	476	0	476	231	245	0.32	0.4		
VERMONT YANKEE Docket 50-271, DPR-28 1st commercial operation 11/72 Type - BWR Capacity - 504 MWe	1973	222.1		244	85	24	192	103	113	0.35	0.4	
	1974	303.5		357	216	24	192	103	113	0.61	0.7	
	1975	429.0	87.8	282	153	70	83	63	90	0.54	0.4	
	1976	389.6	77.1	815	411	36	375	246	165	0.50	1.1	
	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	0.40	0.9	

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Opera- tions	Maint & Others	Con- tractor	Station & Utility			
VERMONT YANKEE (continued)	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	409	323	0.58	1.7	
	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	
	1992	446 8	88 1	921	381	58	323	319	62	0.41	0.9	
	1993	402 3	80 1	833	217	41	176	166	51	0.26	0.5	
1994	515 8	98 7	220	38	24	14	18	20	0.17	0.1		
VOGTLE 1,2 Docket 50-424, 50-425; NPF-68, -81 1st commercial operation 6/87, 5/89 Type - PWRs Capacity - 1169, 1169 MWe	1988	820 4	77 7	1,108	138	13	125	107	31	0.12	0.2	
1989	1,045 8	96 0	427	32	7	25	14	18	0.07	0.0		
1990	1,710 9	82 7	1,602	466	89	377	323	143	0.29	0.3		
1991	1,966 5	89 2	1,357	362	50	312	296	66	0.27	0.2		
1992	2,047 9	90 0	1,262	426	51	375	310	116	0.34	0.2		
1993	2,060 4	88 3	1,338	367	34	333	251	116	0.27	0.2		
1994	2,170 1	91 3	1048	217	8	209	120	97	0.21	0.1		
WASHINGTON NUCLEAR 2 Docket 50-397; NPF-21 1st commercial operation 12/84 Type - BWR Capacity - 1086 MWe	1985	616 0	87 6	755	119	42	77	42	77	0.16	0.2	
1986	616 0	74 4	1,013	222	56	166	70	152	0.22	0.4		
1987	639 0	70 8	1,201	406	95	311	143	263	0.34	0.6		
1988	707 7	71 8	1,050	353	81	272	93	260	0.34	0.5		
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		
1992	682 3	65 6	1,489	612	11	601	307	305	0.41	0.9		
1993	849 6	79 5	1,385	469	1	468	207	262	0.34	0.6		
1994	803 8	75 2	1,870	866	108	758	468	398	0.46	1.1		

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Operations	Maint & Others	Con- tractor	Station & Utility			
WATERFORD 3 Docket 50-382, NPF-38 1st commercial operation 9/85 Type - PWR Capacity - 1075 MWe	1986	875.7	79.1	1,244	223	62	161	178	45	0.18	0.3	
	1987	891.8	82.5	959	156	33	123	106	50	0.16	0.2	
	1988	784.3	75.4	1,246	259	79	180	207	52	0.21	0.3	
	1989	909.8	82.6	1,306	265	70	195	231	34	0.20	0.3	
	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	
	1992	909.6	83.2	1,213	226	52	174	177	49	0.19	0.2	
	1993	1,088.3	99.4	195	15	3	12	5	10	0.08	0.0	
1994	949.1	87.0	1,167	191	47	144	143	48	0.16	0.2		
C-36 WOLF CREEK 1 Docket 50-482, NPF-42 1st commercial operation 9/85 Type - PWR Capacity - 1160 MWe	1986	832.8	73.3	682	143	27	116	78	65	0.21	0.2	
	1987	778.8	71.1	675	138	26	112	82	56	0.20	0.2	
	1988	794.7	70.7	1,010	297	62	235	177	120	0.29	0.4	
	1989	1,108.4	99.5	186	18	4	14	8	10	0.10	0.0	
	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	
	1992	1,010.8	86.7	446	78	17	61	42	36	0.17	0.1	
	1993	940.5	80.6	975	183	31	152	117	66	0.19	0.2	
1994	1,017.2	86.8	1,082	235	36	199	170	65	0.22	0.2		
YANKEE ROWE ¹³ Docket 50-29, DPR-3 1st commercial operation 7/61 Type - PWR Capacity - 167 MWe	1969	138.3		193	215	83	132	78	133	1.11	1.6	
	1970	146.1		355	255	90	165	158	97	0.72	1.7	
	1971	173.5		155	90	46	44	19	71	0.58	0.5	
	1972	78.7		282	255	63	192	146	109	0.90	3.2	
	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		

¹³ Yankee Rowe ended commercial operation as of 10/91, and will not be put in commercial operation again. It is no longer included in the count of commercial reactors.

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

Reporting Organization	Year	Megawatt Years MW-YR	Unit Availability Factor	Total Personnel With Measurable Doses	Person-cSv (-rems)						Average Measurable Dose (cSv or rems)	Person cSv (-rems) MW-yr
					Collective Dose	Per Work Function		Per Personnel Type				
						Operations	Maint & Others	Con- tractor	Station & Utility			
YANKEE ROWE (continued)	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	
	1992	0.0	0.0	324	94	10	84	59	35	0.29	---	
	1993	0.0	0.0	313	163	8	155	153	10	0.52	---	
	1994	0.0	0.0	222	156	4	152	137	19	0.70	---	
C-37 ZION 1,2 Docket 50-295, 50-304; DPR-39, -48 1st commercial operation 12/73, 9/74 Type - PWRs Capacity - 1040, 1040 MWe	1974	425.3	71.1	306	56			13	43	0.18	0.1	
	1975	1,181.5	74.9	436	127	17	110	49	78	0.29	0.1	
	1976	1,134.9	61.9	774	571	64	507	257	314	0.74	0.5	
	1977	1,358.6	75.0	784	1,003	43	960	561	442	1.28	0.7	
	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	
	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		
1992	1,128.8	59.0	1,732	1,043	19	1,024	783	260	0.60	0.9		
1993	1,458.2	70.9	1,772	643	15	628	461	182	0.36	0.4		
1994	1,224.9	59.9	1,176	306	14	292	176	130	0.26	0.2		

APPENDIX D

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

1994

NOTE: Appendix D contains data on operating plants as well as plants which are no longer in commercial operation.

APPENDIX D

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

1994

PLANT: *ARKANSAS 1,2

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	37	0	130	167	7.316	0.000	22.954	30.270
OPERATIONS PERSONNEL	16	0	0	16	2.747	0.000	0.000	2.747
HEALTH PHYSICS PERSONNEL	37	2	50	89	10.188	0.320	9.746	20.254
SUPERVISORY PERSONNEL	1	0	1	2	0.130	0.000	0.165	0.295
ENGINEERING PERSONNEL	3	0	7	10	0.329	0.000	0.987	1.316
TOTAL	94	2	188	284	20.710	0.320	33.852	54.882
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	2	0	0	2	0.215	0.000	0.000	0.215
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	2	0	0	2	0.215	0.000	0.000	0.215
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	14	0	57	71	4.509	0.000	21.197	25.706
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	4	0	11	15	0.650	0.000	1.925	2.575
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	16	16	0.000	0.000	6.620	6.620
TOTAL	18	0	84	102	5.159	0.000	29.742	34.901
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	19	0	18	37	3.211	0.000	2.758	5.969
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	7	0	13	20	1.206	0.000	2.936	4.142
SUPERVISORY PERSONNEL	0	0	1	1	0.000	0.000	0.150	0.150
ENGINEERING PERSONNEL	0	1	0	1	0.000	0.125	0.000	0.125
TOTAL	26	1	32	59	4.417	0.125	5.844	10.386
<u>WASTE PROCESSING</u>								
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	4	0	2	6	0.690	0.000	0.667	1.357
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	4	0	2	6	0.690	0.000	0.667	1.357
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	1	0	43	44	0.137	0.000	12.055	12.192
OPERATIONS PERSONNEL	4	0	0	4	0.709	0.000	0.000	0.709
HEALTH PHYSICS PERSONNEL	5	0	2	7	1.044	0.000	0.272	1.316
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	8	8	0.000	0.000	1.302	1.302
TOTAL	10	0	53	63	1.890	0.000	13.629	15.519
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	73	0	248	321	15.368	0.000	58.964	74.352
OPERATIONS PERSONNEL	20	0	0	20	3.456	0.000	0.000	3.456
HEALTH PHYSICS PERSONNEL	57	2	78	137	13.778	0.320	15.546	29.644
SUPERVISORY PERSONNEL	1	0	2	3	0.130	0.000	0.315	0.445
ENGINEERING PERSONNEL	3	1	31	35	0.329	0.125	8.909	9.363
GRAND TOTALS	154	3	359	516	33.081	0.445	83.734	117.260

*Workers may be counted in more than one category

APPENDIX D (Continued)

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

1994

PLANT: ***BEAVER VALLEY 1,2**

TYPE: **PWR**

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			TOTAL				
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT					
REACTOR OPS & SURV												
MAINTENANCE PERSONNEL	3	0	1	4	0.400	0.000	0.090	0.490				
OPERATIONS PERSONNEL	11	0	0	11	1.660	0.000	0.000	1.660				
HEALTH PHYSICS PERSONNEL	20	0	0	20	4.755	0.000	0.000	4.755				
SUPERVISORY PERSONNEL	4	0	2	6	0.625	0.000	0.360	0.985				
ENGINEERING PERSONNEL	1	0	0	1	0.085	0.000	0.000	0.085				
TOTAL	39	0	3	42	7.525	0.000	0.450	7.975				
ROUTINE MAINTENANCE												
MAINTENANCE PERSONNEL	70	0	12	82	15.880	0.000	2.390	18.270				
OPERATIONS PERSONNEL	1	0	0	1	0.060	0.000	0.000	0.060				
HEALTH PHYSICS PERSONNEL	17	0	0	17	4.085	0.000	0.000	4.085				
SUPERVISORY PERSONNEL	6	0	0	6	0.960	0.000	0.000	0.960				
ENGINEERING PERSONNEL	0	0	1	1	0.020	0.000	0.110	0.130				
TOTAL	94	0	13	107	21.005	0.000	2.500	23.505				
IN-SERVICE INSPECTION												
MAINTENANCE PERSONNEL	0	0	0	0	0.045	0.000	0.000	0.045				
OPERATIONS PERSONNEL	0	0	0	0	0.030	0.000	0.000	0.030				
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.150	0.000	0.000	0.150				
SUPERVISORY PERSONNEL	2	0	0	2	0.350	0.000	0.000	0.350				
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
TOTAL	3	0	0	3	0.575	0.000	0.000	0.575				
SPECIAL MAINTENANCE												
MAINTENANCE PERSONNEL	1	0	9	10	0.070	0.000	1.865	1.935				
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	2	0	0	2	0.575	0.000	0.000	0.575				
SUPERVISORY PERSONNEL	0	0	0	0	0.010	0.000	0.000	0.010				
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
TOTAL	3	0	9	12	0.655	0.000	1.865	2.520				
WASTE PROCESSING												
MAINTENANCE PERSONNEL	1	0	0	1	0.100	0.000	0.000	0.100				
OPERATIONS PERSONNEL	5	0	0	5	1.315	0.000	0.000	1.315				
HEALTH PHYSICS PERSONNEL	4	0	0	4	1.085	0.000	0.000	1.085				
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	0	10	2.500	0.000	0.000	2.500				
REFUELING												
MAINTENANCE PERSONNEL	0	0	0	0	0.030	0.000	0.000	0.030				
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.005	0.000	0.000	0.005				
SUPERVISORY PERSONNEL	0	0	0	0	0.005	0.000	0.000	0.005				
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
TOTAL	0	0	0	0	0.040	0.000	0.000	0.040				
TOTAL BY JOB FUNCTION												
MAINTENANCE PERSONNEL	75	(75)	0	(0)	22	(21)	97	(96)	16.525	0.000	4.345	20.870
OPERATIONS PERSONNEL	17	(17)	0	(0)	0	(0)	17	(17)	3.065	0.000	0.000	3.065
HEALTH PHYSICS PERSONNEL	44	(44)	0	(0)	0	(0)	44	(44)	10.655	0.000	0.000	10.655
SUPERVISORY PERSONNEL	12	(12)	0	(0)	2	(2)	14	(14)	1.950	0.000	0.360	2.310
ENGINEERING PERSONNEL	1	(1)	0	(0)	1	(1)	2	(2)	0.105	0.000	0.110	0.215
GRAND TOTALS	149	(149)	0	(0)	25	(24)	174	(173)	32.300	0.000	4.815	37.115

*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

1994

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				
<u>REACTOR OPS & SURV</u>												
MAINTENANCE PERSONNEL	0	0	0	0	0.125	0.010	0.005	0.140				
OPERATIONS PERSONNEL	25	0	0	25	14.935	0.000	0.000	14.935				
HEALTH PHYSICS PERSONNEL	11	0	4	15	3.525	0.000	1.520	5.045				
SUPERVISORY PERSONNEL	8	0	0	8	3.170	0.085	0.075	3.310				
ENGINEERING PERSONNEL	0	0	0	0	0.535	0.000	0.000	0.535				
TOTAL	44	0	4	48	22.290	0.075	1.600	23.965				
<u>ROUTINE MAINTENANCE</u>												
MAINTENANCE PERSONNEL	20	16	9	45	12.505	7.830	2.150	22.485				
OPERATIONS PERSONNEL	0	0	0	0	0.335	0.000	0.000	0.335				
HEALTH PHYSICS PERSONNEL	8	0	10	18	2.270	0.000	2.410	4.680				
SUPERVISORY PERSONNEL	1	0	1	2	0.270	0.000	0.145	0.415				
ENGINEERING PERSONNEL	5	0	1	6	1.095	0.000	0.920	2.015				
TOTAL	34	16	21	71	16.475	7.830	5.625	29.930				
<u>IN-SERVICE INSPECTION</u>												
MAINTENANCE PERSONNEL	0	11	7	18	0.110	6.630	3.745	10.485				
OPERATIONS PERSONNEL	0	0	0	0	0.050	0.000	0.000	0.050				
HEALTH PHYSICS PERSONNEL	0	0	8	8	0.030	0.000	1.355	1.385				
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.010	0.000	0.010				
ENGINEERING PERSONNEL	1	0	0	1	0.015	0.000	0.000	0.015				
TOTAL	1	11	15	27	0.205	6.640	5.100	11.945				
<u>SPECIAL MAINTENANCE</u>												
MAINTENANCE PERSONNEL	14	9	13	36	6.565	3.965	6.790	17.320				
OPERATIONS PERSONNEL	0	0	0	0	0.460	0.000	0.000	0.460				
HEALTH PHYSICS PERSONNEL	7	0	3	10	2.450	0.000	1.375	3.825				
SUPERVISORY PERSONNEL	0	0	0	0	0.235	0.035	0.035	0.305				
ENGINEERING PERSONNEL	5	0	0	5	1.510	0.000	0.010	1.520				
TOTAL	26	9	16	51	11.220	4.000	8.210	23.430				
<u>WASTE PROCESSING</u>												
MAINTENANCE PERSONNEL	0	0	0	0	0.200	0.015	0.005	0.220				
OPERATIONS PERSONNEL	4	0	0	4	1.360	0.000	0.000	1.360				
HEALTH PHYSICS PERSONNEL	10	0	3	13	4.365	0.000	0.950	5.315				
SUPERVISORY PERSONNEL	1	0	0	1	0.345	0.000	0.000	0.345				
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
TOTAL	15	0	3	18	6.270	0.015	0.955	7.240				
<u>REFUELING</u>												
MAINTENANCE PERSONNEL	9	12	3	24	2.470	5.580	0.530	8.580				
OPERATIONS PERSONNEL	25	0	0	25	4.845	0.000	0.000	4.845				
HEALTH PHYSICS PERSONNEL	2	0	4	6	0.655	0.000	1.140	1.795				
SUPERVISORY PERSONNEL	6	0	0	6	1.450	0.040	0.020	1.510				
ENGINEERING PERSONNEL	2	0	0	2	0.700	0.000	0.125	0.825				
TOTAL	44	12	7	63	10.120	5.620	1.815	17.555				
<u>TOTAL BY JOB FUNCTION</u>												
MAINTENANCE PERSONNEL	43	(23)	48	(27)	32	(27)	123	(77)	21.975	24.030	13.225	59.230
OPERATIONS PERSONNEL	54	(29)	0	(0)	0	(0)	54	(29)	21.985	0.000	0.000	21.985
HEALTH PHYSICS PERSONNEL	38	(18)	0	(0)	32	(18)	70	(36)	13.295	0.000	8.750	22.045
SUPERVISORY PERSONNEL	16	(15)	0	(1)	1	(2)	17	(18)	5.470	0.150	0.275	5.895
ENGINEERING PERSONNEL	13	(14)	0	(0)	1	(3)	14	(17)	3.855	0.000	1.055	4.910
GRAND TOTALS	164	(99)	46	(28)	66	(50)	278	(177)	66.580	24.180	23.305	114.065

*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

1994

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	3	0	10	13	1.036	0.000	1.750	2.786
OPERATIONS PERSONNEL	35	0	21	56	4.547	0.000	0.163	4.710
HEALTH PHYSICS PERSONNEL	21	21	15	57	4.586	0.136	2.235	6.957
SUPERVISORY PERSONNEL	14	0	9	23	0.636	0.000	1.233	1.869
ENGINEERING PERSONNEL	25	0	0	25	1.416	0.000	0.012	1.428
TOTAL	98	21	55	174	12.221	0.136	5.383	17.750
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	136	7	778	921	42.693	0.000	130.513	173.206
OPERATIONS PERSONNEL	135	0	0	135	17.647	0.000	0.003	17.650
HEALTH PHYSICS PERSONNEL	39	47	86	172	8.553	0.313	12.787	21.653
SUPERVISORY PERSONNEL	172	0	111	283	7.882	0.000	15.662	23.544
ENGINEERING PERSONNEL	88	0	16	104	4.956	0.000	1.164	6.120
TOTAL	570	54	991	1615	81.731	0.313	160.129	242.173
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	31	31	0.014	0.000	5.222	5.236
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	84	2	86	0.024	0.552	0.235	0.811
SUPERVISORY PERSONNEL	0	0	0	0	0.003	0.000	0.031	0.034
ENGINEERING PERSONNEL	4	0	1	5	0.216	0.000	0.101	0.317
TOTAL	4	84	34	122	0.257	0.552	5.589	6.398
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	9	0	9	18	2.815	0.000	1.429	4.244
OPERATIONS PERSONNEL	1	0	0	1	0.159	0.000	0.000	0.159
HEALTH PHYSICS PERSONNEL	2	4	0	6	0.439	0.027	0.007	0.473
SUPERVISORY PERSONNEL	29	0	0	29	1.341	0.000	0.001	1.342
ENGINEERING PERSONNEL	5	2	6	13	0.249	0.012	0.452	0.713
TOTAL	46	6	15	67	5.003	0.039	1.889	6.931
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	7	7	0.000	0.000	1.206	1.206
OPERATIONS PERSONNEL	3	0	137	140	0.402	0.000	1.080	1.482
HEALTH PHYSICS PERSONNEL	1	0	1	2	0.159	0.000	0.000	0.159
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.079	0.079
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	4	0	145	149	0.561	0.000	2.365	2.926
REFUELING								
MAINTENANCE PERSONNEL	24	0	23	47	7.646	0.000	3.743	11.389
OPERATIONS PERSONNEL	41	0	0	41	5.312	0.000	0.000	5.312
HEALTH PHYSICS PERSONNEL	7	13	2	22	1.471	0.089	0.345	1.905
SUPERVISORY PERSONNEL	80	0	0	80	3.688	0.000	0.034	3.722
ENGINEERING PERSONNEL	6	0	5	11	0.349	0.003	0.360	0.712
TOTAL	158	13	30	201	18.466	0.092	4.482	23.040
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	172	7	858	1037	54.204	0.000	143.863	198.067
OPERATIONS PERSONNEL	215	0	158	373	28.067	0.000	1.246	29.313
HEALTH PHYSICS PERSONNEL	70	169	106	345	15.232	1.117	15.609	31.958
SUPERVISORY PERSONNEL	295	0	120	415	13.550	0.000	17.040	30.590
ENGINEERING PERSONNEL	128	2	28	158	7.186	0.015	2.089	9.290
GRAND TOTALS	880	178	1270	2328	118.239	1.132	179.847	299.218

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	204	29	423	656	10 184	1.876	3.378	15.438	
OPERATIONS PERSONNEL	118	9	9	136	23 881	0.797	0.140	24.818	
HEALTH PHYSICS PERSONNEL	55	6	24	85	7.004	0.217	0.728	7.949	
SUPERVISORY PERSONNEL	45	3	69	117	3.732	0.019	3.810	7.561	
ENGINEERING PERSONNEL	51	8	76	133	2.381	0.038	1.928	4.347	
TOTAL	473	53	601	1127	47.182	2.947	9.984	60.113	
ROUTINE MAINTENANCE									
MAINTENANCE PERSONNEL	220	29	889	1138	21 605	1.472	115.814	138.891	
OPERATIONS PERSONNEL	94	3	13	110	7.220	0.024	0.243	7.487	
HEALTH PHYSICS PERSONNEL	56	4	11	71	4.767	0.037	0.086	4.890	
SUPERVISORY PERSONNEL	36	3	79	118	1.387	0.034	9.128	10.549	
ENGINEERING PERSONNEL	52	13	89	154	2.659	0.066	3.301	6.058	
TOTAL	458	52	1081	1591	37.638	1.665	128.572	167.875	
IN-SERVICE INSPECTION									
MAINTENANCE PERSONNEL	21	0	189	210	9.705	0.000	80.869	90.574	
OPERATIONS PERSONNEL	0	0	6	6	0.000	0.000	5.830	5.830	
HEALTH PHYSICS PERSONNEL	3	0	1	4	0.015	0.000	0.065	0.080	
SUPERVISORY PERSONNEL	2	1	8	11	0.382	0.302	4.130	4.814	
ENGINEERING PERSONNEL	8	9	69	86	4.688	8.181	76.117	88.986	
TOTAL	34	10	273	317	14.790	8.463	167.011	190.264	
SPECIAL MAINTENANCE									
MAINTENANCE PERSONNEL	138	9	931	1078	10.576	0.042	202.641	213.259	
OPERATIONS PERSONNEL	37	8	5	50	0.532	0.076	0.067	0.675	
HEALTH PHYSICS PERSONNEL	51	1	4	56	1.347	0.003	0.029	1.379	
SUPERVISORY PERSONNEL	13	0	75	88	0.073	0.000	8.443	8.516	
ENGINEERING PERSONNEL	20	6	88	114	0.611	0.015	8.080	8.706	
TOTAL	259	24	1103	1386	13.139	0.136	219.260	232.536	
WASTE PROCESSING									
MAINTENANCE PERSONNEL	20	3	29	52	0.300	0.020	0.450	0.770	
OPERATIONS PERSONNEL	17	0	1	18	0.452	0.000	0.180	0.632	
HEALTH PHYSICS PERSONNEL	8	0	0	8	0.062	0.000	0.000	0.062	
SUPERVISORY PERSONNEL	6	0	0	6	0.067	0.000	0.000	0.067	
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000	
TOTAL	51	3	30	84	0.881	0.020	0.630	1.531	
REFUELING									
MAINTENANCE PERSONNEL	216	30	582	828	59.037	8.819	165.915	233.771	
OPERATIONS PERSONNEL	83	6	12	101	9.383	0.456	3.104	12.943	
HEALTH PHYSICS PERSONNEL	47	5	24	76	9.178	0.683	11.189	21.050	
SUPERVISORY PERSONNEL	37	3	29	69	5.896	0.195	2.393	8.484	
ENGINEERING PERSONNEL	44	10	90	144	5.370	1.009	6.792	13.171	
TOTAL	427	54	737	1218	88.864	11.162	189.393	289.419	
TOTAL BY JOB FUNCTION									
MAINTENANCE PERSONNEL	819	(819)	100 (100)	3043 (3043)	3962 (3962)	111.407	12.229	569.067	692.703
OPERATIONS PERSONNEL	349	(349)	26 (24)	46 (46)	421 (419)	41.468	1.353	9.564	52.385
HEALTH PHYSICS PERSONNEL	220	(220)	16 (16)	64 (64)	300 (300)	22.373	0.940	12.097	35.410
SUPERVISORY PERSONNEL	139	(139)	10 (10)	280 (280)	409 (409)	11.537	0.550	27.904	39.991
ENGINEERING PERSONNEL	175	(175)	44 (44)	412 (412)	631 (631)	15.709	9.321	96.218	121.248
GRAND TOTALS	1702	(1702)	196 (194)	3825 (3825)	5723 (5721)	202.494	24.393	714.850	941.737

*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

1994

PLANT: *BRUNSWICK 1,2

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			TOTAL
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	4	0	0	4	2.235	0.256	0.451	2.942
OPERATIONS PERSONNEL	87	0	49	136	38.148	0.002	12.919	51.069
HEALTH PHYSICS PERSONNEL	63	0	54	117	30.636	0.036	26.647	57.319
SUPERVISORY PERSONNEL	19	0	0	19	7.168	0.178	0.050	7.396
ENGINEERING PERSONNEL	3	0	1	4	2.358	0.159	1.418	3.935
TOTAL	176	0	104	280	80.545	0.631	41.485	122.661
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	187	45	512	744	102.099	17.904	282.050	402.053
OPERATIONS PERSONNEL	1	0	6	7	0.871	0.000	3.367	4.238
HEALTH PHYSICS PERSONNEL	18	2	21	41	7.172	0.465	9.889	17.526
SUPERVISORY PERSONNEL	17	2	6	25	4.966	0.666	3.188	8.820
ENGINEERING PERSONNEL	40	6	70	116	14.105	2.153	35.390	51.648
TOTAL	263	55	615	933	129.213	21.188	333.884	484.285
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	11	11	28	50	3.208	6.134	13.160	22.502
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.001	0.001
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.010	0.000	0.053	0.063
ENGINEERING PERSONNEL	11	0	48	59	3.697	0.000	36.496	40.193
TOTAL	22	11	76	109	6.915	6.134	49.710	62.759
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	4	0	376	380	2.534	0.072	185.086	187.692
OPERATIONS PERSONNEL	4	0	3	7	0.739	0.000	0.833	1.572
HEALTH PHYSICS PERSONNEL	9	0	28	37	4.098	0.016	11.983	16.102
SUPERVISORY PERSONNEL	8	0	10	18	2.595	0.012	3.567	6.174
ENGINEERING PERSONNEL	7	0	84	91	3.443	0.286	29.951	33.680
TOTAL	32	0	501	533	13.409	0.366	231.425	245.200
WASTE PROCESSING								
MAINTENANCE PERSONNEL	15	0	30	45	5.969	0.622	12.429	19.020
OPERATIONS PERSONNEL	0	0	0	0	0.006	0.000	0.017	0.023
HEALTH PHYSICS PERSONNEL	11	0	3	14	5.362	0.000	0.788	6.150
SUPERVISORY PERSONNEL	1	0	2	3	0.381	0.000	0.859	1.240
ENGINEERING PERSONNEL	2	0	14	16	0.840	0.043	10.172	11.055
TOTAL	29	0	49	78	12.558	0.665	24.265	37.488
REFUELING								
MAINTENANCE PERSONNEL	10	0	25	35	3.036	0.150	10.513	13.699
OPERATIONS PERSONNEL	2	0	0	2	0.410	0.000	0.075	0.485
HEALTH PHYSICS PERSONNEL	0	0	8	8	0.140	0.000	2.366	2.506
SUPERVISORY PERSONNEL	1	0	0	1	0.553	0.000	0.073	0.626
ENGINEERING PERSONNEL	6	0	50	56	2.496	0.099	27.124	29.719
TOTAL	19	0	83	102	6.635	0.249	40.151	47.035
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	221	56	971	1258	119.081	25.138	503.689	647.908
OPERATIONS PERSONNEL	94	0	58	152	40.174	0.002	17.212	57.388
HEALTH PHYSICS PERSONNEL	101	2	114	217	47.408	0.517	51.878	99.803
SUPERVISORY PERSONNEL	41	2	18	66	15.673	0.856	7.790	24.319
ENGINEERING PERSONNEL	69	6	267	342	26.939	2.720	140.551	170.210
GRAND TOTALS	541	66	1428	2035	249.275	29.233	720.920	999.428

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	14	0	2	16	5.074	0.000	0.373	5.447
OPERATIONS PERSONNEL	42	14	15	71	4.243	0.098	0.159	4.500
HEALTH PHYSICS PERSONNEL	29	13	0	42	5.729	0.094	0.000	5.823
SUPERVISORY PERSONNEL	16	0	3	19	0.629	0.000	0.320	0.949
ENGINEERING PERSONNEL	6	1	0	7	0.338	0.026	0.000	0.364
TOTAL	107	28	20	155	16.013	0.218	0.852	17.083
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	137	0	549	686	47.341	0.000	103.065	150.406
OPERATIONS PERSONNEL	155	92	35	282	15.855	0.833	0.365	16.853
HEALTH PHYSICS PERSONNEL	44	80	54	178	8.857	0.586	10.976	20.419
SUPERVISORY PERSONNEL	231	18	190	439	9.257	0.000	20.846	30.103
ENGINEERING PERSONNEL	107	12	16	135	5.974	0.319	0.139	6.432
TOTAL	674	202	844	1720	87.284	1.538	135.391	224.213
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	80	80	0.000	0.000	14.919	14.919
OPERATIONS PERSONNEL	0	3	0	3	0.000	0.016	0.000	0.016
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.011	0.000	0.000	0.011
SUPERVISORY PERSONNEL	0	0	0	0	0.001	0.000	0.028	0.029
ENGINEERING PERSONNEL	3	2	10	15	0.184	0.065	0.089	0.338
TOTAL	3	5	90	98	0.196	0.081	15.036	15.313
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	1	0	21	22	0.397	0.000	4.006	4.405
OPERATIONS PERSONNEL	0	29	0	29	0.002	0.201	0.000	0.203
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.053	0.000	0.064	0.117
SUPERVISORY PERSONNEL	1	0	1	2	0.045	0.000	0.001	0.046
ENGINEERING PERSONNEL	2	0	0	2	0.053	0.001	0.000	0.054
TOTAL	4	29	22	55	0.550	0.202	4.073	4.825
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.020	0.000	0.000	0.020
OPERATIONS PERSONNEL	3	0	148	151	0.296	0.000	1.548	1.843
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.168	0.000	0.000	0.168
SUPERVISORY PERSONNEL	0	0	0	0	0.024	0.000	0.000	0.024
ENGINEERING PERSONNEL	0	0	0	0	0.001	0.000	0.000	0.001
TOTAL	4	0	148	152	0.508	0.000	1.548	2.056
REFUELING								
MAINTENANCE PERSONNEL	15	0	42	57	5.047	0.000	7.803	12.850
OPERATIONS PERSONNEL	21	4	0	25	2.167	0.030	0.000	2.197
HEALTH PHYSICS PERSONNEL	0	1	0	1	0.019	0.007	0.000	0.026
SUPERVISORY PERSONNEL	25	0	0	25	1.002	0.000	0.046	1.048
ENGINEERING PERSONNEL	6	2	0	8	0.341	0.035	0.000	0.376
TOTAL	67	7	42	116	8.576	0.072	7.849	16.497
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	167	0	694	861	57.879	0.000	130.168	188.047
OPERATIONS PERSONNEL	221	142	198	561	22.562	0.978	2.072	25.612
HEALTH PHYSICS PERSONNEL	74	94	54	222	14.837	0.687	11.040	26.564
SUPERVISORY PERSONNEL	273	18	194	485	10.958	0.000	21.241	32.199
ENGINEERING PERSONNEL	124	17	26	167	6.891	0.446	0.228	7.565
GRAND TOTALS	859	271	1166	2296	113.127	2.111	164.749	279.987

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *CALLAWAY 1

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.315	0.000	0.127	0.442
OPERATIONS PERSONNEL	2	0	0	2	0.724	0.000	0.000	0.724
HEALTH PHYSICS PERSONNEL	22	0	0	22	5.109	0.000	0.000	5.109
SUPERVISORY PERSONNEL	0	0	0	0	0.012	0.000	0.019	0.031
ENGINEERING PERSONNEL	0	0	0	0	0.056	0.000	0.000	0.056
TOTAL	24	0	0	24	6.216	0.000	0.146	6.362
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	1	0	0	1	2.026	0.000	0.016	2.042
OPERATIONS PERSONNEL	0	0	0	0	0.074	0.000	0.000	0.074
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.619	0.000	0.000	0.619
SUPERVISORY PERSONNEL	0	0	0	0	0.036	0.000	0.011	0.047
ENGINEERING PERSONNEL	0	0	0	0	0.211	0.000	0.063	0.304
TOTAL	1	0	0	1	2.966	0.000	0.120	3.086
<u>IN-SERVICE INSPECTION</u>								
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	0.027	0.000	0.000	0.027
ENGINEERING PERSONNEL	0	0	0	0	0.255	0.000	0.041	0.296
TOTAL	0	0	0	0	0.282	0.000	0.041	0.323
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.030	0.000	0.000	0.030
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.038	0.000	0.000	0.038
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.056	0.000	0.000	0.056
TOTAL	0	0	0	0	0.124	0.000	0.000	0.124
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.008	0.000	0.000	0.008
OPERATIONS PERSONNEL	1	0	0	1	0.238	0.000	0.000	0.238
HEALTH PHYSICS PERSONNEL	14	0	0	14	4.281	0.000	0.000	4.281
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	15	0	0	15	4.527	0.000	0.000	4.527
<u>REFUELING</u>								
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
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	1	0	0	1	2.379	0.000	0.143	2.522
OPERATIONS PERSONNEL	3	0	0	3	1.036	0.000	0.000	1.036
HEALTH PHYSICS PERSONNEL	36	0	0	36	10.047	0.000	0.000	10.047
SUPERVISORY PERSONNEL	0	0	0	0	0.075	0.000	0.030	0.105
ENGINEERING PERSONNEL	0	0	0	0	0.578	0.000	0.134	0.712
GRAND TOTALS	40	0	0	40	14.115	0.000	0.307	14.422

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *CALVERT CLIFFS 1,2

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			TOTAL				
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT					
REACTOR OPS & SURV												
MAINTENANCE PERSONNEL	16	0	3	19	2.891	0.000	0.811	3.702				
OPERATIONS PERSONNEL	58	0	1	59	12.747	0.000	0.121	12.868				
HEALTH PHYSICS PERSONNEL	17	0	9	26	3.067	0.000	2.416	5.483				
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
ENGINEERING PERSONNEL	6	0	1	7	1.227	0.000	0.358	1.585				
TOTAL	97	0	14	111	19.932	0.000	3.706	23.638				
ROUTINE MAINTENANCE												
MAINTENANCE PERSONNEL	74	11	75	160	15.886	6.956	12.987	35.829				
OPERATIONS PERSONNEL	3	0	0	3	0.485	0.000	0.000	0.485				
HEALTH PHYSICS PERSONNEL	0	0	5	5	0.000	0.000	0.758	0.758				
SUPERVISORY PERSONNEL	1	0	1	2	0.126	0.000	0.136	0.262				
ENGINEERING PERSONNEL	4	0	3	7	0.638	0.000	0.549	1.187				
TOTAL	82	11	84	177	17.135	6.956	14.430	38.521				
IN-SERVICE INSPECTION												
MAINTENANCE PERSONNEL	13	0	46	59	3.069	0.000	14.122	17.221				
OPERATIONS PERSONNEL	1	0	1	2	0.296	0.000	0.224	0.520				
HEALTH PHYSICS PERSONNEL	0	0	11	11	0.000	0.000	2.907	2.907				
SUPERVISORY PERSONNEL	1	0	0	1	0.400	0.000	0.000	0.400				
ENGINEERING PERSONNEL	0	0	1	1	0.000	0.000	0.332	0.332				
TOTAL	15	0	59	74	3.765	0.000	17.585	21.380				
SPECIAL MAINTENANCE												
MAINTENANCE PERSONNEL	81	6	240	327	24.016	0.790	75.676	100.482				
OPERATIONS PERSONNEL	6	0	4	10	1.680	0.000	0.993	2.673				
HEALTH PHYSICS PERSONNEL	25	0	82	107	7.388	0.000	28.410	35.796				
SUPERVISORY PERSONNEL	1	0	10	11	0.224	0.000	3.305	3.529				
ENGINEERING PERSONNEL	4	0	0	4	0.556	0.000	0.000	0.556				
TOTAL	117	6	336	459	33.864	0.790	108.384	143.038				
WASTE PROCESSING												
MAINTENANCE PERSONNEL	1	0	6	7	0.518	0.000	2.039	2.557				
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	16	0	54	70	5.062	0.000	18.132	23.194				
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	17	0	60	77	5.580	0.000	20.171	25.751				
REFUELING												
MAINTENANCE PERSONNEL	21	0	167	188	5.118	0.000	75.677	80.795				
OPERATIONS PERSONNEL	1	0	0	1	0.251	0.000	0.000	0.251				
HEALTH PHYSICS PERSONNEL	9	0	71	80	2.280	0.000	19.045	21.305				
SUPERVISORY PERSONNEL	0	0	12	12	0.000	0.000	4.668	4.668				
ENGINEERING PERSONNEL	1	0	3	4	0.120	0.000	0.770	0.890				
TOTAL	32	0	253	285	7.749	0.000	100.180	107.909				
TOTAL BY JOB FUNCTION												
MAINTENANCE PERSONNEL	206	(171)	17	(17)	537	(438)	760	(626)	51.528	7.746	181.312	240.586
OPERATIONS PERSONNEL	69	(71)	0	(0)	6	(8)	75	(79)	15.459	0.000	1.338	16.797
HEALTH PHYSICS PERSONNEL	87	(49)	0	(0)	232	(147)	299	(196)	17.777	0.000	71.668	89.445
SUPERVISORY PERSONNEL	3	(5)	0	(0)	23	(22)	26	(27)	0.750	0.000	8.109	8.859
ENGINEERING PERSONNEL	15	(27)	0	(0)	8	(9)	23	(36)	2.541	0.000	2.009	4.550
GRAND TOTALS	360	(323)	17	(17)	806	(624)	1183	(964)	88.055	7.746	264.436	360.237

*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

1994

PLANT: *CATAWBA 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	164	269	75	508	3.199	4.450	0.800	8.449				
OPERATIONS PERSONNEL	74	3	30	107	12.948	0.242	4.798	17.988				
HEALTH PHYSICS PERSONNEL	30	0	46	76	3.050	0.000	4.525	7.575				
SUPERVISORY PERSONNEL	3	1	3	7	0.179	0.000	0.104	0.283				
ENGINEERING PERSONNEL	1	0	0	1	0.011	0.000	0.000	0.011				
TOTAL	272	273	154	699	19.387	4.692	10.227	34.306				
ROUTINE MAINTENANCE												
MAINTENANCE PERSONNEL	160	230	68	458	24.834	21.559	10.538	56.931				
OPERATIONS PERSONNEL	36	3	27	66	0.657	0.037	4.064	4.758				
HEALTH PHYSICS PERSONNEL	28	0	36	64	2.411	0.000	2.630	5.041				
SUPERVISORY PERSONNEL	2	1	3	6	0.267	0.001	0.061	0.329				
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
TOTAL	226	234	134	594	28.169	21.597	17.293	67.059				
IN-SERVICE INSPECTION												
MAINTENANCE PERSONNEL	110	209	62	381	7.821	27.682	4.218	39.721				
OPERATIONS PERSONNEL	15	1	10	26	0.860	0.228	0.032	1.120				
HEALTH PHYSICS PERSONNEL	15	0	20	35	0.110	0.000	2.251	2.361				
SUPERVISORY PERSONNEL	1	1	1	3	0.000	0.143	0.000	0.143				
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
TOTAL	141	211	93	445	8.791	28.053	6.501	43.345				
SPECIAL MAINTENANCE												
MAINTENANCE PERSONNEL	96	208	40	344	6.028	22.596	3.912	32.536				
OPERATIONS PERSONNEL	25	0	20	45	0.835	0.000	1.948	2.783				
HEALTH PHYSICS PERSONNEL	23	0	21	44	0.909	0.000	0.784	1.693				
SUPERVISORY PERSONNEL	2	1	2	5	0.003	0.157	0.165	0.325				
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
TOTAL	146	209	83	438	7.775	22.753	6.809	37.337				
WASTE PROCESSING												
MAINTENANCE PERSONNEL	14	18	1	33	0.052	0.041	0.034	0.127				
OPERATIONS PERSONNEL	12	0	25	37	0.763	0.000	0.156	0.919				
HEALTH PHYSICS PERSONNEL	10	0	15	25	0.925	0.000	1.278	2.203				
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	36	18	41	95	1.740	0.041	1.468	3.249				
REFUELING												
MAINTENANCE PERSONNEL	124	151	34	309	1.803	10.757	0.290	12.850				
OPERATIONS PERSONNEL	51	2	29	82	0.106	0.003	2.238	2.347				
HEALTH PHYSICS PERSONNEL	8	0	25	33	0.304	0.000	1.151	1.455				
SUPERVISORY PERSONNEL	1	0	0	1	0.042	0.000	0.000	0.042				
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
TOTAL	184	153	88	425	2.255	10.760	3.679	16.694				
TOTAL BY JOB FUNCTION												
MAINTENANCE PERSONNEL	668	(167)085	(299)	280	(88)	2033	(554)	43.737	87.085	19.792	150.614	
OPERATIONS PERSONNEL	213	(74)	9	(3)	141	(30)	363	(107)	16.169	0.510	13.236	29.915
HEALTH PHYSICS PERSONNEL	114	(30)	0	(0)	163	(46)	277	(76)	7.709	0.000	12.619	20.328
SUPERVISORY PERSONNEL	9	(4)	4	(1)	9	(3)	22	(8)	0.491	0.301	0.330	1.122
ENGINEERING PERSONNEL	1	(1)	0	(0)	0	(0)	1	(1)	0.011	0.000	0.000	0.011
GRAND TOTALS	1005	(276)086	(303)	583	(167)	2696	(746)	88.117	87.896	45.977	201.990	

*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

1994

PLANT: *CLINTON

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			TOTAL
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	54	1	7	62	0.401	0.011	0.059	0.471
OPERATIONS PERSONNEL	16	1	0	17	0.282	0.041	0.000	0.323
HEALTH PHYSICS PERSONNEL	25	0	1	26	0.282	0.000	0.005	0.287
SUPERVISORY PERSONNEL	5	0	1	6	0.108	0.000	0.004	0.112
ENGINEERING PERSONNEL	3	0	0	3	0.029	0.000	0.000	0.029
TOTAL	103	2	9	114	1.102	0.052	0.068	1.222
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	27	0	2	29	0.284	0.000	0.016	0.300
OPERATIONS PERSONNEL	4	0	0	4	0.039	0.000	0.000	0.039
HEALTH PHYSICS PERSONNEL	13	0	0	13	0.114	0.000	0.000	0.114
SUPERVISORY PERSONNEL	2	0	1	3	0.005	0.000	0.009	0.014
ENGINEERING PERSONNEL	3	0	0	3	0.057	0.000	0.000	0.057
TOTAL	49	0	3	52	0.499	0.000	0.025	0.524
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	1	0	0	1	0.025	0.000	0.000	0.025
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	3	0	0	3	0.028	0.000	0.000	0.028
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	4	0	0	4	0.053	0.000	0.000	0.053
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	101	1	23	125	24.962	0.324	5.023	30.309
OPERATIONS PERSONNEL	25	2	2	29	5.351	0.305	0.148	5.804
HEALTH PHYSICS PERSONNEL	45	0	2	47	12.672	0.000	0.058	12.730
SUPERVISORY PERSONNEL	6	0	2	8	1.465	0.000	0.324	1.789
ENGINEERING PERSONNEL	5	0	0	5	0.955	0.000	0.000	0.955
TOTAL	182	3	29	214	45.405	0.629	5.553	51.587
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	11	0	2	13	0.130	0.000	0.368	0.498
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	19	0	0	19	0.313	0.000	0.000	0.313
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	31	0	2	33	0.448	0.000	0.368	0.816
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	15	0	2	17	0.345	0.000	0.085	0.430
OPERATIONS PERSONNEL	1	0	0	1	0.005	0.000	0.000	0.005
HEALTH PHYSICS PERSONNEL	15	0	0	15	0.154	0.000	0.000	0.154
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	31	0	2	33	0.504	0.000	0.085	0.589
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	209	2	36	247	26.147	0.335	5.551	32.033
OPERATIONS PERSONNEL	46	3	2	51	5.677	0.346	0.148	6.171
HEALTH PHYSICS PERSONNEL	120	0	3	123	13.563	0.000	0.063	13.626
SUPERVISORY PERSONNEL	14	0	4	18	1.583	0.000	0.337	1.920
ENGINEERING PERSONNEL	11	0	0	11	1.041	0.000	0.000	1.041
GRAND TOTALS	400	5	45	450	48.011	0.681	6.099	54.791

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: ***COMANCHE PEAK 1,2**

TYPE: **PWR**

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	0	0	15	15	0.041	0.000	5.601	5.642
OPERATIONS PERSONNEL	7	0	3	10	4.405	0.018	1.366	5.789
HEALTH PHYSICS PERSONNEL	5	0	22	27	1.773	0.000	7.059	8.832
SUPERVISORY PERSONNEL	0	0	0	0	0.125	0.018	0.086	0.229
ENGINEERING PERSONNEL	0	0	4	4	0.481	0.016	0.895	1.392
TOTAL	12	0	44	56	6.825	0.052	15.007	21.884
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	14	0	76	90	4.490	0.000	25.743	30.233
OPERATIONS PERSONNEL	1	0	0	1	0.440	0.000	0.383	0.823
HEALTH PHYSICS PERSONNEL	0	0	4	4	0.161	0.000	1.373	1.534
SUPERVISORY PERSONNEL	0	0	0	0	0.079	0.055	0.006	0.140
ENGINEERING PERSONNEL	0	0	0	0	0.096	0.000	0.731	0.827
TOTAL	15	0	80	95	5.266	0.055	28.236	33.557
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	0	0	37	37	0.037	0.000	9.460	9.497
OPERATIONS PERSONNEL	2	0	3	5	0.302	0.000	0.496	0.798
HEALTH PHYSICS PERSONNEL	1	0	6	7	0.182	0.000	1.406	1.588
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.128	0.128
TOTAL	3	0	46	49	0.521	0.000	11.490	12.011
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	0	0	19	19	0.083	0.000	7.294	7.377
OPERATIONS PERSONNEL	0	0	2	2	0.052	0.000	0.392	0.444
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.003	0.000	0.044	0.047
SUPERVISORY PERSONNEL	0	0	0	0	0.002	0.000	0.030	0.032
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.190	0.190
TOTAL	0	0	21	21	0.140	0.000	7.950	8.090
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.168	0.000	0.493	0.661
OPERATIONS PERSONNEL	1	0	1	2	0.703	0.000	1.862	2.565
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.338	0.000	1.032	1.370
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.022	0.000	0.011	0.033
TOTAL	1	0	1	2	1.231	0.000	3.398	4.629
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	0	0	27	27	0.084	0.000	8.330	8.414
OPERATIONS PERSONNEL	0	0	0	0	0.164	0.000	0.141	0.305
HEALTH PHYSICS PERSONNEL	0	0	2	2	0.047	0.000	1.071	1.118
SUPERVISORY PERSONNEL	0	0	0	0	0.145	0.000	0.000	0.145
ENGINEERING PERSONNEL	0	0	0	0	0.066	0.000	0.147	0.213
TOTAL	0	0	29	29	0.506	0.000	9.689	10.195
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	14	0	174	188	4.903	0.000	56.921	61.824
OPERATIONS PERSONNEL	11	0	9	20	6.066	0.018	4.640	10.724
HEALTH PHYSICS PERSONNEL	6	0	34	40	2.504	0.000	11.965	14.469
SUPERVISORY PERSONNEL	0	0	0	0	0.351	0.073	0.122	0.546
ENGINEERING PERSONNEL	0	0	4	4	0.665	0.016	2.102	2.783
GRAND TOTALS	31	0	221	252	14.489	0.107	75.770	90.366

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *COOK 1,2

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM				
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL	
<u>REACTOR OPS & SURV</u>									
MAINTENANCE PERSONNEL	1	0	11	12	0.172	0.000	2.069	2.241	
OPERATIONS PERSONNEL	48	1	2	51	11.558	0.338	0.336	12.232	
HEALTH PHYSICS PERSONNEL	18	0	29	47	3.805	0.000	4.354	8.159	
SUPERVISORY PERSONNEL	1	0	0	1	0.176	0.000	0.000	0.176	
ENGINEERING PERSONNEL	3	0	0	3	1.001	0.000	0.000	1.001	
TOTAL	71	1	42	114	16.712	0.338	6.759	23.809	
<u>ROUTINE MAINTENANCE</u>									
MAINTENANCE PERSONNEL	115	1	403	519	53.600	0.295	167.607	221.502	
OPERATIONS PERSONNEL	26	1	40	67	6.470	0.413	12.361	19.244	
HEALTH PHYSICS PERSONNEL	23	0	76	99	10.986	0.000	28.420	39.406	
SUPERVISORY PERSONNEL	2	0	0	2	0.885	0.000	0.000	0.885	
ENGINEERING PERSONNEL	17	0	6	23	5.134	0.000	1.650	6.794	
TOTAL	183	2	525	710	77.075	0.708	210.048	287.831	
<u>IN-SERVICE INSPECTION</u>									
MAINTENANCE PERSONNEL	2	0	73	75	0.254	0.000	27.899	28.153	
OPERATIONS PERSONNEL	4	0	18	22	0.876	0.000	7.119	7.995	
HEALTH PHYSICS PERSONNEL	0	0	8	8	0.000	0.000	3.122	3.122	
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000	
ENGINEERING PERSONNEL	2	0	5	7	0.252	0.000	3.413	3.665	
TOTAL	8	0	104	112	1.382	0.000	41.553	42.935	
<u>SPECIAL MAINTENANCE</u>									
MAINTENANCE PERSONNEL	1	1	106	108	0.119	0.113	35.800	36.032	
OPERATIONS PERSONNEL	2	0	17	19	0.995	0.000	6.201	7.196	
HEALTH PHYSICS PERSONNEL	3	0	0	3	0.380	0.000	0.000	0.380	
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000	
ENGINEERING PERSONNEL	0	2	0	2	0.000	0.377	0.000	0.377	
TOTAL	6	3	123	132	1.494	0.490	42.001	43.985	
<u>WASTE PROCESSING</u>									
MAINTENANCE PERSONNEL	0	0	2	2	0.000	0.000	1.293	1.293	
OPERATIONS PERSONNEL	0	0	2	2	0.000	0.000	1.701	1.701	
HEALTH PHYSICS PERSONNEL	2	0	17	19	0.855	0.000	3.848	4.703	
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	21	23	0.855	0.000	6.842	7.697	
<u>REFUELING</u>									
MAINTENANCE PERSONNEL	3	0	30	33	0.833	0.000	7.493	8.326	
OPERATIONS PERSONNEL	8	0	25	33	3.727	0.000	11.323	15.050	
HEALTH PHYSICS PERSONNEL	7	0	16	23	2.064	0.000	2.620	4.684	
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	71	89	6.624	0.000	21.436	28.060	
<u>TOTAL BY JOB FUNCTION</u>									
MAINTENANCE PERSONNEL	122	(116)	2 (2)	625 (520)	749 (638)	54.978	0.408	242.161	297.547
OPERATIONS PERSONNEL	88	(76)	2 (2)	104 (82)	194 (160)	23.626	0.751	39.041	63.418
HEALTH PHYSICS PERSONNEL	53	(29)	0 (0)	146 (127)	199 (156)	18.090	0.000	42.364	60.454
SUPERVISORY PERSONNEL	3	(2)	0 (0)	0 (0)	3 (2)	1.061	0.000	0.000	1.061
ENGINEERING PERSONNEL	22	(19)	2 (2)	11 (11)	35 (32)	6.387	0.377	5.073	11.837
GRAND TOTALS	288	(242)	6 (6)	886 (740)	1180 (988)	104.142	1.536	328.639	434.317

*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**

1994

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	70	1	6	77	1.861	0.043	0.225	2.129				
OPERATIONS PERSONNEL	37	0	0	37	8.707	0.000	0.000	8.707				
HEALTH PHYSICS PERSONNEL	30	0	4	34	7.618	0.000	1.222	8.840				
SUPERVISORY PERSONNEL	2	2	1	5	0.220	0.052	0.152	0.424				
ENGINEERING PERSONNEL	7	13	7	27	1.187	1.198	0.471	2.826				
TOTAL	146	16	18	180	19.593	1.263	2.070	22.926				
ROUTINE MAINTENANCE												
MAINTENANCE PERSONNEL	76	3	17	96	23.949	0.867	3.276	28.092				
OPERATIONS PERSONNEL	32	0	0	32	1.299	0.000	0.000	1.299				
HEALTH PHYSICS PERSONNEL	31	0	4	35	13.681	0.000	0.567	14.248				
SUPERVISORY PERSONNEL	2	2	2	6	0.161	1.400	0.167	1.728				
ENGINEERING PERSONNEL	7	13	6	26	0.769	4.099	0.700	5.568				
TOTAL	148	18	29	195	39.859	6.366	4.710	50.935				
IN-SERVICE INSPECTION												
MAINTENANCE PERSONNEL	0	0	1	1	0.000	0.000	0.001	0.001				
OPERATIONS PERSONNEL	1	0	0	1	0.005	0.000	0.000	0.005				
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	0.005	0.000	0.001	0.006				
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	17	1	2	20	0.101	0.002	0.018	0.121				
OPERATIONS PERSONNEL	8	0	0	8	0.691	0.000	0.000	0.691				
HEALTH PHYSICS PERSONNEL	18	0	2	20	0.913	0.000	0.020	0.933				
SUPERVISORY PERSONNEL	0	0	1	1	0.000	0.000	0.001	0.001				
ENGINEERING PERSONNEL	0	2	0	2	0.000	0.005	0.000	0.005				
TOTAL	43	3	5	51	1.705	0.007	0.039	1.751				
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	163	(76)	5	(3)	26	(17)	194	(96)	25.911	0.912	3.520	30.343
OPERATIONS PERSONNEL	78	(37)	0	(0)	0	(0)	78	(37)	10.702	0.000	0.000	10.702
HEALTH PHYSICS PERSONNEL	79	(31)	0	(0)	10	(4)	89	(35)	22.212	0.000	1.809	24.021
SUPERVISORY PERSONNEL	4	(2)	4	(2)	4	(2)	12	(6)	0.381	1.452	0.320	2.153
ENGINEERING PERSONNEL	14	(7)	28	(13)	13	(7)	55	(27)	1.956	5.272	1.171	8.399
GRAND TOTALS	338	(153)	37	(18)	53	(30)	428	(201)	61.162	7.636	6.820	75.618

*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

1994

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
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.026	0.000	0.000	0.026
OPERATIONS PERSONNEL	30	0	0	30	7.046	0.000	0.000	7.046
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.015	0.000	0.000	0.015
SUPERVISORY PERSONNEL	0	0	0	0	0.011	0.012	0.000	0.023
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.158	0.000	0.158
TOTAL	30	0	0	30	7.066	0.170	0.000	7.266
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	78	36	167	281	26.007	9.685	63.982	99.674
OPERATIONS PERSONNEL	14	2	6	22	4.521	0.569	2.251	7.341
HEALTH PHYSICS PERSONNEL	28	0	54	82	7.712	0.000	17.659	25.371
SUPERVISORY PERSONNEL	6	5	62	73	1.808	2.352	22.278	26.438
ENGINEERING PERSONNEL	0	4	6	10	0.221	1.605	2.044	3.870
TOTAL	126	47	295	468	40.269	14.211	108.214	162.694
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	0	0	66	66	0.078	0.033	27.019	27.130
OPERATIONS PERSONNEL	5	0	2	7	1.194	0.000	0.980	2.174
HEALTH PHYSICS PERSONNEL	0	0	3	3	0.009	0.000	0.772	0.781
SUPERVISORY PERSONNEL	0	0	13	13	0.067	0.047	4.971	5.085
ENGINEERING PERSONNEL	0	1	0	1	0.000	0.214	0.000	0.214
TOTAL	5	1	84	90	1.348	0.294	33.742	35.384
<u>SPECIAL MAINTENANCE</u>								
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
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	1	0	0	1	1.111	0.016	0.117	1.244
OPERATIONS PERSONNEL	13	0	0	13	4.398	0.000	0.000	4.398
HEALTH PHYSICS PERSONNEL	3	0	0	3	0.663	0.000	0.657	1.320
SUPERVISORY PERSONNEL	2	0	0	2	0.703	0.001	0.000	0.704
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	19	0	0	19	6.875	0.017	0.774	7.666
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	0	0	29	29	0.254	0.269	10.286	10.809
OPERATIONS PERSONNEL	0	0	0	0	0.054	0.015	0.031	0.100
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.018	0.000	0.141	0.159
SUPERVISORY PERSONNEL	0	0	9	9	0.104	0.009	2.471	2.584
ENGINEERING PERSONNEL	0	0	0	0	0.880	0.023	0.085	0.988
TOTAL	0	0	38	38	1.310	0.316	13.014	14.640
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	79	36	262	377	27.476	10.003	101.404	138.883
OPERATIONS PERSONNEL	62	2	8	72	17.213	0.584	3.262	21.059
HEALTH PHYSICS PERSONNEL	31	0	57	88	8.417	0.000	19.229	27.646
SUPERVISORY PERSONNEL	8	5	84	97	2.693	2.421	29.720	34.834
ENGINEERING PERSONNEL	0	5	6	11	1.101	2.000	2.129	5.230
GRAND TOTALS	180	48	417	645	56.900	15.008	155.744	227.652

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	0	0	0	0	0.053	0.000	0.052	0.105
OPERATIONS PERSONNEL	21	0	0	21	5.663	0.000	0.004	5.667
HEALTH PHYSICS PERSONNEL	10	0	12	22	3.010	0.089	3.090	6.189
SUPERVISORY PERSONNEL	0	0	0	0	0.169	0.000	0.000	0.169
ENGINEERING PERSONNEL	0	0	0	0	0.400	0.000	0.032	0.432
TOTAL	31	0	12	43	9.295	0.089	3.178	12.562
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	7	0	4	11	4.321	0.006	2.299	6.626
OPERATIONS PERSONNEL	0	0	0	0	0.052	0.000	0.000	0.052
HEALTH PHYSICS PERSONNEL	3	0	0	3	0.872	0.000	0.184	1.056
SUPERVISORY PERSONNEL	0	0	0	0	0.053	0.000	0.000	0.053
ENGINEERING PERSONNEL	0	0	0	0	0.140	0.001	0.018	0.159
TOTAL	10	0	4	14	5.438	0.007	2.501	7.946
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	3	0	18	21	0.896	0.000	10.075	10.971
OPERATIONS PERSONNEL	0	0	0	0	0.018	0.000	0.000	0.018
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.082	0.074	0.048	0.204
SUPERVISORY PERSONNEL	0	0	0	0	0.049	0.000	0.058	0.107
ENGINEERING PERSONNEL	0	0	0	0	0.315	0.000	0.002	0.317
TOTAL	3	0	18	21	1.360	0.074	10.183	11.617
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	15	0	9	24	4.603	0.000	4.141	8.744
OPERATIONS PERSONNEL	0	0	0	0	0.264	0.000	0.000	0.264
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.509	0.099	0.174	0.782
SUPERVISORY PERSONNEL	0	0	0	0	0.055	0.000	0.000	0.055
ENGINEERING PERSONNEL	1	0	0	1	0.711	0.000	0.059	0.770
TOTAL	16	0	9	25	6.142	0.099	4.374	10.615
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.047	0.000	0.000	0.047
OPERATIONS PERSONNEL	0	0	0	0	0.034	0.000	0.000	0.034
HEALTH PHYSICS PERSONNEL	5	0	3	8	1.553	0.091	0.936	2.580
SUPERVISORY PERSONNEL	0	0	0	0	0.036	0.000	0.000	0.036
ENGINEERING PERSONNEL	0	0	0	0	0.003	0.000	0.000	0.003
TOTAL	5	0	3	8	1.673	0.091	0.936	2.700
REFUELING								
MAINTENANCE PERSONNEL	9	0	20	29	3.234	0.000	8.065	11.299
OPERATIONS PERSONNEL	7	0	0	7	2.281	0.000	0.010	2.291
HEALTH PHYSICS PERSONNEL	2	0	5	7	0.796	0.039	1.467	2.302
SUPERVISORY PERSONNEL	0	0	0	0	0.020	0.000	0.020	0.040
ENGINEERING PERSONNEL	7	0	0	7	2.642	0.005	0.012	2.659
TOTAL	25	0	25	50	8.973	0.044	9.574	18.591
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	34	0	51	85	13.154	0.006	24.632	37.792
OPERATIONS PERSONNEL	28	0	0	28	8.312	0.000	0.014	8.326
HEALTH PHYSICS PERSONNEL	20	0	20	40	6.822	0.392	5.899	13.113
SUPERVISORY PERSONNEL	0	0	0	0	0.382	0.000	0.078	0.460
ENGINEERING PERSONNEL	8	0	0	8	4.211	0.006	0.123	4.340
GRAND TOTALS	90	0	71	161	32.881	0.404	30.746	64.031

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: ***DIABLO CANYON 1,2**

TYPE: **PWR**

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			TOTAL
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	6	0	0	6	0.775	0.000	0.000	0.775
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.128	0.000	0.000	0.128
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	0.903	0.000	0.000	0.903
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	9	5	13	27	1.851	0.735	4.749	7.335
OPERATIONS PERSONNEL	1	0	0	1	0.105	0.000	0.000	0.105
HEALTH PHYSICS PERSONNEL	12	13	1	26	1.594	2.195	0.124	3.913
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	1	1	2	0.000	0.115	0.121	0.236
TOTAL	22	19	15	56	3.550	3.045	4.994	11.589
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	2	10	20	32	0.593	2.936	8.380	11.909
OPERATIONS PERSONNEL	4	0	1	5	1.580	0.000	0.180	1.740
HEALTH PHYSICS PERSONNEL	0	1	1	2	0.000	0.205	0.225	0.430
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	1	1	2	0.000	0.330	0.560	0.890
TOTAL	6	12	23	41	2.153	3.471	9.345	14.969
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	12	32	164	208	2.861	12.372	84.274	99.507
OPERATIONS PERSONNEL	1	2	1	4	0.226	0.750	0.110	1.086
HEALTH PHYSICS PERSONNEL	18	34	13	65	4.295	11.900	4.365	20.560
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	2	3	0.400	0.000	0.560	0.960
TOTAL	32	68	180	280	7.782	25.022	89.309	122.113
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	1	2	3	0.000	0.920	1.251	2.171
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	9	1	2	12	5.714	1.141	0.796	7.651
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	9	2	4	15	5.714	2.061	2.047	9.822
REFUELING								
MAINTENANCE PERSONNEL	67	107	495	669	27.315	35.523	203.049	265.887
OPERATIONS PERSONNEL	32	8	9	49	7.105	1.747	3.422	12.274
HEALTH PHYSICS PERSONNEL	22	60	33	115	8.635	20.490	14.666	43.791
SUPERVISORY PERSONNEL	1	0	0	1	0.135	0.000	0.000	0.135
ENGINEERING PERSONNEL	9	8	23	40	2.929	2.301	7.089	12.319
TOTAL	131	183	560	874	46.119	60.061	228.228	334.406
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	90	155	694	939	32.620	52.486	301.703	386.809
OPERATIONS PERSONNEL	44	10	11	65	9.771	2.497	3.712	15.980
HEALTH PHYSICS PERSONNEL	62	109	50	221	20.366	35.931	20.176	76.473
SUPERVISORY PERSONNEL	1	0	0	1	0.135	0.000	0.000	0.135
ENGINEERING PERSONNEL	10	10	27	47	3.329	2.746	8.330	14.405
GRAND TOTALS	207	284	782	1273	66.221	93.660	333.921	493.802

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *DRESDEN 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	12	1	29	42	5.629	0.036	8.652	14.317
OPERATIONS PERSONNEL	118	0	69	187	34.363	0.000	7.525	41.888
HEALTH PHYSICS PERSONNEL	27	97	4	128	11.608	1.050	0.922	13.580
SUPERVISORY PERSONNEL	129	0	130	259	14.230	0.009	0.730	14.969
ENGINEERING PERSONNEL	38	0	39	77	4.805	0.000	3.369	8.204
TOTAL	324	98	271	693	70.635	1.095	21.228	92.958
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	270	17	1275	1562	122.680	0.567	377.541	500.788
OPERATIONS PERSONNEL	115	0	38	153	32.892	0.000	4.173	37.065
HEALTH PHYSICS PERSONNEL	53	184	76	313	22.694	1.987	19.798	44.469
SUPERVISORY PERSONNEL	182	3	104	289	20.106	0.080	0.583	20.769
ENGINEERING PERSONNEL	107	0	213	320	13.867	0.000	18.584	32.471
TOTAL	727	204	1706	2637	212.259	2.634	420.669	635.562
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	90	90	0.001	0.000	26.581	26.582
OPERATIONS PERSONNEL	0	0	0	0	0.005	0.000	0.000	0.005
HEALTH PHYSICS PERSONNEL	0	38	8	46	0.058	0.412	2.107	2.577
SUPERVISORY PERSONNEL	0	0	8	8	0.000	0.000	0.046	0.046
ENGINEERING PERSONNEL	3	0	75	78	0.338	0.000	6.567	6.905
TOTAL	3	38	181	222	0.402	0.412	35.301	36.115
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	3	5	76	84	1.055	0.175	22.514	23.744
OPERATIONS PERSONNEL	8	0	4	12	2.366	0.000	0.492	2.858
HEALTH PHYSICS PERSONNEL	3	31	5	39	1.440	0.340	1.195	2.975
SUPERVISORY PERSONNEL	13	1	9	23	1.474	0.015	0.047	1.536
ENGINEERING PERSONNEL	7	0	13	20	0.833	0.000	1.145	1.978
TOTAL	34	37	107	178	7.168	0.530	25.393	33.091
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	12	12	0.016	0.000	3.701	3.717
OPERATIONS PERSONNEL	10	0	67	77	3.154	0.000	7.305	10.459
HEALTH PHYSICS PERSONNEL	5	1	0	6	1.989	0.007	0.000	1.996
SUPERVISORY PERSONNEL	2	0	0	2	0.195	0.000	0.000	0.195
ENGINEERING PERSONNEL	0	0	1	1	0.004	0.000	0.052	0.056
TOTAL	17	1	80	98	5.358	0.007	11.058	16.423
REFUELING								
MAINTENANCE PERSONNEL	28	0	10	38	12.763	0.000	2.968	15.761
OPERATIONS PERSONNEL	4	0	1	5	1.233	0.000	0.092	1.325
HEALTH PHYSICS PERSONNEL	2	1	0	3	0.869	0.006	0.000	0.875
SUPERVISORY PERSONNEL	9	0	0	9	0.967	0.000	0.001	0.968
ENGINEERING PERSONNEL	1	0	2	3	0.082	0.000	0.136	0.218
TOTAL	44	1	13	58	15.914	0.006	3.227	19.147
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	313	23	1492	1828	142.144	0.778	441.987	584.909
OPERATIONS PERSONNEL	255	0	179	434	74.013	0.000	19.587	93.600
HEALTH PHYSICS PERSONNEL	90	352	93	535	38.658	3.802	24.012	66.472
SUPERVISORY PERSONNEL	335	4	251	590	36.972	0.104	1.407	38.483
ENGINEERING PERSONNEL	156	0	343	499	19.949	0.000	29.833	49.832
GRAND TOTALS	1149	379	2358	3886	311.736	4.684	516.876	833.296

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	10	0	0	10	3.924	0.000	0.032	3.956
OPERATIONS PERSONNEL	7	0	0	7	2.763	0.000	0.000	2.763
HEALTH PHYSICS PERSONNEL	12	0	3	15	3.967	0.000	1.549	5.516
SUPERVISORY PERSONNEL	0	0	0	0	0.358	0.000	0.148	0.506
ENGINEERING PERSONNEL	3	0	1	4	0.883	0.000	0.181	1.064
TOTAL	32	0	4	36	11.895	0.000	1.910	13.805
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	93	0	26	119	45.417	0.055	13.169	58.641
OPERATIONS PERSONNEL	32	0	0	32	12.567	0.063	0.000	12.650
HEALTH PHYSICS PERSONNEL	7	0	2	9	2.624	0.000	0.690	3.314
SUPERVISORY PERSONNEL	6	0	11	17	2.508	0.007	3.280	5.795
ENGINEERING PERSONNEL	17	0	3	20	5.378	0.032	0.914	6.324
TOTAL	155	0	42	197	68.494	0.177	18.053	86.724
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.030	0.000	0.201	0.231
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.030	0.000	0.000	0.030
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	1	1	0.189	0.000	0.212	0.401
TOTAL	0	0	1	1	0.249	0.000	0.413	0.662
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	16	0	4	20	5.496	0.000	2.226	7.722
OPERATIONS PERSONNEL	3	1	0	4	1.920	0.181	0.312	2.413
HEALTH PHYSICS PERSONNEL	3	0	0	3	1.052	0.000	0.106	1.158
SUPERVISORY PERSONNEL	0	0	0	0	0.164	0.000	0.007	0.171
ENGINEERING PERSONNEL	1	0	1	2	0.287	0.000	0.317	0.604
TOTAL	23	1	5	29	8.919	0.181	2.968	12.068
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	3	0	0	3	1.425	0.000	0.000	1.425
OPERATIONS PERSONNEL	9	0	1	10	2.704	0.000	0.775	3.479
HEALTH PHYSICS PERSONNEL	1	0	1	2	1.112	0.000	0.368	1.480
SUPERVISORY PERSONNEL	0	0	0	0	0.074	0.000	0.000	0.074
ENGINEERING PERSONNEL	0	0	0	0	0.086	0.000	0.000	0.086
TOTAL	13	0	2	15	5.401	0.000	1.143	6.544
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.116	0.000	0.025	0.141
OPERATIONS PERSONNEL	0	0	0	0	0.241	0.101	0.000	0.342
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.030	0.000	0.000	0.030
SUPERVISORY PERSONNEL	0	0	0	0	0.015	0.000	0.001	0.016
ENGINEERING PERSONNEL	0	0	0	0	0.098	0.000	0.000	0.098
TOTAL	0	0	0	0	0.500	0.101	0.026	0.627
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	122	0	30	152	56.408	0.055	15.653	72.116
OPERATIONS PERSONNEL	51	1	1	53	20.195	0.365	1.087	21.647
HEALTH PHYSICS PERSONNEL	23	0	6	29	8.815	0.000	2.713	11.528
SUPERVISORY PERSONNEL	6	0	11	17	3.119	0.007	3.436	6.562
ENGINEERING PERSONNEL	21	0	6	27	6.921	0.032	1.624	8.577
GRAND TOTALS	223	1	54	278	95.458	0.459	24.513	120.430

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	26	0	4	30	0.232	0.000	0.038	0.270
OPERATIONS PERSONNEL	117	0	1	118	12.348	0.000	0.078	12.426
HEALTH PHYSICS PERSONNEL	66	0	85	151	6.001	0.000	9.743	15.744
SUPERVISORY PERSONNEL	8	2	4	14	0.190	0.034	0.152	0.376
ENGINEERING PERSONNEL	13	3	7	23	0.238	0.038	0.182	0.458
TOTAL	230	5	101	336	19.009	0.072	10.193	29.274
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	183	0	43	226	6.675	0.000	0.994	7.669
OPERATIONS PERSONNEL	19	0	0	19	0.582	0.000	0.000	0.582
HEALTH PHYSICS PERSONNEL	70	0	73	143	6.188	0.000	1.913	8.101
SUPERVISORY PERSONNEL	2	0	0	2	0.051	0.000	0.000	0.051
ENGINEERING PERSONNEL	4	0	5	9	0.076	0.000	0.062	0.138
TOTAL	278	0	121	399	13.572	0.000	2.969	16.541
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	22	0	62	84	0.540	0.000	10.639	11.179
OPERATIONS PERSONNEL	2	0	1	3	0.079	0.000	0.018	0.097
HEALTH PHYSICS PERSONNEL	11	0	13	24	0.082	0.000	0.262	0.344
SUPERVISORY PERSONNEL	2	0	2	4	0.092	0.000	0.482	0.574
ENGINEERING PERSONNEL	13	3	43	59	0.831	0.066	7.173	8.070
TOTAL	50	3	121	174	1.624	0.066	18.574	20.264
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	191	0	278	469	40.247	0.000	55.239	95.486
OPERATIONS PERSONNEL	47	0	18	65	2.829	0.000	2.118	4.947
HEALTH PHYSICS PERSONNEL	72	0	72	144	11.787	0.000	8.079	19.866
SUPERVISORY PERSONNEL	5	1	5	11	0.100	0.043	1.096	1.239
ENGINEERING PERSONNEL	19	0	133	152	1.299	0.000	48.685	49.984
TOTAL	334	1	506	841	56.262	0.043	115.217	171.522
WASTE PROCESSING								
MAINTENANCE PERSONNEL	41	0	1	42	0.641	0.000	0.021	0.662
OPERATIONS PERSONNEL	32	0	2	34	0.688	0.000	0.007	0.695
HEALTH PHYSICS PERSONNEL	62	0	35	97	6.859	0.000	1.697	8.556
SUPERVISORY PERSONNEL	1	0	0	1	0.009	0.000	0.000	0.009
ENGINEERING PERSONNEL	1	0	1	2	0.006	0.000	0.022	0.028
TOTAL	137	0	39	176	8.203	0.000	1.747	9.950
REFUELING								
MAINTENANCE PERSONNEL	3	0	5	8	0.027	0.000	0.087	0.114
OPERATIONS PERSONNEL	21	0	22	43	0.395	0.000	1.802	2.197
HEALTH PHYSICS PERSONNEL	11	0	1	12	0.301	0.000	0.002	0.303
SUPERVISORY PERSONNEL	1	1	2	4	0.097	0.043	0.041	0.181
ENGINEERING PERSONNEL	4	3	1	8	0.066	0.056	0.010	0.132
TOTAL	40	4	31	75	0.886	0.099	1.942	2.927
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	466	0	393	859	48.362	0.000	67.018	115.380
OPERATIONS PERSONNEL	238	0	44	282	16.921	0.000	4.023	20.944
HEALTH PHYSICS PERSONNEL	292	0	279	571	31.218	0.000	21.696	52.914
SUPERVISORY PERSONNEL	19	4	13	36	0.539	0.120	1.771	2.430
ENGINEERING PERSONNEL	54	9	190	253	2.516	0.160	56.134	58.810
GRAND TOTALS	1069	13	919	2001	99.556	0.280	150.642	250.478

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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				
<u>REACTOR OPS & SURV</u>												
MAINTENANCE PERSONNEL	96	9	119	224	9.295	0.088	14.701	24.084				
OPERATIONS PERSONNEL	78	2	44	124	10.839	0.000	13.665	24.534				
HEALTH PHYSICS PERSONNEL	26	0	23	49	3.091	0.000	1.612	4.703				
SUPERVISORY PERSONNEL	121	26	182	331	3.351	0.190	6.739	10.280				
ENGINEERING PERSONNEL	106	10	14	130	2.828	0.011	0.454	3.293				
TOTAL	427	46	382	855	29.404	0.289	37.201	66.894				
<u>ROUTINE MAINTENANCE</u>												
MAINTENANCE PERSONNEL	17	1	8	26	4.754	0.087	2.081	6.922				
OPERATIONS PERSONNEL	1	0	0	1	0.042	0.000	0.000	0.042				
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
SUPERVISORY PERSONNEL	1	5	19	25	0.139	0.234	4.796	5.169				
ENGINEERING PERSONNEL	1	0	0	1	0.043	0.000	0.000	0.043				
TOTAL	20	6	27	53	4.978	0.321	6.877	12.176				
<u>IN-SERVICE INSPECTION</u>												
MAINTENANCE PERSONNEL	2	0	3	5	0.298	0.000	0.956	1.254				
OPERATIONS PERSONNEL	1	0	0	1	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	10	10	0.000	0.000	2.845	2.845				
ENGINEERING PERSONNEL	1	0	0	1	0.018	0.000	0.000	0.018				
TOTAL	4	0	13	17	0.316	0.000	3.801	4.117				
<u>SPECIAL MAINTENANCE</u>												
MAINTENANCE PERSONNEL	51	3	260	314	9.348	0.054	43.474	52.876				
OPERATIONS PERSONNEL	32	0	15	47	4.097	0.000	4.574	8.671				
HEALTH PHYSICS PERSONNEL	17	0	11	28	3.030	0.000	2.527	5.557				
SUPERVISORY PERSONNEL	24	10	217	251	3.019	0.211	34.848	38.078				
ENGINEERING PERSONNEL	23	1	8	32	1.064	0.000	0.919	1.983				
TOTAL	147	14	511	672	20.558	0.265	86.342	107.165				
<u>WASTE PROCESSING</u>												
MAINTENANCE PERSONNEL	1	0	3	4	0.009	0.000	0.374	0.383				
OPERATIONS PERSONNEL	11	0	18	29	0.176	0.000	0.725	0.901				
HEALTH PHYSICS PERSONNEL	4	0	1	5	0.289	0.000	0.002	0.291				
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.276	0.276				
ENGINEERING PERSONNEL	1	0	0	1	0.000	0.000	0.000	0.000				
TOTAL	17	0	22	39	0.474	0.000	1.377	1.851				
<u>REFUELING</u>												
MAINTENANCE PERSONNEL	3	0	20	23	0.431	0.000	3.771	4.202				
OPERATIONS PERSONNEL	6	0	19	25	0.873	0.000	4.991	5.864				
HEALTH PHYSICS PERSONNEL	3	0	4	7	0.414	0.000	0.526	0.940				
SUPERVISORY PERSONNEL	7	2	77	86	0.322	0.001	6.718	7.041				
ENGINEERING PERSONNEL	15	0	8	23	0.387	0.000	0.405	0.792				
TOTAL	34	2	128	164	2.427	0.001	16.411	18.839				
<u>TOTAL BY JOB FUNCTION</u>												
MAINTENANCE PERSONNEL	170	(172)	13	(13)	413	(413)	596	(596)	24.135	0.229	65.357	89.721
OPERATIONS PERSONNEL	129	(129)	2	(2)	96	(96)	227	(227)	16.027	0.000	23.985	40.012
HEALTH PHYSICS PERSONNEL	50	(50)	0	(0)	39	(39)	89	(89)	6.824	0.000	4.667	11.491
SUPERVISORY PERSONNEL	153	(153)	45	(43)	505	(524)	703	(720)	6.831	0.636	56.222	63.689
ENGINEERING PERSONNEL	147	(147)	11	(11)	30	(30)	188	(188)	4.340	0.011	1.778	6.129
GRAND TOTALS	649	(651)	71	(69)	1083	(1102)	1803	(1822)	58.157	0.876	152.009	211.042

*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

1994

PLANT: *FITZPATRICK

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	107	2	249	358	67.650	0.270	74.540	142.460
OPERATIONS PERSONNEL	77	2	13	92	48.930	0.320	2.610	51.860
HEALTH PHYSICS PERSONNEL	46	0	29	75	24.880	0.000	11.280	36.160
SUPERVISORY PERSONNEL	15	0	18	33	2.920	0.000	4.410	7.330
ENGINEERING PERSONNEL	18	0	7	25	3.880	0.000	1.680	5.560
TOTAL	263	4	316	583	148.260	0.590	94.520	243.370
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	0	0	61	61	0.000	0.000	26.450	26.450
OPERATIONS PERSONNEL	3	0	1	4	0.570	0.000	0.150	0.720
HEALTH PHYSICS PERSONNEL	5	0	4	9	1.490	0.000	0.550	2.040
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	1	1	0.000	0.000	0.180	0.180
TOTAL	8	0	67	75	2.060	0.000	27.330	29.390
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	6	0	1	7	0.960	0.000	0.100	1.060
OPERATIONS PERSONNEL	9	0	0	9	2.110	0.000	0.000	2.110
HEALTH PHYSICS PERSONNEL	19	0	3	22	3.360	0.000	0.560	3.920
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	34	0	4	38	6.430	0.000	0.660	7.090
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	0	0	2	2	0.000	0.000	0.230	0.230
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	2	0	0	2	0.250	0.000	0.000	0.250
SUPERVISORY PERSONNEL	0	0	2	2	0.000	0.000	0.260	0.260
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	2	0	4	6	0.250	0.000	0.490	0.740
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	10	0	2	12	1.430	0.000	0.250	1.680
OPERATIONS PERSONNEL	0	0	4	4	0.000	0.000	0.630	0.630
HEALTH PHYSICS PERSONNEL	1	0	1	2	0.110	0.000	0.100	0.210
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	7	18	1.540	0.000	0.980	2.520
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	2	0	0	2	0.220	0.000	0.000	0.220
HEALTH PHYSICS PERSONNEL	1	0	1	2	0.270	0.000	0.140	0.410
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	1	4	0.490	0.000	0.140	0.630
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	123	2	315	440	70.040	0.270	101.570	171.880
OPERATIONS PERSONNEL	91	2	18	111	51.830	0.320	3.390	55.540
HEALTH PHYSICS PERSONNEL	74	0	38	112	30.360	0.000	12.630	42.990
SUPERVISORY PERSONNEL	15	0	20	35	2.920	0.000	4.670	7.590
ENGINEERING PERSONNEL	18	0	8	26	3.880	0.000	1.860	5.740
GRAND TOTALS	321	4	399	724	159.030	0.590	124.120	283.740

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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				
<u>REACTOR OPS & SURV</u>												
MAINTENANCE PERSONNEL	0	0	0	0	0.038	0.000	0.002	0.040				
OPERATIONS PERSONNEL	16	0	0	16	2.332	0.000	0.000	2.332				
HEALTH PHYSICS PERSONNEL	9	0	1	10	2.903	0.000	0.234	3.137				
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
ENGINEERING PERSONNEL	2	0	0	2	0.325	0.000	0.000	0.325				
TOTAL	27	0	1	28	5.598	0.000	0.236	5.834				
<u>ROUTINE MAINTENANCE</u>												
MAINTENANCE PERSONNEL	24	0	3	27	4.918	0.000	0.544	5.462				
OPERATIONS PERSONNEL	1	0	0	1	0.130	0.000	0.000	0.130				
HEALTH PHYSICS PERSONNEL	6	0	6	12	2.578	0.000	2.118	4.696				
SUPERVISORY PERSONNEL	1	0	0	1	0.138	0.000	0.000	0.138				
ENGINEERING PERSONNEL	2	0	0	2	0.541	0.000	0.028	0.569				
TOTAL	34	0	9	43	8.305	0.000	2.680	10.985				
<u>IN-SERVICE INSPECTION</u>												
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				
<u>SPECIAL MAINTENANCE</u>												
MAINTENANCE PERSONNEL	2	0	9	11	0.369	0.000	1.941	2.340				
OPERATIONS PERSONNEL	0	0	0	0	0.064	0.000	0.000	0.064				
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.426	0.000	0.120	0.546				
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
ENGINEERING PERSONNEL	2	0	3	5	0.350	0.000	1.101	1.451				
TOTAL	5	0	12	17	1.239	0.000	3.162	4.401				
<u>WASTE PROCESSING</u>												
MAINTENANCE PERSONNEL	0	0	0	0	0.036	0.000	0.000	0.036				
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	8	0	2	10	3.943	0.000	0.661	4.604				
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.043	0.043				
TOTAL	8	0	2	10	3.979	0.000	0.704	4.683				
<u>REFUELING</u>												
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				
<u>TOTAL BY JOB FUNCTION</u>												
MAINTENANCE PERSONNEL	26	(27)	0	(0)	12	(12)	38	(39)	5.391	0.000	2.487	7.878
OPERATIONS PERSONNEL	17	(17)	0	(0)	0	(0)	17	(17)	2.526	0.000	0.000	2.526
HEALTH PHYSICS PERSONNEL	24	(24)	0	(0)	9	(10)	33	(34)	9.850	0.000	3.133	12.983
SUPERVISORY PERSONNEL	1	(1)	0	(0)	0	(0)	1	(1)	0.138	0.000	0.000	0.138
ENGINEERING PERSONNEL	6	(6)	0	(0)	3	(3)	9	(9)	1.216	0.000	1.172	2.388
GRAND TOTALS	74	(75)	0	(0)	24	(25)	98	(100)	19.121	0.000	6.792	25.913

*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

1994

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
<u>REACTOR OPS & SURV</u>								
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
<u>ROUTINE MAINTENANCE</u>								
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
<u>IN-SERVICE INSPECTION</u>								
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
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	0	0	74	74	0.000	0.000	62.301	62.301
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	29	29	0.000	0.000	10.030	10.030
SUPERVISORY PERSONNEL	0	0	5	5	0.000	0.000	1.540	1.540
ENGINEERING PERSONNEL	0	0	3	3	0.000	0.000	0.708	0.708
TOTAL	0	0	111	111	0.000	0.000	74.579	74.579
<u>WASTE PROCESSING</u>								
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
<u>REFUELING</u>								
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
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	0	0	74	74	0.000	0.000	62.301	62.301
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	29	29	0.000	0.000	10.030	10.030
SUPERVISORY PERSONNEL	0	0	5	5	0.000	0.000	1.540	1.540
ENGINEERING PERSONNEL	0	0	3	3	0.000	0.000	0.708	0.708
GRAND TOTALS	0	0	111	111	0.000	0.000	74.579	74.579

*Workers may be counted in more than one category

APPENDIX D (Continued)

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

1994

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	43	35	57	135	0.624	0.217	0.123	0.964
OPERATIONS PERSONNEL	27	0	0	27	4.232	0.000	0.000	4.232
HEALTH PHYSICS PERSONNEL	16	0	42	58	1.781	0.000	4.968	6.749
SUPERVISORY PERSONNEL	11	14	12	37	0.058	0.868	0.205	1.131
ENGINEERING PERSONNEL	3	3	2	8	0.048	0.000	0.056	0.104
TOTAL	100	52	113	265	6.743	1.085	5.352	13.180
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	43	53	105	201	7.014	3.995	8.336	19.345
OPERATIONS PERSONNEL	25	0	0	25	0.876	0.000	0.000	0.876
HEALTH PHYSICS PERSONNEL	16	0	39	55	2.861	0.000	5.049	7.910
SUPERVISORY PERSONNEL	10	15	12	37	2.433	0.870	0.475	3.778
ENGINEERING PERSONNEL	3	3	2	8	0.097	0.416	0.022	0.535
TOTAL	97	71	158	326	13.281	5.281	13.882	32.444
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	14	32	21	67	0.455	1.768	0.507	2.730
OPERATIONS PERSONNEL	2	0	0	2	0.236	0.000	0.000	0.236
HEALTH PHYSICS PERSONNEL	7	0	9	16	0.051	0.000	0.606	0.657
SUPERVISORY PERSONNEL	7	10	10	27	0.275	1.814	0.970	3.059
ENGINEERING PERSONNEL	2	2	1	5	0.021	0.056	0.148	0.225
TOTAL	32	44	41	117	1.038	3.638	2.231	6.907
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	41	53	97	191	5.702	5.577	13.865	25.144
OPERATIONS PERSONNEL	13	0	0	13	0.441	0.000	0.000	0.441
HEALTH PHYSICS PERSONNEL	11	0	12	23	1.209	0.000	0.424	1.633
SUPERVISORY PERSONNEL	5	12	11	28	0.533	0.391	0.559	1.483
ENGINEERING PERSONNEL	3	2	1	6	0.247	0.120	0.052	0.419
TOTAL	73	67	121	261	8.132	6.088	14.900	29.120
WASTE PROCESSING								
MAINTENANCE PERSONNEL	7	0	9	16	0.017	0.000	0.587	0.604
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	2	0	6	8	0.046	0.000	0.151	0.197
SUPERVISORY PERSONNEL	0	1	1	2	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	1	0	2	0.000	0.000	0.000	0.000
TOTAL	10	2	16	28	0.063	0.000	0.738	0.801
REFUELING								
MAINTENANCE PERSONNEL	22	19	32	73	1.595	1.505	8.157	11.257
OPERATIONS PERSONNEL	8	0	0	8	1.405	0.000	0.000	1.405
HEALTH PHYSICS PERSONNEL	1	0	7	8	0.111	0.000	0.361	0.472
SUPERVISORY PERSONNEL	0	5	2	7	0.000	0.487	0.123	0.610
ENGINEERING PERSONNEL	1	1	0	2	0.097	0.000	0.000	0.097
TOTAL	32	25	41	98	3.208	1.992	8.641	13.841
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	170	(43)192	(53) 321	(117) 683	(213) 15.407	13.062	31.575	60.044
OPERATIONS PERSONNEL	75	(27) 0	(0) 0	(0) 75	(27) 7.190	0.000	0.000	7.190
HEALTH PHYSICS PERSONNEL	53	(16) 0	(0) 115	(42) 168	(58) 6.059	0.000	11.559	17.618
SUPERVISORY PERSONNEL	33	(11) 57	(15) 48	(12) 138	(38) 3.299	4.430	2.332	10.061
ENGINEERING PERSONNEL	13	(3) 12	(3) 6	(2) 31	(8) 0.510	0.592	0.278	1.380
GRAND TOTALS	344	(100)281	(71) 490	(173) 1095	(344) 32.465	18.084	45.744	96.293

*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

1994

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
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	46	0	6	52	10.212	0.000	1.875	12.087
OPERATIONS PERSONNEL	44	0	3	47	11.085	0.008	1.778	12.871
HEALTH PHYSICS PERSONNEL	21	0	2	23	6.978	0.002	0.543	7.523
SUPERVISORY PERSONNEL	1	0	0	1	0.526	0.003	0.196	0.727
ENGINEERING PERSONNEL	2	0	0	2	1.317	0.000	0.075	1.392
TOTAL	114	0	11	125	30.118	0.013	4.469	34.600
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	58	0	16	74	14.248	0.000	8.022	22.270
OPERATIONS PERSONNEL	2	0	1	3	0.648	0.000	1.402	2.050
HEALTH PHYSICS PERSONNEL	9	0	1	10	2.565	0.000	0.536	3.101
SUPERVISORY PERSONNEL	0	0	0	0	0.280	0.001	0.018	0.299
ENGINEERING PERSONNEL	1	0	4	5	0.346	0.000	0.818	1.164
TOTAL	70	0	22	92	18.087	0.001	10.796	28.884
<u>IN-SERVICE INSPECTION</u>								
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
<u>SPECIAL MAINTENANCE</u>								
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
<u>WASTE PROCESSING</u>								
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
<u>REFUELING</u>								
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
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	104	0	22	126	24.480	0.000	9.897	34.357
OPERATIONS PERSONNEL	48	0	4	50	11.733	0.008	3.180	14.921
HEALTH PHYSICS PERSONNEL	30	0	3	33	9.543	0.002	1.079	10.624
SUPERVISORY PERSONNEL	1	0	0	1	0.806	0.004	0.216	1.026
ENGINEERING PERSONNEL	3	0	4	7	1.663	0.000	0.893	2.556
GRAND TOTALS	184	0	33	217	48.205	0.014	15.265	63.484

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	49	4	23	76	3.241	0.102	2.380	5.723
OPERATIONS PERSONNEL	37	0	0	37	13.093	0.000	0.000	13.093
HEALTH PHYSICS PERSONNEL	22	2	1	25	6.227	0.470	0.010	6.707
SUPERVISORY PERSONNEL	1	1	1	3	0.010	0.360	0.073	0.443
ENGINEERING PERSONNEL	10	3	4	17	0.955	0.275	0.155	1.385
TOTAL	119	10	29	158	23.526	1.207	2.618	27.351
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	52	7	84	143	10.700	1.170	30.939	42.809
OPERATIONS PERSONNEL	24	0	0	24	0.341	0.000	0.000	0.341
HEALTH PHYSICS PERSONNEL	24	1	1	26	3.622	0.000	0.025	3.647
SUPERVISORY PERSONNEL	1	1	1	3	0.105	0.000	0.051	0.156
ENGINEERING PERSONNEL	11	3	7	21	0.992	0.190	0.321	1.503
TOTAL	112	12	93	217	15.760	1.360	31.336	48.456
<u>IN-SERVICE INSPECTION</u>								
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
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	50	6	76	132	22.343	0.582	33.474	56.399
OPERATIONS PERSONNEL	17	0	0	17	0.270	0.000	0.000	0.270
HEALTH PHYSICS PERSONNEL	22	3	4	29	1.937	0.370	0.355	2.662
SUPERVISORY PERSONNEL	1	0	0	1	0.080	0.000	0.000	0.080
ENGINEERING PERSONNEL	11	3	7	21	1.957	0.320	0.852	3.129
TOTAL	101	12	87	200	26.587	1.272	34.681	62.540
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	0	1	0	1	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	12	3	3	18	1.277	0.000	0.245	1.522
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	12	4	3	19	1.277	0.000	0.245	1.522
<u>REFUELING</u>								
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
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	151	18	183	352	36.284	1.854	66.793	104.931
OPERATIONS PERSONNEL	78	0	0	78	13.704	0.000	0.000	13.704
HEALTH PHYSICS PERSONNEL	80	9	9	98	13.063	0.840	0.635	14.538
SUPERVISORY PERSONNEL	3	2	2	7	0.195	0.360	0.124	0.679
ENGINEERING PERSONNEL	32	9	18	59	3.904	0.785	1.328	6.017
GRAND TOTALS	344	38	212	594	67.150	3.839	68.880	139.869

*Workers may be counted in more than one category.

APPENDIX D (Continued)
**NUMBER OF PERSONNEL AND PERSON-REM
 BY WORK AND JOB FUNCTION**

1994

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	1.267	0.015	1.220	2.502
OPERATIONS PERSONNEL	18	0	0	18	5.468	0.000	0.669	6.137
HEALTH PHYSICS PERSONNEL	23	0	15	38	5.825	0.000	5.365	11.220
SUPERVISORY PERSONNEL	0	0	0	0	0.326	0.071	0.019	0.416
ENGINEERING PERSONNEL	1	0	0	1	<u>1.239</u>	<u>0.323</u>	<u>0.392</u>	<u>1.954</u>
TOTAL	45	0	16	61	14.125	0.409	7.665	22.229
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	23	1	94	118	8.078	0.885	30.834	39.797
OPERATIONS PERSONNEL	1	0	0	1	0.207	0.000	0.126	0.333
HEALTH PHYSICS PERSONNEL	7	0	21	28	3.252	0.000	5.291	8.543
SUPERVISORY PERSONNEL	2	0	0	2	0.415	0.012	0.124	0.551
ENGINEERING PERSONNEL	3	0	54	57	<u>1.171</u>	<u>0.100</u>	<u>27.173</u>	<u>28.444</u>
TOTAL	36	1	169	206	13.123	0.997	63.548	77.668
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	1	5	6	0.234	0.213	1.559	2.006
OPERATIONS PERSONNEL	0	0	0	0	0.159	0.000	0.019	0.178
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.206	0.000	0.314	0.520
SUPERVISORY PERSONNEL	0	0	0	0	0.001	0.000	0.000	0.001
ENGINEERING PERSONNEL	0	0	19	19	<u>0.414</u>	<u>0.002</u>	<u>6.220</u>	<u>6.636</u>
TOTAL	0	1	24	25	1.014	0.215	8.112	9.341
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	21	0	33	54	6.570	0.042	8.707	15.319
OPERATIONS PERSONNEL	1	0	0	1	0.294	0.000	0.024	0.318
HEALTH PHYSICS PERSONNEL	10	0	15	25	2.571	0.000	4.294	6.865
SUPERVISORY PERSONNEL	0	0	0	0	0.080	0.000	0.016	0.096
ENGINEERING PERSONNEL	1	0	12	13	<u>0.360</u>	<u>0.014</u>	<u>2.844</u>	<u>3.248</u>
TOTAL	33	0	60	93	9.905	0.056	15.885	25.846
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.001	0.000	0.277	0.278
OPERATIONS PERSONNEL	0	0	0	0	0.007	0.000	0.000	0.007
HEALTH PHYSICS PERSONNEL	2	0	0	2	0.601	0.000	0.015	0.616
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	<u>0.000</u>	<u>0.000</u>	<u>0.031</u>	<u>0.031</u>
TOTAL	2	0	0	2	0.609	0.000	0.323	0.932
REFUELING								
MAINTENANCE PERSONNEL	29	5	145	179	8.765	1.431	48.592	58.788
OPERATIONS PERSONNEL	3	0	0	3	1.391	0.000	0.011	1.402
HEALTH PHYSICS PERSONNEL	4	0	12	16	1.458	0.000	3.758	5.216
SUPERVISORY PERSONNEL	1	0	0	1	0.152	0.040	0.129	0.321
ENGINEERING PERSONNEL	2	1	49	52	<u>0.838</u>	<u>0.450</u>	<u>18.018</u>	<u>19.306</u>
TOTAL	39	6	206	251	12.604	1.921	70.508	85.033
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	76	7	278	361	24.915	2.588	91.189	118.690
OPERATIONS PERSONNEL	23	0	0	23	7.526	0.000	0.849	8.375
HEALTH PHYSICS PERSONNEL	46	0	63	109	13.913	0.000	19.067	32.980
SUPERVISORY PERSONNEL	3	0	0	3	0.974	0.123	0.288	1.385
ENGINEERING PERSONNEL	7	1	134	142	4.052	0.889	54.678	59.619
GRAND TOTALS	155	8	475	638	51.380	3.598	166.071	221.049

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *HATCH 1,2

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			TOTAL
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	119	2	56	177	33.520	0.507	29.450	63.477
OPERATIONS PERSONNEL	81	0	0	81	47.074	0.000	0.124	47.198
HEALTH PHYSICS PERSONNEL	53	3	45	101	19.593	0.432	16.912	36.937
SUPERVISORY PERSONNEL	33	2	7	42	11.444	0.426	2.278	14.148
ENGINEERING PERSONNEL	12	0	5	17	4.050	0.129	2.546	6.725
TOTAL	298	7	113	418	115.681	1.494	51.310	168.485
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	180	12	671	863	114.932	3.981	322.337	441.250
OPERATIONS PERSONNEL	8	0	1	9	4.491	0.000	0.196	4.687
HEALTH PHYSICS PERSONNEL	6	0	6	12	4.444	0.111	2.474	7.029
SUPERVISORY PERSONNEL	10	1	17	28	3.312	0.603	6.436	10.351
ENGINEERING PERSONNEL	12	1	36	49	6.242	0.346	20.046	26.634
TOTAL	216	14	731	961	133.421	5.041	351.489	489.951
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	4	0	61	65	2.267	0.060	32.570	34.897
OPERATIONS PERSONNEL	0	0	0	0	0.004	0.000	0.000	0.004
HEALTH PHYSICS PERSONNEL	9	0	23	32	9.389	0.033	21.605	31.027
SUPERVISORY PERSONNEL	3	2	0	5	1.217	0.244	0.546	2.007
ENGINEERING PERSONNEL	2	1	22	25	0.800	0.262	8.101	9.163
TOTAL	18	3	106	127	13.677	0.599	62.822	77.099
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	38	1	98	137	18.646	0.205	49.473	68.324
OPERATIONS PERSONNEL	2	0	0	2	3.484	0.000	0.000	3.484
HEALTH PHYSICS PERSONNEL	1	0	7	8	0.406	0.000	1.827	2.233
SUPERVISORY PERSONNEL	5	0	2	7	3.444	0.042	0.799	4.285
ENGINEERING PERSONNEL	1	1	13	15	0.603	0.282	4.907	5.792
TOTAL	47	2	120	169	26.583	0.529	57.006	84.118
WASTE PROCESSING								
MAINTENANCE PERSONNEL	2	0	27	29	1.091	0.061	8.413	9.565
OPERATIONS PERSONNEL	1	0	0	1	0.727	0.000	0.060	0.807
HEALTH PHYSICS PERSONNEL	11	0	18	29	3.252	0.000	6.187	9.439
SUPERVISORY PERSONNEL	1	0	0	1	0.253	0.038	0.079	0.370
ENGINEERING PERSONNEL	0	0	0	0	0.036	0.000	0.073	0.109
TOTAL	15	0	45	60	5.359	0.099	14.832	20.290
REFUELING								
MAINTENANCE PERSONNEL	0	0	55	55	0.571	0.083	18.436	19.090
OPERATIONS PERSONNEL	3	0	0	3	2.096	0.000	0.016	2.112
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.011	0.000	0.174	0.185
SUPERVISORY PERSONNEL	0	0	1	1	0.423	0.018	0.210	0.651
ENGINEERING PERSONNEL	0	0	20	20	0.239	0.006	5.253	5.500
TOTAL	3	0	76	79	3.340	0.109	24.089	27.538
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	343	15	968	1326	171.027	4.897	460.679	636.603
OPERATIONS PERSONNEL	95	0	1	96	57.876	0.000	0.416	58.292
HEALTH PHYSICS PERSONNEL	80	3	99	182	37.095	0.576	49.179	86.850
SUPERVISORY PERSONNEL	52	5	27	84	20.093	1.371	10.348	31.812
ENGINEERING PERSONNEL	27	3	96	126	11.970	1.027	40.926	53.923
GRAND TOTALS	597	26	1191	1814	298.061	7.871	561.548	867.480

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	7	0	4	11	2.105	0.193	2.170	4.468
OPERATIONS PERSONNEL	62	0	0	62	18.933	0.140	0.241	19.314
HEALTH PHYSICS PERSONNEL	21	0	9	30	4.911	0.040	4.154	9.105
SUPERVISORY PERSONNEL	0	0	0	0	0.043	0.020	0.013	0.076
ENGINEERING PERSONNEL	0	0	1	1	0.176	0.212	0.198	0.586
TOTAL	90	0	14	104	26.166	0.605	6.776	33.549
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	16	0	6	22	6.244	0.679	1.899	8.822
OPERATIONS PERSONNEL	4	0	0	4	0.962	0.131	0.043	1.166
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.554	0.015	0.312	0.881
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.013	0.013
ENGINEERING PERSONNEL	2	0	0	2	0.232	0.113	0.004	0.349
TOTAL	22	0	6	28	8.022	0.938	2.271	11.231
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	4	52	56	0.393	0.956	19.560	20.909
OPERATIONS PERSONNEL	0	5	2	7	0.072	1.574	0.367	2.013
HEALTH PHYSICS PERSONNEL	0	0	5	5	0.112	0.000	1.255	1.367
SUPERVISORY PERSONNEL	0	0	1	1	0.034	0.001	0.348	0.383
ENGINEERING PERSONNEL	0	3	1	4	0.000	0.987	0.322	1.309
TOTAL	0	12	61	73	0.611	3.518	21.852	25.981
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	61	7	141	209	19.293	2.834	71.762	93.889
OPERATIONS PERSONNEL	15	4	2	21	6.885	0.791	1.560	9.236
HEALTH PHYSICS PERSONNEL	23	2	19	44	5.710	0.522	6.109	12.341
SUPERVISORY PERSONNEL	0	0	0	0	0.086	0.067	0.047	0.200
ENGINEERING PERSONNEL	1	2	2	5	0.223	0.996	0.475	1.694
TOTAL	100	15	164	279	32.197	5.210	79.953	117.360
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.255	0.158	0.039	0.452
OPERATIONS PERSONNEL	0	0	1	1	0.204	0.025	1.078	1.307
HEALTH PHYSICS PERSONNEL	13	0	3	16	4.480	0.003	1.188	5.651
SUPERVISORY PERSONNEL	0	0	0	0	0.029	0.000	0.000	0.029
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.263	0.000	0.263
TOTAL	13	0	4	17	4.948	0.449	2.305	7.702
REFUELING								
MAINTENANCE PERSONNEL	73	20	154	247	24.016	7.168	65.105	96.289
OPERATIONS PERSONNEL	36	7	3	46	9.753	1.855	1.167	12.775
HEALTH PHYSICS PERSONNEL	13	1	37	51	4.345	0.613	12.601	17.559
SUPERVISORY PERSONNEL	0	0	1	1	0.309	0.044	0.396	0.749
ENGINEERING PERSONNEL	1	2	0	3	0.413	0.605	0.441	1.459
TOTAL	123	30	195	348	38.836	10.285	79.710	128.831
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	157	31	357	545	52.306	11.988	160.535	224.829
OPERATIONS PERSONNEL	117	16	8	141	36.839	4.516	4.456	45.811
HEALTH PHYSICS PERSONNEL	70	3	73	146	20.062	1.193	25.619	46.904
SUPERVISORY PERSONNEL	0	0	2	2	0.501	0.132	0.817	1.450
ENGINEERING PERSONNEL	4	7	4	15	1.044	3.176	1.440	5.660
GRAND TOTALS	348	57	444	849	110.782	21.005	192.667	324.654

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT:	*INDIAN POINT 2								TYPE:	PWR		
WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM				TOTAL			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL				
REACTOR OPS & SURV												
MAINTENANCE PERSONNEL	16	4	24	44	0.217	0.011	4.233	4.461				
OPERATIONS PERSONNEL	21	0	1	22	2.494	0.000	0.061	2.555				
HEALTH PHYSICS PERSONNEL	9	0	13	22	0.963	0.000	3.400	4.363				
SUPERVISORY PERSONNEL	2	2	1	5	0.253	0.000	0.052	0.374				
ENGINEERING PERSONNEL	3	0	1	4	0.312	0.000	0.017	0.329				
TOTAL	51	6	40	97	4.269	0.080	7.763	12.112				
ROUTINE MAINTENANCE												
MAINTENANCE PERSONNEL	17	2	13	32	0.225	0.026	0.198	0.449				
OPERATIONS PERSONNEL	0	0	1	1	0.000	0.000	0.001	0.001				
HEALTH PHYSICS PERSONNEL	2	0	3	5	0.006	0.000	0.053	0.061				
SUPERVISORY PERSONNEL	1	1	1	3	0.001	0.004	0.011	0.016				
ENGINEERING PERSONNEL	1	0	1	2	0.014	0.000	0.007	0.021				
TOTAL	21	3	19	43	0.248	0.030	0.270	0.548				
IN-SERVICE INSPECTION												
MAINTENANCE PERSONNEL	1	1	0	2	0.005	0.004	0.000	0.009				
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	2	0	2	4	0.085	0.000	0.010	0.095				
SUPERVISORY PERSONNEL	0	1	0	1	0.000	0.011	0.000	0.011				
ENGINEERING PERSONNEL	0	0	1	1	0.000	0.000	0.008	0.008				
TOTAL	3	2	3	8	0.090	0.015	0.018	0.123				
SPECIAL MAINTENANCE												
MAINTENANCE PERSONNEL	23	10	29	62	4.425	1.706	5.414	11.545				
OPERATIONS PERSONNEL	12	0	1	13	1.291	0.000	0.278	1.569				
HEALTH PHYSICS PERSONNEL	8	0	11	19	0.727	0.000	1.457	2.184				
SUPERVISORY PERSONNEL	1	2	1	4	0.016	0.395	0.022	0.433				
ENGINEERING PERSONNEL	3	0	1	4	0.266	0.000	0.085	0.351				
TOTAL	47	12	43	102	6.725	2.101	7.256	16.082				
WASTE PROCESSING												
MAINTENANCE PERSONNEL	3	0	24	27	0.206	0.000	3.585	3.791				
OPERATIONS PERSONNEL	4	0	1	5	0.025	0.000	0.001	0.026				
HEALTH PHYSICS PERSONNEL	6	0	5	11	0.174	0.000	1.097	1.271				
SUPERVISORY PERSONNEL	1	0	1	2	0.010	0.000	0.114	0.124				
ENGINEERING PERSONNEL	1	0	1	2	0.001	0.000	0.006	0.006				
TOTAL	15	0	32	47	0.416	0.000	4.802	5.218				
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	80	(24)	17	(10)	90	(29)	167	(63)	5.078	1.747	13.430	20.255
OPERATIONS PERSONNEL	37	(21)	0	(0)	4	(1)	41	(22)	3.810	0.000	0.341	4.151
HEALTH PHYSICS PERSONNEL	27	(9)	0	(0)	34	(13)	61	(22)	1.987	0.000	6.017	8.004
SUPERVISORY PERSONNEL	5	(2)	6	(2)	4	(1)	15	(5)	0.280	0.479	0.199	0.958
ENGINEERING PERSONNEL	8	(3)	0	(0)	5	(1)	13	(4)	0.593	0.000	0.122	0.715
GRAND TOTALS	137	(59)	23	(12)	137	(45)	297	(116)	11.748	2.226	20.109	34.083

*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

1994

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	25	0	37	62	3.880	0.000	6.350	10.230
OPERATIONS PERSONNEL	40	0	11	51	8.370	0.000	2.470	10.840
HEALTH PHYSICS PERSONNEL	20	0	7	27	4.700	0.000	1.870	6.570
SUPERVISORY PERSONNEL	4	0	0	4	0.580	0.000	0.000	0.580
ENGINEERING PERSONNEL	1	2	3	6	0.200	0.490	0.490	1.180
TOTAL	90	2	58	150	17.730	0.490	11.180	29.400
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	4	0	20	24	0.510	0.000	4.660	5.170
OPERATIONS PERSONNEL	1	0	0	1	0.110	0.000	0.000	0.110
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	5	0	20	25	0.620	0.000	4.660	5.280
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	23	0	38	61	4.960	0.000	6.720	11.680
OPERATIONS PERSONNEL	0	0	1	1	0.000	0.000	0.200	0.200
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	1	0	0	1	0.260	0.000	0.000	0.260
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	24	0	39	63	5.220	0.000	6.920	12.140
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	52	0	95	147	9.350	0.000	17.730	27.080
OPERATIONS PERSONNEL	41	0	12	53	8.480	0.000	2.670	11.150
HEALTH PHYSICS PERSONNEL	20	0	7	27	4.700	0.000	1.870	6.570
SUPERVISORY PERSONNEL	5	0	0	5	0.840	0.000	0.000	0.840
ENGINEERING PERSONNEL	1	2	3	6	0.200	0.490	0.490	1.180
GRAND TOTALS	119	2	117	238	23.570	0.490	22.760	46.820

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *KEWAUNEE

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	0	0	1	1	0.046	0.000	0.210	0.256
OPERATIONS PERSONNEL	8	0	0	8	2.020	0.000	0.000	2.020
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	0	0	0.013	0.000	0.000	0.013
ENGINEERING PERSONNEL	0	0	0	0	0.001	0.000	0.000	0.001
TOTAL	8	0	1	9	2.080	0.000	0.210	2.290
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	5	1	16	22	4.511	0.858	4.622	9.991
OPERATIONS PERSONNEL	2	0	1	3	1.444	0.000	0.133	1.577
HEALTH PHYSICS PERSONNEL	11	0	19	30	5.128	0.000	4.228	9.356
SUPERVISORY PERSONNEL	1	0	0	1	0.881	0.000	0.000	0.881
ENGINEERING PERSONNEL	0	0	1	1	0.007	0.000	0.611	0.618
TOTAL	19	1	37	57	11.971	0.858	9.594	22.423
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	0	0	3	3	0.076	0.000	0.622	0.698
OPERATIONS PERSONNEL	0	0	0	0	0.012	0.000	0.000	0.012
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	0.250	0.000	0.000	0.250
TOTAL	1	0	3	4	0.338	0.000	0.622	0.960
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	14	0	55	69	4.986	0.157	24.349	29.492
OPERATIONS PERSONNEL	0	0	0	0	0.057	0.000	0.000	0.057
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.027	0.000	0.000	0.027
SUPERVISORY PERSONNEL	1	0	0	1	0.306	0.000	0.000	0.306
ENGINEERING PERSONNEL	6	2	0	8	1.789	0.331	0.000	2.120
TOTAL	21	2	55	78	7.165	0.488	24.349	32.002
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.086	0.000	0.042	0.128
OPERATIONS PERSONNEL	1	0	0	1	0.357	0.000	0.000	0.357
HEALTH PHYSICS PERSONNEL	2	0	0	2	0.764	0.000	0.000	0.764
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	1.207	0.000	0.042	1.249
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	10	3	0	13	4.471	1.116	0.143	5.730
OPERATIONS PERSONNEL	5	0	0	5	1.758	0.000	0.000	1.758
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	2	0	0	2	0.471	0.000	0.000	0.471
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	17	3	0	20	6.700	1.116	0.143	7.959
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	29	4	75	108	14.176	2.131	29.988	46.295
OPERATIONS PERSONNEL	16	0	1	17	5.648	0.000	0.133	5.781
HEALTH PHYSICS PERSONNEL	13	0	19	32	5.919	0.000	4.228	10.147
SUPERVISORY PERSONNEL	4	0	0	4	1.671	0.000	0.000	1.671
ENGINEERING PERSONNEL	7	2	1	10	2.047	0.331	0.611	2.989
GRAND TOTALS	69	6	96	171	29.461	2.462	34.960	66.883

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *LACROSSE

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM							
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL				
<u>REACTOR OPS & SURV</u>												
MAINTENANCE PERSONNEL	1	0	0	1	0.304	0.000	0.190	0.494				
OPERATIONS PERSONNEL	6	0	0	6	1.404	0.000	0.000	1.404				
HEALTH PHYSICS PERSONNEL	4	0	0	4	0.729	0.000	0.000	0.729				
SUPERVISORY PERSONNEL	0	0	0	0	0.231	0.000	0.000	0.231				
ENGINEERING PERSONNEL	0	0	0	0	0.007	0.002	0.000	0.009				
TOTAL	11	0	0	11	2.675	0.002	0.190	2.867				
<u>ROUTINE MAINTENANCE</u>												
MAINTENANCE PERSONNEL	0	0	0	0	0.043	0.000	0.000	0.043				
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	0.043	0.000	0.000	0.043				
<u>IN-SERVICE INSPECTION</u>												
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				
<u>SPECIAL MAINTENANCE</u>												
MAINTENANCE PERSONNEL	0	0	14	14	0.273	0.000	3.586	3.859				
OPERATIONS PERSONNEL	1	0	0	1	0.410	0.000	0.000	0.410				
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.076	0.000	0.020	0.096				
SUPERVISORY PERSONNEL	0	0	0	0	0.140	0.000	0.000	0.140				
ENGINEERING PERSONNEL	0	0	0	0	0.013	0.078	0.000	0.091				
TOTAL	1	0	14	15	0.912	0.078	3.606	4.596				
<u>WASTE PROCESSING</u>												
MAINTENANCE PERSONNEL	2	0	0	2	0.350	0.000	0.000	0.350				
OPERATIONS PERSONNEL	0	0	0	0	0.026	0.000	0.000	0.026				
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.015	0.000	0.000	0.015				
SUPERVISORY PERSONNEL	0	0	0	0	0.009	0.000	0.000	0.009				
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
TOTAL	2	0	0	2	0.400	0.000	0.000	0.400				
<u>REFUELING</u>												
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				
<u>TOTAL BY JOB FUNCTION</u>												
MAINTENANCE PERSONNEL	3	(4)	0	(0)	14	(14)	17	(18)	0.970	0.000	3.776	4.743
OPERATIONS PERSONNEL	7	(7)	0	(0)	0	(0)	7	(7)	1.840	0.000	0.000	1.840
HEALTH PHYSICS PERSONNEL	4	(3)	0	(0)	0	(0)	4	(3)	0.820	0.000	0.020	0.840
SUPERVISORY PERSONNEL	0	(1)	0	(0)	0	(0)	0	(1)	0.380	0.000	0.000	0.380
ENGINEERING PERSONNEL	0	(0)	0	(0)	0	(0)	0	(0)	0.020	0.080	0.000	0.100
GRAND TOTALS	14	(15)	0	(0)	14	(14)	28	(29)	4.030	0.080	3.796	7.906

*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

1994

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
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	38	1	55	94	23.160	0.012	17.859	41.031
OPERATIONS PERSONNEL	94	0	84	178	31.863	0.000	7.854	39.717
HEALTH PHYSICS PERSONNEL	9	56	0	65	6.434	0.693	0.070	7.197
SUPERVISORY PERSONNEL	84	0	59	143	8.270	0.000	1.650	9.920
ENGINEERING PERSONNEL	44	1	4	49	6.006	0.017	0.744	6.769
TOTAL	269	58	202	529	75.735	0.722	28.177	104.634
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	185	24	795	1004	112.901	0.261	257.952	371.114
OPERATIONS PERSONNEL	56	0	0	56	18.934	0.000	0.004	18.938
HEALTH PHYSICS PERSONNEL	67	205	41	313	48.236	2.524	9.016	59.776
SUPERVISORY PERSONNEL	179	0	127	306	17.655	0.000	3.532	21.187
ENGINEERING PERSONNEL	75	2	113	190	10.185	0.058	23.605	33.848
TOTAL	562	231	1076	1869	207.911	2.843	294.109	504.863
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	1	0	205	206	0.335	0.000	66.467	66.802
OPERATIONS PERSONNEL	1	0	0	1	0.278	0.000	0.000	0.278
HEALTH PHYSICS PERSONNEL	0	5	26	31	0.076	0.059	5.788	5.923
SUPERVISORY PERSONNEL	5	0	5	10	0.478	0.000	0.129	0.607
ENGINEERING PERSONNEL	8	0	54	62	1.056	0.000	11.143	12.199
TOTAL	15	5	290	310	2.223	0.059	83.527	85.809
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	3	0	23	26	1.671	0.000	7.542	9.213
OPERATIONS PERSONNEL	0	0	0	0	0.224	0.000	0.000	0.224
HEALTH PHYSICS PERSONNEL	1	5	1	7	0.596	0.059	0.108	0.763
SUPERVISORY PERSONNEL	1	0	3	4	0.101	0.000	0.089	0.190
ENGINEERING PERSONNEL	6	0	0	6	0.777	0.000	0.017	0.794
TOTAL	11	5	27	43	3.369	0.059	7.756	11.184
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	1	0	19	20	0.684	0.000	6.319	7.003
OPERATIONS PERSONNEL	9	0	56	65	3.205	0.000	5.299	8.504
HEALTH PHYSICS PERSONNEL	3	0	1	4	1.957	0.000	0.141	2.098
SUPERVISORY PERSONNEL	8	0	2	10	0.788	0.000	0.051	0.839
ENGINEERING PERSONNEL	1	0	0	1	0.152	0.000	0.002	0.154
TOTAL	22	0	78	100	6.786	0.000	11.812	18.598
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	0	0	2	2	0.086	0.000	0.472	0.558
OPERATIONS PERSONNEL	0	0	0	0	0.009	0.000	0.000	0.009
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.060	0.000	0.000	0.060
SUPERVISORY PERSONNEL	0	0	0	0	0.016	0.000	0.002	0.018
ENGINEERING PERSONNEL	0	0	1	1	0.002	0.000	0.217	0.219
TOTAL	0	0	3	3	0.173	0.000	0.691	0.864
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	228	25	1099	1352	138.837	0.273	356.611	495.721
OPERATIONS PERSONNEL	160	0	140	300	54.513	0.000	13.157	67.670
HEALTH PHYSICS PERSONNEL	80	271	69	420	57.359	3.335	15.123	75.817
SUPERVISORY PERSONNEL	277	0	196	473	27.308	0.000	5.453	32.761
ENGINEERING PERSONNEL	134	3	172	309	18.180	0.075	35.728	53.983
GRAND TOTALS	879	299	1676	2854	296.197	3.683	426.072	725.952

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *LIMERICK 1,2

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	117	114	189	400	7.344	4.886	5.158	17.388
OPERATIONS PERSONNEL	147	21	58	226	9.203	0.803	1.699	11.705
HEALTH PHYSICS PERSONNEL	42	0	48	90	6.755	0.000	2.859	9.614
SUPERVISORY PERSONNEL	4	5	36	45	0.317	0.219	1.108	1.644
ENGINEERING PERSONNEL	43	23	27	93	1.654	0.585	0.903	3.142
TOTAL	353	163	338	854	25.273	6.483	11.727	43.483
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	36	29	19	84	1.961	0.672	0.446	3.079
OPERATIONS PERSONNEL	21	3	27	51	0.949	0.054	0.534	1.537
HEALTH PHYSICS PERSONNEL	14	0	10	24	0.359	0.000	0.220	0.579
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	3	0	3	6	0.053	0.000	0.054	0.107
TOTAL	74	32	59	165	3.322	0.726	1.254	5.302
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	0	2	20	22	0.000	0.088	8.867	8.955
OPERATIONS PERSONNEL	0	1	8	9	0.000	0.068	2.442	2.510
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0	0	6	6	0.000	0.000	0.881	0.881
ENGINEERING PERSONNEL	1	0	6	7	0.027	0.000	2.394	2.421
TOTAL	1	3	40	44	0.027	0.156	14.584	14.767
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	51	22	53	126	3.386	0.871	3.179	7.436
OPERATIONS PERSONNEL	38	4	10	52	1.067	0.117	0.371	1.555
HEALTH PHYSICS PERSONNEL	21	0	18	39	0.608	0.000	0.507	1.115
SUPERVISORY PERSONNEL	2	0	11	13	0.036	0.000	3.017	3.053
ENGINEERING PERSONNEL	16	10	3	29	0.467	0.110	0.015	0.592
TOTAL	128	36	95	259	5.564	1.098	7.089	13.751
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	19	45	46	110	0.687	0.439	2.296	3.422
OPERATIONS PERSONNEL	35	7	18	60	0.469	0.024	0.905	1.398
HEALTH PHYSICS PERSONNEL	29	1	25	55	1.143	0.050	0.935	2.128
SUPERVISORY PERSONNEL	2	2	10	14	0.782	0.031	0.676	1.489
ENGINEERING PERSONNEL	9	5	5	19	0.197	0.893	0.000	1.090
TOTAL	94	60	104	258	3.278	1.437	4.812	9.527
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	132	117	384	633	20.071	20.746	74.706	115.523
OPERATIONS PERSONNEL	155	22	85	262	10.630	4.060	9.392	24.091
HEALTH PHYSICS PERSONNEL	51	4	69	124	4.743	0.376	11.645	16.764
SUPERVISORY PERSONNEL	9	5	149	163	0.405	0.871	21.582	22.858
ENGINEERING PERSONNEL	52	48	49	149	2.793	2.150	3.725	8.668
TOTAL	399	196	736	1331	38.651	28.203	121.050	187.904
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	355	(270) 329 (329)	691 (743)	1375 (1342)	33.449	27.702	94.652	155.803
OPERATIONS PERSONNEL	396	(398) 58 (120)	206 (279)	660 (797)	22.327	5.126	15.343	42.796
HEALTH PHYSICS PERSONNEL	157	(111) 5 (19)	170 (114)	332 (244)	13.608	0.426	16.166	30.200
SUPERVISORY PERSONNEL	17	(33) 12 (33)	212 (391)	241 (457)	1.540	1.121	27.264	29.925
ENGINEERING PERSONNEL	124	(173) 86 (243)	93 (177)	303 (583)	5.191	3.738	7.091	16.020
GRAND TOTALS	1049	(985) 490 (744)	1372 (1704)	2911 (3433)	76.115	38.113	160.516	274.744

*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

1994

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
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	2	0	0	2	1.340	0.000	0.100	1.440
OPERATIONS PERSONNEL	27	0	6	33	7.006	0.000	1.450	8.456
HEALTH PHYSICS PERSONNEL	17	0	11	28	5.452	0.000	2.723	8.175
SUPERVISORY PERSONNEL	1	0	0	1	0.350	0.000	0.090	0.440
ENGINEERING PERSONNEL	2	0	1	3	0.798	0.000	0.190	0.988
TOTAL	49	0	18	67	14.946	0.000	4.553	19.499
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	25	0	25	50	7.672	0.000	8.765	16.437
OPERATIONS PERSONNEL	4	0	1	5	2.229	0.000	0.490	2.719
HEALTH PHYSICS PERSONNEL	5	0	0	5	2.110	0.000	0.181	2.291
SUPERVISORY PERSONNEL	4	0	3	7	1.188	0.000	2.403	3.591
ENGINEERING PERSONNEL	4	0	54	58	1.520	0.000	48.476	49.996
TOTAL	42	0	83	125	14.719	0.000	60.315	75.034
<u>IN-SERVICE INSPECTION</u>								
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
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	8	0	11	19	2.075	0.000	3.205	5.280
OPERATIONS PERSONNEL	0	0	0	0	0.090	0.000	0.000	0.090
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.040	0.000	0.010	0.050
SUPERVISORY PERSONNEL	0	0	0	0	0.030	0.000	0.045	0.075
ENGINEERING PERSONNEL	0	0	3	3	0.065	0.000	1.531	1.596
TOTAL	8	0	14	22	2.300	0.000	4.791	7.091
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	1	0	0	1	0.195	0.000	0.020	0.215
OPERATIONS PERSONNEL	0	0	0	0	0.020	0.000	0.005	0.025
HEALTH PHYSICS PERSONNEL	2	0	1	3	0.681	0.000	0.220	0.901
SUPERVISORY PERSONNEL	0	0	0	0	0.040	0.000	0.005	0.045
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.055	0.055
TOTAL	3	0	1	4	0.936	0.000	0.305	1.241
<u>REFUELING</u>								
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
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	36	0	36	72	11.282	0.000	12.090	23.372
OPERATIONS PERSONNEL	31	0	7	38	9.345	0.000	1.945	11.290
HEALTH PHYSICS PERSONNEL	24	0	12	36	8.283	0.000	3.134	11.417
SUPERVISORY PERSONNEL	5	0	3	8	1.608	0.000	2.543	4.151
ENGINEERING PERSONNEL	6	0	58	64	2.383	0.000	50.252	52.635
GRAND TOTALS	102	0	116	218	32.901	0.000	69.964	102.865

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *MCGUIRE 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	430	114	722	1.457	1.015	0.109	2.581
OPERATIONS PERSONNEL	48	3	25	76	1.334	0.061	0.540	1.935
HEALTH PHYSICS PERSONNEL	24	2	65	91	1.042	0.012	0.922	1.976
SUPERVISORY PERSONNEL	1	6	1	8	0.005	0.005	0.000	0.010
ENGINEERING PERSONNEL	12	7	52	71	0.122	0.117	0.031	0.270
TOTAL	263	448	257	968	3.960	1.210	1.602	6.772
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	181	437	125	743	72.087	210.046	30.134	312.267
OPERATIONS PERSONNEL	51	3	28	82	7.424	0.745	8.362	16.531
HEALTH PHYSICS PERSONNEL	24	2	65	91	3.573	0.303	16.133	20.009
SUPERVISORY PERSONNEL	1	6	0	7	0.156	1.420	0.000	1.576
ENGINEERING PERSONNEL	12	7	60	79	2.161	1.498	21.583	25.242
TOTAL	269	455	278	1002	85.401	214.012	76.212	375.625
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	71	80	8	159	2.270	2.562	0.166	4.998
OPERATIONS PERSONNEL	0	0	1	1	0.000	0.000	0.019	0.019
HEALTH PHYSICS PERSONNEL	10	1	16	27	0.291	0.000	0.208	0.499
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	1	2	0.000	0.000	0.000	0.000
TOTAL	82	81	26	189	2.561	2.562	0.393	5.516
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	50	31	6	87	0.212	0.041	0.003	0.256
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	2	0	6	8	0.006	0.000	0.011	0.017
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	52	31	12	95	0.218	0.041	0.014	0.273
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	1	3	5	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	3	0	23	26	0.024	0.000	0.132	0.156
HEALTH PHYSICS PERSONNEL	2	0	0	2	0.024	0.000	0.000	0.024
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	1	26	33	0.048	0.000	0.132	0.180
REFUELING								
MAINTENANCE PERSONNEL	8	24	0	32	0.096	0.173	0.000	0.269
OPERATIONS PERSONNEL	0	0	8	8	0.000	0.000	0.086	0.086
HEALTH PHYSICS PERSONNEL	5	0	12	17	0.001	0.000	0.004	0.005
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	0	1	0.000	0.000	0.000	0.000
TOTAL	14	24	20	58	0.097	0.173	0.090	0.360
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	489	(181)003 (437)	256 (125)	1748 (743)	76.122	213.837	30.412	320.371
OPERATIONS PERSONNEL	102	(51) 6 (3)	85 (28)	193 (82)	8.782	0.806	9.139	18.727
HEALTH PHYSICS PERSONNEL	67	(24) 5 (2)	164 (65)	236 (91)	4.937	0.315	17.278	22.530
SUPERVISORY PERSONNEL	2	(1) 12 (6)	1 (1)	15 (8)	0.161	1.425	0.000	1.586
ENGINEERING PERSONNEL	26	(12) 14 (7)	113 (61)	153 (80)	2.283	1.615	21.614	25.512
GRAND TOTALS	686	(269)040 (455)	619 (280)	2345 (1004)	32.285	217.996	78.443	388.726

*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

1994

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	60	12	125	197	2.211	0.110	0.649	2.970
OPERATIONS PERSONNEL	86	0	13	79	4.623	0.000	0.798	5.421
HEALTH PHYSICS PERSONNEL	47	0	54	101	2.039	0.000	0.635	2.674
SUPERVISORY PERSONNEL	0	0	5	5	0.000	0.000	0.007	0.007
ENGINEERING PERSONNEL	15	16	26	57	0.378	0.154	0.222	0.754
TOTAL	188	28	223	439	9.251	0.264	2.311	11.826
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	72	22	334	428	2.863	0.281	7.981	11.125
OPERATIONS PERSONNEL	13	0	6	19	0.249	0.000	0.044	0.293
HEALTH PHYSICS PERSONNEL	25	0	27	52	0.638	0.000	0.656	1.294
SUPERVISORY PERSONNEL	0	0	5	5	0.000	0.000	0.021	0.021
ENGINEERING PERSONNEL	9	9	24	42	0.128	0.089	1.339	1.556
TOTAL	119	31	396	546	3.878	0.370	10.041	14.289
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	7	5	255	267	0.930	0.183	48.617	49.730
OPERATIONS PERSONNEL	11	0	0	11	0.206	0.000	0.000	0.206
HEALTH PHYSICS PERSONNEL	11	0	26	37	0.240	0.000	1.172	1.412
SUPERVISORY PERSONNEL	0	0	3	3	0.000	0.000	0.052	0.052
ENGINEERING PERSONNEL	4	12	37	53	0.081	0.818	10.600	11.499
TOTAL	33	17	321	371	1.457	1.001	60.441	62.899
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	50	17	223	290	5.696	0.129	6.389	12.214
OPERATIONS PERSONNEL	18	0	6	24	0.131	0.000	0.033	0.164
HEALTH PHYSICS PERSONNEL	21	0	8	29	1.066	0.000	0.114	1.180
SUPERVISORY PERSONNEL	0	0	5	5	0.000	0.000	0.003	0.003
ENGINEERING PERSONNEL	9	8	9	26	0.554	0.119	0.081	0.754
TOTAL	98	25	251	374	7.447	0.248	6.620	14.315
WASTE PROCESSING								
MAINTENANCE PERSONNEL	17	11	45	73	0.975	0.067	4.320	5.362
OPERATIONS PERSONNEL	1	0	0	1	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	12	0	22	34	0.983	0.000	1.309	2.292
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	1	0	1	2	0.000	0.000	0.000	0.000
TOTAL	31	11	68	110	1.958	0.067	5.629	7.654
REFUELING								
MAINTENANCE PERSONNEL	124	31	628	783	20.954	3.870	176.089	200.913
OPERATIONS PERSONNEL	57	0	15	72	13.692	0.000	2.372	16.064
HEALTH PHYSICS PERSONNEL	53	1	59	113	9.555	0.111	18.375	28.041
SUPERVISORY PERSONNEL	0	0	6	6	0.000	0.000	0.361	0.361
ENGINEERING PERSONNEL	17	20	57	94	2.219	3.394	12.480	18.093
TOTAL	251	52	765	1068	46.420	7.375	209.677	263.472
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	330	98	1610	2038	33.629	4.640	244.045	282.314
OPERATIONS PERSONNEL	166	0	40	206	18.901	0.000	3.247	22.148
HEALTH PHYSICS PERSONNEL	169	1	196	366	14.521	0.111	22.261	36.893
SUPERVISORY PERSONNEL	0	0	24	24	0.000	0.000	0.444	0.444
ENGINEERING PERSONNEL	55	65	154	274	3.360	4.574	24.722	32.656
GRAND TOTALS	720	164	2024	2908	70.411	9.325	294.719	374.455

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	134	36	262	432	8.452	0.506	5.470	14.428	
OPERATIONS PERSONNEL	52	0	27	79	7.561	0.000	0.095	7.656	
HEALTH PHYSICS PERSONNEL	101	1	33	135	8.562	0.000	0.780	9.342	
SUPERVISORY PERSONNEL	1	0	10	11	0.037	0.000	0.043	0.080	
ENGINEERING PERSONNEL	10	18	40	68	0.454	0.338	0.716	1.508	
TOTAL	298	55	372	725	25.096	0.844	7.104	33.044	
ROUTINE MAINTENANCE									
MAINTENANCE PERSONNEL	60	18	232	310	2.003	0.058	2.881	4.942	
OPERATIONS PERSONNEL	13	0	2	15	0.094	0.000	0.004	0.098	
HEALTH PHYSICS PERSONNEL	29	0	2	31	0.375	0.000	0.000	0.375	
SUPERVISORY PERSONNEL	1	0	2	3	0.018	0.000	0.001	0.019	
ENGINEERING PERSONNEL	6	3	12	21	0.035	0.000	0.071	0.106	
TOTAL	109	21	250	380	2.525	0.058	2.957	5.540	
IN-SERVICE INSPECTION									
MAINTENANCE PERSONNEL	14	4	23	41	0.020	0.000	1.103	1.123	
OPERATIONS PERSONNEL	1	0	1	2	0.011	0.000	0.003	0.014	
HEALTH PHYSICS PERSONNEL	7	0	1	8	0.003	0.000	0.000	0.003	
SUPERVISORY PERSONNEL	1	0	1	2	0.000	0.000	0.007	0.007	
ENGINEERING PERSONNEL	4	3	5	12	0.034	0.068	0.125	0.227	
TOTAL	27	7	31	65	0.068	0.068	1.238	1.374	
SPECIAL MAINTENANCE									
MAINTENANCE PERSONNEL	49	15	188	252	5.870	0.476	30.873	37.219	
OPERATIONS PERSONNEL	26	0	6	32	2.706	0.000	0.081	2.787	
HEALTH PHYSICS PERSONNEL	22	0	5	27	1.194	0.000	0.213	1.407	
SUPERVISORY PERSONNEL	1	0	4	5	0.205	0.000	0.413	0.618	
ENGINEERING PERSONNEL	7	5	9	21	0.461	0.478	0.946	1.885	
TOTAL	105	20	212	337	10.436	0.954	32.526	43.916	
WASTE PROCESSING									
MAINTENANCE PERSONNEL	49	22	91	162	1.490	0.048	1.901	3.439	
OPERATIONS PERSONNEL	8	0	7	15	0.000	0.000	0.000	0.000	
HEALTH PHYSICS PERSONNEL	47	0	17	64	0.817	0.000	0.152	0.969	
SUPERVISORY PERSONNEL	1	0	0	1	0.000	0.000	0.000	0.000	
ENGINEERING PERSONNEL	3	1	6	10	0.001	0.000	0.002	0.003	
TOTAL	108	23	121	252	2.308	0.048	2.055	4.411	
REFUELING									
MAINTENANCE PERSONNEL	88	29	388	505	7.791	0.815	62.134	70.740	
OPERATIONS PERSONNEL	36	0	8	44	5.626	0.000	0.120	5.746	
HEALTH PHYSICS PERSONNEL	54	1	33	88	4.758	0.000	4.849	9.607	
SUPERVISORY PERSONNEL	1	0	5	6	0.051	0.000	0.656	0.707	
ENGINEERING PERSONNEL	9	9	35	53	0.380	0.349	4.208	4.937	
TOTAL	188	39	469	696	18.606	1.164	71.967	91.737	
TOTAL BY JOB FUNCTION									
MAINTENANCE PERSONNEL	394	(394)	124 (124)	1184 (1479)	1702 (1997)	25.626	1.903	104.362	131.891
OPERATIONS PERSONNEL	136	(136)	0 (0)	51 (51)	187 (187)	16.028	0.000	0.303	16.331
HEALTH PHYSICS PERSONNEL	260	(260)	2 (2)	91 (91)	353 (353)	15.709	0.000	5.994	21.703
SUPERVISORY PERSONNEL	6	(6)	0 (0)	22 (22)	28 (28)	0.311	0.000	1.120	1.431
ENGINEERING PERSONNEL	39	(39)	39 (39)	107 (107)	185 (185)	1.365	1.233	6.068	8.666
GRAND TOTALS	835	(835)	165 (165)	1455 (1750)	2455 (2750)	59.039	3.136	117.847	180.022

*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

1994

PLANT: *MONTICELLO

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	26	37	7	70	5.461	11.313	2.574	19.348
OPERATIONS PERSONNEL	43	0	1	44	28.059	0.000	0.745	28.804
HEALTH PHYSICS PERSONNEL	30	4	9	43	9.586	1.084	2.296	12.966
SUPERVISORY PERSONNEL	34	3	3	40	13.576	1.534	1.974	17.084
ENGINEERING PERSONNEL	9	1	0	10	3.298	0.109	0.000	3.407
TOTAL	142	45	20	207	59.980	14.040	7.589	81.609
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	27	114	25	166	24.032	69.856	8.016	101.904
OPERATIONS PERSONNEL	4	0	0	4	1.449	0.000	0.000	1.449
HEALTH PHYSICS PERSONNEL	18	9	13	40	9.905	2.120	8.857	20.882
SUPERVISORY PERSONNEL	30	6	10	46	11.897	3.363	3.826	19.086
ENGINEERING PERSONNEL	9	1	0	10	6.039	0.106	0.000	6.145
TOTAL	88	130	48	266	53.322	75.445	20.699	149.466
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	0	21	28	49	0.110	7.964	22.023	30.097
OPERATIONS PERSONNEL	0	0	0	0	0.716	0.000	0.000	0.716
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.240	0.000	0.102	0.342
SUPERVISORY PERSONNEL	1	1	36	38	0.498	0.522	26.919	27.939
ENGINEERING PERSONNEL	0	0	0	0	0.005	0.000	0.000	0.005
TOTAL	1	22	64	87	1.569	8.486	49.044	59.099
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	3	115	41	159	1.369	54.361	17.769	73.499
OPERATIONS PERSONNEL	0	0	0	0	0.474	0.000	0.000	0.474
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.273	0.034	0.379	0.686
SUPERVISORY PERSONNEL	2	7	12	21	0.949	1.452	4.859	7.260
ENGINEERING PERSONNEL	0	0	0	0	0.075	0.001	0.000	0.076
TOTAL	5	122	54	181	3.140	55.848	23.007	81.995
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	5	1	0	6	1.275	0.544	0.000	1.819
OPERATIONS PERSONNEL	0	0	0	0	0.152	0.000	0.000	0.152
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.643	0.002	0.031	0.676
SUPERVISORY PERSONNEL	0	0	0	0	0.115	0.000	0.000	0.115
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	6	1	0	7	2.185	0.546	0.031	2.762
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	8	22	0	30	2.410	5.856	0.033	8.299
OPERATIONS PERSONNEL	11	0	0	11	3.702	0.000	0.000	3.702
HEALTH PHYSICS PERSONNEL	5	0	3	8	1.060	0.050	0.461	1.571
SUPERVISORY PERSONNEL	3	2	0	5	0.777	0.350	0.184	1.311
ENGINEERING PERSONNEL	0	0	0	0	0.121	0.034	0.000	0.155
TOTAL	27	24	3	54	8.070	6.290	0.678	15.038
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	69	310	101	480	34.657	149.894	50.415	234.966
OPERATIONS PERSONNEL	58	0	1	59	34.552	0.000	0.745	35.297
HEALTH PHYSICS PERSONNEL	54	13	28	95	21.707	3.290	12.126	37.123
SUPERVISORY PERSONNEL	70	19	61	150	27.812	7.221	37.762	72.795
ENGINEERING PERSONNEL	18	2	0	20	9.538	0.250	0.000	9.788
GRAND TOTALS	269	344	189	802	128.266	160.655	101.048	389.969

*Workers may be counted in more than one category

APPENDIX D (Continued)

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

1994

PLANT: *NINE MILE POINT 1,2

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	970	1	462	1433	8.335	0.005	4.368	12.708
OPERATIONS PERSONNEL	5288	0	962	6250	26.838	0.000	3.365	30.303
HEALTH PHYSICS PERSONNEL	2358	1	0	2359	10.239	0.020	0.000	10.259
SUPERVISORY PERSONNEL	405	0	28	433	1.906	0.000	0.167	2.073
ENGINEERING PERSONNEL	373	4	111	488	2.692	0.035	0.719	3.446
TOTAL	9394	6	1563	10963	50.110	0.060	8.619	58.789
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	1531	0	2125	3656	21.786	0.000	29.150	50.936
OPERATIONS PERSONNEL	240	0	59	299	2.212	0.000	1.020	3.232
HEALTH PHYSICS PERSONNEL	745	1	0	746	6.178	0.010	0.000	6.188
SUPERVISORY PERSONNEL	61	3	87	151	0.850	0.026	0.857	1.733
ENGINEERING PERSONNEL	526	8	180	714	5.965	0.066	1.948	7.979
TOTAL	3103	12	2451	5566	36.991	0.102	32.975	70.068
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	6	0	19	25	0.045	0.000	0.168	0.213
OPERATIONS PERSONNEL	0	0	3	3	0.000	0.000	0.033	0.033
HEALTH PHYSICS PERSONNEL	8	0	0	8	0.066	0.000	0.000	0.066
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	18	0	2	20	0.164	0.000	0.020	0.184
TOTAL	32	0	24	56	0.275	0.000	0.221	0.496
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	39	0	445	484	0.715	0.000	5.466	6.181
OPERATIONS PERSONNEL	14	0	29	43	0.115	0.000	0.225	0.340
HEALTH PHYSICS PERSONNEL	57	0	0	57	0.430	0.000	0.000	0.430
SUPERVISORY PERSONNEL	3	0	8	11	0.008	0.000	0.044	0.052
ENGINEERING PERSONNEL	44	0	37	81	0.633	0.000	0.224	0.857
TOTAL	157	0	519	676	1.901	0.000	5.959	7.860
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	27	0	161	188	0.237	0.000	1.610	1.847
OPERATIONS PERSONNEL	2104	0	301	2405	8.759	0.000	5.042	13.801
HEALTH PHYSICS PERSONNEL	300	0	0	300	2.489	0.000	0.000	2.489
SUPERVISORY PERSONNEL	61	0	1	62	0.275	0.000	0.015	0.290
ENGINEERING PERSONNEL	63	0	1	64	0.586	0.000	0.005	0.591
TOTAL	2575	0	464	3039	12.346	0.000	6.672	19.018
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	4	0	23	27	0.020	0.000	0.198	0.218
OPERATIONS PERSONNEL	15	0	0	15	0.101	0.000	0.000	0.101
HEALTH PHYSICS PERSONNEL	17	0	0	17	0.053	0.000	0.000	0.053
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	10	0	0	10	0.084	0.000	0.000	0.084
TOTAL	46	0	23	69	0.258	0.000	0.198	0.456
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	2577	1	3235	5813	31.138	0.005	40.960	72.103
OPERATIONS PERSONNEL	7681	0	1354	9015	38.125	0.000	9.685	47.810
HEALTH PHYSICS PERSONNEL	3485	2	0	3487	19.455	0.030	0.000	19.485
SUPERVISORY PERSONNEL	530	3	124	657	3.039	0.026	1.083	4.148
ENGINEERING PERSONNEL	1054	12	331	1397	10.124	0.101	2.916	13.141
GRAND TOTALS	15307	18	5044	20369	101.881	0.162	54.644	156.687

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *NORTH ANNA 1,2

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			TOTAL				
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT					
REACTOR OPS & SURV												
MAINTENANCE PERSONNEL	70	0	25	95	1.516	0.000	0.250	1.766				
OPERATIONS PERSONNEL	96	3	3	104	7.196	0.000	0.010	7.208				
HEALTH PHYSICS PERSONNEL	48	0	71	119	1.896	0.012	3.812	5.722				
SUPERVISORY PERSONNEL	42	1	0	43	0.946	0.002	0.000	0.948				
ENGINEERING PERSONNEL	25	2	0	27	0.615	0.024	0.000	0.639				
TOTAL	283	6	99	388	12.173	0.038	4.072	16.283				
ROUTINE MAINTENANCE												
MAINTENANCE PERSONNEL	209	1	461	671	40.728	0.000	42.953	83.681				
OPERATIONS PERSONNEL	327	14	55	396	10.286	0.172	0.629	11.087				
HEALTH PHYSICS PERSONNEL	101	0	164	265	13.920	0.000	12.979	26.899				
SUPERVISORY PERSONNEL	96	3	7	106	1.897	0.002	0.007	1.906				
ENGINEERING PERSONNEL	135	7	29	171	3.144	0.008	0.874	4.026				
TOTAL	868	25	716	1609	69.975	0.182	57.442	127.599				
IN-SERVICE INSPECTION												
MAINTENANCE PERSONNEL	14	0	56	70	0.735	0.000	3.354	4.089				
OPERATIONS PERSONNEL	12	0	1	13	1.697	0.000	0.024	1.721				
HEALTH PHYSICS PERSONNEL	8	0	24	32	0.063	0.000	0.486	0.549				
SUPERVISORY PERSONNEL	1	0	0	1	0.040	0.000	0.000	0.040				
ENGINEERING PERSONNEL	20	0	15	35	0.604	0.000	1.937	2.541				
TOTAL	55	0	96	151	3.139	0.000	5.801	8.940				
SPECIAL MAINTENANCE												
MAINTENANCE PERSONNEL	5	0	14	19	0.165	0.000	0.359	0.524				
OPERATIONS PERSONNEL	1	0	1	2	0.014	0.000	0.003	0.017				
HEALTH PHYSICS PERSONNEL	0	0	8	8	0.000	0.000	0.042	0.042				
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
ENGINEERING PERSONNEL	1	0	1	2	0.044	0.000	0.004	0.048				
TOTAL	7	0	24	31	0.223	0.000	0.408	0.631				
WASTE PROCESSING												
MAINTENANCE PERSONNEL	54	0	0	54	0.275	0.000	0.000	0.275				
OPERATIONS PERSONNEL	14	0	0	14	0.357	0.000	0.000	0.357				
HEALTH PHYSICS PERSONNEL	36	0	3	39	0.962	0.000	0.017	0.979				
SUPERVISORY PERSONNEL	8	0	0	8	0.043	0.000	0.000	0.043				
ENGINEERING PERSONNEL	2	0	0	2	0.024	0.000	0.000	0.024				
TOTAL	114	0	3	117	1.661	0.000	0.017	1.678				
REFUELING												
MAINTENANCE PERSONNEL	211	0	395	606	6.874	0.000	18.890	25.764				
OPERATIONS PERSONNEL	70	2	16	88	1.859	0.064	1.100	3.023				
HEALTH PHYSICS PERSONNEL	33	0	50	83	0.334	0.000	2.277	2.611				
SUPERVISORY PERSONNEL	35	0	4	39	0.619	0.000	0.376	0.995				
ENGINEERING PERSONNEL	47	0	12	59	0.410	0.000	0.455	0.865				
TOTAL	396	2	477	875	10.096	0.064	23.098	33.258				
TOTAL BY JOB FUNCTION												
MAINTENANCE PERSONNEL	563	(566)	1	(1)	951	(1070)	1515	(1637)	50.293	0.000	65.806	116.099
OPERATIONS PERSONNEL	522	(535)	19	(21)	76	(78)	617	(634)	21.411	0.236	1.766	23.413
HEALTH PHYSICS PERSONNEL	226	(226)	0	(0)	320	(326)	546	(552)	17.177	0.012	19.613	36.802
SUPERVISORY PERSONNEL	182	(184)	4	(4)	11	(12)	197	(200)	3.545	0.004	0.383	3.932
ENGINEERING PERSONNEL	230	(232)	9	(9)	57	(62)	296	(303)	4.841	0.032	3.270	8.143
GRAND TOTALS	1723	(1743)	33	(35)	1415	(1548)	3171	(3326)	97.267	0.284	90.838	188.389

*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

1994

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	
<u>REACTOR OPS & SURV</u>									
MAINTENANCE PERSONNEL	280	430	155	865	5.255	2.318	0.216	7.789	
OPERATIONS PERSONNEL	74	0	38	112	21.571	0.000	0.976	22.547	
HEALTH PHYSICS PERSONNEL	47	0	90	137	1.314	0.000	4.061	5.375	
SUPERVISORY PERSONNEL	6	1	0	7	0.104	0.000	0.000	0.104	
ENGINEERING PERSONNEL	6	1	10	17	0.144	0.024	0.003	0.171	
TOTAL	413	432	293	1138	28.388	2.342	5.256	35.986	
<u>ROUTINE MAINTENANCE</u>									
MAINTENANCE PERSONNEL	278	428	145	851	88.512	118.942	22.871	230.325	
OPERATIONS PERSONNEL	58	0	51	109	3.156	0.000	22.327	25.483	
HEALTH PHYSICS PERSONNEL	47	0	90	137	7.499	0.000	18.580	26.079	
SUPERVISORY PERSONNEL	5	1	0	6	1.172	0.180	0.000	1.332	
ENGINEERING PERSONNEL	5	1	10	16	0.836	0.079	0.290	1.205	
TOTAL	393	430	296	1119	101.175	119.181	64.068	284.424	
<u>IN-SERVICE INSPECTION</u>									
MAINTENANCE PERSONNEL	47	131	36	214	2.798	12.798	2.081	17.677	
OPERATIONS PERSONNEL	10	0	11	21	0.027	0.000	0.133	0.160	
HEALTH PHYSICS PERSONNEL	17	0	55	72	0.218	0.000	2.382	2.596	
SUPERVISORY PERSONNEL	2	0	0	2	0.010	0.000	0.000	0.010	
ENGINEERING PERSONNEL	0	1	3	4	0.000	0.103	0.119	0.222	
TOTAL	76	132	105	313	3.051	12.901	4.715	20.667	
<u>SPECIAL MAINTENANCE</u>									
MAINTENANCE PERSONNEL	160	283	79	522	27.787	56.821	14.753	99.361	
OPERATIONS PERSONNEL	1	0	11	12	0.001	0.000	0.645	0.646	
HEALTH PHYSICS PERSONNEL	28	0	72	100	1.958	0.000	5.393	7.351	
SUPERVISORY PERSONNEL	2	1	0	3	1.225	0.232	1.812	3.269	
ENGINEERING PERSONNEL	4	0	8	12	1.567	0.000	0.000	1.567	
TOTAL	195	284	170	649	32.538	57.053	22.603	112.194	
<u>WASTE PROCESSING</u>									
MAINTENANCE PERSONNEL	56	43	0	99	1.084	2.363	0.000	3.447	
OPERATIONS PERSONNEL	18	0	39	57	0.886	0.000	0.461	1.347	
HEALTH PHYSICS PERSONNEL	28	0	7	35	2.169	0.000	0.055	2.224	
SUPERVISORY PERSONNEL	3	0	0	3	0.434	0.000	0.000	0.434	
ENGINEERING PERSONNEL	1	0	0	1	0.012	0.000	0.000	0.012	
TOTAL	106	43	46	195	4.585	2.363	0.516	7.464	
<u>REFUELING</u>									
MAINTENANCE PERSONNEL	43	75	28	146	1.835	15.753	3.678	21.266	
OPERATIONS PERSONNEL	41	0	19	60	0.830	0.000	0.310	1.140	
HEALTH PHYSICS PERSONNEL	12	0	33	45	0.160	0.000	1.484	1.644	
SUPERVISORY PERSONNEL	1	0	0	1	0.014	0.000	0.000	0.014	
ENGINEERING PERSONNEL	2	0	1	3	0.176	0.000	0.012	0.188	
TOTAL	99	75	81	255	3.015	15.753	5.484	24.252	
<u>TOTAL BY JOB FUNCTION</u>									
MAINTENANCE PERSONNEL	864	(280) 390 (430)	443	(156) 2697	(866)	127.271	208.993	43.599	379.865
OPERATIONS PERSONNEL	202	(77) 0 (0)	169	(51) 371	(128)	26.471	0.000	24.852	51.323
HEALTH PHYSICS PERSONNEL	179	(47) 0 (0)	347	(90) 526	(137)	13.316	0.000	31.955	45.271
SUPERVISORY PERSONNEL	19	(6) 3 (1)	0	(0) 22	(7)	2.959	0.392	1.812	5.163
ENGINEERING PERSONNEL	18	(6) 3 (1)	32	(10) 53	(17)	2.735	0.206	0.424	3.365
GRAND TOTALS	1282	(416) 396 (432)	991	(307) 3689	(1155)	172.752	209.583	102.642	484.987

*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

1994

PLANT: *OYSTER CREEK

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM							
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL				
<u>REACTOR OPS & SURV</u>												
MAINTENANCE PERSONNEL	208	0	502	710	9.076	0.000	9.021	18.097				
OPERATIONS PERSONNEL	156	0	4	160	22.520	0.000	0.044	22.564				
HEALTH PHYSICS PERSONNEL	94	0	93	187	10.654	0.000	7.084	17.738				
SUPERVISORY PERSONNEL	31	0	8	39	0.776	0.000	0.017	0.793				
ENGINEERING PERSONNEL	39	3	4	46	0.596	0.001	0.095	0.692				
TOTAL	528	3	611	1142	43.622	0.001	16.261	59.884				
<u>ROUTINE MAINTENANCE</u>												
MAINTENANCE PERSONNEL	479	27	970	1476	71.891	0.204	104.683	176.758				
OPERATIONS PERSONNEL	228	2	13	243	10.024	0.002	0.522	10.548				
HEALTH PHYSICS PERSONNEL	78	0	15	93	5.553	0.000	0.071	5.624				
SUPERVISORY PERSONNEL	95	4	27	126	2.661	0.001	0.385	3.047				
ENGINEERING PERSONNEL	145	2	31	178	3.815	0.051	0.992	4.858				
TOTAL	1025	35	1056	2116	93.944	0.258	106.633	200.835				
<u>IN-SERVICE INSPECTION</u>												
MAINTENANCE PERSONNEL	103	1	198	302	3.212	0.000	23.719	26.931				
OPERATIONS PERSONNEL	15	0	2	17	0.534	0.000	0.254	0.788				
HEALTH PHYSICS PERSONNEL	24	0	15	39	0.299	0.000	0.295	0.594				
SUPERVISORY PERSONNEL	5	0	1	6	0.118	0.000	0.000	0.118				
ENGINEERING PERSONNEL	14	1	3	18	0.172	0.001	0.214	0.387				
TOTAL	161	2	219	382	4.335	0.001	24.482	28.818				
<u>SPECIAL MAINTENANCE</u>												
MAINTENANCE PERSONNEL	264	15	1084	1363	61.214	0.928	464.925	527.067				
OPERATIONS PERSONNEL	89	0	4	93	8.322	0.000	2.080	10.402				
HEALTH PHYSICS PERSONNEL	60	0	73	133	9.007	0.000	11.547	20.554				
SUPERVISORY PERSONNEL	35	2	18	55	3.478	0.044	2.850	6.372				
ENGINEERING PERSONNEL	57	2	17	76	7.162	0.185	7.204	14.551				
TOTAL	505	19	1196	1720	89.183	1.157	488.606	578.946				
<u>WASTE PROCESSING</u>												
MAINTENANCE PERSONNEL	60	10	101	171	0.340	0.011	8.627	8.978				
OPERATIONS PERSONNEL	58	0	3	61	1.195	0.000	2.714	3.909				
HEALTH PHYSICS PERSONNEL	34	0	7	41	0.437	0.000	0.069	0.536				
SUPERVISORY PERSONNEL	6	0	1	7	0.059	0.000	0.103	0.162				
ENGINEERING PERSONNEL	3	1	2	6	0.137	0.003	0.045	0.185				
TOTAL	161	11	114	286	2.168	0.014	11.588	13.770				
<u>REFUELING</u>												
MAINTENANCE PERSONNEL	75	8	145	228	0.653	1.406	17.511	19.570				
OPERATIONS PERSONNEL	37	0	2	39	1.484	0.000	0.443	1.927				
HEALTH PHYSICS PERSONNEL	21	0	14	35	0.589	0.000	0.743	1.332				
SUPERVISORY PERSONNEL	6	0	1	7	0.032	0.000	0.258	0.290				
ENGINEERING PERSONNEL	15	0	6	21	0.253	0.000	0.824	1.077				
TOTAL	154	8	168	330	3.011	1.406	19.779	24.196				
<u>TOTAL BY JOB FUNCTION</u>												
MAINTENANCE PERSONNEL	1189	(500)	61	(28)	3000	(1261)	4250	(1789)	146.386	2.549	628.466	777.401
OPERATIONS PERSONNEL	583	(288)	2	(2)	28	(16)	613	(306)	44.079	0.002	6.057	50.138
HEALTH PHYSICS PERSONNEL	311	(111)	0	(0)	217	(98)	528	(209)	26.539	0.000	19.839	46.378
SUPERVISORY PERSONNEL	178	(103)	6	(4)	56	(29)	240	(136)	7.124	0.045	3.613	10.782
ENGINEERING PERSONNEL	273	(154)	9	(4)	63	(37)	345	(195)	12.135	0.241	9.374	21.750
GRAND TOTALS	2534	(1156)	78	(38)	3364	(1441)	5976	(2635)	236.263	2.837	667.349	906.449

*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

1994

PLANT: *PALISADES

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	2	0	0	2	0.872	0.010	0.171	1.053
OPERATIONS PERSONNEL	32	0	0	32	7.307	0.003	0.390	7.700
HEALTH PHYSICS PERSONNEL	17	0	4	21	3.375	0.000	1.809	5.184
SUPERVISORY PERSONNEL	4	0	0	4	1.273	0.019	0.038	1.330
ENGINEERING PERSONNEL	1	0	1	2	1.537	0.032	0.488	2.057
TOTAL	56	0	5	61	14.364	0.064	2.896	17.324
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	54	0	10	64	13.769	0.375	4.201	18.345
OPERATIONS PERSONNEL	0	0	2	2	0.166	0.004	1.106	1.276
HEALTH PHYSICS PERSONNEL	14	0	4	18	3.367	0.000	1.453	4.820
SUPERVISORY PERSONNEL	3	0	1	4	0.587	0.000	0.425	1.012
ENGINEERING PERSONNEL	3	2	3	8	0.882	0.599	1.449	2.930
TOTAL	74	2	20	96	18.771	0.978	8.634	28.383
<u>IN-SERVICE INSPECTION</u>								
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	0.010	0.010
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.006	0.007	0.000	0.013
TOTAL	0	0	0	0	0.006	0.007	0.010	0.023
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	1	0	25	26	0.485	0.038	6.595	7.118
OPERATIONS PERSONNEL	0	0	1	1	0.013	0.000	0.220	0.233
HEALTH PHYSICS PERSONNEL	4	0	2	6	1.026	0.000	0.459	1.485
SUPERVISORY PERSONNEL	1	0	0	1	0.232	0.000	0.018	0.250
ENGINEERING PERSONNEL	0	0	3	3	0.023	0.029	1.164	1.216
TOTAL	6	0	31	37	1.779	0.067	8.456	10.302
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	1	6	1	8	0.274	0.878	0.671	1.823
OPERATIONS PERSONNEL	0	0	1	1	0.239	0.000	0.198	0.437
HEALTH PHYSICS PERSONNEL	5	0	0	5	1.322	0.000	0.142	1.464
SUPERVISORY PERSONNEL	0	0	0	0	0.218	0.000	0.029	0.247
ENGINEERING PERSONNEL	0	0	0	0	0.185	0.044	0.193	0.422
TOTAL	6	6	2	14	2.238	0.922	1.233	4.393
<u>REFUELING</u>								
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
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	58	6	36	100	15.400	1.301	11.638	28.339
OPERATIONS PERSONNEL	32	0	4	36	7.725	0.007	1.914	9.646
HEALTH PHYSICS PERSONNEL	40	0	10	50	9.090	0.000	3.873	12.963
SUPERVISORY PERSONNEL	8	0	1	9	2.310	0.019	0.510	2.839
ENGINEERING PERSONNEL	4	2	7	13	2.633	0.711	3.294	6.638
GRAND TOTALS	142	8	56	206	37.158	2.038	21.229	60.425

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	1	0	0	1	0.735	0.000	0.230	0.965
OPERATIONS PERSONNEL	36	0	0	36	11.931	0.000	0.040	11.971
HEALTH PHYSICS PERSONNEL	44	0	42	86	11.105	0.000	11.550	22.655
SUPERVISORY PERSONNEL	3	0	0	3	1.470	0.000	0.000	1.470
ENGINEERING PERSONNEL	2	0	2	4	1.370	0.000	0.360	1.730
TOTAL	86	0	44	130	26.611	0.000	12.180	38.791
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	161	0	378	539	58.550	0.000	166.362	224.912
OPERATIONS PERSONNEL	16	0	2	18	7.309	0.000	0.895	8.204
HEALTH PHYSICS PERSONNEL	54	0	59	113	18.272	0.000	19.530	37.802
SUPERVISORY PERSONNEL	16	0	4	20	4.815	0.000	2.603	7.418
ENGINEERING PERSONNEL	20	0	50	70	6.031	0.000	20.468	26.499
TOTAL	267	0	493	760	94.977	0.000	209.858	304.835
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	7	0	91	98	2.590	0.000	38.465	41.055
OPERATIONS PERSONNEL	0	0	3	3	0.275	0.000	1.399	1.674
HEALTH PHYSICS PERSONNEL	9	0	26	35	2.735	0.000	6.965	9.700
SUPERVISORY PERSONNEL	0	0	0	0	0.135	0.000	0.160	0.295
ENGINEERING PERSONNEL	1	0	7	8	1.095	0.000	3.369	4.464
TOTAL	17	0	127	144	6.830	0.000	50.358	57.188
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	1	0	4	5	0.170	0.000	1.860	2.030
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	2	0	0	2	0.425	0.000	0.300	0.725
SUPERVISORY PERSONNEL	0	0	0	0	0.030	0.000	0.000	0.030
ENGINEERING PERSONNEL	1	0	0	1	0.185	0.000	0.105	0.290
TOTAL	4	0	4	8	0.810	0.000	2.265	3.075
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	0	0	1	1	0.220	0.000	0.890	1.110
OPERATIONS PERSONNEL	1	0	2	3	0.165	0.000	0.885	1.050
HEALTH PHYSICS PERSONNEL	20	0	11	31	8.395	0.000	4.920	13.315
SUPERVISORY PERSONNEL	0	0	1	1	0.060	0.000	0.400	0.460
ENGINEERING PERSONNEL	0	0	0	0	0.010	0.000	0.110	0.120
TOTAL	21	0	15	36	8.850	0.000	7.205	16.055
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	22	0	34	56	5.860	0.000	15.851	21.711
OPERATIONS PERSONNEL	1	0	0	1	0.500	0.000	0.025	0.525
HEALTH PHYSICS PERSONNEL	6	0	10	16	1.535	0.000	3.555	5.090
SUPERVISORY PERSONNEL	3	0	0	3	1.015	0.000	0.000	1.015
ENGINEERING PERSONNEL	5	0	4	9	1.745	0.000	2.450	4.195
TOTAL	37	0	48	85	10.655	0.000	21.881	32.536
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	192	0	508	700	68.125	0.000	223.658	291.783
OPERATIONS PERSONNEL	54	0	7	61	20.180	0.000	3.244	23.424
HEALTH PHYSICS PERSONNEL	135	0	148	283	42.467	0.000	46.820	89.287
SUPERVISORY PERSONNEL	22	0	5	27	7.525	0.000	3.163	10.688
ENGINEERING PERSONNEL	29	0	63	92	10.436	0.000	26.862	37.298
GRAND TOTALS	432	0	731	1163	148.733	0.000	303.747	452.480

*Workers may be counted in more than one category.

APPENDIX D (Continued)
NUMBER OF PERSONNEL AND PERSON-REM
BY WORK AND JOB FUNCTION

1994

PLANT: ***PEACH BOTTOM 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	139	95	182	416	7.034	5.693	13.833	26.560
OPERATIONS PERSONNEL	142	43	118	303	12.233	4.196	6.035	22.464
HEALTH PHYSICS PERSONNEL	124	7	69	200	27.169	0.981	9.034	37.184
SUPERVISORY PERSONNEL	10	11	56	77	0.534	0.162	2.342	3.038
ENGINEERING PERSONNEL	58	70	42	170	4.676	1.780	1.291	7.747
TOTAL	473	226	467	1166	51.646	12.812	32.535	96.993
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	113	122	403	638	12.622	4.416	35.058	52.096
OPERATIONS PERSONNEL	43	23	74	140	1.331	1.382	4.559	7.272
HEALTH PHYSICS PERSONNEL	49	3	19	71	1.688	0.074	0.766	2.528
SUPERVISORY PERSONNEL	5	4	174	183	0.482	0.079	6.531	7.092
ENGINEERING PERSONNEL	29	26	18	73	0.832	0.246	0.170	1.248
TOTAL	239	178	686	1105	16.955	6.197	47.084	70.236
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	17	8	210	235	0.770	0.212	34.352	35.334
OPERATIONS PERSONNEL	2	5	29	36	0.032	0.085	5.978	6.095
HEALTH PHYSICS PERSONNEL	7	0	6	13	0.176	0.000	0.279	0.455
SUPERVISORY PERSONNEL	1	0	145	146	0.017	0.000	18.266	18.283
ENGINEERING PERSONNEL	0	1	8	9	0.000	0.008	1.451	1.459
TOTAL	27	14	396	439	0.995	0.305	60.326	61.626
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	101	77	330	508	20.115	6.758	56.239	83.112
OPERATIONS PERSONNEL	28	20	50	96	1.306	1.488	10.305	13.101
HEALTH PHYSICS PERSONNEL	45	2	35	82	6.436	0.130	3.340	9.906
SUPERVISORY PERSONNEL	4	0	128	132	1.748	0.000	9.794	11.542
ENGINEERING PERSONNEL	16	10	22	48	1.778	0.081	1.234	3.093
TOTAL	192	109	565	866	31.385	8.457	80.912	120.754
WASTE PROCESSING								
MAINTENANCE PERSONNEL	31	67	65	163	0.618	3.207	3.720	7.545
OPERATIONS PERSONNEL	6	8	13	27	0.215	0.315	3.350	3.880
HEALTH PHYSICS PERSONNEL	38	2	16	56	2.749	0.474	1.921	5.144
SUPERVISORY PERSONNEL	2	4	8	14	0.075	0.012	0.072	0.159
ENGINEERING PERSONNEL	4	6	4	14	0.065	0.189	0.000	0.254
TOTAL	81	87	106	274	3.722	4.197	9.063	16.982
REFUELING								
MAINTENANCE PERSONNEL	143	179	515	837	15.398	28.103	75.525	119.026
OPERATIONS PERSONNEL	82	52	106	240	6.156	5.674	12.003	23.833
HEALTH PHYSICS PERSONNEL	66	3	46	115	6.886	0.444	7.622	14.952
SUPERVISORY PERSONNEL	4	10	312	326	0.506	1.620	46.662	48.788
ENGINEERING PERSONNEL	43	43	47	133	1.896	1.629	2.319	5.844
TOTAL	338	287	1026	1651	30.842	37.470	144.131	212.443
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	544	(268) 548	(350) 1705	(826) 2797	(1444) 56.557	48.389	218.727	323.673
OPERATIONS PERSONNEL	301	(348) 151	(137) 390	(349) 842	(834) 21.275	13.140	42.230	76.645
HEALTH PHYSICS PERSONNEL	329	(164) 17	(18) 191	(92) 537	(274) 45.104	2.103	22.962	70.169
SUPERVISORY PERSONNEL	26	(28) 29	(39) 823	(535) 878	(602) 3.362	1.873	83.687	88.902
ENGINEERING PERSONNEL	150	(131) 156	(231) 141	(140) 447	(502) 9.247	3.933	6.465	19.645
GRAND TOTALS	1350	(939) 901	(775) 3250	(1942) 5501	(3656) 135.545	69.438	374.051	579.034

*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

1994

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	132	63	502	697	1.090	0.085	9.111	10.286
OPERATIONS PERSONNEL	278	39	10	327	23.211	1.026	0.771	25.008
HEALTH PHYSICS PERSONNEL	58	23	213	294	7.618	1.184	26.650	35.452
SUPERVISORY PERSONNEL	3	2	34	39	0.034	0.007	0.279	0.320
ENGINEERING PERSONNEL	8	141	66	215	0.289	1.272	0.722	2.263
TOTAL	479	268	825	1572	32.222	3.574	37.533	73.329
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	179	127	1510	1816	23.544	6.716	255.248	285.508
OPERATIONS PERSONNEL	308	47	32	387	8.832	0.330	1.089	10.251
HEALTH PHYSICS PERSONNEL	61	26	248	333	4.633	0.710	18.144	23.487
SUPERVISORY PERSONNEL	4	3	64	71	0.005	0.000	0.483	0.488
ENGINEERING PERSONNEL	19	226	211	456	0.275	7.356	18.593	26.224
TOTAL	571	429	2063	3063	37.289	15.112	293.557	345.968
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	59	10	701	770	0.400	0.271	46.431	47.102
OPERATIONS PERSONNEL	62	6	7	75	1.199	0.180	0.160	1.539
HEALTH PHYSICS PERSONNEL	15	4	68	87	0.267	0.058	1.092	1.417
SUPERVISORY PERSONNEL	0	0	7	7	0.000	0.000	0.102	0.102
ENGINEERING PERSONNEL	4	60	73	137	0.157	2.412	9.608	12.177
TOTAL	140	80	856	1076	2.023	2.921	57.393	62.337
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	110	46	785	941	5.385	0.120	67.185	72.690
OPERATIONS PERSONNEL	103	4	5	112	1.860	0.027	0.096	1.983
HEALTH PHYSICS PERSONNEL	30	8	97	135	1.290	0.084	2.745	4.119
SUPERVISORY PERSONNEL	1	0	2	3	0.000	0.000	0.004	0.004
ENGINEERING PERSONNEL	5	61	59	125	0.024	1.911	1.938	3.873
TOTAL	249	119	948	1316	8.559	2.142	71.968	82.669
WASTE PROCESSING								
MAINTENANCE PERSONNEL	105	58	370	533	0.068	4.563	4.749	9.380
OPERATIONS PERSONNEL	70	9	3	82	3.325	0.009	0.010	3.344
HEALTH PHYSICS PERSONNEL	48	19	166	233	2.491	1.791	3.554	7.836
SUPERVISORY PERSONNEL	0	1	2	3	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	2	24	4	30	0.005	0.085	0.015	0.105
TOTAL	225	111	545	881	5.889	6.448	8.328	20.665
REFUELING								
MAINTENANCE PERSONNEL	96	51	690	837	19.386	1.204	68.225	88.815
OPERATIONS PERSONNEL	133	9	8	150	21.369	2.540	0.604	24.513
HEALTH PHYSICS PERSONNEL	29	19	144	192	1.201	0.377	6.893	8.471
SUPERVISORY PERSONNEL	1	0	2	3	0.002	0.000	0.032	0.034
ENGINEERING PERSONNEL	6	76	35	117	0.647	4.655	1.238	6.540
TOTAL	265	155	879	1299	42.605	8.776	76.992	128.373
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	681	355	4558	5594	49.873	12.959	450.949	513.781
OPERATIONS PERSONNEL	954	114	65	1133	59.796	4.112	2.730	66.638
HEALTH PHYSICS PERSONNEL	241	99	934	1274	17.500	4.204	59.078	80.782
SUPERVISORY PERSONNEL	9	6	111	126	0.041	0.007	0.900	0.948
ENGINEERING PERSONNEL	44	588	448	1080	1.377	17.691	32.114	51.182
GRAND TOTALS	1929	1162	6116	9207	128.587	36.973	545.771	713.331

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	113	9	123	245	2.736	0.101	0.278	3.115
OPERATIONS PERSONNEL	129	7	68	204	26.641	0.012	0.070	26.723
HEALTH PHYSICS PERSONNEL	44	3	24	71	13.869	0.002	1.510	15.381
SUPERVISORY PERSONNEL	116	16	26	158	3.293	0.027	0.076	3.396
ENGINEERING PERSONNEL	102	17	33	152	2.366	0.019	0.022	2.407
TOTAL	504	52	274	830	48.905	0.161	1.956	51.022
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	162	11	539	712	44.216	2.199	53.397	99.812
OPERATIONS PERSONNEL	113	5	165	283	6.695	0.018	8.197	14.910
HEALTH PHYSICS PERSONNEL	44	3	24	71	8.259	0.010	2.832	11.101
SUPERVISORY PERSONNEL	125	14	51	190	7.804	0.528	1.788	10.120
ENGINEERING PERSONNEL	139	26	51	216	8.469	0.967	1.993	11.429
TOTAL	583	59	830	1472	75.443	3.722	68.207	147.372
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	3	0	109	112	0.016	0.000	18.216	18.232
OPERATIONS PERSONNEL	1	0	4	5	0.003	0.000	0.307	0.310
HEALTH PHYSICS PERSONNEL	12	0	2	14	0.220	0.000	0.059	0.279
SUPERVISORY PERSONNEL	2	1	4	7	0.043	0.018	0.624	0.685
ENGINEERING PERSONNEL	7	2	2	11	0.608	0.009	0.022	0.639
TOTAL	25	3	121	149	0.890	0.027	19.228	20.145
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	31	3	85	119	1.580	0.388	5.046	7.014
OPERATIONS PERSONNEL	2	0	1	3	0.086	0.000	0.262	0.348
HEALTH PHYSICS PERSONNEL	9	0	0	9	0.081	0.000	0.000	0.081
SUPERVISORY PERSONNEL	6	0	7	13	0.039	0.000	0.170	0.209
ENGINEERING PERSONNEL	19	4	8	31	0.426	0.069	1.119	1.614
TOTAL	67	7	101	175	2.212	0.457	6.597	9.266
WASTE PROCESSING								
MAINTENANCE PERSONNEL	57	3	12	72	4.077	0.472	1.221	5.770
OPERATIONS PERSONNEL	27	1	3	31	7.496	0.529	0.006	8.031
HEALTH PHYSICS PERSONNEL	29	0	2	31	3.161	0.000	0.069	3.250
SUPERVISORY PERSONNEL	11	0	1	12	1.044	0.000	0.004	1.048
ENGINEERING PERSONNEL	7	0	0	7	0.272	0.000	0.000	0.272
TOTAL	131	4	18	153	16.050	1.001	1.320	18.371
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	366	26	868	1260	52.625	3.160	78.158	133.943
OPERATIONS PERSONNEL	272	13	241	526	40.921	0.559	8.342	50.322
HEALTH PHYSICS PERSONNEL	138	6	52	196	25.590	0.012	4.490	30.092
SUPERVISORY PERSONNEL	260	31	89	380	12.223	0.573	2.662	15.458
ENGINEERING PERSONNEL	274	49	94	417	12.141	1.064	3.156	16.361
GRAND TOTALS	1310	125	1344	2779	143.500	5.368	97.306	246.176

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	0.000	0.000	0.000
OPERATIONS PERSONNEL	50	0	0	50	13.480	0.000	0.120	13.600
HEALTH PHYSICS PERSONNEL	23	0	0	23	12.000	0.000	0.000	12.000
SUPERVISORY PERSONNEL	15	0	1	16	3.350	0.000	0.230	3.580
ENGINEERING PERSONNEL	6	16	0	22	1.710	3.010	0.000	4.720
TOTAL	94	16	1	111	30.540	3.010	0.350	33.900
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	52	18	0	70	18.400	7.850	0.000	26.250
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	4	0	0	4	1.260	0.000	0.000	1.260
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	56	18	0	74	19.660	7.850	0.000	27.510
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	30	30	0.000	0.000	21.077	21.077
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	2	2	0.000	0.000	2.240	2.240
ENGINEERING PERSONNEL	4	4	45	53	1.150	1.320	7.540	10.010
TOTAL	4	4	77	85	1.150	1.320	30.857	33.327
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	72	72	0.000	0.000	33.500	33.500
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	32	32	0.000	0.000	8.700	8.700
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	104	104	0.000	0.000	42.200	42.200
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.770	0.770
OPERATIONS PERSONNEL	50	0	0	50	0.180	0.000	0.000	0.180
HEALTH PHYSICS PERSONNEL	23	0	11	34	2.240	0.000	0.400	2.640
SUPERVISORY PERSONNEL	2	0	0	2	0.250	0.000	0.000	0.250
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.050	0.050
TOTAL	75	0	11	86	2.670	0.000	1.220	3.890
REFUELING								
MAINTENANCE PERSONNEL	52	18	0	70	19.150	8.500	0.000	27.650
OPERATIONS PERSONNEL	50	0	0	50	1.100	0.000	0.000	1.100
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	13	0	0	13	0.690	0.000	0.000	0.690
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	115	18	0	133	20.940	8.500	0.000	29.440
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	104	36	102	242	37.550	16.350	55.347	109.247
OPERATIONS PERSONNEL	150	0	0	150	14.780	0.000	0.120	14.880
HEALTH PHYSICS PERSONNEL	46	0	43	89	14.240	0.000	9.100	23.340
SUPERVISORY PERSONNEL	34	0	3	37	5.550	0.000	2.470	8.020
ENGINEERING PERSONNEL	10	20	45	75	2.860	4.330	7.590	14.780
GRAND TOTALS	344	56	193	593	74.960	20.680	74.627	170.267

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	2	23	1	26	0.907	5.146	0.325	6.378
OPERATIONS PERSONNEL	7	0	0	7	3.373	0.000	0.000	3.373
HEALTH PHYSICS PERSONNEL	11	1	13	25	2.668	0.164	2.674	5.506
SUPERVISORY PERSONNEL	2	1	0	3	1.175	0.364	0.109	1.648
ENGINEERING PERSONNEL	0	0	0	0	0.024	0.000	0.000	0.024
TOTAL	22	25	14	61	8.147	5.674	3.108	16.929
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	6	13	0	19	2.695	4.089	0.163	6.947
OPERATIONS PERSONNEL	0	0	0	0	0.148	0.000	0.000	0.148
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.083	0.033	0.034	0.150
SUPERVISORY PERSONNEL	0	0	1	1	0.528	0.063	0.310	0.901
ENGINEERING PERSONNEL	4	0	0	4	0.997	0.000	0.000	0.997
TOTAL	10	13	1	24	4.451	4.185	0.507	9.143
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	2	25	21	48	1.354	8.581	10.204	20.139
OPERATIONS PERSONNEL	0	0	0	0	0.008	0.000	0.000	0.008
HEALTH PHYSICS PERSONNEL	1	0	7	8	0.211	0.000	1.439	1.650
SUPERVISORY PERSONNEL	3	0	44	47	0.920	0.048	15.244	16.212
ENGINEERING PERSONNEL	0	0	0	0	0.030	0.000	0.000	0.030
TOTAL	6	25	72	103	2.523	8.629	26.887	38.039
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	18	31	9	58	6.548	11.961	4.817	23.326
OPERATIONS PERSONNEL	0	0	0	0	0.277	0.000	0.000	0.277
HEALTH PHYSICS PERSONNEL	3	0	1	4	0.969	0.000	0.464	1.433
SUPERVISORY PERSONNEL	6	1	15	22	1.114	0.264	4.209	5.587
ENGINEERING PERSONNEL	2	0	0	2	0.568	0.000	0.000	0.568
TOTAL	29	32	25	86	9.476	12.225	9.490	31.191
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	1	0	0	1	0.707	0.045	0.101	0.853
OPERATIONS PERSONNEL	0	0	0	0	0.034	0.000	0.000	0.034
HEALTH PHYSICS PERSONNEL	2	0	0	2	0.728	0.000	0.032	0.760
SUPERVISORY PERSONNEL	0	0	0	0	0.033	0.037	0.000	0.070
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	3	0	0	3	1.502	0.082	0.133	1.717
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	19	11	0	30	4.998	4.035	0.002	9.035
OPERATIONS PERSONNEL	0	0	0	0	0.645	0.000	0.000	0.645
HEALTH PHYSICS PERSONNEL	0	1	1	2	0.108	0.112	0.305	0.525
SUPERVISORY PERSONNEL	1	1	0	2	0.542	0.268	0.141	0.951
ENGINEERING PERSONNEL	0	0	0	0	0.062	0.000	0.000	0.062
TOTAL	20	13	1	34	6.355	4.415	0.448	11.218
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	48	103	31	182	17.209	33.857	15.612	66.678
OPERATIONS PERSONNEL	7	0	0	7	4.485	0.000	0.000	4.485
HEALTH PHYSICS PERSONNEL	17	2	22	41	4.767	0.309	4.948	10.024
SUPERVISORY PERSONNEL	12	3	60	75	4.312	1.044	20.013	25.369
ENGINEERING PERSONNEL	6	0	0	6	1.681	0.000	0.000	1.681
GRAND TOTALS	90	108	113	311	32.454	35.210	40.573	108.237

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	14	0	33	47	12.860	0.000	13.337	26.197
OPERATIONS PERSONNEL	115	0	208	323	42.070	0.000	16.205	58.275
HEALTH PHYSICS PERSONNEL	44	33	12	89	29.948	0.188	8.595	38.731
SUPERVISORY PERSONNEL	89	0	29	118	10.581	0.000	1.657	12.238
ENGINEERING PERSONNEL	65	0	11	76	8.356	0.006	0.523	8.885
TOTAL	327	33	293	653	103.815	0.194	40.317	144.326
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	138	0	866	1002	125.873	0.000	355.012	480.885
OPERATIONS PERSONNEL	25	0	2	27	9.286	0.000	0.186	9.472
HEALTH PHYSICS PERSONNEL	25	96	17	138	17.224	0.547	12.667	30.468
SUPERVISORY PERSONNEL	143	0	178	321	16.839	0.000	10.127	27.066
ENGINEERING PERSONNEL	61	5	107	173	7.775	0.085	5.239	13.099
TOTAL	390	101	1170	1661	177.097	0.632	383.261	560.990
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	97	98	0.992	0.000	39.673	40.665
OPERATIONS PERSONNEL	1	0	0	1	0.413	0.000	0.001	0.414
HEALTH PHYSICS PERSONNEL	1	35	1	37	0.474	0.198	0.445	1.117
SUPERVISORY PERSONNEL	2	0	6	8	0.182	0.000	0.363	0.545
ENGINEERING PERSONNEL	12	0	28	40	1.471	0.000	1.382	2.853
TOTAL	17	35	132	184	3.532	0.198	41.864	45.594
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	9	0	645	654	8.159	0.000	264.173	272.332
OPERATIONS PERSONNEL	1	0	1	2	0.430	0.000	0.047	0.477
HEALTH PHYSICS PERSONNEL	6	85	35	126	4.160	0.480	26.069	30.709
SUPERVISORY PERSONNEL	25	0	143	168	2.978	0.000	8.146	11.124
ENGINEERING PERSONNEL	29	6	97	132	3.764	0.104	4.780	8.648
TOTAL	70	91	921	1082	19.491	0.584	303.215	323.290
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	38	38	0.307	0.000	15.477	15.784
OPERATIONS PERSONNEL	23	0	10	33	8.518	0.000	0.793	9.311
HEALTH PHYSICS PERSONNEL	2	3	3	8	1.442	0.015	2.120	3.577
SUPERVISORY PERSONNEL	27	0	6	33	3.207	0.000	0.343	3.550
ENGINEERING PERSONNEL	1	0	0	1	0.117	0.000	0.011	0.128
TOTAL	53	3	57	113	13.591	0.015	18.744	32.350
REFUELING								
MAINTENANCE PERSONNEL	12	0	3	15	11.369	0.000	1.177	12.546
OPERATIONS PERSONNEL	11	0	0	11	4.143	0.000	0.000	4.143
HEALTH PHYSICS PERSONNEL	2	30	0	32	1.583	0.173	0.000	1.756
SUPERVISORY PERSONNEL	18	0	2	20	2.182	0.000	0.107	2.289
ENGINEERING PERSONNEL	2	0	3	5	0.233	0.000	0.136	0.369
TOTAL	45	30	8	83	19.510	0.173	1.420	21.103
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	172	0	1682	1854	159.560	0.000	688.849	848.409
OPERATIONS PERSONNEL	176	0	221	397	64.860	0.000	17.232	82.092
HEALTH PHYSICS PERSONNEL	80	282	68	430	54.831	1.601	49.926	106.358
SUPERVISORY PERSONNEL	304	0	364	668	36.069	0.000	20.743	56.812
ENGINEERING PERSONNEL	170	11	246	427	21.716	0.195	12.071	33.982
GRAND TOTALS	902	293	2581	3776	337.036	1.796	788.821	1127.653

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *RANCHO SECO

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			TOTAL
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	
<u>REACTOR OPS & SURV</u>								
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	4	0	0	4	0.600	0.000	0.000	0.600
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	4	0	0	4	0.600	0.000	0.000	0.600
<u>ROUTINE MAINTENANCE</u>								
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	0.014	0.000	0.000	0.014
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	0	1	0.014	0.000	0.000	0.014
<u>IN-SERVICE INSPECTION</u>								
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
<u>SPECIAL MAINTENANCE</u>								
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	0.001	0.000	0.000	0.001
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	0	1	0.001	0.000	0.000	0.001
<u>WASTE PROCESSING</u>								
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	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	0	1	0.003	0.000	0.000	0.003
<u>REFUELING</u>								
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	2	0	0	2	0.006	0.000	0.000	0.006
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	0.006	0.000	0.000	0.006
<u>TOTAL BY JOB FUNCTION</u>								
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	9	0	0	9	0.624	0.000	0.000	0.624
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	0	9	0.624	0.000	0.000	0.624

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	
<u>REACTOR OPS & SURV</u>									
MAINTENANCE PERSONNEL	9	1	27	37	4.841	0.107	9.196	14.144	
OPERATIONS PERSONNEL	54	0	1	55	24.723	0.000	0.089	24.812	
HEALTH PHYSICS PERSONNEL	24	0	46	70	11.656	0.004	14.703	26.363	
SUPERVISORY PERSONNEL	1	1	2	4	0.298	0.194	0.302	0.794	
ENGINEERING PERSONNEL	9	3	8	20	2.051	0.543	1.452	4.046	
TOTAL	97	5	84	186	43.569	0.848	25.742	70.159	
<u>ROUTINE MAINTENANCE</u>									
MAINTENANCE PERSONNEL	21	0	128	149	13.476	0.030	35.799	49.305	
OPERATIONS PERSONNEL	0	0	0	0	0.185	0.000	0.014	0.199	
HEALTH PHYSICS PERSONNEL	1	0	4	5	0.482	0.000	2.190	2.672	
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.006	0.006	
ENGINEERING PERSONNEL	1	1	7	9	0.425	0.146	1.812	2.383	
TOTAL	23	1	139	163	14.568	0.176	39.821	54.565	
<u>IN-SERVICE INSPECTION</u>									
MAINTENANCE PERSONNEL	9	0	57	66	3.183	0.000	49.040	52.223	
OPERATIONS PERSONNEL	7	0	1	8	4.446	0.000	0.105	4.551	
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.276	0.000	0.888	1.164	
SUPERVISORY PERSONNEL	0	0	1	1	0.006	0.000	0.202	0.208	
ENGINEERING PERSONNEL	5	2	70	77	1.792	0.563	33.202	35.557	
TOTAL	21	2	130	153	9.703	0.563	83.437	93.703	
<u>SPECIAL MAINTENANCE</u>									
MAINTENANCE PERSONNEL	75	1	290	366	45.849	0.633	137.166	183.648	
OPERATIONS PERSONNEL	3	0	1	4	4.419	0.000	0.681	5.100	
HEALTH PHYSICS PERSONNEL	6	0	10	16	6.760	0.003	5.472	12.235	
SUPERVISORY PERSONNEL	0	1	1	2	0.368	0.125	0.191	0.684	
ENGINEERING PERSONNEL	11	17	65	93	4.133	4.966	27.762	36.861	
TOTAL	95	19	367	481	61.529	5.727	171.272	238.528	
<u>WASTE PROCESSING</u>									
MAINTENANCE PERSONNEL	0	0	23	23	0.051	0.000	3.688	3.739	
OPERATIONS PERSONNEL	0	0	7	7	0.000	0.000	3.047	3.047	
HEALTH PHYSICS PERSONNEL	1	0	2	3	0.713	0.000	0.376	1.089	
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000	
ENGINEERING PERSONNEL	0	0	0	0	0.016	0.000	0.030	0.046	
TOTAL	1	0	32	33	0.780	0.000	7.141	7.921	
<u>REFUELING</u>									
MAINTENANCE PERSONNEL	5	0	57	62	2.231	0.000	20.486	22.717	
OPERATIONS PERSONNEL	7	0	1	8	1.067	0.000	0.087	1.154	
HEALTH PHYSICS PERSONNEL	5	1	7	13	2.101	0.134	2.285	4.520	
SUPERVISORY PERSONNEL	0	1	0	1	0.006	0.011	0.007	0.024	
ENGINEERING PERSONNEL	0	1	17	18	0.084	0.195	3.672	3.951	
TOTAL	17	3	82	102	5.499	0.340	26.537	32.376	
<u>TOTAL BY JOB FUNCTION</u>									
MAINTENANCE PERSONNEL	119	(115)	2 (2)	582 (581)	703 (698)	69.631	0.770	255.375	325.776
OPERATIONS PERSONNEL	71	(71)	0 (0)	11 (10)	82 (81)	34.840	0.000	4.023	38.863
HEALTH PHYSICS PERSONNEL	37	(37)	1 (1)	70 (70)	108 (108)	21.988	0.141	25.914	48.043
SUPERVISORY PERSONNEL	1	(2)	3 (2)	4 (4)	8 (8)	0.678	0.330	0.706	1.716
ENGINEERING PERSONNEL	26	(27)	24 (24)	167 (167)	217 (218)	8.511	6.413	67.930	82.854
GRAND TOTALS	254	(252)	30 (29)	834 (832)	1118 (1113)	135.648	7.654	353.950	497.252

*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

1994

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
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	4	0	0	4	1.079	0.002	0.017	1.098
OPERATIONS PERSONNEL	11	0	0	11	2.597	0.000	0.102	2.699
HEALTH PHYSICS PERSONNEL	14	0	0	14	3.709	0.000	0.000	3.709
SUPERVISORY PERSONNEL	0	0	1	1	0.049	0.000	0.240	0.289
ENGINEERING PERSONNEL	1	0	2	3	0.303	0.080	0.501	1.484
TOTAL	30	0	3	33	8.337	0.082	0.860	9.279
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	0	0	2	2	0.498	0.031	1.928	2.455
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.082	0.000	0.000	0.082
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.010	0.010
ENGINEERING PERSONNEL	0	0	0	0	0.022	0.001	0.036	0.059
TOTAL	0	0	2	2	0.602	0.032	1.972	2.606
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.112	0.003	0.000	0.115
OPERATIONS PERSONNEL	0	0	0	0	0.074	0.000	0.000	0.074
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.102	0.000	0.000	0.102
SUPERVISORY PERSONNEL	0	0	0	0	0.010	0.000	0.032	0.042
ENGINEERING PERSONNEL	0	0	1	1	0.213	0.128	0.566	0.907
TOTAL	0	0	1	1	0.511	0.131	0.598	1.240
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	48	5	28	81	18.595	1.463	8.824	28.882
OPERATIONS PERSONNEL	2	0	0	2	1.107	0.000	0.220	1.327
HEALTH PHYSICS PERSONNEL	15	0	5	20	3.964	0.000	0.950	4.914
SUPERVISORY PERSONNEL	1	0	0	1	0.611	0.005	0.070	0.686
ENGINEERING PERSONNEL	10	1	10	21	3.111	0.295	2.783	6.189
TOTAL	76	6	43	125	27.388	1.763	12.847	41.998
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.028	0.000	0.002	0.030
OPERATIONS PERSONNEL	0	0	0	0	0.010	0.000	0.000	0.010
HEALTH PHYSICS PERSONNEL	4	0	0	4	1.223	0.000	0.000	1.223
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.005	0.005
ENGINEERING PERSONNEL	0	0	0	0	0.025	0.000	0.135	0.160
TOTAL	4	0	0	4	1.286	0.000	0.142	1.428
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	1	0	0	1	0.665	0.000	0.160	0.825
OPERATIONS PERSONNEL	7	0	0	7	2.085	0.000	0.000	2.085
HEALTH PHYSICS PERSONNEL	4	0	0	4	1.825	0.000	0.045	1.870
SUPERVISORY PERSONNEL	0	0	0	0	0.070	0.010	0.000	0.080
ENGINEERING PERSONNEL	0	0	0	0	0.378	0.095	0.035	0.508
TOTAL	12	0	0	12	5.023	0.105	0.240	5.368
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	53	5	30	88	20.977	1.499	10.929	33.405
OPERATIONS PERSONNEL	20	0	0	20	5.873	0.000	0.322	6.195
HEALTH PHYSICS PERSONNEL	37	0	5	42	10.905	0.000	0.995	11.900
SUPERVISORY PERSONNEL	1	0	1	2	0.740	0.015	0.357	1.112
ENGINEERING PERSONNEL	11	1	13	25	4.652	0.599	4.056	9.307
GRAND TOTALS	122	6	49	177	43.147	2.113	16.659	61.919

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *SALEM 1,2

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			TOTAL				
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT					
REACTOR OPS & SURV												
MAINTENANCE PERSONNEL	0	0	0	0	0.464	0.080	0.009	0.553				
OPERATIONS PERSONNEL	0	0	0	0	0.290	0.038	0.031	0.359				
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.364	0.003	0.000	0.367				
SUPERVISORY PERSONNEL	0	0	0	0	0.029	0.012	0.000	0.041				
ENGINEERING PERSONNEL	0	0	0	0	0.088	0.034	0.000	0.122				
TOTAL	0	0	0	0	1.235	0.167	0.040	1.442				
ROUTINE MAINTENANCE												
MAINTENANCE PERSONNEL	19	12	15	46	10.253	3.558	4.099	17.910				
OPERATIONS PERSONNEL	2	0	1	3	4.385	0.562	0.051	4.998				
HEALTH PHYSICS PERSONNEL	12	2	0	14	4.210	0.667	0.559	5.436				
SUPERVISORY PERSONNEL	0	0	0	0	0.381	0.017	0.024	0.422				
ENGINEERING PERSONNEL	2	0	0	2	0.878	0.493	0.017	1.388				
TOTAL	35	14	16	65	20.107	5.297	4.750	30.154				
IN-SERVICE INSPECTION												
MAINTENANCE PERSONNEL	0	11	8	19	0.102	2.186	0.021	2.309				
OPERATIONS PERSONNEL	0	3	0	3	0.002	0.501	0.000	0.503				
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
SUPERVISORY PERSONNEL	0	0	0	0	0.008	0.000	0.000	0.008				
ENGINEERING PERSONNEL	0	1	1	2	0.004	0.388	0.000	0.392				
TOTAL	0	15	9	24	0.116	3.075	0.021	3.212				
SPECIAL MAINTENANCE												
MAINTENANCE PERSONNEL	0	2	4	6	0.210	0.442	1.607	2.259				
OPERATIONS PERSONNEL	0	0	0	0	0.029	0.063	0.101	0.223				
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.211	0.001	0.138	0.350				
SUPERVISORY PERSONNEL	0	0	0	0	0.001	0.000	0.000	0.001				
ENGINEERING PERSONNEL	0	0	0	0	0.002	0.016	0.008	0.026				
TOTAL	0	2	4	6	0.453	0.552	1.854	2.859				
WASTE PROCESSING												
MAINTENANCE PERSONNEL	0	0	2	2	0.066	0.066	0.246	0.398				
OPERATIONS PERSONNEL	2	0	0	2	0.344	0.050	0.000	0.394				
HEALTH PHYSICS PERSONNEL	8	0	2	10	2.841	0.000	0.802	3.643				
SUPERVISORY PERSONNEL	0	0	0	0	0.004	0.000	0.000	0.004				
ENGINEERING PERSONNEL	2	0	0	2	0.334	0.134	0.000	0.468				
TOTAL	12	0	4	16	3.609	0.250	1.048	4.907				
REFUELING												
MAINTENANCE PERSONNEL	23	15	198	236	9.091	5.222	76.435	90.748				
OPERATIONS PERSONNEL	4	2	31	37	3.740	0.927	13.206	17.873				
HEALTH PHYSICS PERSONNEL	20	0	50	70	7.320	0.160	15.319	22.799				
SUPERVISORY PERSONNEL	4	0	3	7	0.607	0.000	2.368	2.975				
ENGINEERING PERSONNEL	0	1	0	1	0.308	0.571	0.296	1.175				
TOTAL	51	18	282	351	21.066	6.880	107.624	135.570				
TOTAL BY JOB FUNCTION												
MAINTENANCE PERSONNEL	42	(8)	40	(32)	227	(227)	309	(301)	20.206	11.554	82.417	114.177
OPERATIONS PERSONNEL	8	(8)	5	(5)	32	(32)	45	(45)	8.790	2.171	13.389	24.350
HEALTH PHYSICS PERSONNEL	40	(40)	2	(2)	52	(52)	94	(94)	14.946	0.831	16.818	32.595
SUPERVISORY PERSONNEL	4	(4)	0	(0)	3	(3)	7	(7)	1.030	0.029	2.392	3.451
ENGINEERING PERSONNEL	4	(4)	2	(2)	1	(1)	7	(7)	1.614	1.636	0.321	3.571
GRAND TOTALS	98	(98)	49	(41)	315	(315)	462	(454)	46.586	16.221	115.337	178.144

*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

1994

PLANT: *SAN ONOFRE 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				
<u>REACTOR OPS & SURV</u>												
MAINTENANCE PERSONNEL	3	0	0	3	0.184	0.000	0.000	0.184				
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	23	0	8	31	2.988	0.000	1.837	4.825				
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
ENGINEERING PERSONNEL	7	0	0	7	0.646	0.000	0.000	0.646				
TOTAL	33	0	8	41	3.818	0.000	1.837	5.655				
<u>ROUTINE MAINTENANCE</u>												
MAINTENANCE PERSONNEL	38	0	5	43	3.057	0.000	2.102	5.159				
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	38	0	20	58	1.058	0.000	0.176	1.234				
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
ENGINEERING PERSONNEL	7	0	0	7	0.467	0.000	0.000	0.467				
TOTAL	83	0	25	108	4.582	0.000	2.278	6.860				
<u>IN-SERVICE INSPECTION</u>												
MAINTENANCE PERSONNEL	15	0	1	16	0.087	0.000	0.046	0.133				
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	4	0	2	6	0.014	0.000	0.001	0.015				
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	0.101	0.000	0.047	0.148				
<u>SPECIAL MAINTENANCE</u>												
MAINTENANCE PERSONNEL	30	0	0	30	4.012	0.000	0.000	4.012				
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	23	0	9	32	0.253	0.000	0.036	0.289				
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
ENGINEERING PERSONNEL	2	0	0	2	0.252	0.000	0.000	0.252				
TOTAL	55	0	9	64	4.517	0.000	0.036	4.553				
<u>WASTE PROCESSING</u>												
MAINTENANCE PERSONNEL	2	0	0	2	0.008	0.000	0.000	0.008				
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	34	0	23	57	4.786	0.000	4.416	9.182				
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	36	0	23	59	4.774	0.000	4.416	9.190				
<u>REFUELING</u>												
MAINTENANCE PERSONNEL	7	0	0	7	0.156	0.000	0.000	0.156				
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	1	0	1	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	0	0	0	0	0.000	0.000	0.000	0.000				
TOTAL	8	0	1	9	0.156	0.000	0.000	0.156				
<u>TOTAL BY JOB FUNCTION</u>												
MAINTENANCE PERSONNEL	95	(38)	0	(0)	6	(5)	101	(43)	7.504	0.000	2.148	9.652
OPERATIONS PERSONNEL	0	(0)	0	(0)	0	(0)	0	(0)	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	123	(41)	0	(0)	63	(24)	186	(65)	9.079	0.000	6.466	15.545
SUPERVISORY PERSONNEL	0	(0)	0	(0)	0	(0)	0	(0)	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	16	(7)	0	(0)	0	(0)	16	(7)	1.365	0.000	0.000	1.365
GRAND TOTALS	234	(83)	0	(0)	69	(29)	303	(115)	17.948	0.000	8.614	26.562

*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

1994

PLANT: *SEABROOK

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM							
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL				
<u>REACTOR OPS & SURV</u>												
MAINTENANCE PERSONNEL	27	2	53	82	0.327	0.011	3.296	3.634				
OPERATIONS PERSONNEL	22	10	3	35	2.426	0.370	0.010	2.806				
HEALTH PHYSICS PERSONNEL	18	0	50	68	3.392	0.000	13.647	17.039				
SUPERVISORY PERSONNEL	2	5	0	7	0.000	0.134	0.000	0.134				
ENGINEERING PERSONNEL	1	2	17	20	0.000	0.045	1.819	1.864				
TOTAL	70	19	123	212	6.145	0.560	18.772	25.477				
<u>ROUTINE MAINTENANCE</u>												
MAINTENANCE PERSONNEL	39	2	141	182	8.474	0.261	27.162	35.897				
OPERATIONS PERSONNEL	24	10	4	38	1.745	1.568	0.592	3.905				
HEALTH PHYSICS PERSONNEL	17	0	36	53	0.502	0.000	2.632	3.134				
SUPERVISORY PERSONNEL	2	5	0	7	0.475	0.926	0.000	1.401				
ENGINEERING PERSONNEL	1	2	56	59	0.160	0.542	23.216	23.918				
TOTAL	83	19	237	339	11.356	3.297	53.602	68.255				
<u>IN-SERVICE INSPECTION</u>												
MAINTENANCE PERSONNEL	7	0	2	9	0.000	0.000	0.026	0.026				
OPERATIONS PERSONNEL	2	3	1	6	0.010	0.000	0.005	0.015				
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.000	0.000	0.005	0.005				
SUPERVISORY PERSONNEL	0	3	0	3	0.000	0.012	0.000	0.012				
ENGINEERING PERSONNEL	0	1	1	2	0.000	0.000	0.015	0.015				
TOTAL	9	7	5	21	0.010	0.012	0.051	0.073				
<u>SPECIAL MAINTENANCE</u>												
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				
<u>WASTE PROCESSING</u>												
MAINTENANCE PERSONNEL	7	0	33	40	0.332	0.000	2.641	2.973				
OPERATIONS PERSONNEL	7	1	1	9	0.145	0.005	0.000	0.150				
HEALTH PHYSICS PERSONNEL	7	0	19	26	0.075	0.000	1.210	1.285				
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
ENGINEERING PERSONNEL	0	0	1	1	0.000	0.000	0.030	0.030				
TOTAL	21	1	54	76	0.552	0.005	3.881	4.438				
<u>REFUELING</u>												
MAINTENANCE PERSONNEL	20	1	30	51	0.701	0.022	1.877	2.600				
OPERATIONS PERSONNEL	6	1	0	7	0.095	0.003	0.000	0.098				
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.000	0.000	0.000	0.000				
SUPERVISORY PERSONNEL	1	2	0	3	0.025	0.065	0.000	0.090				
ENGINEERING PERSONNEL	1	0	0	1	0.010	0.000	0.000	0.010				
TOTAL	29	4	30	63	0.831	0.090	1.877	2.796				
<u>TOTAL BY JOB FUNCTION</u>												
MAINTENANCE PERSONNEL	100	(39)	5	(2)	259	(141)	364	(182)	9.834	0.294	35.002	45.130
OPERATIONS PERSONNEL	61	(24)	25	(10)	9	(4)	95	(38)	4.421	1.946	0.607	6.974
HEALTH PHYSICS PERSONNEL	43	(18)	0	(0)	106	(56)	149	(74)	3.969	0.000	17.494	21.463
SUPERVISORY PERSONNEL	5	(2)	15	(5)	0	(0)	20	(7)	0.500	1.137	0.000	1.637
ENGINEERING PERSONNEL	3	(1)	5	(2)	75	(56)	83	(59)	0.170	0.587	25.080	25.837
GRAND TOTALS	212	(84)	50	(19)	449	(257)	711	(360)	18.894	3.964	78.183	101.041

*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

1994

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
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	64	2	98	164	1.331	0.007	3.330	4.668
OPERATIONS PERSONNEL	37	6	1	44	3.978	0.996	0.025	4.999
HEALTH PHYSICS PERSONNEL	43	7	43	93	3.889	0.454	2.337	6.680
SUPERVISORY PERSONNEL	23	2	0	25	0.610	0.002	0.000	0.612
ENGINEERING PERSONNEL	24	8	6	38	0.877	0.033	0.713	1.623
TOTAL	191	25	148	364	10.685	1.492	6.405	18.582
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	120	7	402	529	26.104	1.903	76.424	104.431
OPERATIONS PERSONNEL	48	8	13	69	3.453	0.766	2.311	6.530
HEALTH PHYSICS PERSONNEL	65	7	59	131	8.735	0.754	14.626	24.117
SUPERVISORY PERSONNEL	30	3	0	33	1.802	0.044	0.000	1.846
ENGINEERING PERSONNEL	34	19	41	94	2.006	0.251	1.182	3.439
TOTAL	297	44	515	856	42.100	3.718	94.545	140.363
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	21	0	93	114	2.194	0.000	9.894	12.088
OPERATIONS PERSONNEL	4	1	19	24	0.058	0.026	3.708	3.792
HEALTH PHYSICS PERSONNEL	32	5	35	72	0.994	0.411	5.557	6.962
SUPERVISORY PERSONNEL	8	1	0	9	0.159	0.043	0.000	0.202
ENGINEERING PERSONNEL	8	24	71	103	0.967	6.518	39.338	46.823
TOTAL	73	31	218	322	4.372	6.998	58.497	69.867
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	51	3	270	324	4.748	0.009	34.498	39.255
OPERATIONS PERSONNEL	21	2	5	28	0.147	0.028	0.332	0.507
HEALTH PHYSICS PERSONNEL	29	3	25	57	0.699	0.011	0.369	1.079
SUPERVISORY PERSONNEL	12	0	0	12	0.113	0.000	0.000	0.113
ENGINEERING PERSONNEL	6	2	7	15	0.089	0.020	0.299	0.408
TOTAL	119	10	307	436	5.796	0.068	35.498	41.362
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	13	0	22	35	0.237	0.000	0.466	0.703
OPERATIONS PERSONNEL	2	0	1	3	0.149	0.000	0.893	1.042
HEALTH PHYSICS PERSONNEL	23	0	13	36	2.276	0.000	1.098	3.374
SUPERVISORY PERSONNEL	2	0	0	2	0.038	0.000	0.000	0.038
ENGINEERING PERSONNEL	2	0	1	3	0.326	0.000	1.385	1.711
TOTAL	42	0	37	79	3.026	0.000	3.842	6.868
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	33	3	75	111	3.803	0.060	12.932	16.795
OPERATIONS PERSONNEL	21	3	8	32	1.035	1.044	0.156	2.235
HEALTH PHYSICS PERSONNEL	21	4	16	41	0.917	0.429	0.170	1.516
SUPERVISORY PERSONNEL	6	1	1	8	0.630	0.326	0.002	0.958
ENGINEERING PERSONNEL	12	5	28	45	0.106	0.509	10.104	10.719
TOTAL	93	16	128	237	6.491	2.368	23.364	32.223
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	302	15	960	1277	38.417	1.979	137.544	177.940
OPERATIONS PERSONNEL	133	20	47	200	8.820	2.860	7.425	19.105
HEALTH PHYSICS PERSONNEL	213	26	191	430	17.510	2.059	24.159	43.728
SUPERVISORY PERSONNEL	81	7	1	89	3.352	0.415	0.002	3.769
ENGINEERING PERSONNEL	86	58	154	298	4.371	7.331	53.021	64.723
GRAND TOTALS	815	126	1353	2294	72.470	14.644	222.151	309.265

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	0	1	1	2	0.632	1.126	0.987	2.745
OPERATIONS PERSONNEL	6	0	0	6	3.237	0.000	0.091	3.328
HEALTH PHYSICS PERSONNEL	15	0	5	20	3.499	0.000	2.547	6.046
SUPERVISORY PERSONNEL	1	0	0	1	0.726	0.255	0.002	0.983
ENGINEERING PERSONNEL	0	0	0	0	0.005	0.000	0.009	0.014
TOTAL	22	1	6	29	8.099	1.381	3.636	13.116
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	4	0	27	31	2.432	3.442	9.338	15.212
OPERATIONS PERSONNEL	0	0	2	2	0.068	0.000	1.018	1.086
HEALTH PHYSICS PERSONNEL	1	0	2	3	0.780	0.000	0.633	1.393
SUPERVISORY PERSONNEL	0	3	0	3	0.581	0.247	0.078	0.906
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	5	3	31	39	3.841	3.689	11.067	18.597
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	3	2	8	13	0.956	0.598	2.739	4.293
OPERATIONS PERSONNEL	0	0	0	0	0.004	0.000	0.000	0.004
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.298	0.000	0.020	0.313
SUPERVISORY PERSONNEL	0	0	0	0	0.095	0.036	0.034	0.165
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	4	2	8	14	1.348	0.634	2.793	4.775
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	5	15	20	0.500	1.442	4.565	6.507
OPERATIONS PERSONNEL	0	0	0	0	0.001	0.000	0.019	0.020
HEALTH PHYSICS PERSONNEL	2	0	0	2	0.768	0.000	0.375	1.143
SUPERVISORY PERSONNEL	0	2	0	2	0.389	0.319	0.079	0.787
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	2	7	15	24	1.658	1.761	5.038	8.457
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	1	3	4	0.052	0.208	1.547	1.807
OPERATIONS PERSONNEL	0	0	0	0	0.128	0.000	0.000	0.128
HEALTH PHYSICS PERSONNEL	2	0	17	19	1.191	0.000	4.243	5.434
SUPERVISORY PERSONNEL	0	1	0	1	0.289	0.168	0.000	0.457
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	2	2	20	24	1.660	0.376	5.790	7.826
REFUELING								
MAINTENANCE PERSONNEL	1	1	11	13	0.501	0.290	3.162	3.953
OPERATIONS PERSONNEL	0	0	1	1	0.015	0.000	0.178	0.193
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.317	0.000	0.119	0.436
SUPERVISORY PERSONNEL	1	0	0	1	0.592	0.135	0.002	0.729
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	3	1	12	16	1.425	0.425	3.461	5.311
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	8	10	65	83	5.073	7.106	22.338	34.517
OPERATIONS PERSONNEL	6	0	3	9	3.453	0.000	1.306	4.759
HEALTH PHYSICS PERSONNEL	22	0	24	46	6.828	0.000	7.937	14.765
SUPERVISORY PERSONNEL	2	6	0	8	2.672	1.160	0.195	4.027
ENGINEERING PERSONNEL	0	0	0	0	0.005	0.000	0.009	0.014
GRAND TOTALS	38	16	92	146	18.031	8.266	31.785	58.082

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	1	1	0.301	0.016	1.048	1.365				
OPERATIONS PERSONNEL	31	1	1	33	7.966	0.533	2.367	10.866				
HEALTH PHYSICS PERSONNEL	20	0	16	36	5.320	0.010	5.135	10.465				
SUPERVISORY PERSONNEL	0	0	0	0	0.012	0.000	0.000	0.012				
ENGINEERING PERSONNEL	0	0	1	1	0.000	0.120	0.153	0.273				
TOTAL	51	1	19	71	13.599	0.679	8.703	22.981				
ROUTINE MAINTENANCE												
MAINTENANCE PERSONNEL	210	5	222	437	66.127	1.781	64.925	132.833				
OPERATIONS PERSONNEL	13	8	49	70	5.076	3.471	14.873	23.420				
HEALTH PHYSICS PERSONNEL	33	0	100	133	11.542	0.007	37.037	48.586				
SUPERVISORY PERSONNEL	0	0	0	0	0.015	0.000	0.000	0.015				
ENGINEERING PERSONNEL	0	2	8	10	0.000	1.529	1.633	3.162				
TOTAL	256	15	379	650	82.760	6.788	118.468	208.016				
IN-SERVICE INSPECTION												
MAINTENANCE PERSONNEL	5	2	26	33	2.380	0.480	8.125	10.985				
OPERATIONS PERSONNEL	2	2	5	9	0.911	0.440	4.036	5.387				
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.051	0.000	0.000	0.051				
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
ENGINEERING PERSONNEL	0	0	8	8	0.000	0.586	2.779	3.365				
TOTAL	7	4	39	50	3.342	1.506	14.940	19.788				
SPECIAL MAINTENANCE												
MAINTENANCE PERSONNEL	50	0	154	213	18.452	0.211	62.619	81.282				
OPERATIONS PERSONNEL	0	5	86	91	0.273	1.307	51.221	52.801				
HEALTH PHYSICS PERSONNEL	3	0	1	4	1.020	0.000	0.217	1.237				
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
ENGINEERING PERSONNEL	0	1	2	3	0.000	0.412	0.550	0.962				
TOTAL	62	6	243	311	19.745	1.930	114.607	136.282				
WASTE PROCESSING												
MAINTENANCE PERSONNEL	0	0	7	7	0.484	0.000	1.931	2.425				
OPERATIONS PERSONNEL	0	0	13	13	0.106	0.000	6.901	7.007				
HEALTH PHYSICS PERSONNEL	9	0	37	46	3.144	0.000	10.746	13.890				
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	9	0	57	66	3.744	0.000	19.578	23.322				
REFUELING												
MAINTENANCE PERSONNEL	126	2	14	144	50.147	0.737	5.736	56.620				
OPERATIONS PERSONNEL	16	1	11	28	5.358	0.612	3.739	9.709				
HEALTH PHYSICS PERSONNEL	6	0	2	8	1.603	0.002	1.596	3.201				
SUPERVISORY PERSONNEL	0	0	0	0	0.005	0.000	0.000	0.005				
ENGINEERING PERSONNEL	0	1	2	3	0.000	0.769	0.251	1.020				
TOTAL	150	4	29	183	57.113	2.120	11.322	70.555				
TOTAL BY JOB FUNCTION												
MAINTENANCE PERSONNEL	402	(269)	9	(8)	424	(376)	835	(653)	137.901	3.225	144.384	285.510
OPERATIONS PERSONNEL	62	(67)	17	(13)	165	(135)	244	(215)	19.690	6.363	83.137	109.190
HEALTH PHYSICS PERSONNEL	71	(57)	0	(0)	156	(150)	227	(207)	22.880	0.019	54.731	77.430
SUPERVISORY PERSONNEL	0	(0)	0	(0)	0	(0)	0	(0)	0.032	0.000	0.000	0.032
ENGINEERING PERSONNEL	0	(0)	4	(8)	21	(17)	25	(25)	0.000	3.416	5.386	8.782
GRAND TOTALS	535	(383)	30	(29)	766	(678)	1331	(1100)	180.303	13.023	287.618	480.944

*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

1994

PLANT: *SUMMER 1

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			TOTAL
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	1	0	2	3	0.632	0.000	1.106	1.738
OPERATIONS PERSONNEL	9	0	1	10	3.513	0.001	0.402	3.916
HEALTH PHYSICS PERSONNEL	6	0	53	59	2.506	0.000	16.073	18.579
SUPERVISORY PERSONNEL	0	0	1	1	0.126	0.000	0.189	0.315
ENGINEERING PERSONNEL	0	0	1	1	0.102	0.000	0.249	0.351
TOTAL	16	0	58	74	6.879	0.001	18.019	24.899
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	47	0	146	193	11.773	0.026	48.736	60.535
OPERATIONS PERSONNEL	7	0	9	16	2.557	0.025	2.487	5.069
HEALTH PHYSICS PERSONNEL	6	0	57	63	1.903	0.000	17.287	19.190
SUPERVISORY PERSONNEL	0	0	1	1	0.290	0.000	0.383	0.673
ENGINEERING PERSONNEL	3	0	21	24	1.430	0.000	6.914	8.344
TOTAL	63	0	234	297	17.953	0.051	75.807	93.811
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	33	33	0.170	0.049	9.688	9.907
OPERATIONS PERSONNEL	0	0	0	0	0.481	0.000	0.094	0.575
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.020	0.000	0.206	0.226
SUPERVISORY PERSONNEL	0	0	0	0	0.046	0.000	0.002	0.048
ENGINEERING PERSONNEL	0	0	18	18	0.323	0.000	5.149	5.472
TOTAL	0	0	51	51	1.040	0.049	15.139	16.228
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	16	0	327	343	6.054	0.020	146.761	152.835
OPERATIONS PERSONNEL	5	0	2	7	1.675	0.000	0.811	2.486
HEALTH PHYSICS PERSONNEL	2	0	3	5	0.669	0.000	1.880	2.549
SUPERVISORY PERSONNEL	0	0	2	2	0.633	0.000	0.755	1.388
ENGINEERING PERSONNEL	1	0	104	105	0.994	0.000	47.135	48.129
TOTAL	24	0	436	462	10.025	0.020	197.342	207.387
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.036	0.000	0.158	0.194
OPERATIONS PERSONNEL	0	0	0	0	0.001	0.000	0.179	0.180
HEALTH PHYSICS PERSONNEL	3	0	2	5	0.957	0.000	1.041	1.998
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.015	0.015
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	3	0	2	5	0.994	0.000	1.393	2.387
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.021	0.000	0.251	0.272
OPERATIONS PERSONNEL	0	0	0	0	0.085	0.000	0.108	0.193
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.119	0.119
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	1	1	0.007	0.000	0.301	0.308
TOTAL	0	0	1	1	0.113	0.000	0.779	0.892
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	64	0	508	572	18.686	0.065	206.700	225.481
OPERATIONS PERSONNEL	21	0	12	33	8.312	0.026	4.081	12.419
HEALTH PHYSICS PERSONNEL	17	0	115	132	6.055	0.000	36.606	42.661
SUPERVISORY PERSONNEL	0	0	4	4	1.095	0.000	1.344	2.439
ENGINEERING PERSONNEL	4	0	145	149	2.856	0.000	59.748	62.604
GRAND TOTALS	106	0	784	890	37.004	0.121	308.479	345.604

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	211	1	370	582	5.496	0.000	6.118	11.614				
OPERATIONS PERSONNEL	363	13	50	456	22.186	0.008	0.727	22.921				
HEALTH PHYSICS PERSONNEL	93	0	168	261	10.147	0.000	13.263	23.410				
SUPERVISORY PERSONNEL	144	0	38	182	2.630	0.000	1.744	4.374				
ENGINEERING PERSONNEL	132	4	22	158	2.388	0.002	0.046	2.436				
TOTAL	973	18	648	1639	42.847	0.010	21.898	64.755				
ROUTINE MAINTENANCE												
MAINTENANCE PERSONNEL	195	0	671	866	50.065	0.000	132.577	182.642				
OPERATIONS PERSONNEL	244	4	30	278	3.454	0.082	1.844	5.380				
HEALTH PHYSICS PERSONNEL	63	0	162	225	10.186	0.000	25.534	35.720				
SUPERVISORY PERSONNEL	84	0	42	126	3.880	0.000	6.970	10.850				
ENGINEERING PERSONNEL	62	1	27	90	2.570	0.005	0.768	3.343				
TOTAL	648	5	932	1585	70.155	0.087	167.693	237.935				
IN-SERVICE INSPECTION												
MAINTENANCE PERSONNEL	17	0	217	234	1.405	0.000	25.716	27.121				
OPERATIONS PERSONNEL	6	2	5	13	0.030	0.147	0.200	0.377				
HEALTH PHYSICS PERSONNEL	18	0	49	67	0.443	0.000	1.284	1.727				
SUPERVISORY PERSONNEL	6	0	13	19	0.538	0.000	1.620	2.158				
ENGINEERING PERSONNEL	7	0	26	33	0.832	0.000	5.419	6.251				
TOTAL	54	2	310	366	3.248	0.147	34.239	37.634				
SPECIAL MAINTENANCE												
MAINTENANCE PERSONNEL	54	0	216	270	0.980	0.000	18.517	19.497				
OPERATIONS PERSONNEL	11	0	5	16	0.066	0.000	0.116	0.182				
HEALTH PHYSICS PERSONNEL	20	0	13	33	0.243	0.000	0.317	0.560				
SUPERVISORY PERSONNEL	8	0	21	29	0.091	0.000	0.419	0.510				
ENGINEERING PERSONNEL	4	0	1	5	0.257	0.000	0.001	0.258				
TOTAL	97	0	256	353	1.637	0.000	19.370	21.007				
WASTE PROCESSING												
MAINTENANCE PERSONNEL	45	0	58	103	0.487	0.000	0.671	1.158				
OPERATIONS PERSONNEL	35	2	1	38	0.883	0.012	0.003	0.898				
HEALTH PHYSICS PERSONNEL	41	0	6	47	1.493	0.000	0.030	1.523				
SUPERVISORY PERSONNEL	20	0	10	30	0.241	0.000	0.073	0.314				
ENGINEERING PERSONNEL	6	0	2	8	0.004	0.000	0.005	0.009				
TOTAL	147	2	77	226	3.108	0.012	0.782	3.902				
REFUELING												
MAINTENANCE PERSONNEL	0	0	36	36	0.000	0.000	3.912	3.912				
OPERATIONS PERSONNEL	11	1	6	18	0.418	0.043	0.070	0.531				
HEALTH PHYSICS PERSONNEL	16	0	26	42	0.064	0.000	0.434	0.498				
SUPERVISORY PERSONNEL	5	0	0	5	0.133	0.000	0.000	0.133				
ENGINEERING PERSONNEL	0	0	1	1	0.000	0.000	0.021	0.021				
TOTAL	32	1	69	102	0.615	0.043	4.437	5.095				
TOTAL BY JOB FUNCTION												
MAINTENANCE PERSONNEL	522	(540)	1	(1)	1568	(1731)	2091	(2272)	58.433	0.000	187.511	245.944
OPERATIONS PERSONNEL	700	(705)	22	(22)	97	(98)	819	(825)	27.037	0.292	2.960	30.289
HEALTH PHYSICS PERSONNEL	251	(257)	0	(0)	424	(429)	675	(686)	22.576	0.000	40.862	63.438
SUPERVISORY PERSONNEL	267	(270)	0	(0)	124	(141)	391	(411)	7.513	0.000	10.826	18.339
ENGINEERING PERSONNEL	211	(213)	5	(5)	79	(79)	295	(297)	6.051	0.007	6.260	12.318
GRAND TOTALS	1951	(1985)	28	(28)	2292	(2478)	4271	(4491)	121.610	0.299	248.419	370.328

*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

1994

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
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	1	0	0	1	0.170	0.000	0.000	0.170
OPERATIONS PERSONNEL	60	0	0	60	16.457	0.000	0.000	16.457
HEALTH PHYSICS PERSONNEL	10	0	2	12	3.106	0.000	0.335	3.441
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	71	0	2	73	19.733	0.000	0.335	20.068
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	232	6	249	487	107.963	2.894	133.903	244.760
OPERATIONS PERSONNEL	8	0	2	10	1.591	0.000	0.326	1.917
HEALTH PHYSICS PERSONNEL	19	0	152	171	7.009	0.000	62.523	69.532
SUPERVISORY PERSONNEL	13	0	1	14	2.861	0.000	0.275	3.136
ENGINEERING PERSONNEL	8	0	10	18	1.684	0.000	6.367	8.041
TOTAL	280	6	414	700	121.108	2.894	203.384	327.386
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	34	1	44	79	15.682	0.270	18.378	34.330
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	0.132	0.000	0.000	0.132
TOTAL	35	1	44	80	15.814	0.270	18.378	34.462
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	56	0	49	105	28.967	0.000	19.705	48.672
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	7	0	3	10	3.855	0.000	1.140	4.995
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	1	6	7	0.000	0.197	1.063	1.260
TOTAL	63	1	58	122	32.822	0.197	21.938	54.957
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	0	0	2	2	0.000	0.000	1.470	1.470
HEALTH PHYSICS PERSONNEL	3	0	2	5	0.980	0.000	0.520	1.500
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	4	7	0.980	0.000	1.990	2.970
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
OPERATIONS PERSONNEL	11	0	0	11	1.718	0.000	0.000	1.718
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	2	0	0	2	0.311	0.000	0.000	0.311
ENGINEERING PERSONNEL	0	0	3	3	0.000	0.000	0.321	0.321
TOTAL	13	0	3	16	2.029	0.000	0.321	2.350
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	323	7	342	672	152.782	3.164	171.986	327.932
OPERATIONS PERSONNEL	79	0	4	83	19.786	0.000	1.796	21.582
HEALTH PHYSICS PERSONNEL	39	0	159	198	14.950	0.000	64.518	79.468
SUPERVISORY PERSONNEL	15	0	1	16	3.172	0.000	0.275	3.447
ENGINEERING PERSONNEL	9	1	19	29	1.816	0.197	7.771	9.784
GRAND TOTALS	465	8	525	998	192.486	3.361	246.346	442.193

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *THREE MILE ISLAND 1

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM							
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL				
<u>REACTOR OPS & SURV</u>												
MAINTENANCE PERSONNEL	125	3	8	136	1.933	0.064	0.019	2.016				
OPERATIONS PERSONNEL	108	0	1	109	8.836	0.000	0.000	8.836				
HEALTH PHYSICS PERSONNEL	67	1	0	68	6.963	0.000	0.000	6.963				
SUPERVISORY PERSONNEL	123	14	4	141	2.505	0.034	0.044	2.583				
ENGINEERING PERSONNEL	39	2	2	43	0.919	0.030	0.002	0.951				
TOTAL	462	20	15	497	21.186	0.128	0.065	21.379				
<u>ROUTINE MAINTENANCE</u>												
MAINTENANCE PERSONNEL	134	8	28	170	7.370	0.030	0.045	7.445				
OPERATIONS PERSONNEL	39	0	1	40	0.171	0.000	0.006	0.177				
HEALTH PHYSICS PERSONNEL	39	1	0	40	0.252	0.000	0.000	0.252				
SUPERVISORY PERSONNEL	195	40	7	242	1.914	0.021	0.010	1.945				
ENGINEERING PERSONNEL	71	6	3	80	0.313	0.007	0.000	0.320				
TOTAL	478	55	39	572	10.020	0.058	0.061	10.139				
<u>IN-SERVICE INSPECTION</u>												
MAINTENANCE PERSONNEL	7	0	3	10	0.000	0.000	0.034	0.034				
OPERATIONS PERSONNEL	9	0	0	9	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	6	0	0	6	0.020	0.000	0.000	0.020				
SUPERVISORY PERSONNEL	5	1	0	6	0.004	0.002	0.000	0.006				
ENGINEERING PERSONNEL	6	0	0	6	0.018	0.000	0.000	0.018				
TOTAL	33	1	3	37	0.042	0.002	0.034	0.078				
<u>SPECIAL MAINTENANCE</u>												
MAINTENANCE PERSONNEL	98	2	7	107	4.530	0.036	0.278	4.844				
OPERATIONS PERSONNEL	29	0	0	29	0.679	0.000	0.000	0.679				
HEALTH PHYSICS PERSONNEL	35	0	0	35	0.682	0.000	0.000	0.682				
SUPERVISORY PERSONNEL	22	0	0	22	0.652	0.000	0.000	0.652				
ENGINEERING PERSONNEL	5	1	1	7	0.114	0.001	0.105	0.220				
TOTAL	189	3	8	200	6.657	0.037	0.383	7.077				
<u>WASTE PROCESSING</u>												
MAINTENANCE PERSONNEL	47	2	7	56	0.685	0.197	0.010	0.892				
OPERATIONS PERSONNEL	42	0	0	42	5.406	0.000	0.000	5.406				
HEALTH PHYSICS PERSONNEL	42	0	0	42	0.616	0.000	0.000	0.616				
SUPERVISORY PERSONNEL	34	17	2	53	0.399	0.000	0.000	0.399				
ENGINEERING PERSONNEL	9	0	0	9	0.011	0.000	0.000	0.011				
TOTAL	174	19	9	202	7.117	0.197	0.010	7.324				
<u>REFUELING</u>												
MAINTENANCE PERSONNEL	0	0	3	3	0.000	0.000	0.024	0.024				
OPERATIONS PERSONNEL	3	0	0	3	0.005	0.000	0.000	0.005				
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
SUPERVISORY PERSONNEL	4	0	0	4	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	3	10	0.005	0.000	0.024	0.029				
<u>TOTAL BY JOB FUNCTION</u>												
MAINTENANCE PERSONNEL	411	(138)	15	(9)	56	(37)	482	(184)	14.518	0.327	0.410	15.255
OPERATIONS PERSONNEL	230	(122)	0	(0)	2	(1)	232	(123)	15.097	0.000	0.006	15.103
HEALTH PHYSICS PERSONNEL	189	(71)	2	(2)	0	(0)	191	(73)	8.563	0.000	0.000	8.563
SUPERVISORY PERSONNEL	383	(235)	72	(64)	13	(9)	468	(308)	5.474	0.057	0.054	5.585
ENGINEERING PERSONNEL	130	(80)	9	(6)	6	(6)	145	(92)	1.375	0.038	0.107	1.520
GRAND TOTALS	1343	(646)	98	(81)	77	(53)	1518	(780)	45.027	0.422	0.577	46.026

*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**

1994

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				
<u>REACTOR OPS & SURV</u>												
MAINTENANCE PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
OPERATIONS PERSONNEL	6	0	0	6	0.180	0.000	0.000	0.180				
HEALTH PHYSICS PERSONNEL	2	0	0	2	0.050	0.000	0.000	0.050				
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	0.210	0.000	0.000	0.210				
<u>ROUTINE MAINTENANCE</u>												
MAINTENANCE PERSONNEL	87	1	18	106	0.333	0.000	0.054	0.387				
OPERATIONS PERSONNEL	21	0	0	21	0.045	0.000	0.000	0.045				
HEALTH PHYSICS PERSONNEL	3	0	0	3	0.002	0.000	0.000	0.002				
SUPERVISORY PERSONNEL	15	0	0	15	0.078	0.000	0.000	0.078				
ENGINEERING PERSONNEL	8	0	1	9	0.011	0.000	0.003	0.014				
TOTAL	134	1	19	154	0.469	0.000	0.057	0.526				
<u>IN-SERVICE INSPECTION</u>												
MAINTENANCE PERSONNEL	21	3	2	26	0.049	0.000	0.002	0.051				
OPERATIONS PERSONNEL	77	0	0	77	0.543	0.000	0.000	0.543				
HEALTH PHYSICS PERSONNEL	37	1	1	39	0.601	0.000	0.000	0.601				
SUPERVISORY PERSONNEL	107	19	3	129	0.199	0.014	0.000	0.213				
ENGINEERING PERSONNEL	33	1	4	38	0.092	0.000	0.009	0.101				
TOTAL	275	24	10	309	1.484	0.014	0.011	1.509				
<u>SPECIAL MAINTENANCE</u>												
MAINTENANCE PERSONNEL	44	0	20	64	1.414	0.000	1.824	3.238				
OPERATIONS PERSONNEL	13	0	0	13	0.036	0.000	0.000	0.036				
HEALTH PHYSICS PERSONNEL	13	0	0	13	0.716	0.000	0.000	0.716				
SUPERVISORY PERSONNEL	13	0	2	15	0.309	0.000	0.013	0.322				
ENGINEERING PERSONNEL	6	0	1	7	0.170	0.000	0.013	0.183				
TOTAL	89	0	23	112	2.645	0.000	1.850	4.495				
<u>WASTE PROCESSING</u>												
MAINTENANCE PERSONNEL	16	1	11	28	0.006	0.000	0.011	0.017				
OPERATIONS PERSONNEL	18	0	0	18	1.004	0.000	0.000	1.004				
HEALTH PHYSICS PERSONNEL	11	0	0	11	0.094	0.000	0.000	0.094				
SUPERVISORY PERSONNEL	13	1	1	15	0.028	0.000	0.000	0.028				
ENGINEERING PERSONNEL	5	1	0	6	0.000	0.000	0.000	0.000				
TOTAL	63	3	12	78	1.132	0.000	0.011	1.143				
<u>REFUELING</u>												
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				
<u>TOTAL BY JOB FUNCTION</u>												
MAINTENANCE PERSONNEL	168	(106)	5	(4)	51	(26)	224	(136)	1.802	0.000	1.891	3.693
OPERATIONS PERSONNEL	135	(99)	0	(0)	0	(0)	135	(99)	1.788	0.000	0.000	1.788
HEALTH PHYSICS PERSONNEL	66	(38)	1	(1)	1	(1)	68	(40)	1.463	0.000	0.000	1.463
SUPERVISORY PERSONNEL	148	(123)	20	(20)	6	(5)	174	(148)	0.614	0.014	0.013	0.641
ENGINEERING PERSONNEL	52	(38)	2	(2)	6	(4)	60	(44)	0.273	0.000	0.025	0.298
GRAND TOTALS	569	(404)	28	(27)	64	(36)	661	(467)	5.940	0.014	1.929	7.883

*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

1994

PLANT: *TROJAN

TYPE: PWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM							
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	TOTAL				
<u>REACTOR OPS & SURV</u>												
MAINTENANCE PERSONNEL	0	0	0	0	0.070	0.000	0.110	0.180				
OPERATIONS PERSONNEL	0	0	0	0	0.140	0.000	0.000	0.140				
HEALTH PHYSICS PERSONNEL	2	0	0	2	0.560	0.000	0.060	0.620				
SUPERVISORY PERSONNEL	0	0	0	0	0.340	0.020	0.060	0.420				
ENGINEERING PERSONNEL	0	0	0	0	0.260	0.000	0.020	0.280				
TOTAL	2	0	0	2	1.370	0.020	0.250	1.640				
<u>ROUTINE MAINTENANCE</u>												
MAINTENANCE PERSONNEL	2	0	11	13	0.490	0.000	5.100	5.590				
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	2	0	4	6	0.560	0.000	0.740	1.300				
SUPERVISORY PERSONNEL	0	0	0	0	0.140	0.000	0.050	0.190				
ENGINEERING PERSONNEL	0	0	0	0	0.010	0.000	0.000	0.010				
TOTAL	4	0	15	19	1.200	0.000	5.890	7.090				
<u>IN-SERVICE INSPECTION</u>												
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				
<u>SPECIAL MAINTENANCE</u>												
MAINTENANCE PERSONNEL	0	0	2	2	0.060	0.000	0.680	0.740				
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000				
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.160	0.000	0.140	0.300				
SUPERVISORY PERSONNEL	0	0	0	0	0.010	0.000	0.000	0.010				
ENGINEERING PERSONNEL	0	0	0	0	0.050	0.000	0.000	0.050				
TOTAL	0	0	2	2	0.280	0.000	0.820	1.100				
<u>WASTE PROCESSING</u>												
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				
<u>REFUELING</u>												
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				
<u>TOTAL BY JOB FUNCTION</u>												
MAINTENANCE PERSONNEL	2	(2)	0	(0)	13	(12)	15	(14)	0.620	0.000	5.890	6.510
OPERATIONS PERSONNEL	0	(0)	0	(0)	0	(0)	0	(0)	0.140	0.000	0.000	0.140
HEALTH PHYSICS PERSONNEL	4	(3)	0	(0)	4	(4)	8	(7)	1.280	0.000	0.940	2.220
SUPERVISORY PERSONNEL	0	(1)	0	(0)	0	(0)	0	(1)	0.490	0.020	0.110	0.620
ENGINEERING PERSONNEL	0	(0)	0	(0)	0	(0)	0	(0)	0.320	0.000	0.020	0.340
GRAND TOTALS	6	(6)	0	(0)	17	(16)	23	(22)	2.850	0.020	6.960	9.830

*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

1994

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	0	0	0	0	0.167	0.000	0.031	0.198
OPERATIONS PERSONNEL	0	0	0	0	0.088	0.000	0.000	0.088
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.147	0.000	0.000	0.147
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.016	0.016
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	0	0	0	0	0.402	0.000	0.047	0.449
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	238	9	284	531	89.858	2.216	104.846	196.920
OPERATIONS PERSONNEL	52	0	1	53	18.234	0.000	0.463	18.697
HEALTH PHYSICS PERSONNEL	88	0	58	146	29.980	0.019	16.696	46.695
SUPERVISORY PERSONNEL	5	3	51	59	3.304	0.873	20.154	24.331
ENGINEERING PERSONNEL	34	4	3	41	12.113	0.956	1.528	14.597
TOTAL	417	16	397	830	153.489	4.064	143.687	301.240
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	101	102	0.424	0.060	34.452	34.936
OPERATIONS PERSONNEL	0	0	2	2	0.500	0.000	0.726	1.226
HEALTH PHYSICS PERSONNEL	3	0	1	4	1.808	0.000	0.670	2.278
SUPERVISORY PERSONNEL	0	0	50	50	0.098	0.036	20.472	20.606
ENGINEERING PERSONNEL	1	3	8	12	0.324	0.430	3.809	4.563
TOTAL	5	3	162	170	2.954	0.526	60.129	63.609
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	0	0	0.247	0.001	0.204	0.452
OPERATIONS PERSONNEL	0	0	0	0	0.007	0.000	0.000	0.007
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.097	0.000	0.005	0.102
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.010	0.011	0.021
ENGINEERING PERSONNEL	0	0	0	0	0.001	0.007	0.042	0.050
TOTAL	0	0	0	0	0.352	0.018	0.262	0.632
WASTE PROCESSING								
MAINTENANCE PERSONNEL	10	0	0	10	3.243	0.000	0.192	3.435
OPERATIONS PERSONNEL	0	0	1	1	0.192	0.000	1.128	1.320
HEALTH PHYSICS PERSONNEL	18	0	0	18	6.363	0.000	0.401	6.764
SUPERVISORY PERSONNEL	0	0	3	3	0.001	0.000	0.872	0.873
ENGINEERING PERSONNEL	0	0	0	0	0.151	0.003	0.000	0.154
TOTAL	28	0	4	32	9.950	0.003	2.593	12.546
REFUELING								
MAINTENANCE PERSONNEL	139	1	66	206	58.480	0.314	20.949	79.743
OPERATIONS PERSONNEL	30	0	5	35	8.258	0.000	1.488	9.746
HEALTH PHYSICS PERSONNEL	35	0	40	75	10.460	0.003	9.560	20.023
SUPERVISORY PERSONNEL	4	1	6	11	2.316	0.357	1.855	4.528
ENGINEERING PERSONNEL	18	0	4	22	4.478	0.042	1.382	5.902
TOTAL	226	2	121	349	83.992	0.716	35.234	119.942
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	388	10	451	849	152.419	2.591	160.674	315.684
OPERATIONS PERSONNEL	82	0	9	91	27.279	0.000	3.805	31.084
HEALTH PHYSICS PERSONNEL	144	0	99	243	48.655	0.022	27.332	76.009
SUPERVISORY PERSONNEL	9	4	110	123	5.719	1.276	43.380	50.375
ENGINEERING PERSONNEL	53	7	15	75	17.067	1.438	6.761	25.266
GRAND TOTALS	676	21	684	1381	251.139	5.327	241.952	498.418

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *VERMONT YANKEE

TYPE: BWR

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL (>100 mREM)				TOTAL PERSON-REM			TOTAL
	STATION	UTILITY	CONTRACT	TOTAL	STATION	UTILITY	CONTRACT	
REACTOR OPS & SURV								
MAINTENANCE PERSONNEL	18	0	22	40	4.686	0.000	7.265	11.951
OPERATIONS PERSONNEL	22	0	1	23	6.422	0.000	0.293	6.715
HEALTH PHYSICS PERSONNEL	11	0	1	12	4.076	0.000	0.866	4.942
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.082	0.000	0.000	0.082
TOTAL	51	0	24	75	15.266	0.000	8.424	23.690
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	8	0	10	18	2.514	0.000	5.349	7.863
OPERATIONS PERSONNEL	3	0	0	3	0.674	0.000	0.000	0.674
HEALTH PHYSICS PERSONNEL	1	0	4	5	0.594	0.000	1.407	2.001
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.002	0.000	0.000	0.002
TOTAL	12	0	14	26	3.784	0.000	6.756	10.540
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	0.004	0.000	0.000	0.004
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.015	0.000	0.000	0.015
TOTAL	0	0	0	0	0.019	0.000	0.000	0.019
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	1	0	9	10	0.462	0.000	2.942	3.404
OPERATIONS PERSONNEL	0	0	0	0	0.070	0.000	0.000	0.070
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.197	0.000	0.011	0.208
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	9	10	0.729	0.000	2.953	3.682
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0	0	0.008	0.000	0.014	0.022
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.023	0.000	0.000	0.023
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	0.031	0.000	0.014	0.045
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.014	0.000	0.030	0.044
OPERATIONS PERSONNEL	0	0	0	0	0.112	0.000	0.000	0.112
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.003	0.000	0.001	0.004
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	0.129	0.000	0.031	0.160
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	27	0	41	68	7.684	0.000	15.600	23.284
OPERATIONS PERSONNEL	25	0	1	26	7.278	0.000	0.293	7.571
HEALTH PHYSICS PERSONNEL	12	0	5	17	4.897	0.000	2.285	7.182
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.099	0.000	0.000	0.099
GRAND TOTALS	64	0	47	111	19.958	0.000	18.178	38.136

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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	3	0	3	6	0.643	0.000	1.453	2.096
OPERATIONS PERSONNEL	13	0	0	13	4.911	0.015	0.009	4.935
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.526	0.000	0.017	0.543
SUPERVISORY PERSONNEL	0	0	0	0	0.066	0.000	0.219	0.307
ENGINEERING PERSONNEL	0	0	0	0	0.102	0.011	0.050	0.163
TOTAL	17	0	3	20	6.248	0.048	1.748	8.044
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	11	0	32	43	6.989	0.043	11.314	18.346
OPERATIONS PERSONNEL	4	0	0	4	2.574	0.012	0.051	2.637
HEALTH PHYSICS PERSONNEL	49	1	4	54	12.056	0.170	1.655	13.881
SUPERVISORY PERSONNEL	0	0	0	0	0.163	0.057	0.546	0.766
ENGINEERING PERSONNEL	0	0	0	0	0.599	0.007	0.277	0.883
TOTAL	64	1	36	101	22.381	0.289	13.843	36.513
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	8	0	13	21	2.834	0.000	3.405	6.239
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	1	0	20	21	0.107	0.000	8.860	8.967
ENGINEERING PERSONNEL	0	0	1	1	0.104	0.000	0.335	0.439
TOTAL	9	0	34	43	3.047	0.000	12.600	15.647
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	119	1	132	252	41.507	0.244	54.847	96.598
OPERATIONS PERSONNEL	11	1	1	13	4.051	0.248	0.155	4.454
HEALTH PHYSICS PERSONNEL	30	0	58	88	10.181	0.070	17.940	28.191
SUPERVISORY PERSONNEL	3	1	15	19	1.667	0.115	5.403	7.185
ENGINEERING PERSONNEL	5	0	3	8	1.426	0.081	1.475	2.982
TOTAL	168	3	209	380	58.832	0.758	79.820	139.410
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	1	1	0.020	0.000	0.163	0.183
OPERATIONS PERSONNEL	2	0	1	3	0.860	0.000	0.323	1.183
HEALTH PHYSICS PERSONNEL	1	0	4	5	0.847	0.011	1.743	2.601
SUPERVISORY PERSONNEL	0	0	0	0	0.002	0.000	0.001	0.003
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.155	0.155
TOTAL	3	0	6	9	1.729	0.011	2.385	4.125
REFUELING								
MAINTENANCE PERSONNEL	7	0	20	27	1.842	0.000	5.696	7.538
OPERATIONS PERSONNEL	2	0	0	2	0.733	0.021	0.000	0.754
HEALTH PHYSICS PERSONNEL	1	0	3	4	0.467	0.000	1.596	2.063
SUPERVISORY PERSONNEL	0	0	4	4	0.175	0.000	0.923	1.098
ENGINEERING PERSONNEL	1	0	3	4	0.296	0.000	0.946	1.242
TOTAL	11	0	30	41	3.513	0.021	9.161	12.695
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	148	1	201	350	53.835	0.287	76.878	131.000
OPERATIONS PERSONNEL	32	1	2	35	13.131	0.296	0.538	13.965
HEALTH PHYSICS PERSONNEL	82	1	69	152	24.077	0.251	22.951	47.279
SUPERVISORY PERSONNEL	4	1	39	44	2.180	0.194	15.952	18.326
ENGINEERING PERSONNEL	6	0	7	13	2.527	0.099	3.238	5.864
GRAND TOTALS	272	4	318	594	95.750	1.127	119.557	216.434

*Workers may be counted in more than one category

APPENDIX D (Continued)

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

1994

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	47	2	10	59	27.625	1.337	5.158	34.120
OPERATIONS PERSONNEL	52	4	1	57	45.674	1.069	0.344	47.117
HEALTH PHYSICS PERSONNEL	14	0	2	16	5.038	0.000	0.975	6.013
SUPERVISORY PERSONNEL	19	4	2	25	4.994	0.818	0.324	6.136
ENGINEERING PERSONNEL	13	23	7	43	2.862	6.562	2.282	11.506
TOTAL	145	33	22	200	85.993	9.816	9.083	104.892
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	180	6	395	581	180.750	6.867	289.165	456.782
OPERATIONS PERSONNEL	3	0	0	3	5.542	0.161	0.185	5.888
HEALTH PHYSICS PERSONNEL	32	0	65	97	17.788	0.000	34.417	52.205
SUPERVISORY PERSONNEL	6	2	11	19	5.091	0.504	12.789	18.384
ENGINEERING PERSONNEL	12	16	54	82	5.055	10.805	35.419	51.079
TOTAL	233	24	525	782	194.226	18.137	371.975	584.338
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	10	1	8	19	4.771	0.336	5.179	10.286
OPERATIONS PERSONNEL	0	0	0	0	0.391	0.000	0.000	0.391
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.758	0.000	0.158	0.916
SUPERVISORY PERSONNEL	1	0	1	2	0.149	0.002	0.369	0.520
ENGINEERING PERSONNEL	2	2	9	13	0.564	1.021	2.509	4.094
TOTAL	14	3	18	35	6.633	1.359	8.215	16.207
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	23	0	60	83	22.999	0.260	40.853	64.112
OPERATIONS PERSONNEL	0	0	0	0	0.261	0.000	0.000	0.261
HEALTH PHYSICS PERSONNEL	2	0	1	3	0.741	0.000	1.047	1.788
SUPERVISORY PERSONNEL	1	1	0	2	0.855	0.030	0.080	0.965
ENGINEERING PERSONNEL	1	5	5	11	0.416	2.496	3.159	6.071
TOTAL	27	6	66	99	25.272	2.786	45.139	73.197
WASTE PROCESSING								
MAINTENANCE PERSONNEL	13	6	1	20	4.087	1.416	0.193	5.696
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	1	0	5	6	0.367	0.000	3.079	3.446
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.001	0.015	0.030	0.046
TOTAL	14	6	6	26	4.455	1.431	3.302	9.188
REFUELING								
MAINTENANCE PERSONNEL	24	0	13	37	26.552	0.014	4.697	31.263
OPERATIONS PERSONNEL	5	1	0	6	4.439	0.091	0.000	4.530
HEALTH PHYSICS PERSONNEL	3	0	14	17	1.343	0.000	9.437	10.780
SUPERVISORY PERSONNEL	2	1	0	3	1.130	0.062	0.001	1.193
ENGINEERING PERSONNEL	3	5	8	16	0.781	1.288	1.838	3.885
TOTAL	37	7	36	79	34.225	1.455	15.971	51.651
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	297	15	487	799	246.784	10.230	345.245	602.259
OPERATIONS PERSONNEL	60	5	1	66	56.307	1.351	0.529	58.187
HEALTH PHYSICS PERSONNEL	53	0	87	140	26.035	0.000	49.113	75.148
SUPERVISORY PERSONNEL	29	8	14	51	12.219	1.416	13.563	27.198
ENGINEERING PERSONNEL	31	51	83	165	9.459	21.967	45.235	76.681
GRAND TOTALS	470	79	672	1221	350.804	34.984	453.685	839.473

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

PLANT: *WATERFORD 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	15	0	35	50	9.156	0.000	19.348	28.504
OPERATIONS PERSONNEL	11	0	8	19	4.094	0.000	3.834	7.928
HEALTH PHYSICS PERSONNEL	6	0	22	28	2.335	0.000	6.672	9.007
SUPERVISORY PERSONNEL	0	0	0	0	0.026	0.000	0.000	0.026
ENGINEERING PERSONNEL	1	0	1	2	0.564	0.045	0.523	1.132
TOTAL	33	0	66	99	16.175	0.045	30.377	46.597
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	8	0	21	29	3.664	0.000	12.516	16.180
OPERATIONS PERSONNEL	32	0	2	34	7.251	0.000	1.296	8.547
HEALTH PHYSICS PERSONNEL	12	0	51	63	3.790	0.099	11.568	15.457
SUPERVISORY PERSONNEL	0	0	0	0	0.285	0.005	0.036	0.326
ENGINEERING PERSONNEL	0	0	0	0	0.520	0.009	0.218	0.747
TOTAL	52	0	74	126	15.510	0.113	25.634	41.257
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	15	0	119	134	5.062	0.000	38.726	43.788
OPERATIONS PERSONNEL	1	0	12	13	0.638	0.000	3.118	3.754
HEALTH PHYSICS PERSONNEL	2	0	34	36	0.442	0.000	6.500	6.942
SUPERVISORY PERSONNEL	2	0	0	2	0.387	0.000	0.097	0.484
ENGINEERING PERSONNEL	0	0	0	0	0.031	0.000	0.359	0.390
TOTAL	20	0	165	185	6.558	0.000	48.800	55.358
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	0	9	9	0.137	0.000	2.863	3.000
OPERATIONS PERSONNEL	3	0	4	7	0.699	0.000	0.953	1.652
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.169	0.000	0.169	0.338
SUPERVISORY PERSONNEL	1	0	0	1	0.504	0.000	0.036	0.540
ENGINEERING PERSONNEL	1	0	6	7	0.302	0.000	1.186	1.488
TOTAL	6	0	19	25	1.811	0.000	5.207	7.018
WASTE PROCESSING								
MAINTENANCE PERSONNEL	16	0	69	85	4.642	0.000	20.008	24.650
OPERATIONS PERSONNEL	2	0	3	5	0.611	0.000	0.956	1.567
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.124	0.000	0.502	0.626
SUPERVISORY PERSONNEL	1	0	0	1	0.143	0.000	0.000	0.143
ENGINEERING PERSONNEL	0	0	20	20	0.028	0.000	6.675	6.703
TOTAL	19	0	92	111	5.548	0.000	28.141	33.689
REFUELING								
MAINTENANCE PERSONNEL	1	0	1	2	0.715	0.000	0.431	1.146
OPERATIONS PERSONNEL	2	0	1	3	0.689	0.000	1.362	2.051
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.265	0.000	0.552	0.817
SUPERVISORY PERSONNEL	0	0	0	0	0.005	0.000	0.000	0.005
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	3	0	3	6	1.674	0.000	2.345	4.019
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	55	0	254	309	23.376	0.000	93.892	117.268
OPERATIONS PERSONNEL	51	0	30	81	13.980	0.000	11.519	25.499
HEALTH PHYSICS PERSONNEL	21	0	108	129	7.125	0.099	25.963	33.187
SUPERVISORY PERSONNEL	4	0	0	4	1.350	0.005	0.169	1.524
ENGINEERING PERSONNEL	2	0	27	29	1.445	0.054	8.961	10.460
GRAND TOTALS	133	0	419	552	47.276	0.158	140.504	187.938

*Workers may be counted in more than one category.

APPENDIX D (Continued)

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

1994

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
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	4	0	4	8	1.423	0.000	1.815	3.238
OPERATIONS PERSONNEL	13	2	3	18	4.332	0.679	0.372	5.383
HEALTH PHYSICS PERSONNEL	18	1	36	55	6.201	0.207	10.575	16.983
SUPERVISORY PERSONNEL	14	0	6	20	4.158	0.001	2.247	6.404
ENGINEERING PERSONNEL	6	1	1	8	2.796	0.407	0.528	3.731
TOTAL	55	4	50	109	18.908	1.294	15.537	35.739
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	15	0	29	44	5.750	0.009	13.129	18.888
OPERATIONS PERSONNEL	1	0	0	1	0.265	0.014	0.018	0.297
HEALTH PHYSICS PERSONNEL	1	0	1	2	0.676	0.005	0.153	0.834
SUPERVISORY PERSONNEL	5	0	0	5	1.545	0.060	0.688	2.293
ENGINEERING PERSONNEL	1	0	0	1	0.495	0.055	0.211	0.761
TOTAL	23	0	30	53	8.731	0.143	14.199	23.073
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	15	0	32	47	5.422	0.000	11.641	17.063
OPERATIONS PERSONNEL	0	0	0	0	0.115	0.000	0.147	0.262
HEALTH PHYSICS PERSONNEL	5	0	12	17	1.555	0.000	3.319	4.874
SUPERVISORY PERSONNEL	3	0	4	7	1.419	0.000	1.874	3.293
ENGINEERING PERSONNEL	7	1	55	63	3.043	0.404	31.114	34.561
TOTAL	30	1	103	134	11.554	0.404	48.085	60.053
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	15	0	119	134	7.448	0.000	51.816	59.264
OPERATIONS PERSONNEL	0	0	0	0	0.127	0.000	0.005	0.132
HEALTH PHYSICS PERSONNEL	10	0	3	13	3.104	0.052	1.275	4.431
SUPERVISORY PERSONNEL	2	0	5	7	2.119	0.000	2.554	4.673
ENGINEERING PERSONNEL	3	0	46	49	1.220	0.234	14.155	15.609
TOTAL	30	0	173	203	14.018	0.286	69.805	84.109
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	0	0	0	0	0.733	0.000	0.501	1.234
OPERATIONS PERSONNEL	1	0	0	1	0.326	0.005	0.064	0.395
HEALTH PHYSICS PERSONNEL	12	0	15	27	4.335	0.009	5.515	9.859
SUPERVISORY PERSONNEL	0	0	0	0	0.420	0.000	0.000	0.420
ENGINEERING PERSONNEL	0	0	0	0	0.002	0.009	0.000	0.011
TOTAL	13	0	15	28	5.816	0.023	6.080	11.919
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	0	0	2	2	0.629	0.000	1.430	2.119
OPERATIONS PERSONNEL	2	0	0	2	0.737	0.009	0.300	0.746
HEALTH PHYSICS PERSONNEL	3	0	1	4	0.686	0.000	0.773	1.439
SUPERVISORY PERSONNEL	3	0	2	5	1.309	0.000	0.624	1.933
ENGINEERING PERSONNEL	2	0	47	49	0.749	0.005	13.253	14.007
TOTAL	10	0	52	62	4.090	0.014	16.140	20.244
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	49	0	186	235	21.405	0.009	80.392	101.806
OPERATIONS PERSONNEL	17	2	3	22	5.902	0.707	0.606	7.215
HEALTH PHYSICS PERSONNEL	49	1	68	118	16.537	0.273	21.610	38.420
SUPERVISORY PERSONNEL	27	0	17	44	10.988	0.061	7.987	19.016
ENGINEERING PERSONNEL	19	2	149	170	8.305	1.114	59.261	68.680
GRAND TOTALS	161	5	423	589	63.117	2.164	189.856	235.137

*Workers may be counted in more than one category.

APPENDIX D (Continued)
NUMBER OF PERSONNEL AND PERSON-REM
BY WORK AND JOB FUNCTION

1994

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	0	0	0	0	0.085	0.010	0.625	0.720
OPERATIONS PERSONNEL	2	0	1	3	0.915	0.025	0.900	1.840
HEALTH PHYSICS PERSONNEL	0	0	2	2	0.140	0.050	1.582	1.772
SUPERVISORY PERSONNEL	0	0	0	0	0.015	0.000	0.020	0.035
ENGINEERING PERSONNEL	0	0	0	0	0.010	0.295	0.130	0.435
TOTAL	2	0	3	5	1.165	0.380	3.257	4.802
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	9	0	47	56	1.675	0.070	25.645	27.390
OPERATIONS PERSONNEL	0	0	2	2	0.125	0.000	2.770	2.895
HEALTH PHYSICS PERSONNEL	4	2	42	48	1.875	2.030	26.250	32.155
SUPERVISORY PERSONNEL	1	0	1	2	0.520	0.000	0.220	0.740
ENGINEERING PERSONNEL	0	2	1	3	0.100	1.690	0.485	2.275
TOTAL	14	4	93	111	4.295	3.790	57.370	65.455
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0	0	0.015	0.000	0.085	0.100
OPERATIONS PERSONNEL	0	0	1	1	0.010	0.000	1.325	1.335
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.000	0.000	0.030	0.030
SUPERVISORY PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0	0.050	0.040	0.070	0.160
TOTAL	0	0	1	1	0.075	0.040	1.510	1.625
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	8	0	47	55	2.675	0.000	12.151	14.826
OPERATIONS PERSONNEL	1	0	0	1	0.290	0.000	0.105	0.395
HEALTH PHYSICS PERSONNEL	0	0	10	10	0.175	0.010	5.405	5.590
SUPERVISORY PERSONNEL	0	0	1	1	0.055	0.000	0.820	0.875
ENGINEERING PERSONNEL	0	1	1	2	0.020	0.520	0.265	0.805
TOTAL	9	1	59	69	3.215	0.530	18.746	22.491
WASTE PROCESSING								
MAINTENANCE PERSONNEL	3	1	35	39	1.690	0.390	36.004	40.084
OPERATIONS PERSONNEL	0	0	2	2	0.280	0.035	0.880	1.195
HEALTH PHYSICS PERSONNEL	2	2	40	44	2.415	0.305	29.020	31.740
SUPERVISORY PERSONNEL	1	0	1	2	0.135	0.000	0.870	1.005
ENGINEERING PERSONNEL	0	3	1	4	0.030	1.760	0.545	2.335
TOTAL	6	6	79	91	4.550	2.460	69.319	76.359
REFUELING								
MAINTENANCE PERSONNEL	0	0	0	0	0.130	0.000	0.090	0.220
OPERATIONS PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	1	0	0	1	0.120	0.000	0.110	0.230
SUPERVISORY PERSONNEL	0	0	0	0	0.015	0.000	0.020	0.035
ENGINEERING PERSONNEL	0	0	0	0	0.000	0.000	0.000	0.000
TOTAL	1	0	0	1	0.265	0.000	0.220	0.485
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	20	1	129	150	6.270	0.470	76.600	83.340
OPERATIONS PERSONNEL	3	0	6	9	1.620	0.060	5.980	7.660
HEALTH PHYSICS PERSONNEL	7	4	94	105	4.725	2.395	64.397	71.517
SUPERVISORY PERSONNEL	2	0	3	5	0.740	0.000	1.950	2.690
ENGINEERING PERSONNEL	0	6	3	9	0.210	4.305	1.485	6.010
GRAND TOTALS	32	11	235	278	13.565	7.230	150.422	171.217

*Workers may be counted in more than one category

APPENDIX D (Continued)

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

1994

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
<u>REACTOR OPS & SURV</u>								
MAINTENANCE PERSONNEL	0	0	4	4	0.036	0.000	0.675	0.711
OPERATIONS PERSONNEL	108	0	0	108	10.944	0.000	0.000	10.944
HEALTH PHYSICS PERSONNEL	1	44	0	45	0.260	0.542	0.000	0.802
SUPERVISORY PERSONNEL	38	0	0	38	1.207	0.000	0.008	1.215
ENGINEERING PERSONNEL	10	0	0	10	0.366	0.000	0.000	0.366
TOTAL	157	44	4	205	12.813	0.542	0.683	14.038
<u>ROUTINE MAINTENANCE</u>								
MAINTENANCE PERSONNEL	146	8	670	824	63.382	1.046	115.114	179.542
OPERATIONS PERSONNEL	64	0	146	210	6.486	0.000	0.066	6.552
HEALTH PHYSICS PERSONNEL	73	82	81	236	16.994	1.014	10.725	28.733
SUPERVISORY PERSONNEL	227	0	315	542	7.114	0.000	8.343	15.457
ENGINEERING PERSONNEL	112	0	95	207	4.195	0.000	2.085	6.280
TOTAL	622	90	1307	2019	96.171	2.060	136.333	236.564
<u>IN-SERVICE INSPECTION</u>								
MAINTENANCE PERSONNEL	3	0	113	116	1.168	0.000	19.342	20.510
OPERATIONS PERSONNEL	5	0	0	5	0.535	0.000	0.000	0.535
HEALTH PHYSICS PERSONNEL	0	0	0	0	0.020	0.000	0.001	0.021
SUPERVISORY PERSONNEL	25	0	66	91	0.780	0.000	1.760	2.540
ENGINEERING PERSONNEL	16	0	18	34	0.601	0.000	0.410	1.011
TOTAL	49	0	197	246	3.104	0.000	21.513	24.617
<u>SPECIAL MAINTENANCE</u>								
MAINTENANCE PERSONNEL	17	0	57	74	7.358	0.000	9.809	17.167
OPERATIONS PERSONNEL	0	0	0	0	0.020	0.000	0.000	0.020
HEALTH PHYSICS PERSONNEL	0	0	1	1	0.000	0.000	0.072	0.072
SUPERVISORY PERSONNEL	3	0	20	23	0.091	0.000	0.535	0.626
ENGINEERING PERSONNEL	8	0	6	14	0.290	0.000	0.127	0.417
TOTAL	28	0	84	112	7.759	0.000	10.543	18.302
<u>WASTE PROCESSING</u>								
MAINTENANCE PERSONNEL	0	0	20	20	0.000	0.000	3.466	3.466
OPERATIONS PERSONNEL	12	0	0	12	1.177	0.000	0.000	1.177
HEALTH PHYSICS PERSONNEL	2	0	16	18	0.435	0.005	2.068	2.508
SUPERVISORY PERSONNEL	14	0	0	14	0.440	0.000	0.002	0.442
ENGINEERING PERSONNEL	0	0	0	0	0.002	0.000	0.000	0.002
TOTAL	28	0	36	64	2.054	0.005	5.536	7.595
<u>REFUELING</u>								
MAINTENANCE PERSONNEL	5	0	6	11	2.339	0.008	1.043	3.390
OPERATIONS PERSONNEL	8	0	0	8	0.796	0.000	0.000	0.796
HEALTH PHYSICS PERSONNEL	0	26	0	26	0.000	0.317	0.000	0.317
SUPERVISORY PERSONNEL	12	0	0	12	0.373	0.000	0.009	0.382
ENGINEERING PERSONNEL	3	0	0	3	0.096	0.000	0.000	0.096
TOTAL	28	26	6	60	3.604	0.325	1.052	4.981
<u>TOTAL BY JOB FUNCTION</u>								
MAINTENANCE PERSONNEL	171	8	870	1049	74.283	1.054	149.449	224.786
OPERATIONS PERSONNEL	197	0	146	343	19.958	0.000	0.066	20.024
HEALTH PHYSICS PERSONNEL	76	152	98	326	17.709	1.878	12.866	32.453
SUPERVISORY PERSONNEL	319	0	401	720	10.005	0.000	10.657	20.662
ENGINEERING PERSONNEL	149	0	119	268	5.550	0.000	2.622	8.172
GRAND TOTALS	912	160	1634	2706	127.505	2.932	175.660	306.097

*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**

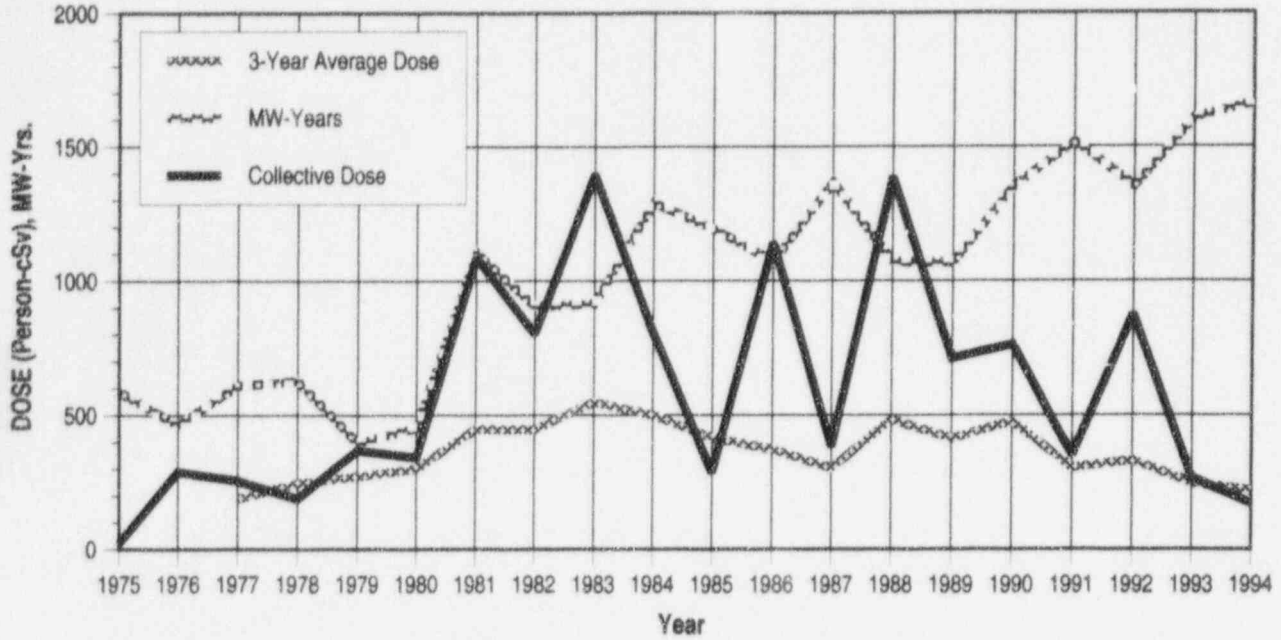
1973-1994

NOTE: Appendix E contains data on operating plants as well as plants which are no longer in commercial operation.

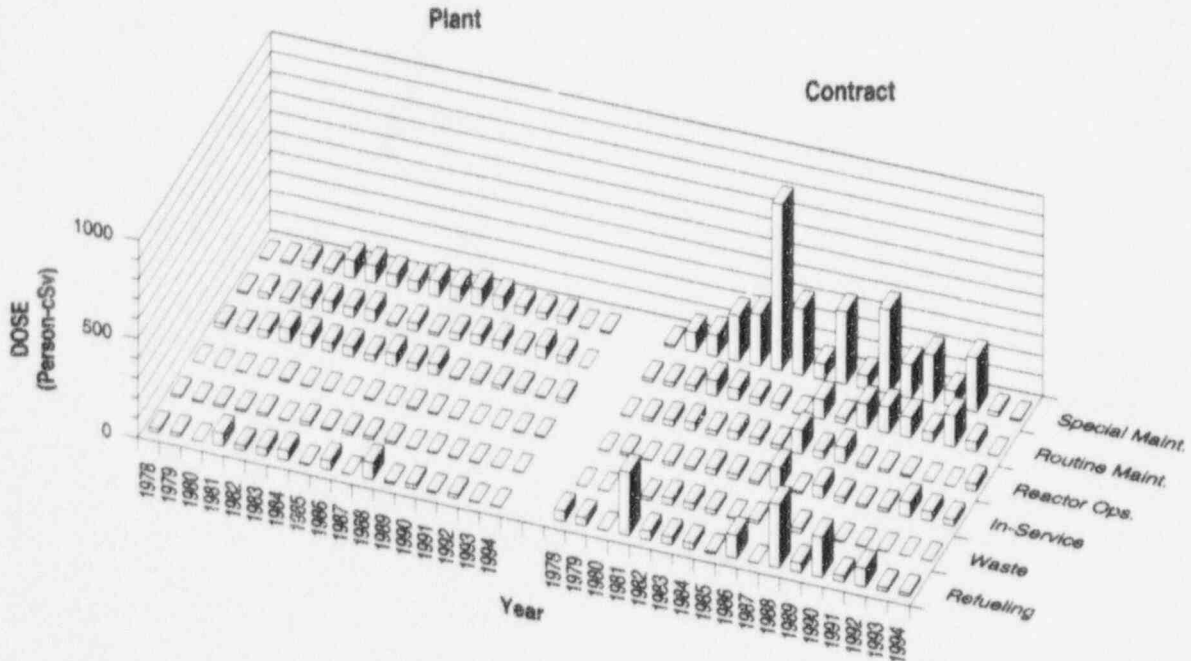
APPENDIX E ARKANSAS 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

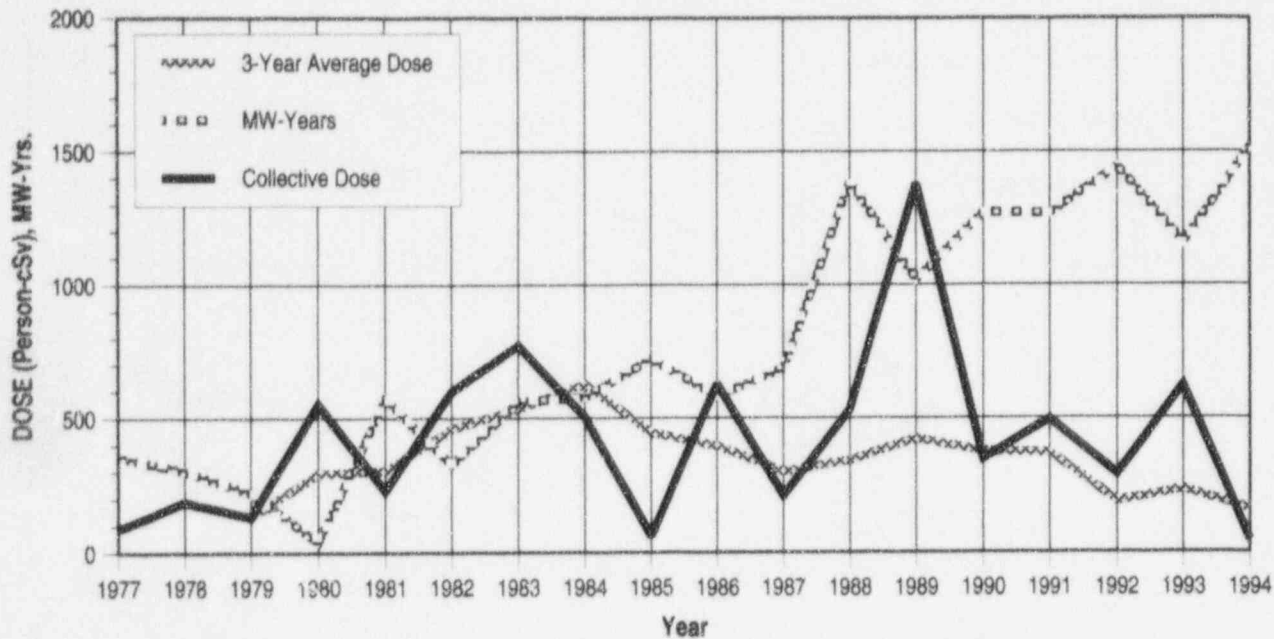


APPENDIX E (continued)

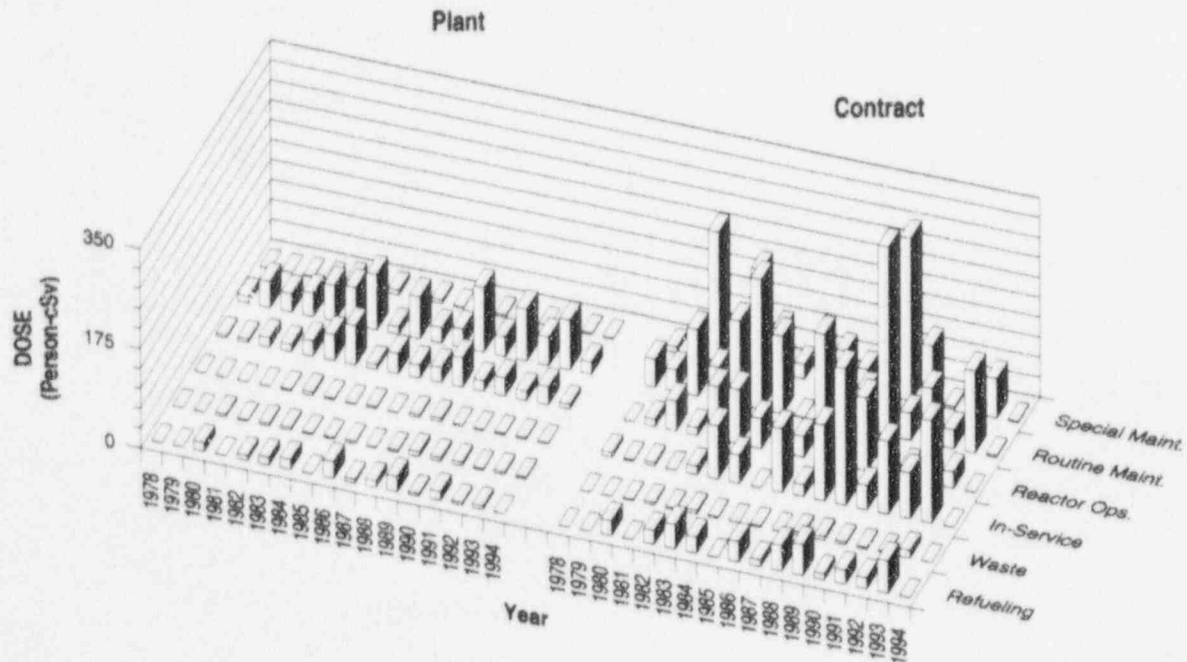
BEAVER VALLEY 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

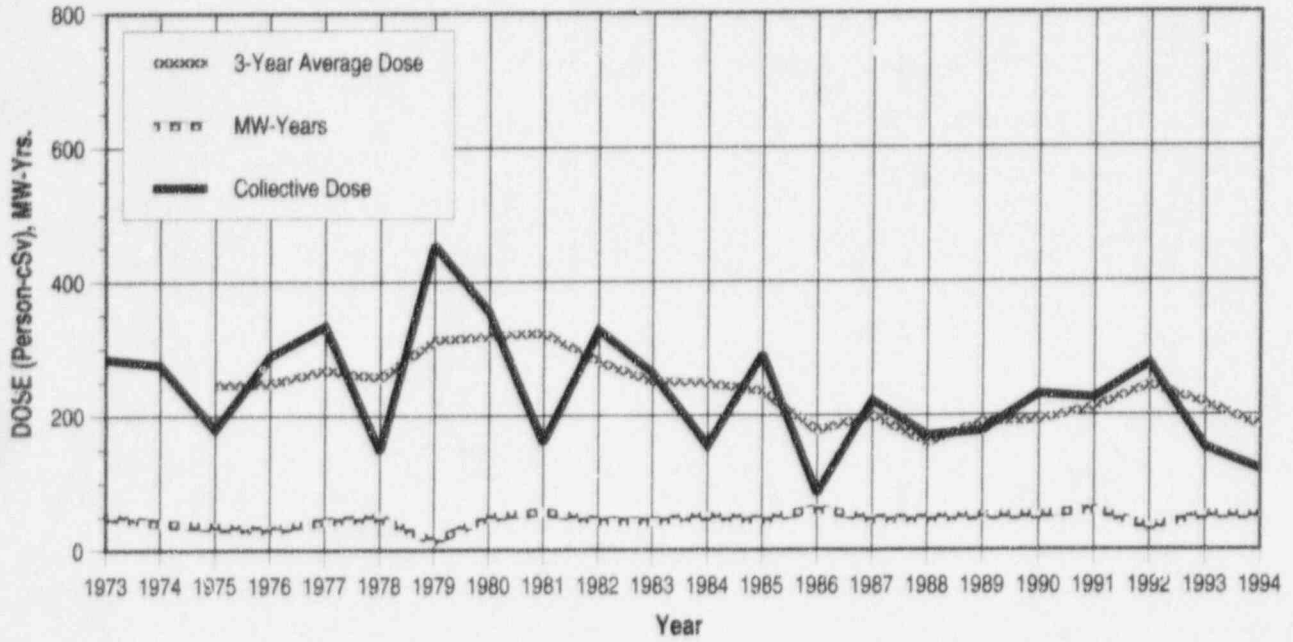


APPENDIX E (continued)

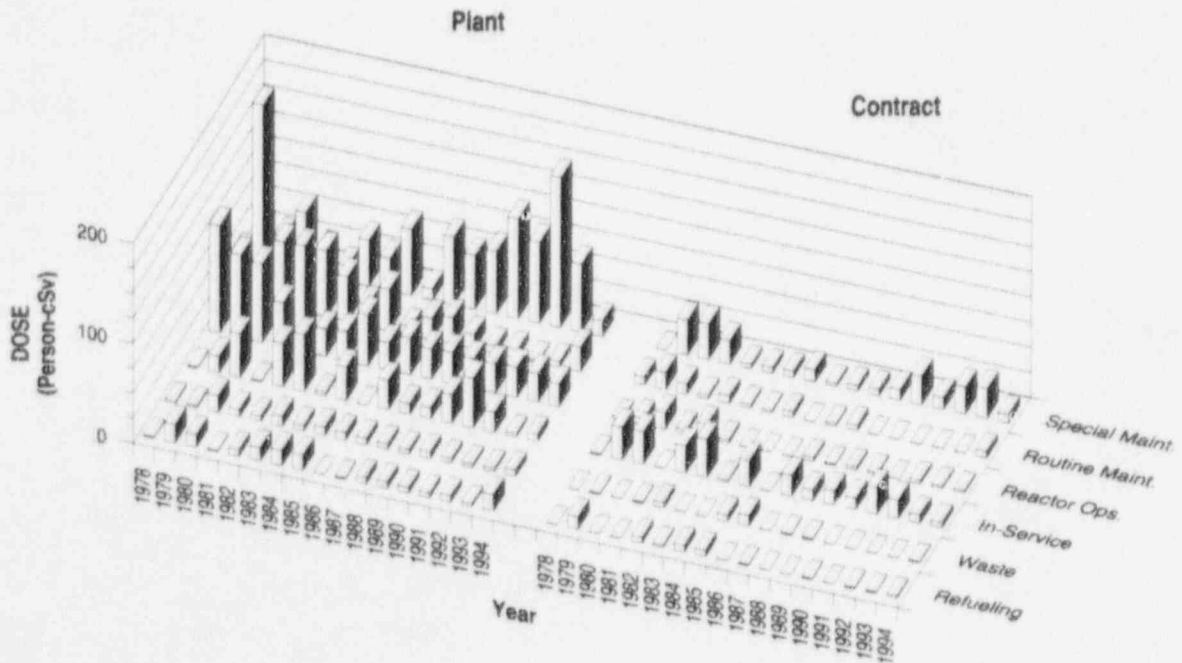
BIG ROCK POINT

Dose-Performance Indicators

BWR



Breakdown by Job Function

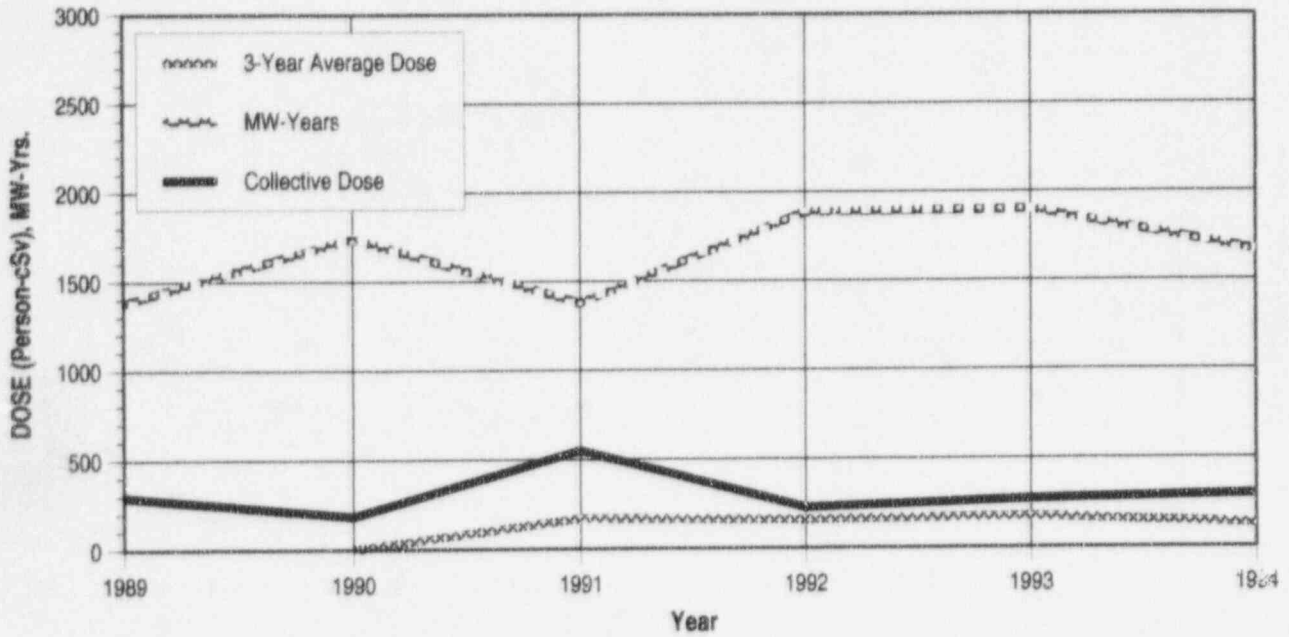


APPENDIX E (continued)

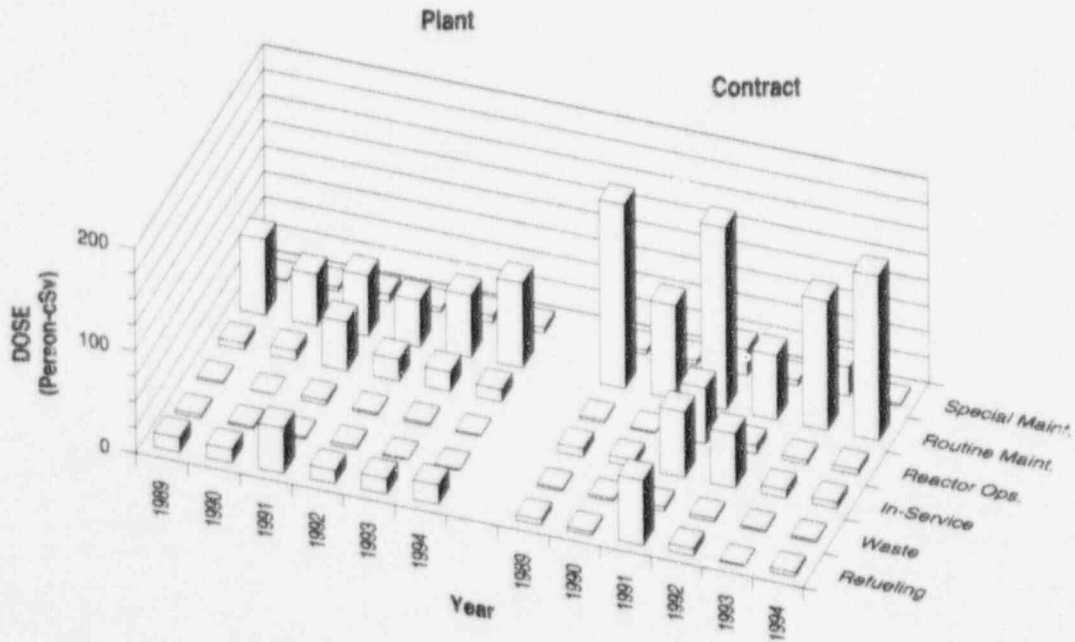
BRAIDWOOD 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

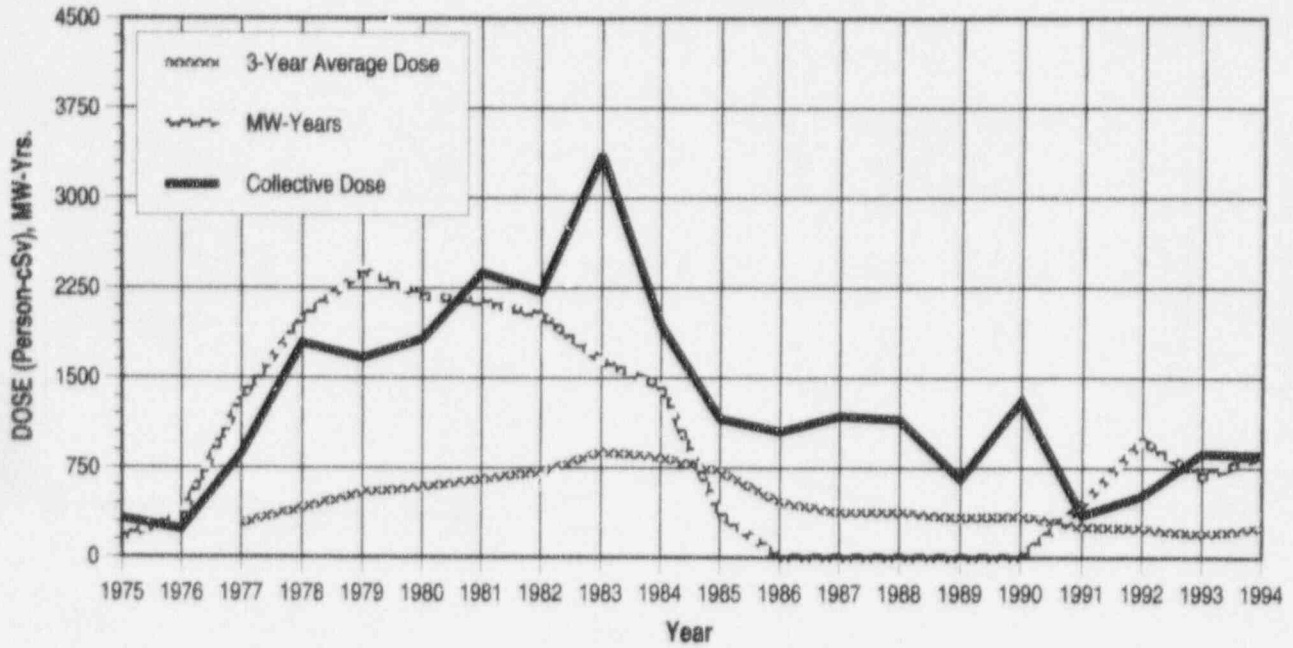


APPENDIX E (continued)

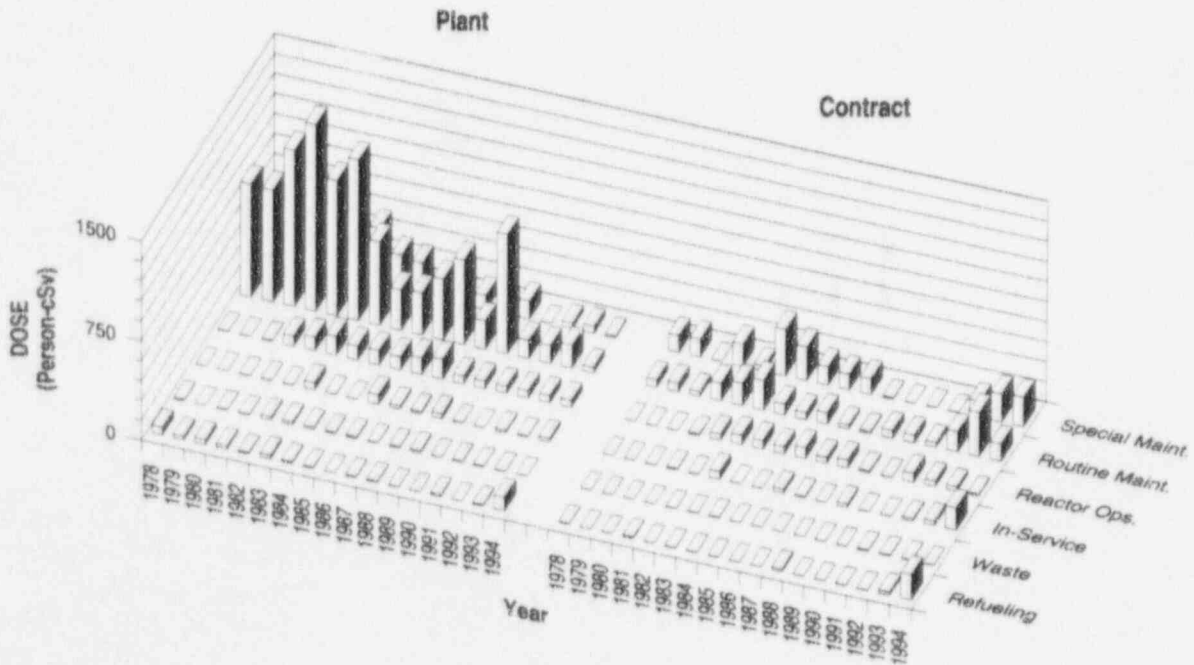
BROWNS FERRY 1, 2, 3

Dose-Performance Indicators

BWR



Breakdown by Job Function

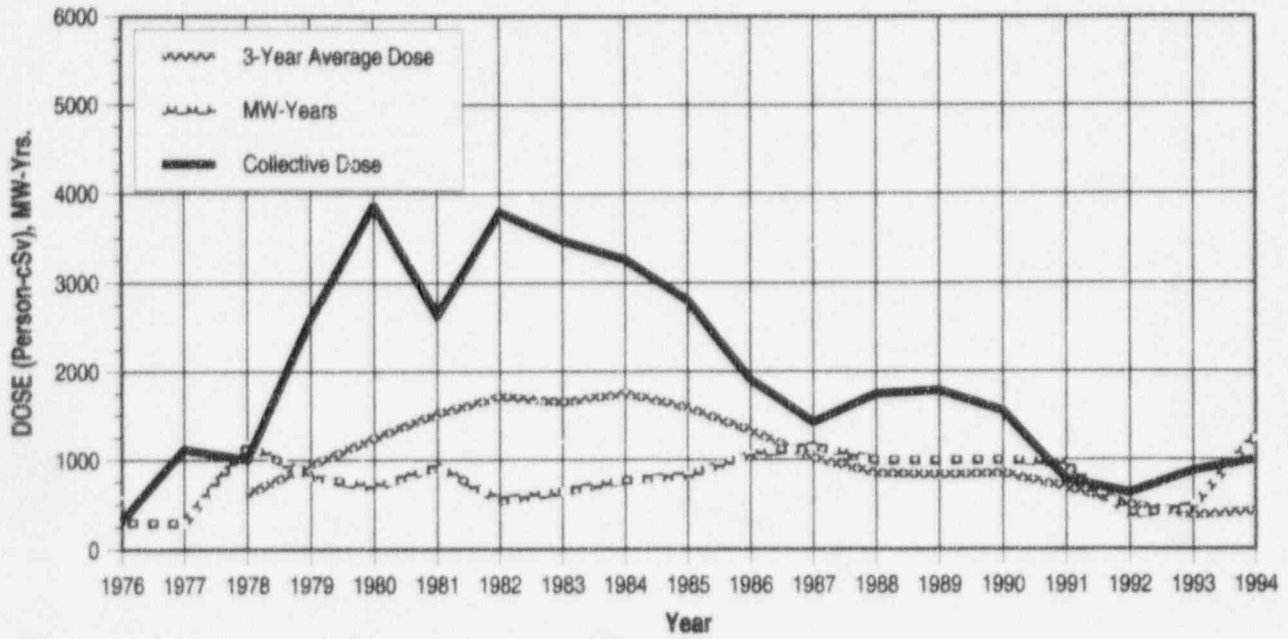


APPENDIX E (continued)

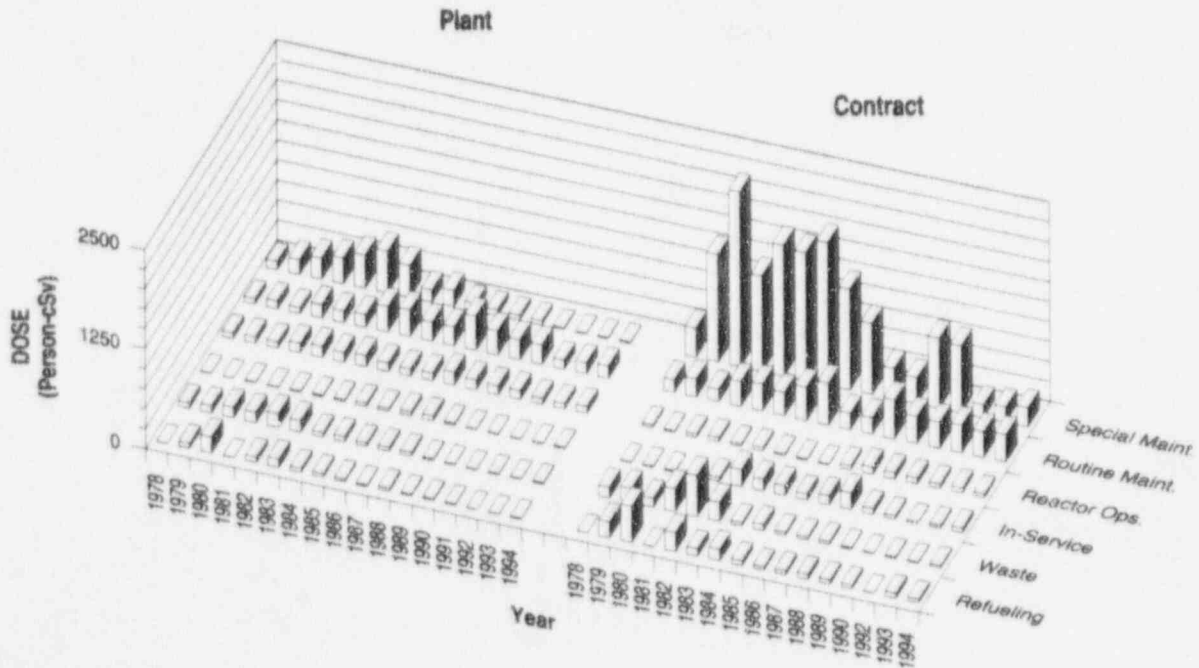
BRUNSWICK 1, 2

Dose-Performance Indicators

BWR



Breakdown by Job Function

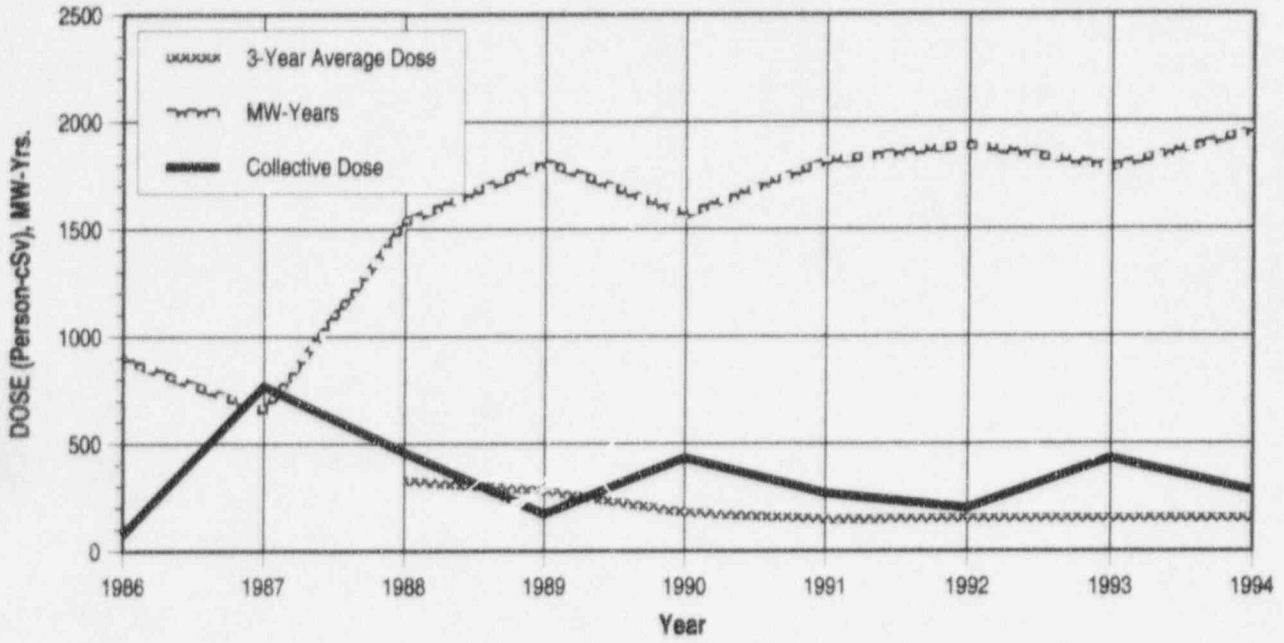


APPENDIX E (continued)

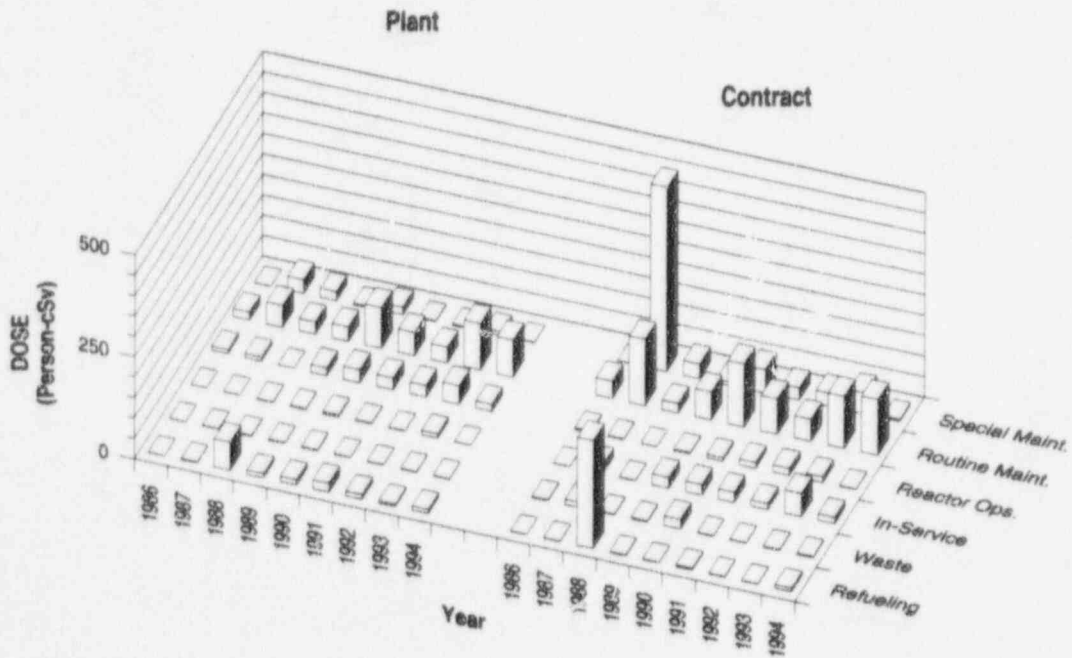
BYRON 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

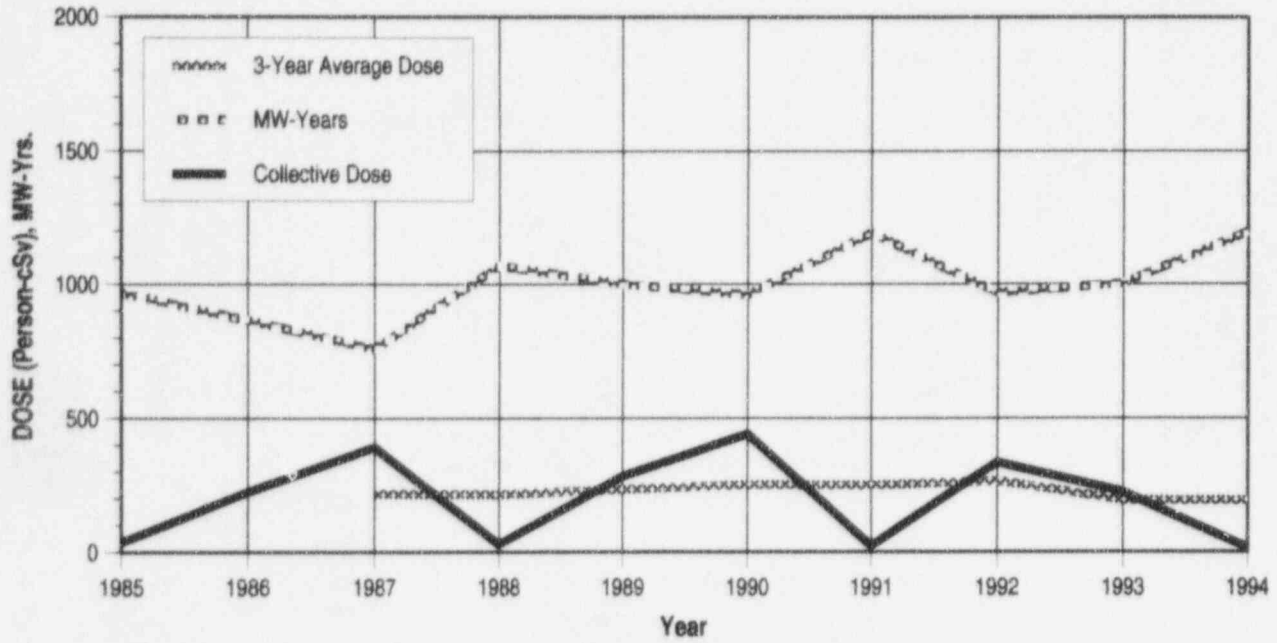


APPENDIX E (continued)

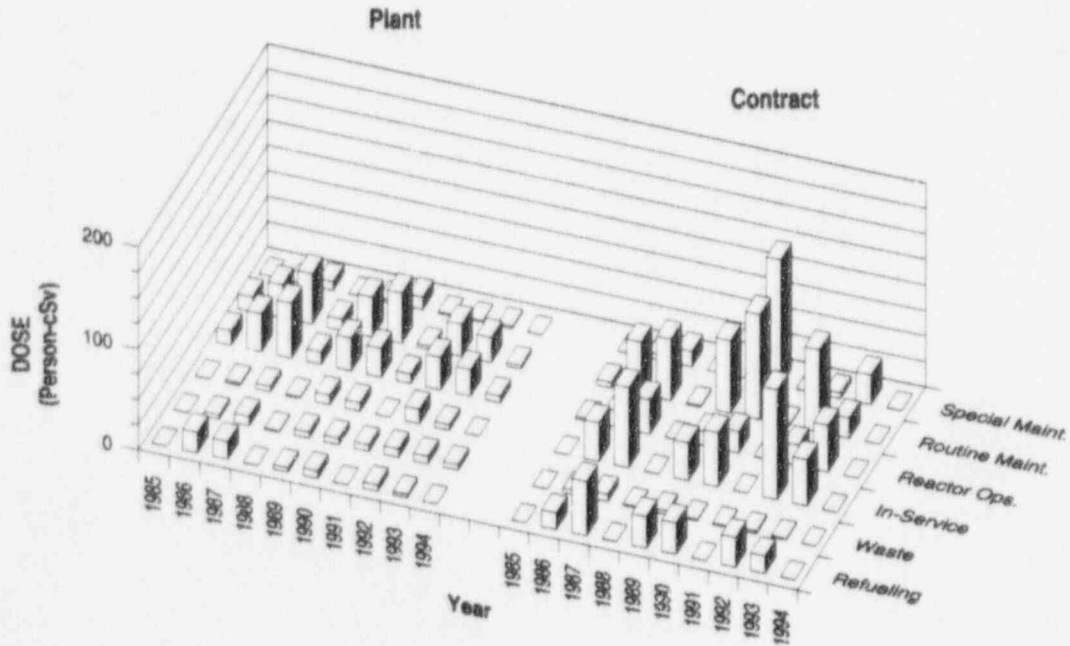
CALLAWAY 1

Dose-Performance Indicators

PWR



Breakdown by Job Function

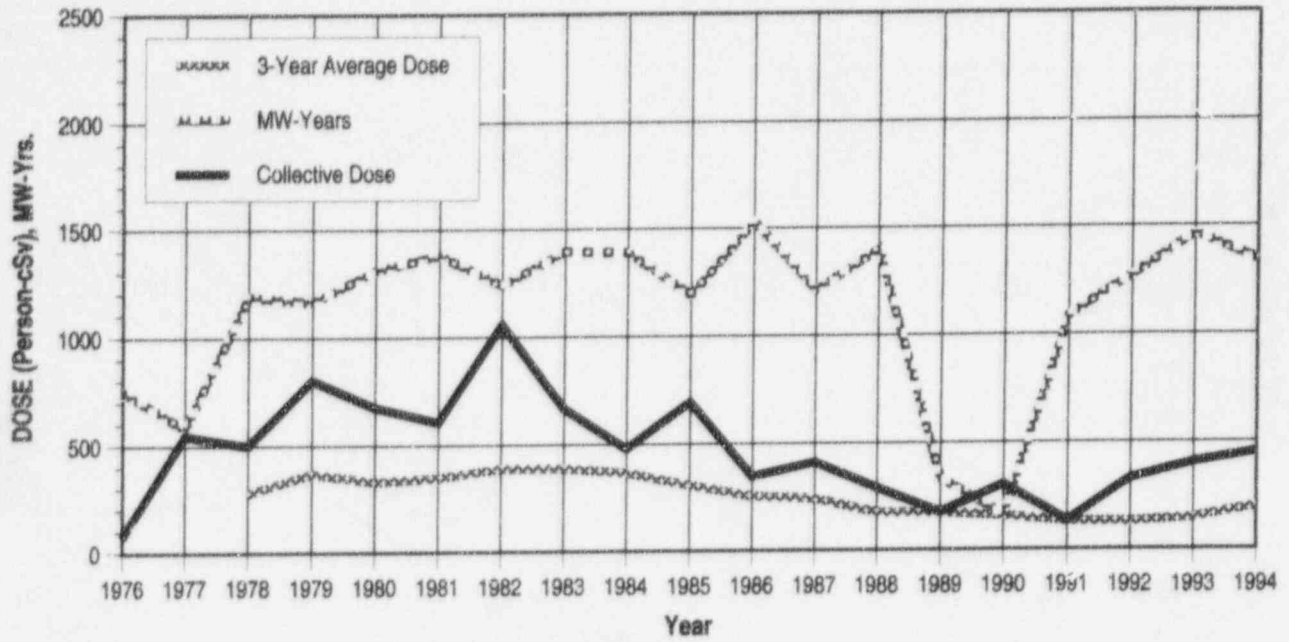


APPENDIX E (continued)

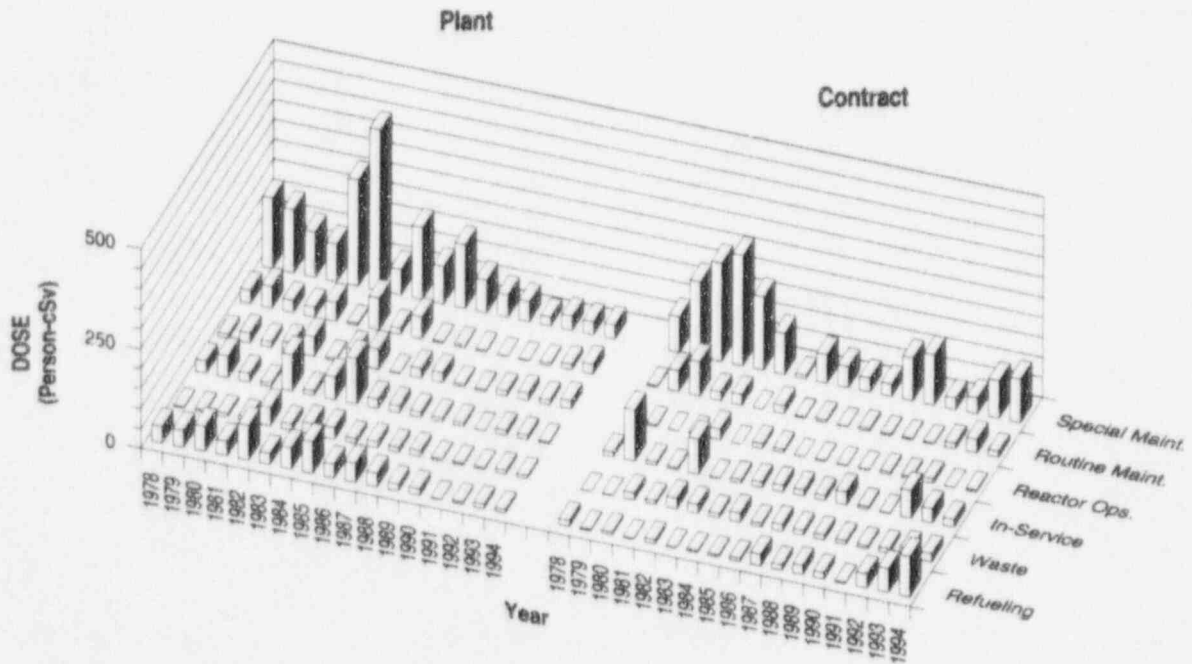
CALVERT CLIFFS 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

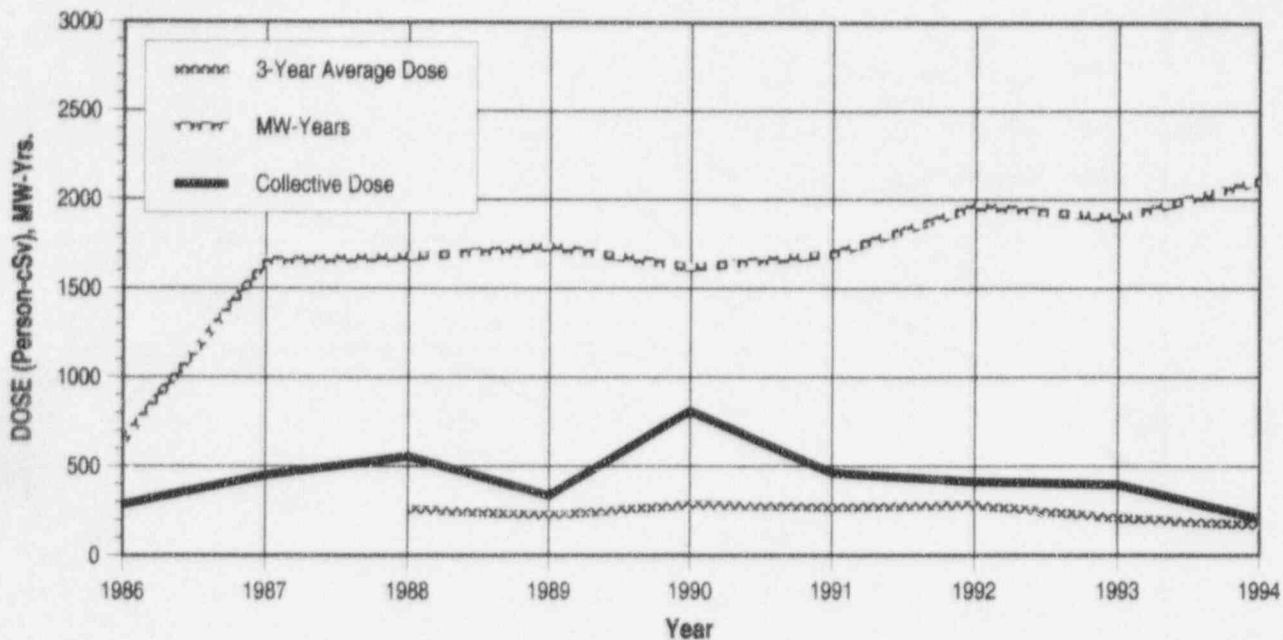


APPENDIX E (continued)

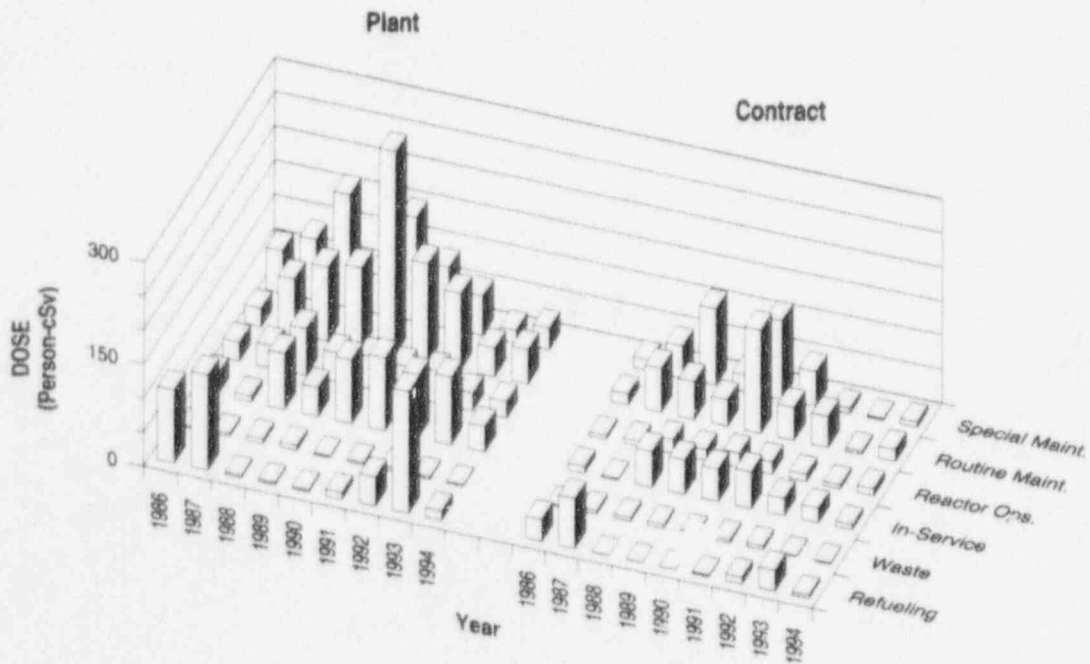
CATAWBA 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

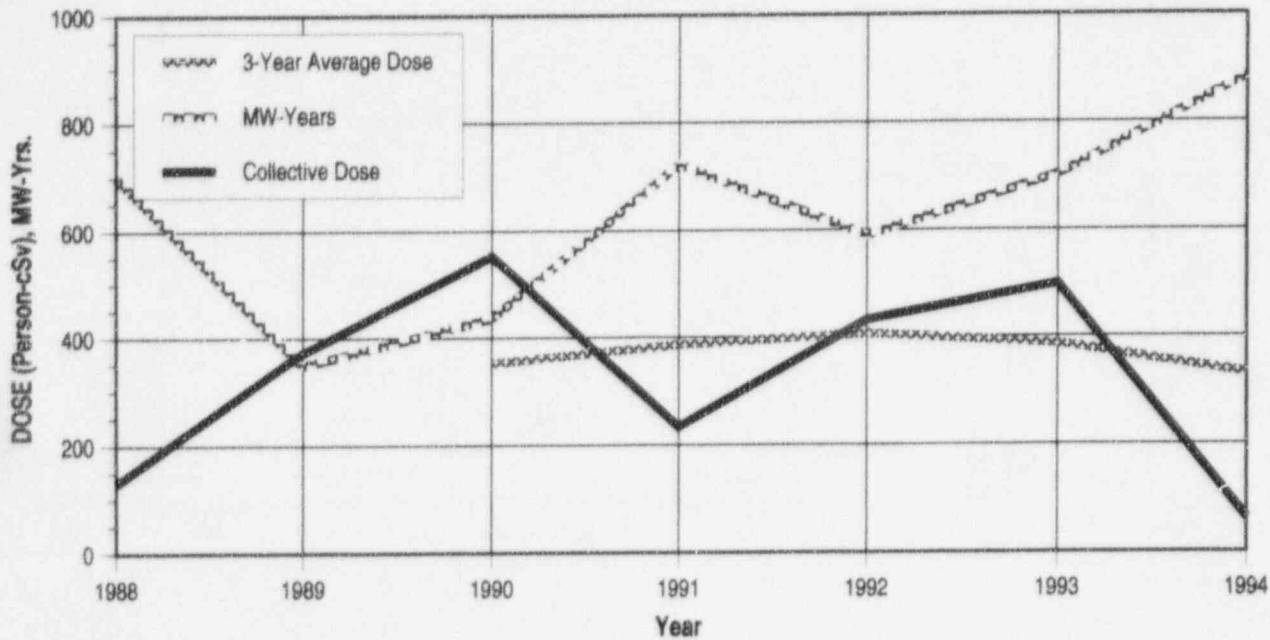


APPENDIX E (continued)

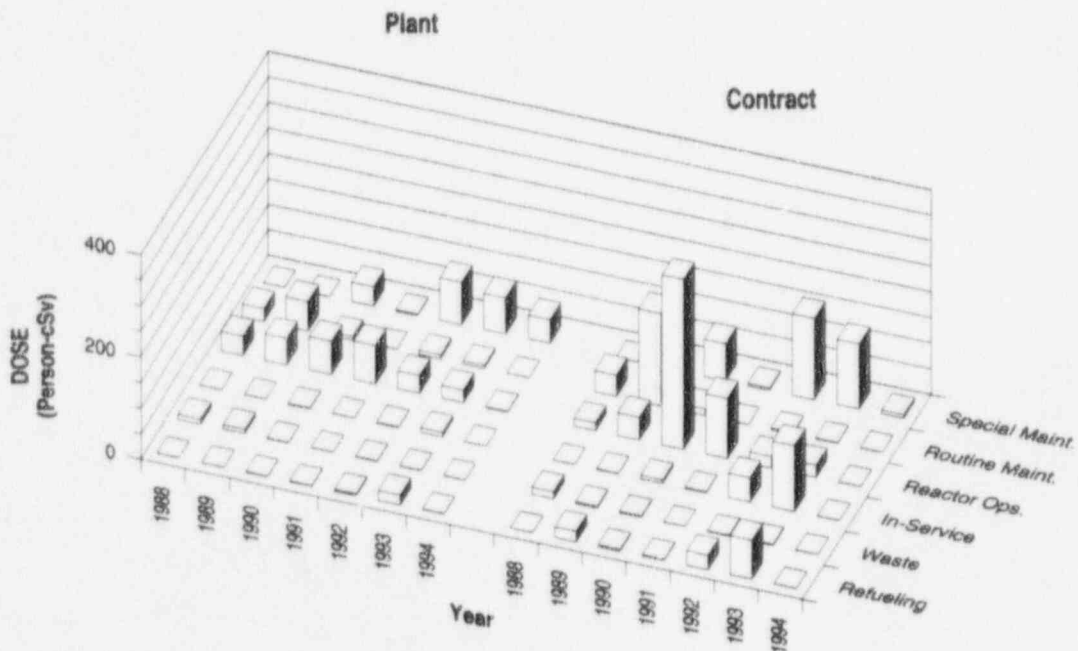
CLINTON

Dose-Performance Indicators

BWR



Breakdown by Job Function

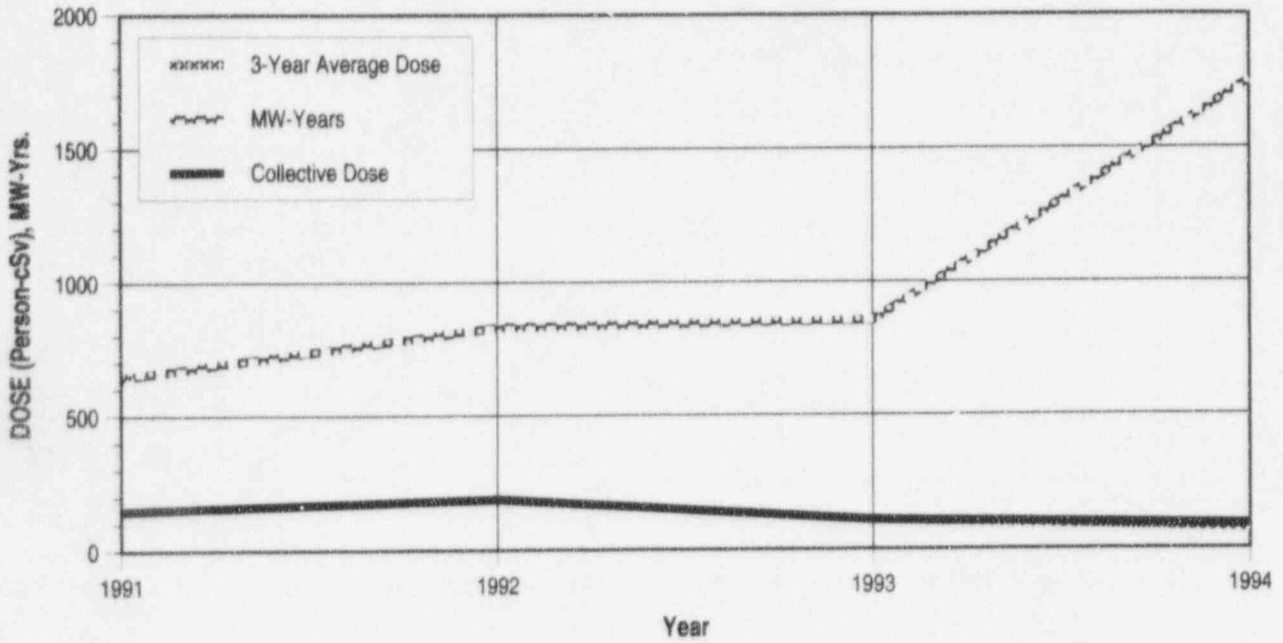


APPENDIX E (continued)

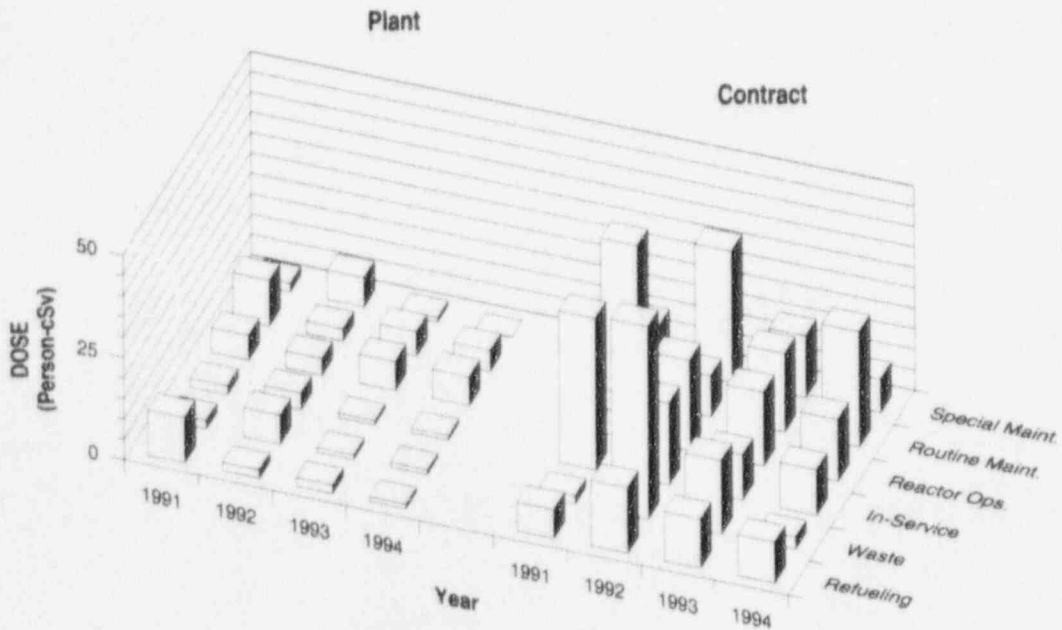
COMANCHE PEAK 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

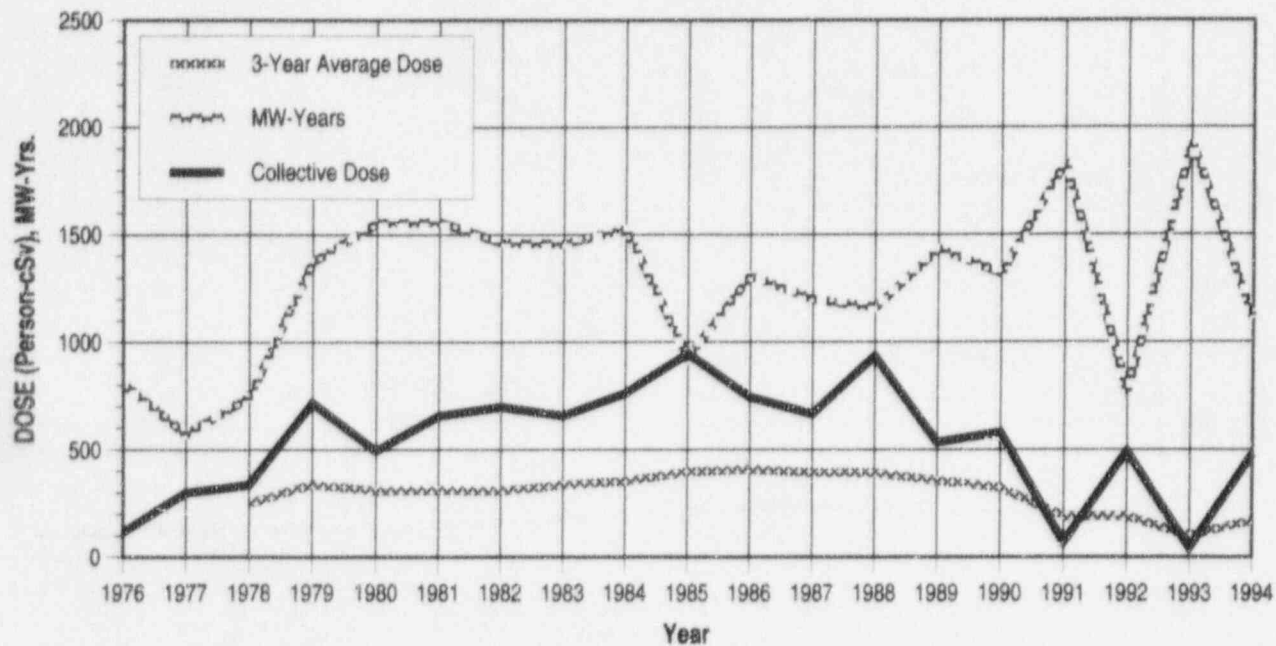


APPENDIX E (continued)

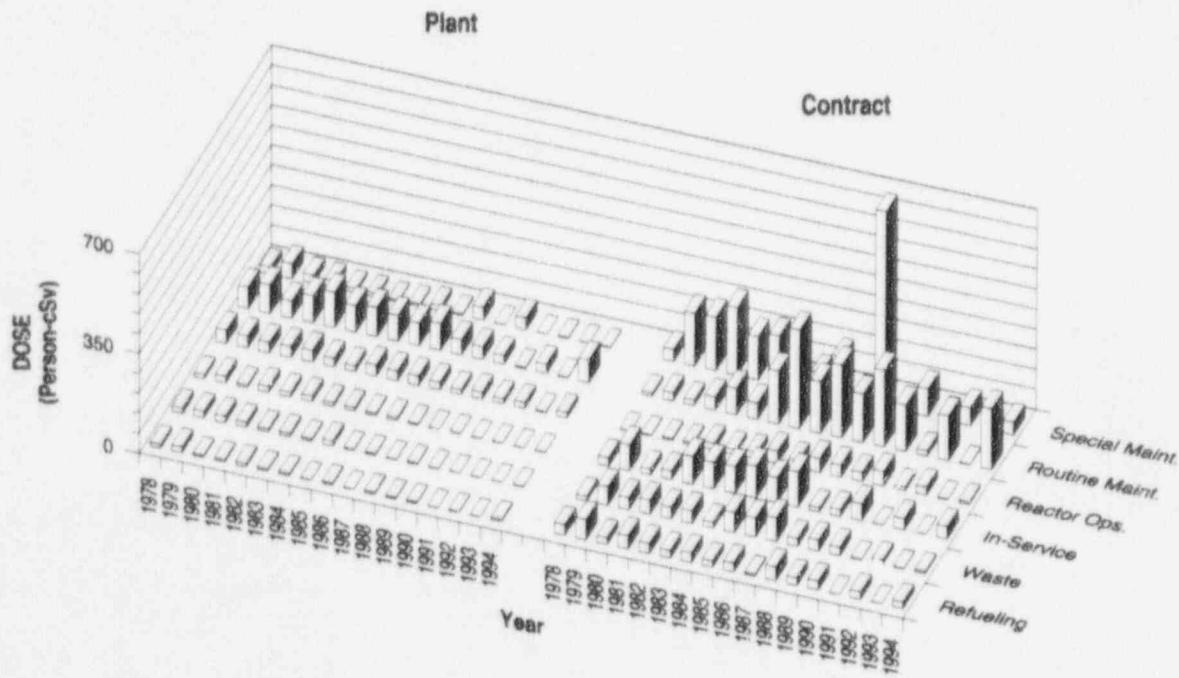
COOK 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

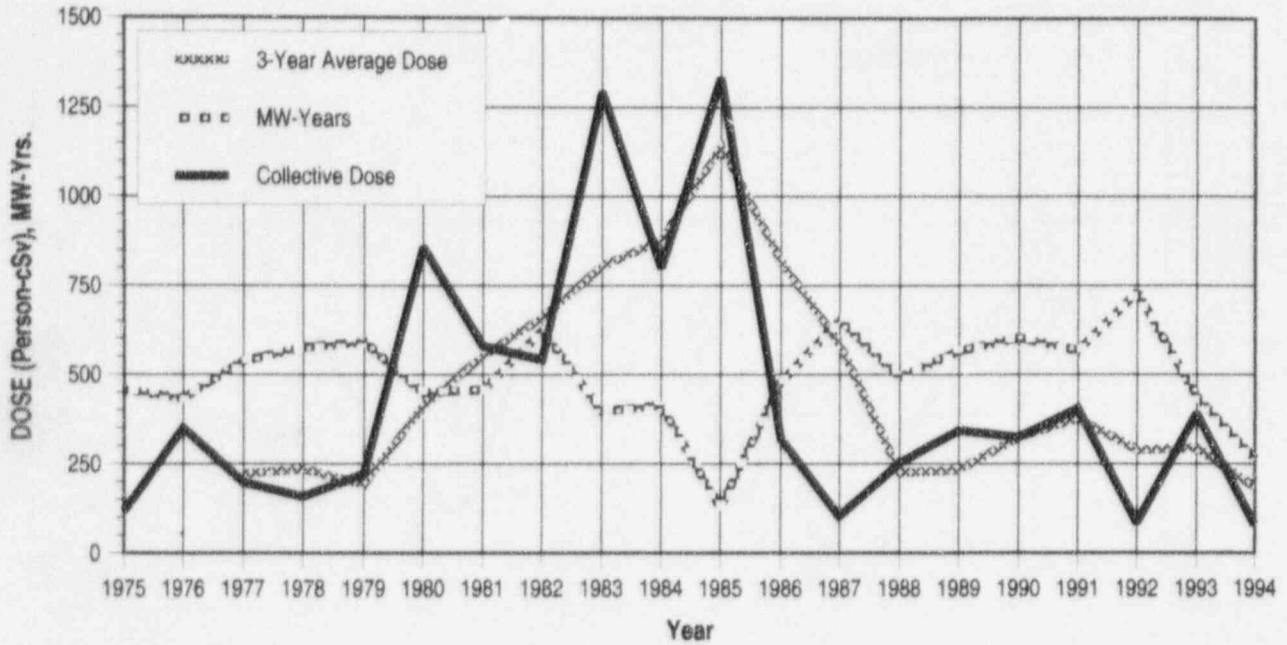


APPENDIX E (continued)

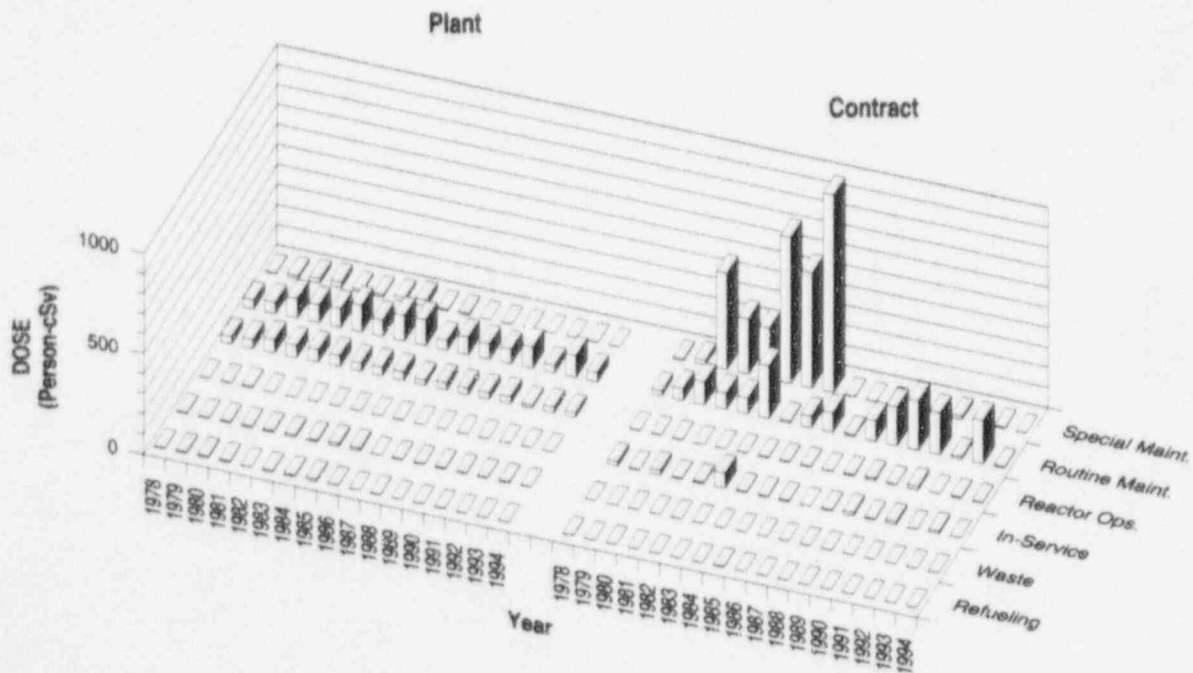
COOPER STATION

Dose-Performance Indicators

BWR



Breakdown by Job Function

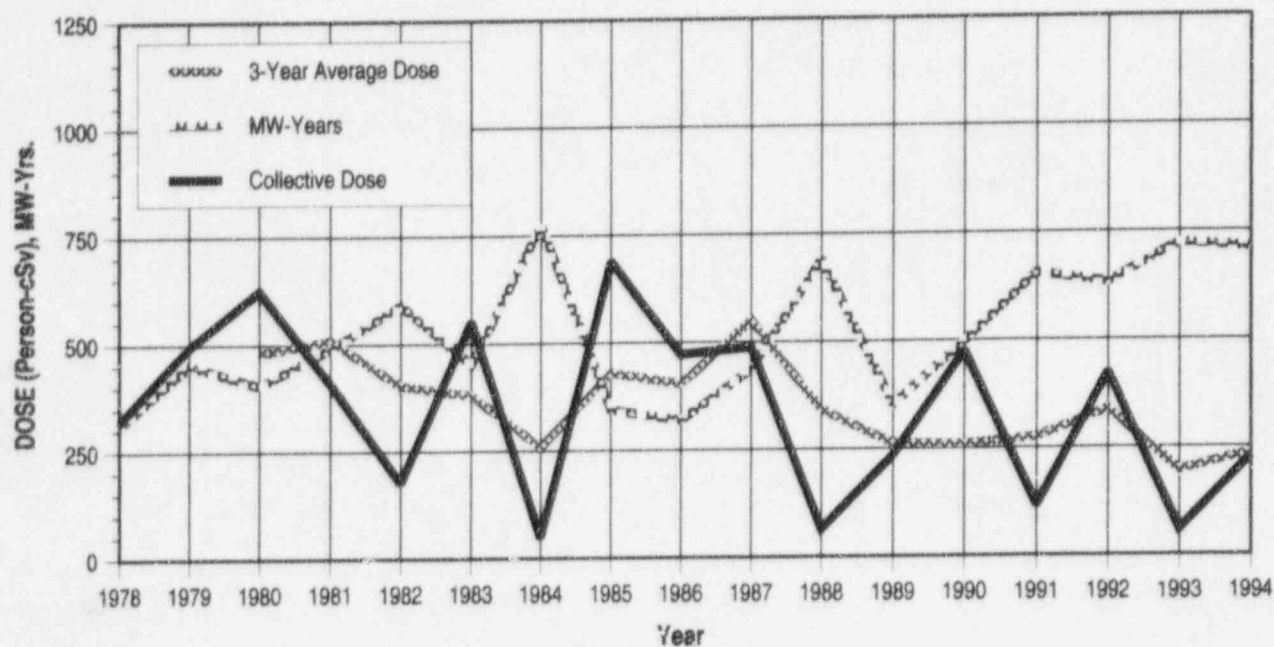


APPENDIX E (continued)

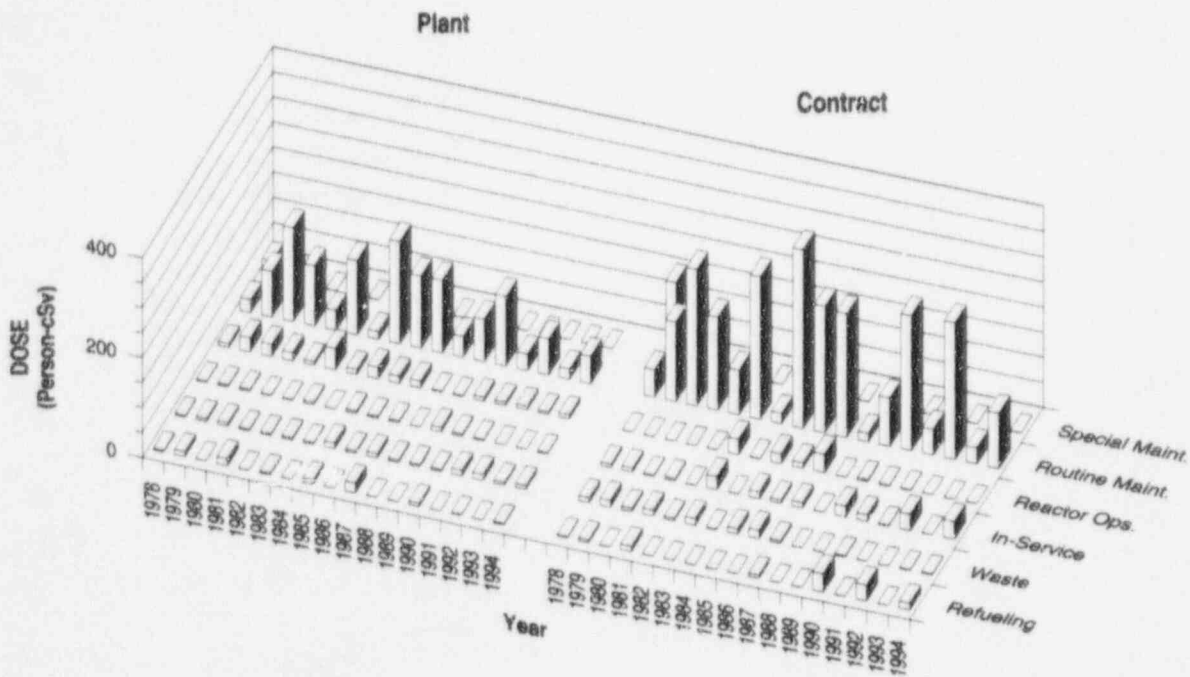
CRYSTAL RIVER 3

Dose-Performance Indicators

PWR



Breakdown by Job Function

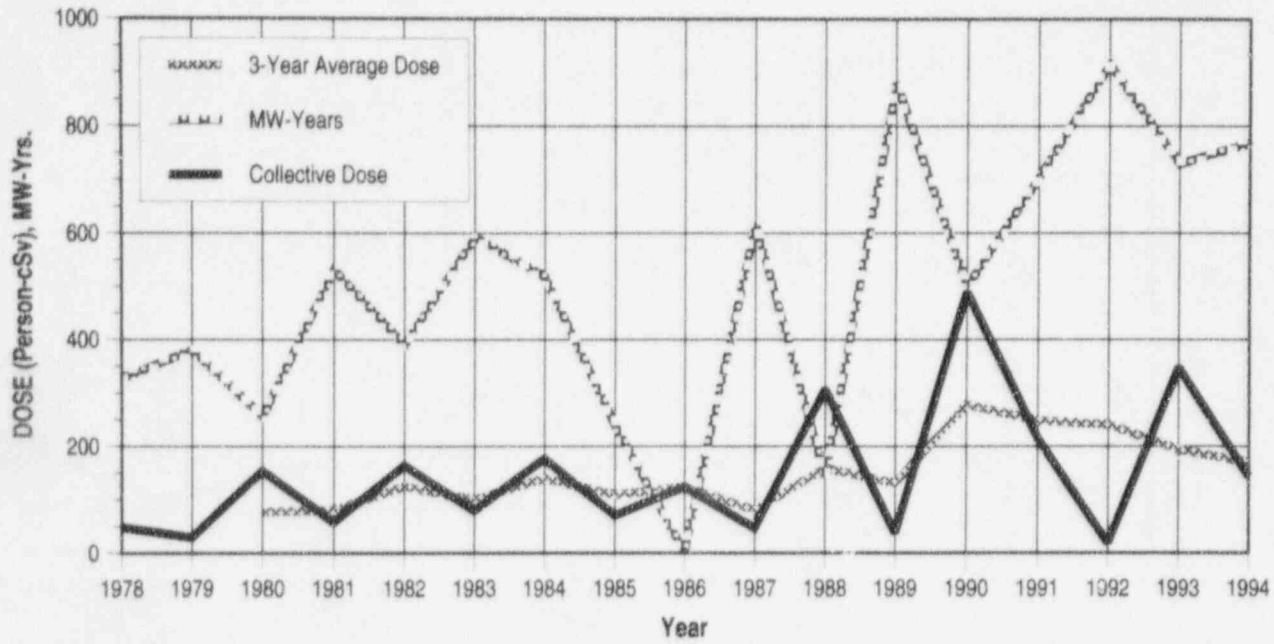


APPENDIX E (continued)

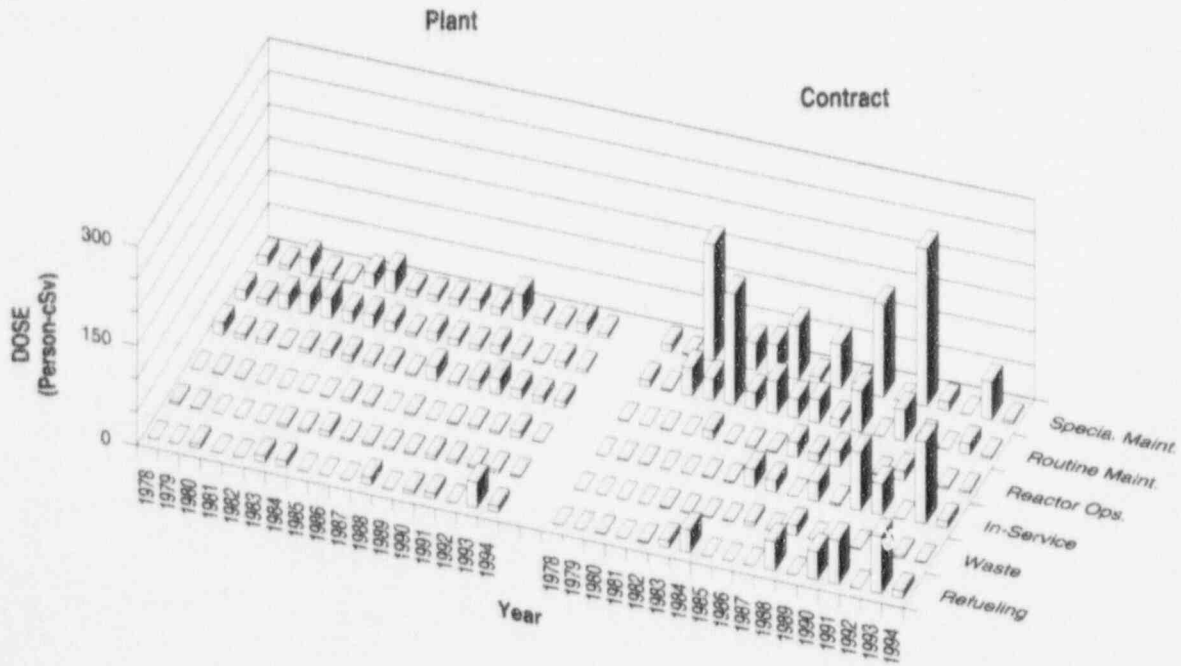
DAVIS-BESSE

Dose-Performance Indicators

PWR



Breakdown by Job Function

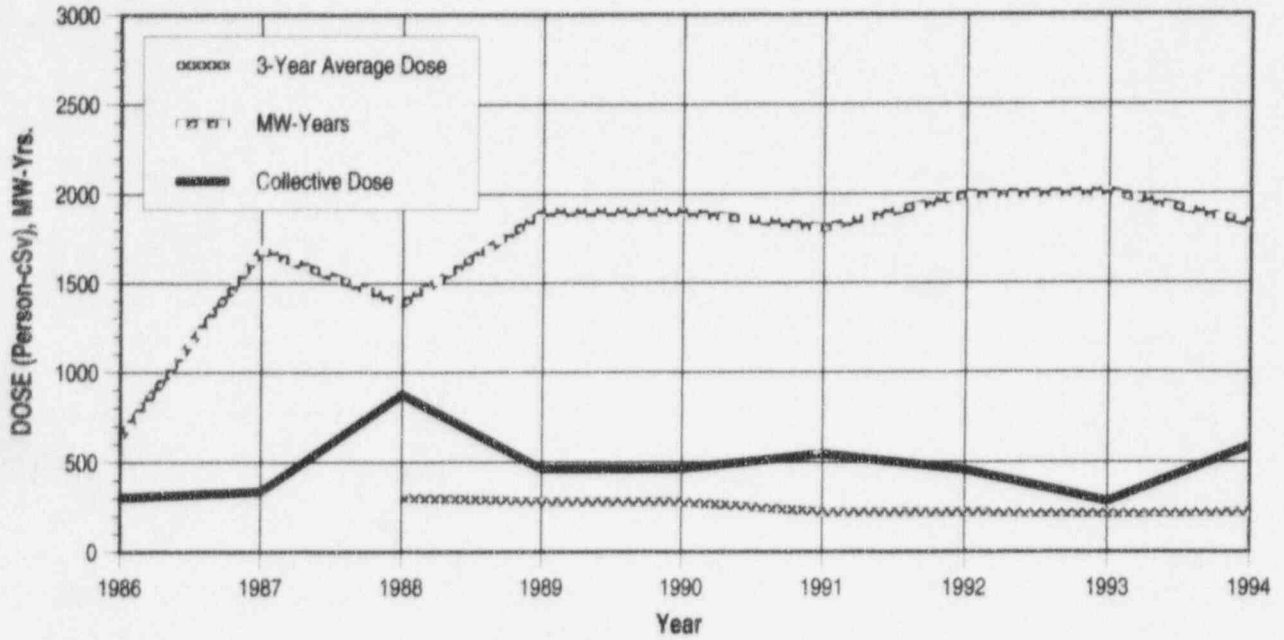


APPENDIX E (continued)

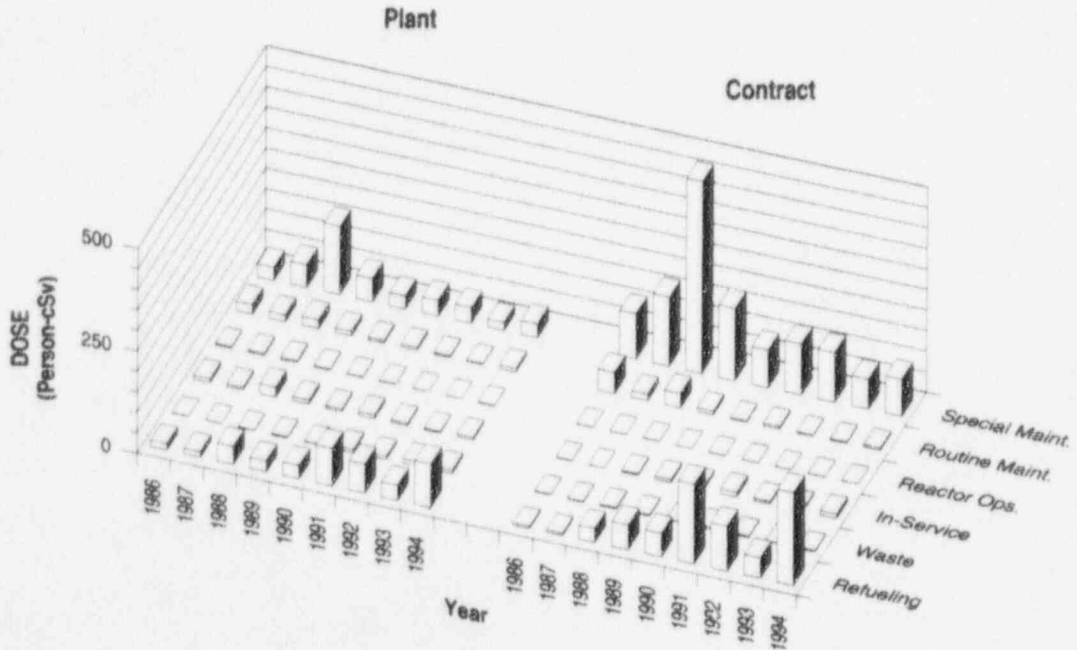
DIABLO CANYON 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

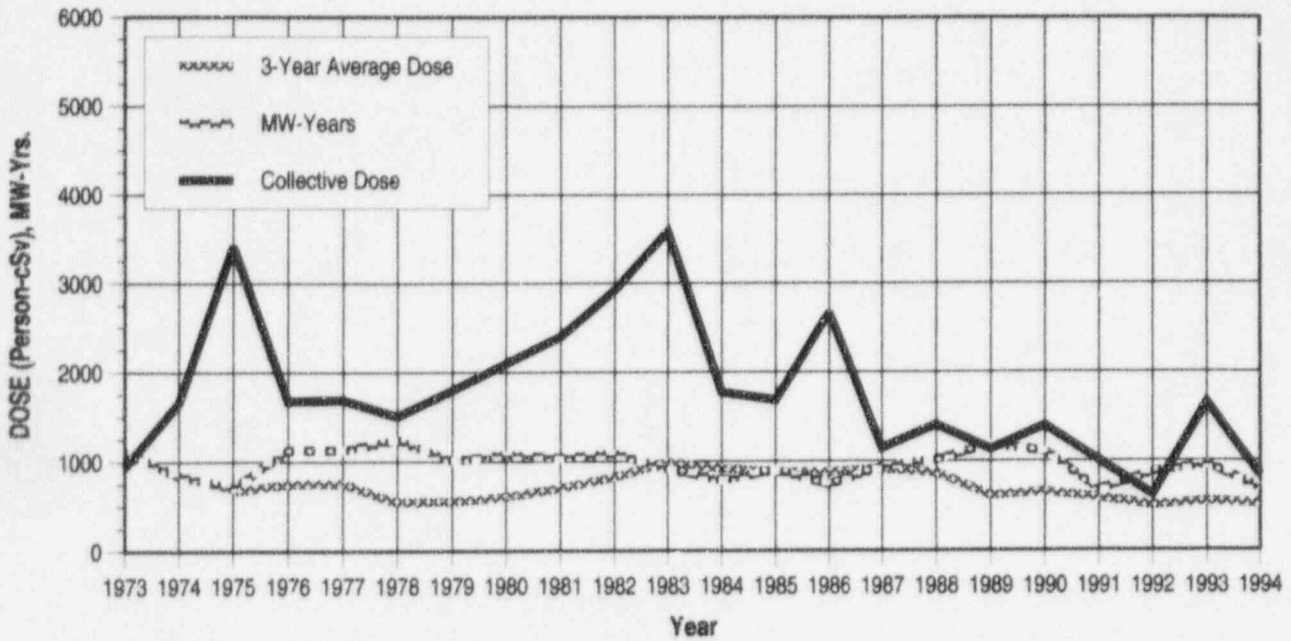


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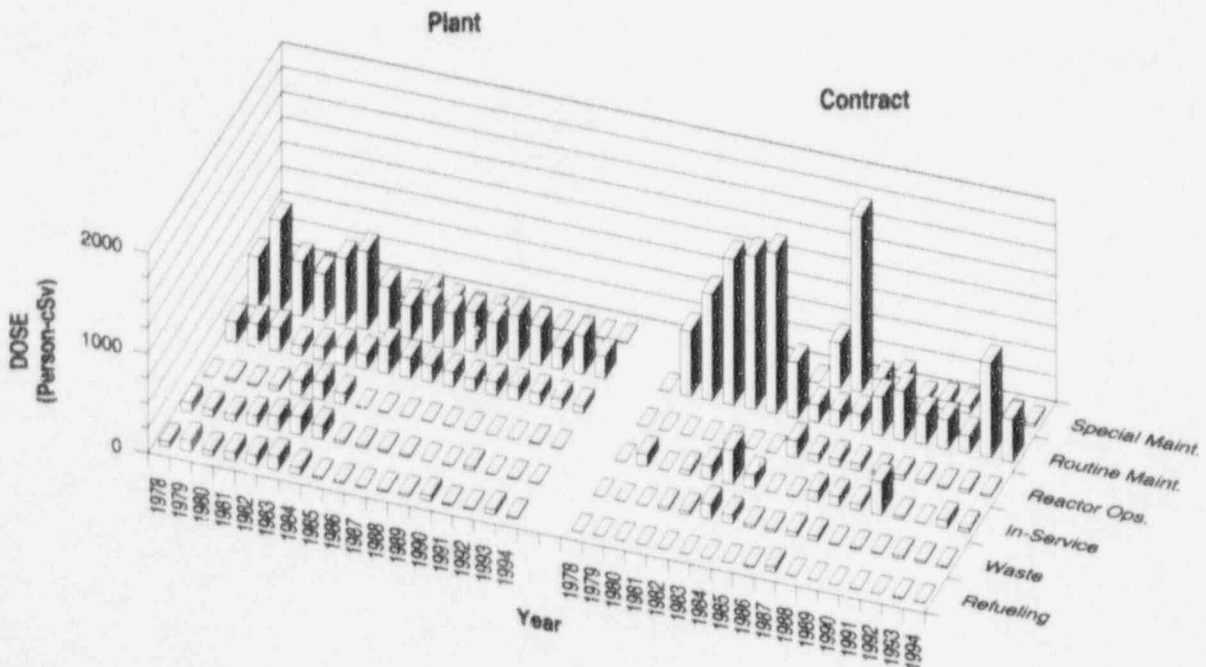
DRESDEN 2, 3

Dose-Performance Indicators

BWR



Breakdown by Job Function

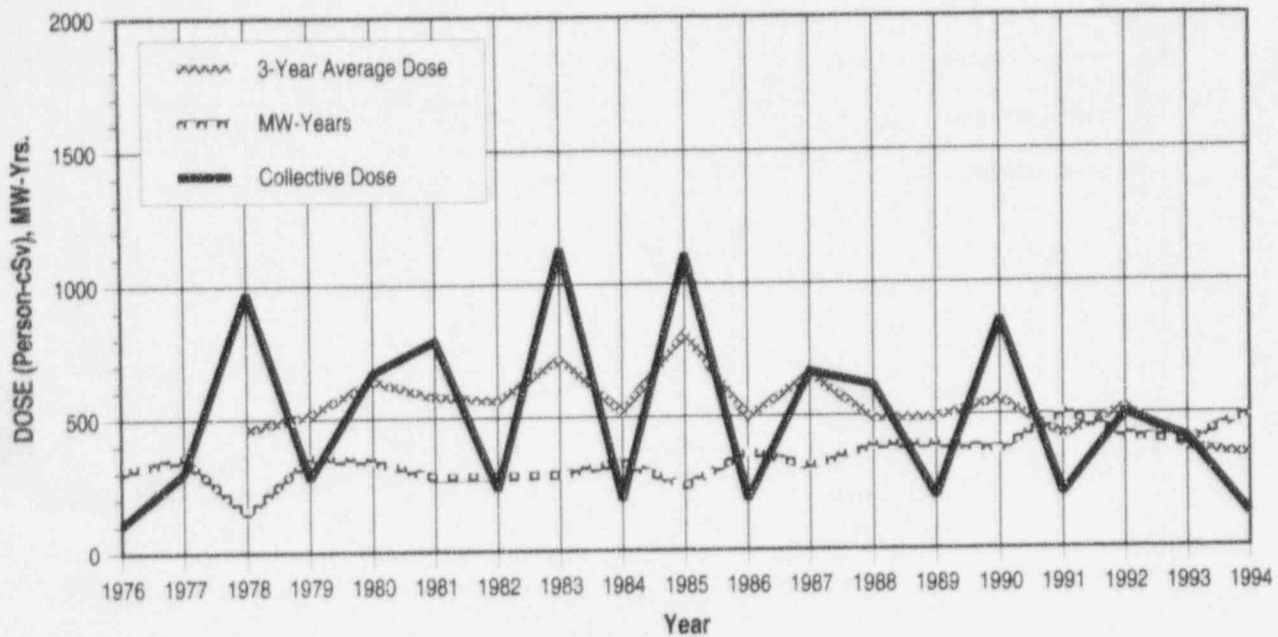


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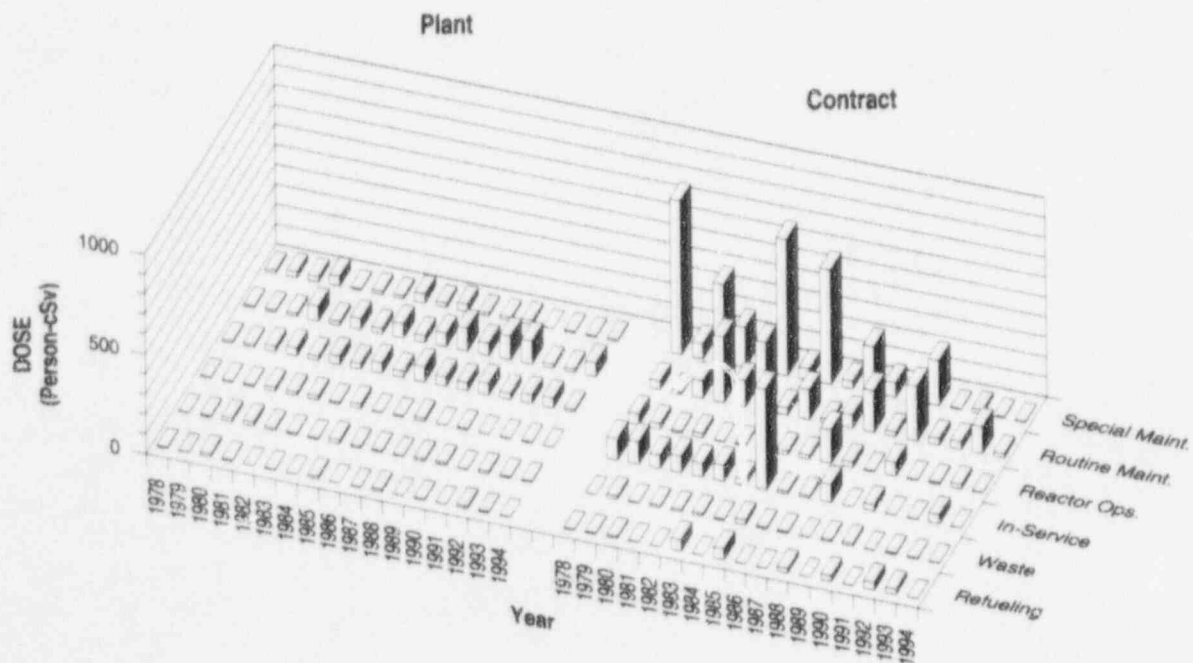
DUANE ARNOLD

Dose-Performance Indicators

BWR



Breakdown by Job Function

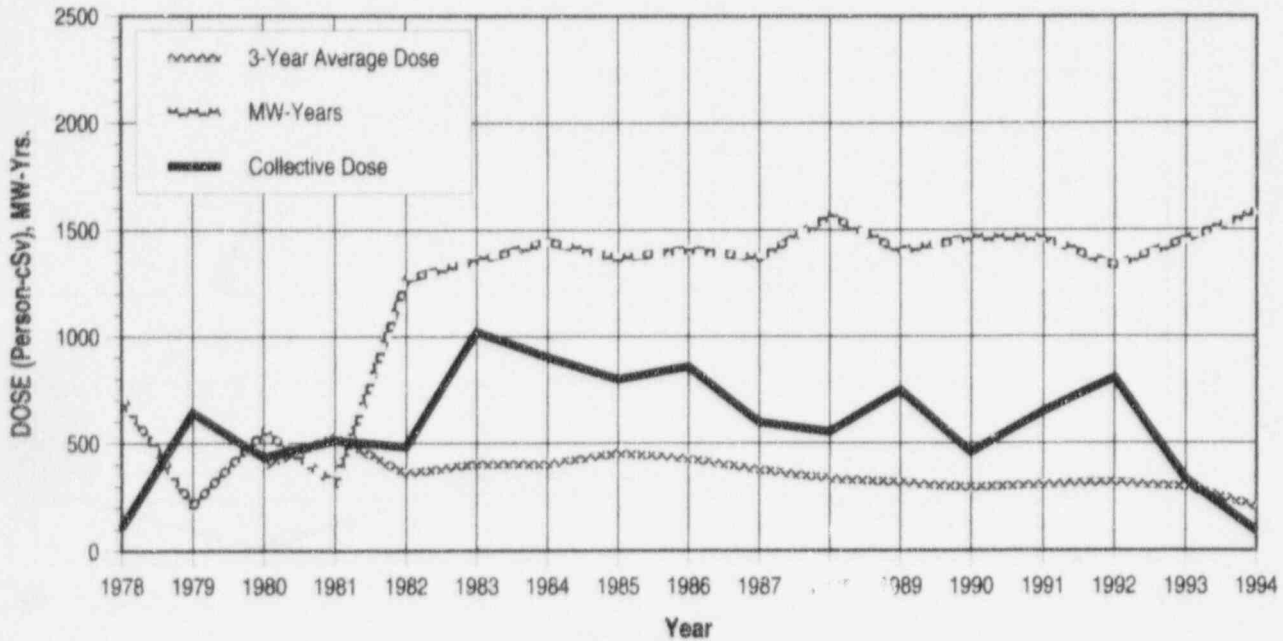


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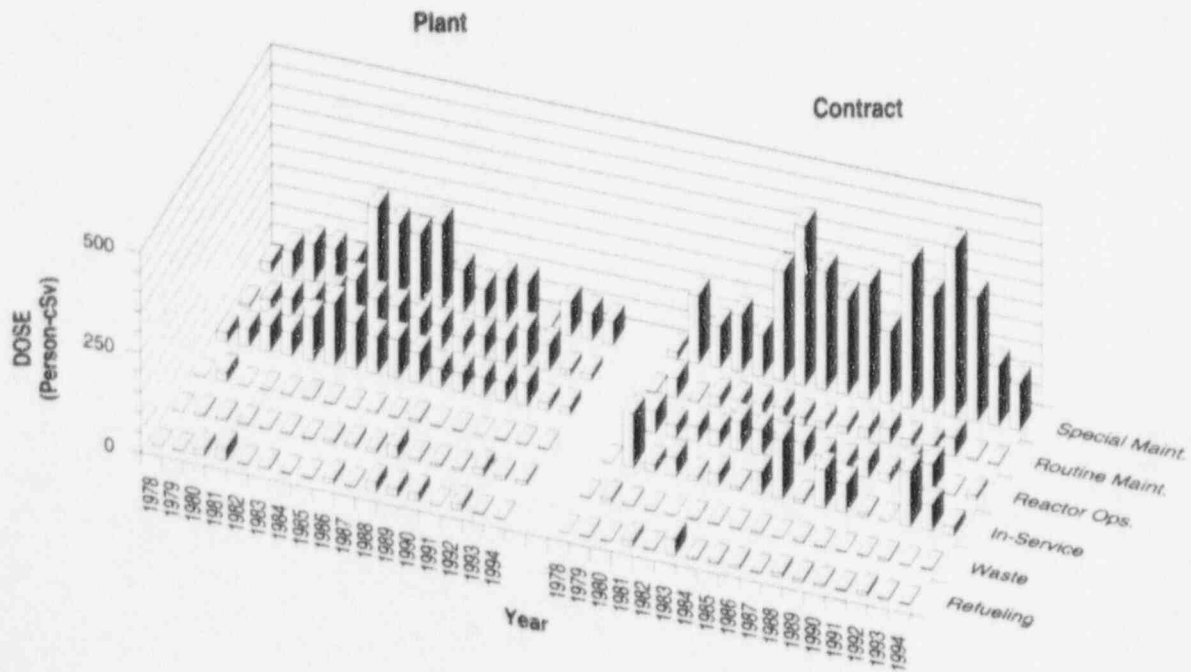
FARLEY 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

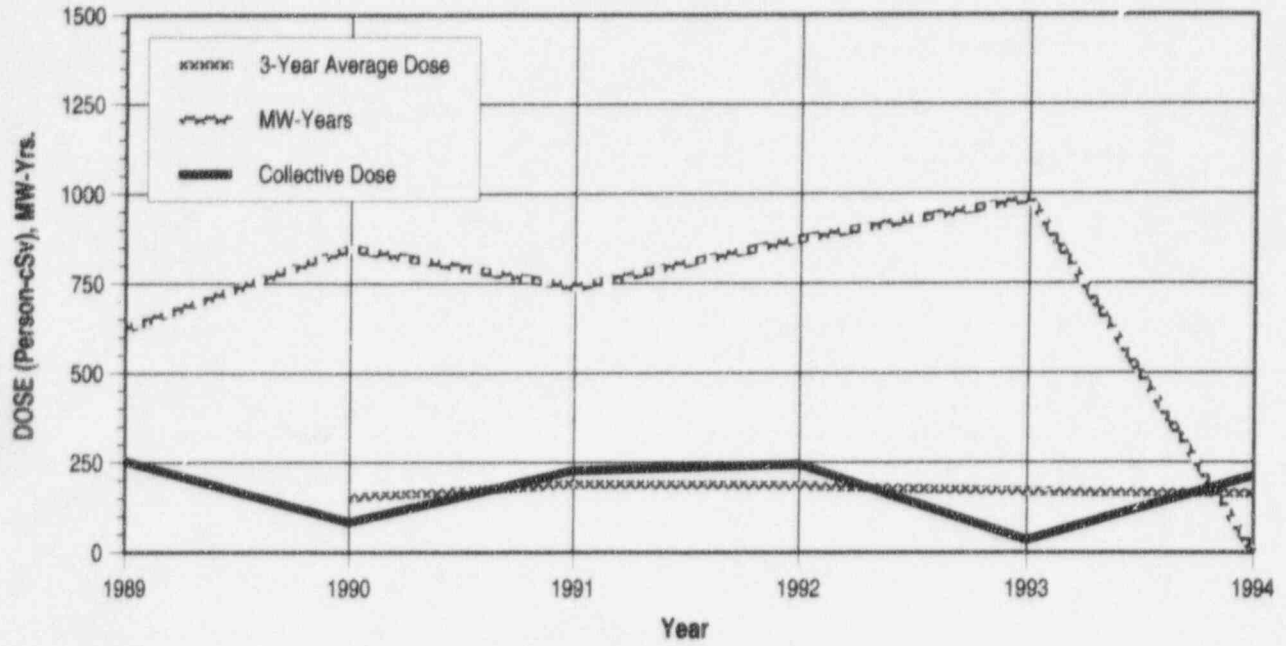


APPENDIX E (continued)

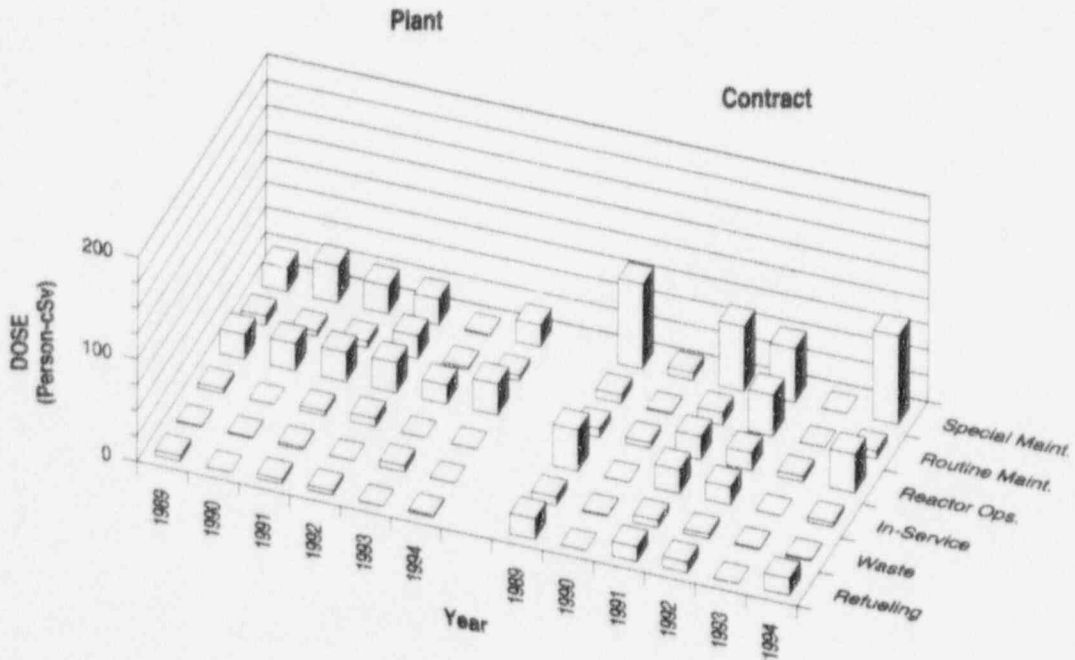
FERMI 2

Dose-Performance Indicators

BWR



Breakdown by Job Function

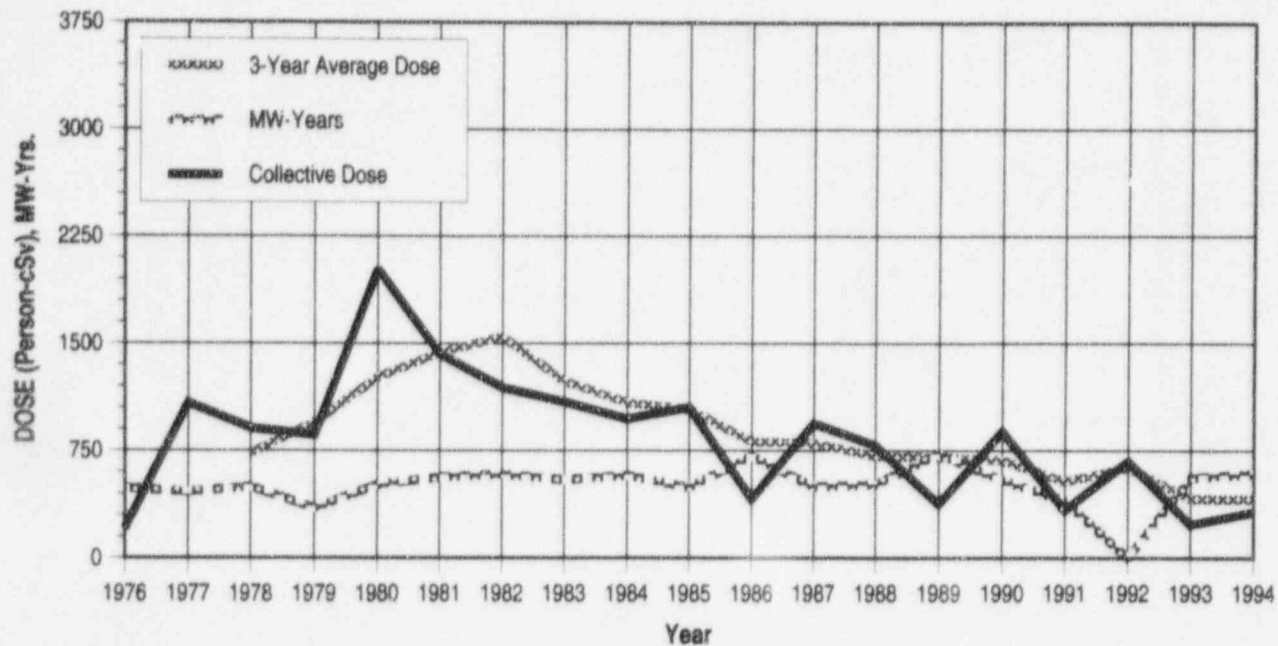


APPENDIX E (continued)

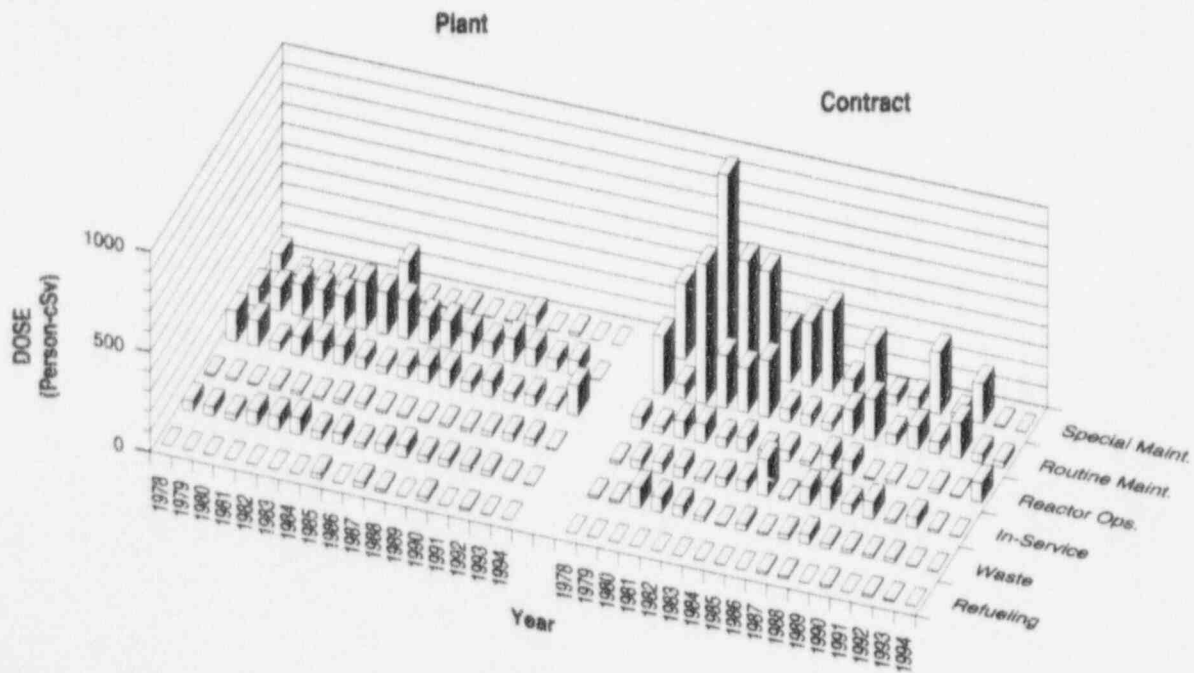
FITZPATRICK

Dose-Performance Indicators

BWR



Breakdown by Job Function

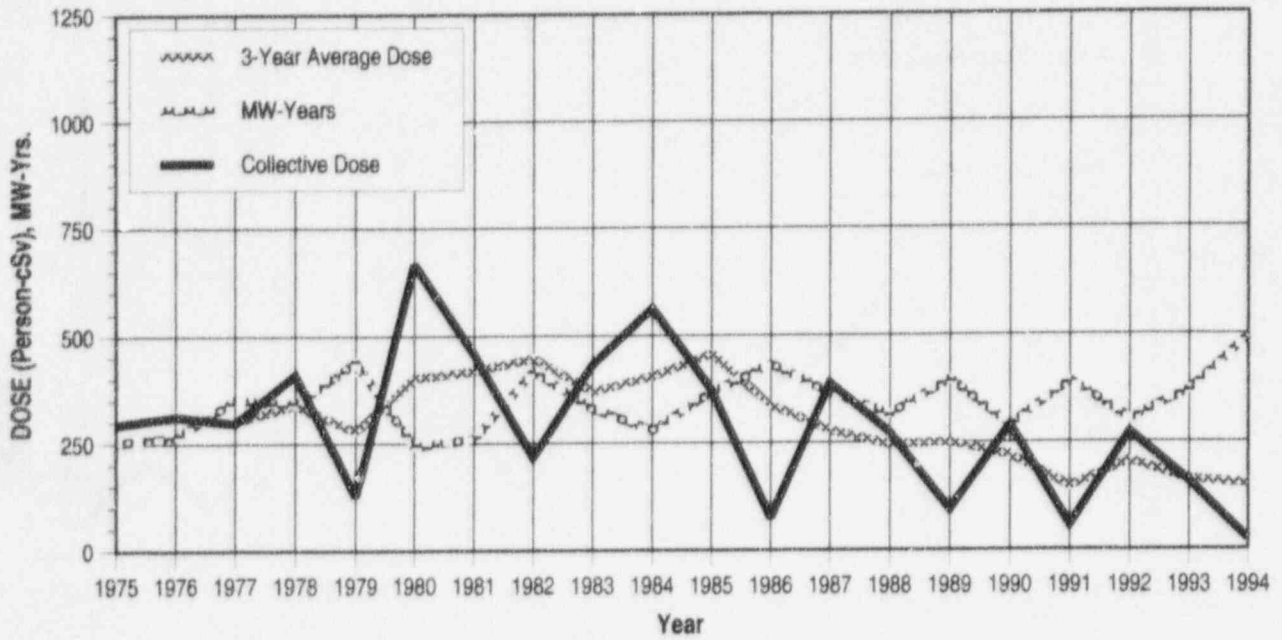


APPENDIX E (continued)

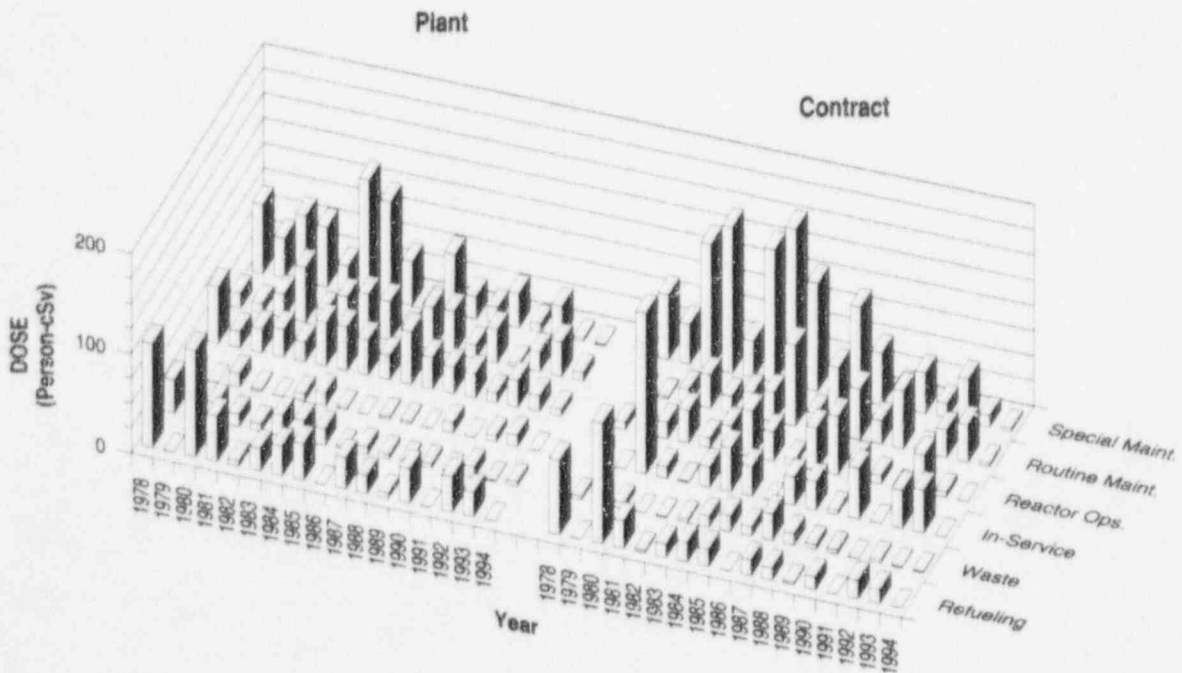
FORT CALHOUN

Dose-Performance Indicators

PWR



Breakdown by Job Function

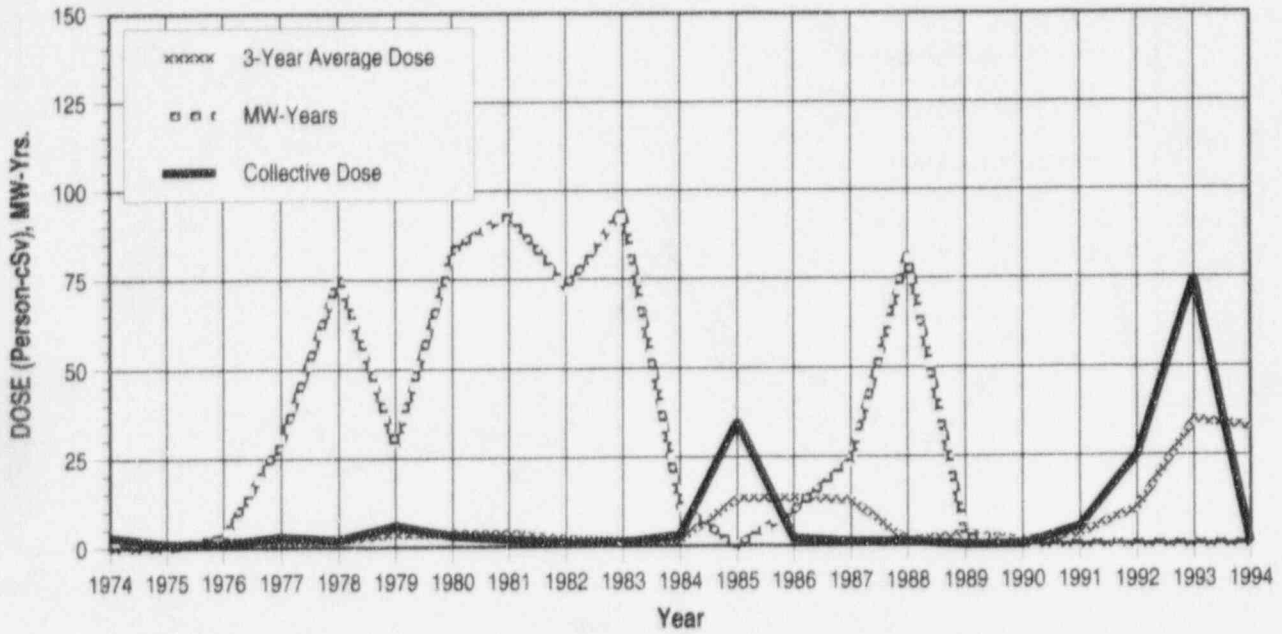


APPENDIX E (continued)

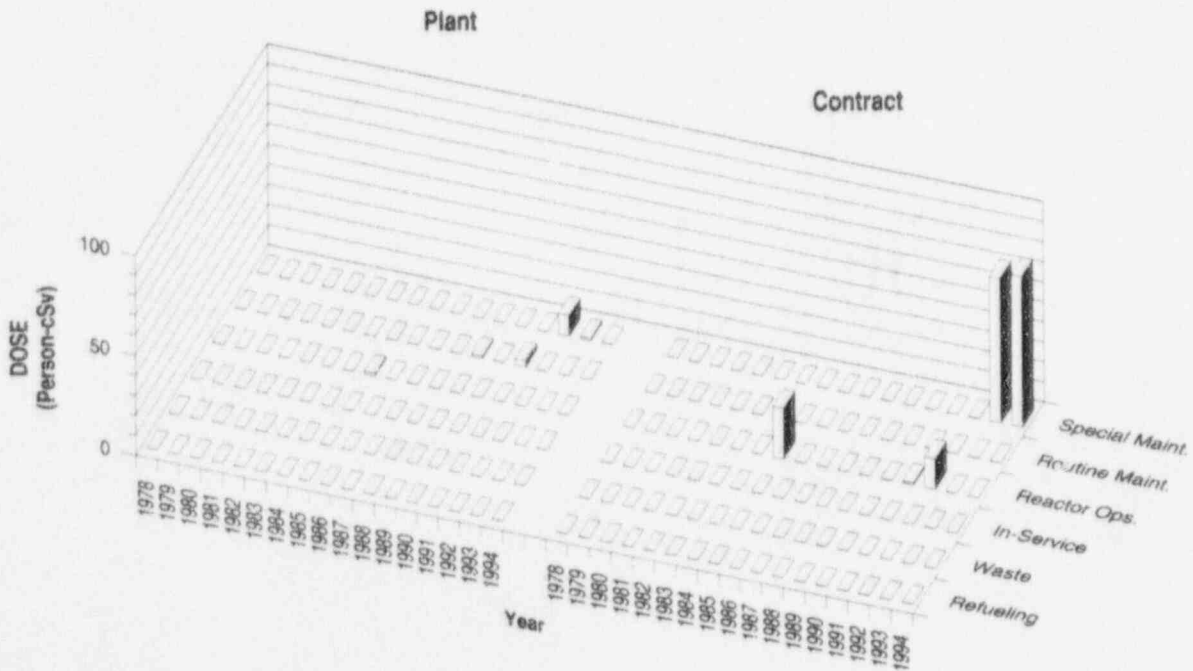
FORT ST. VRAIN

Dose-Performance Indicators

HTGR



Breakdown by Job Function

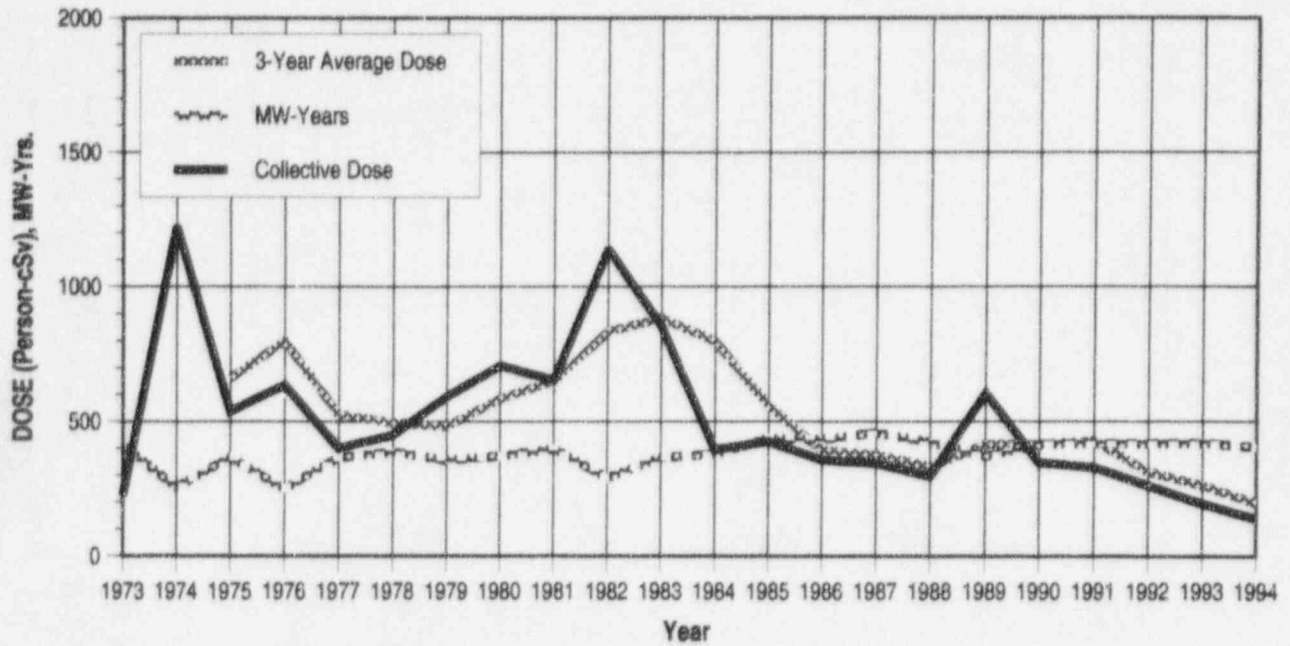


APPENDIX E (continued)

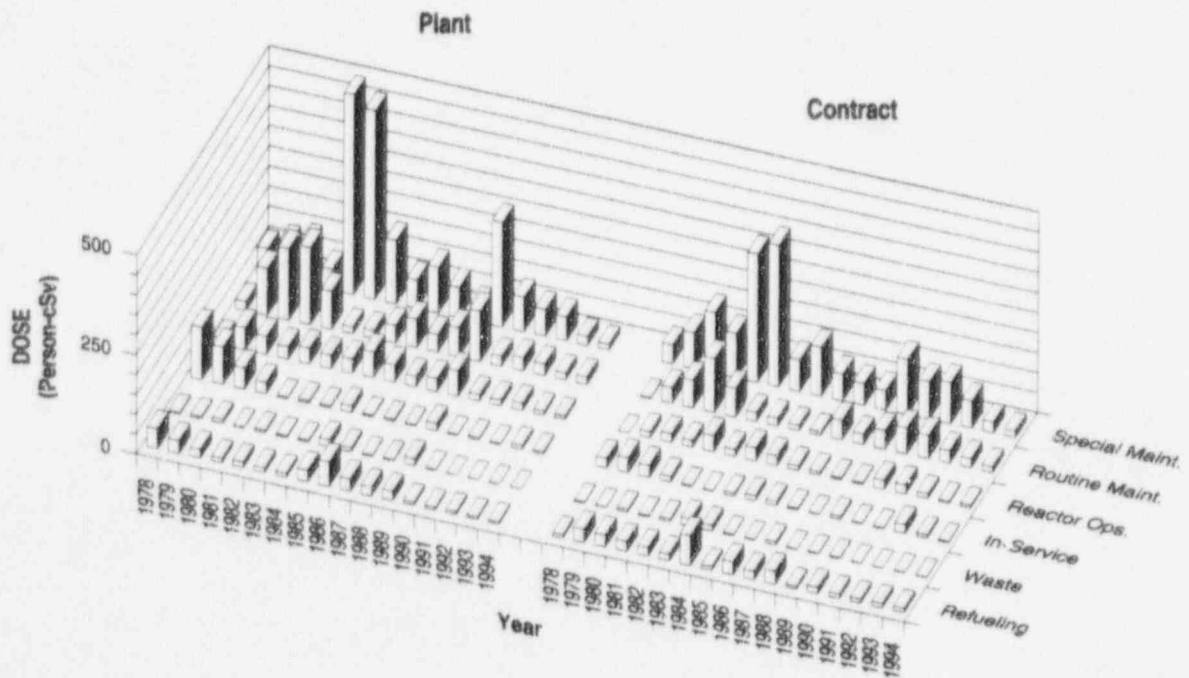
GINNA

Dose-Performance Indicators

PWR



Breakdown by Job Function

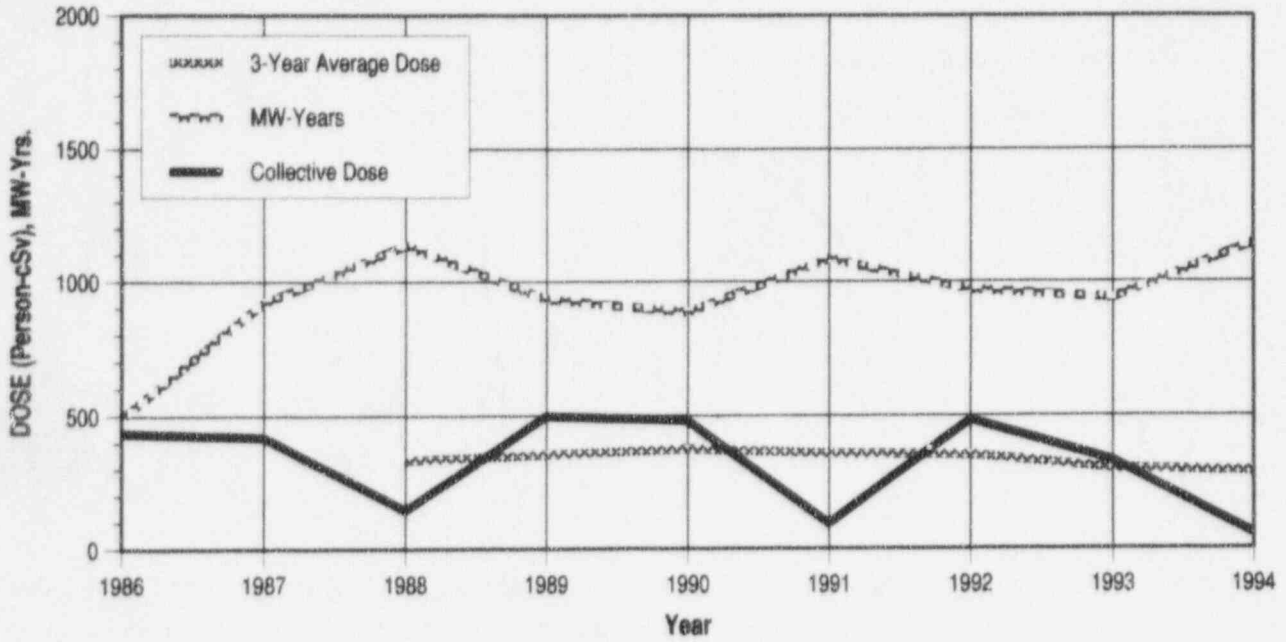


APPENDIX E (continued)

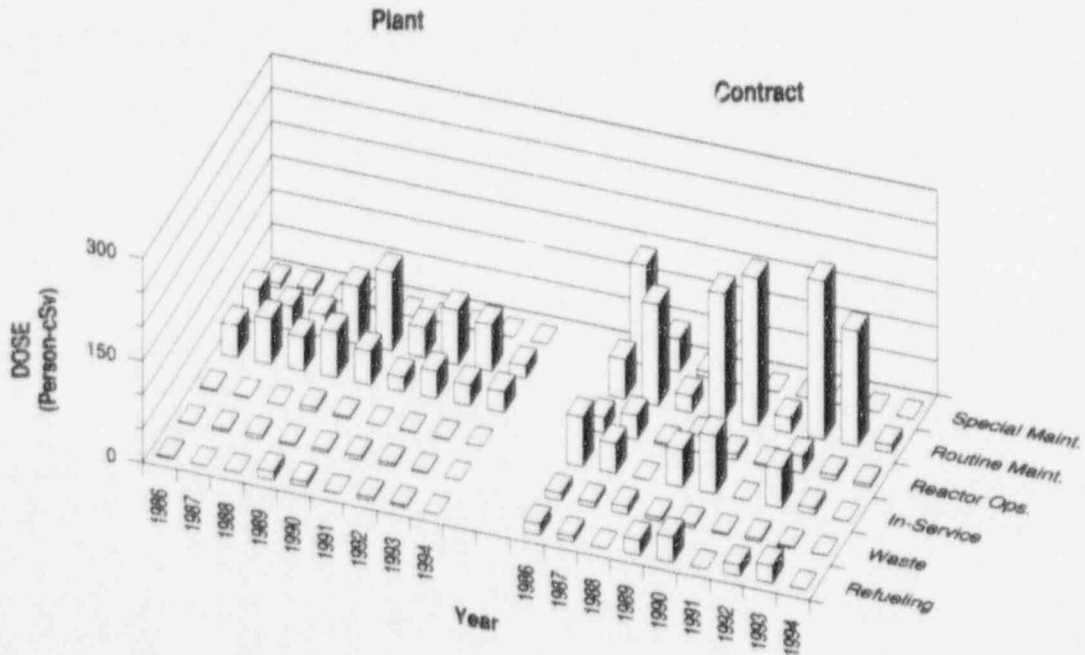
GRAND GULF

Dose-Performance Indicators

BWR



Breakdown by Job Function

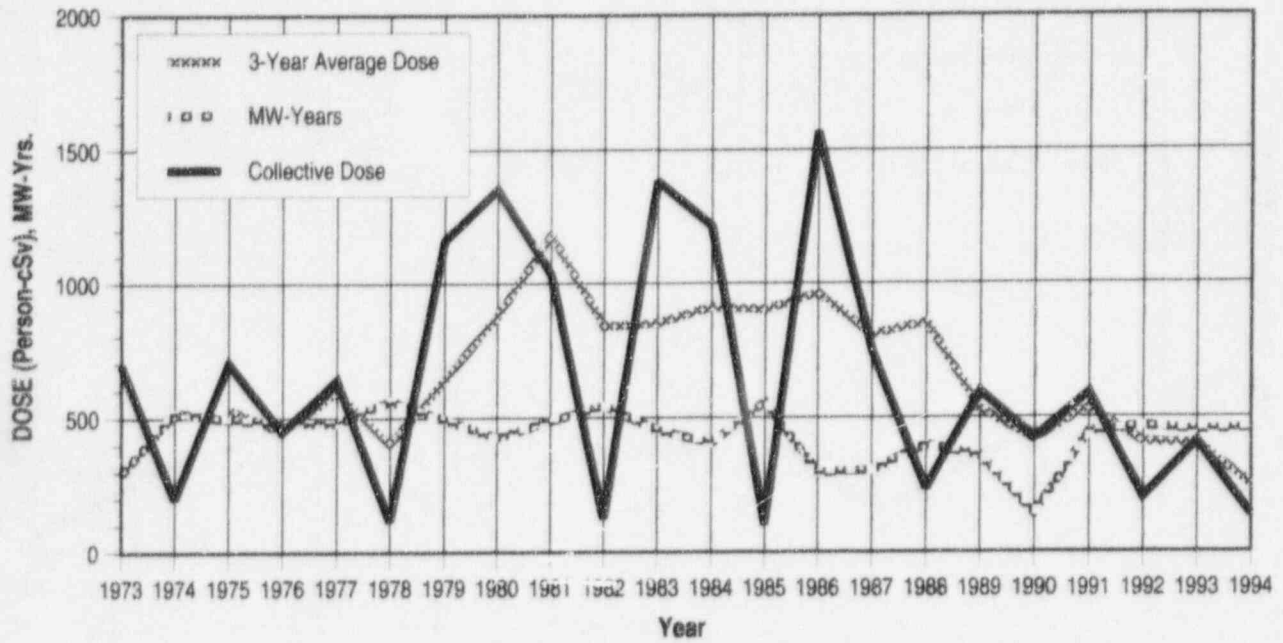


APPENDIX E (continued)

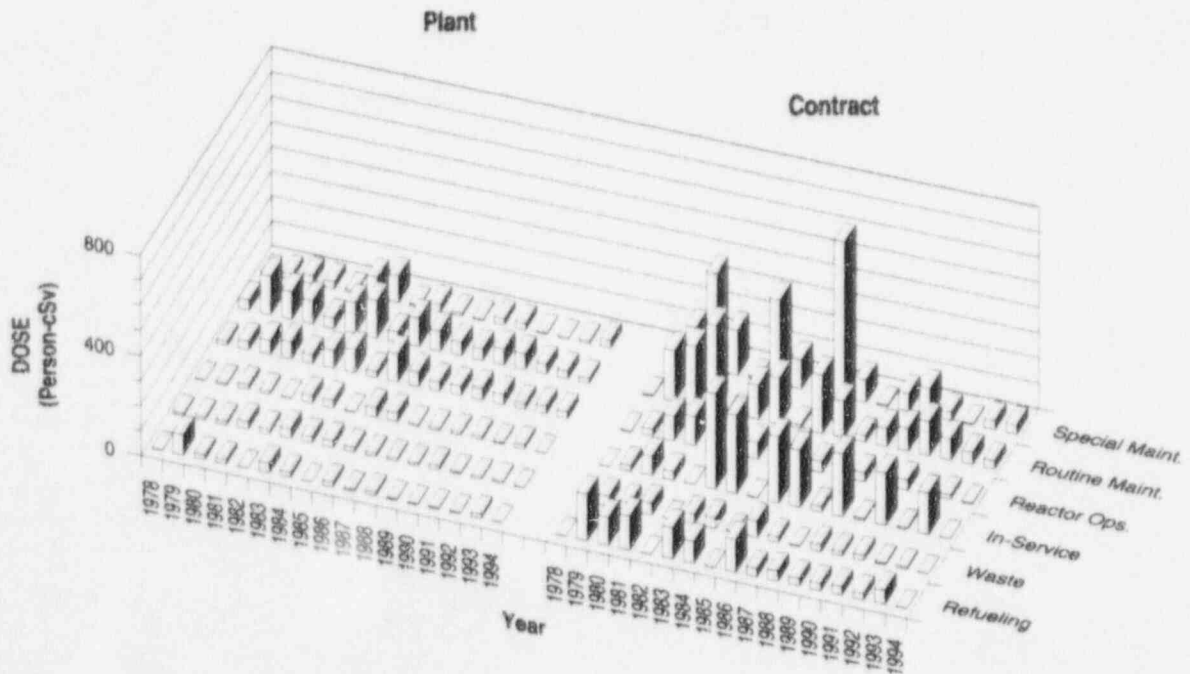
HADDAM NECK

Dose-Performance Indicators

PWR



Breakdown by Job Function

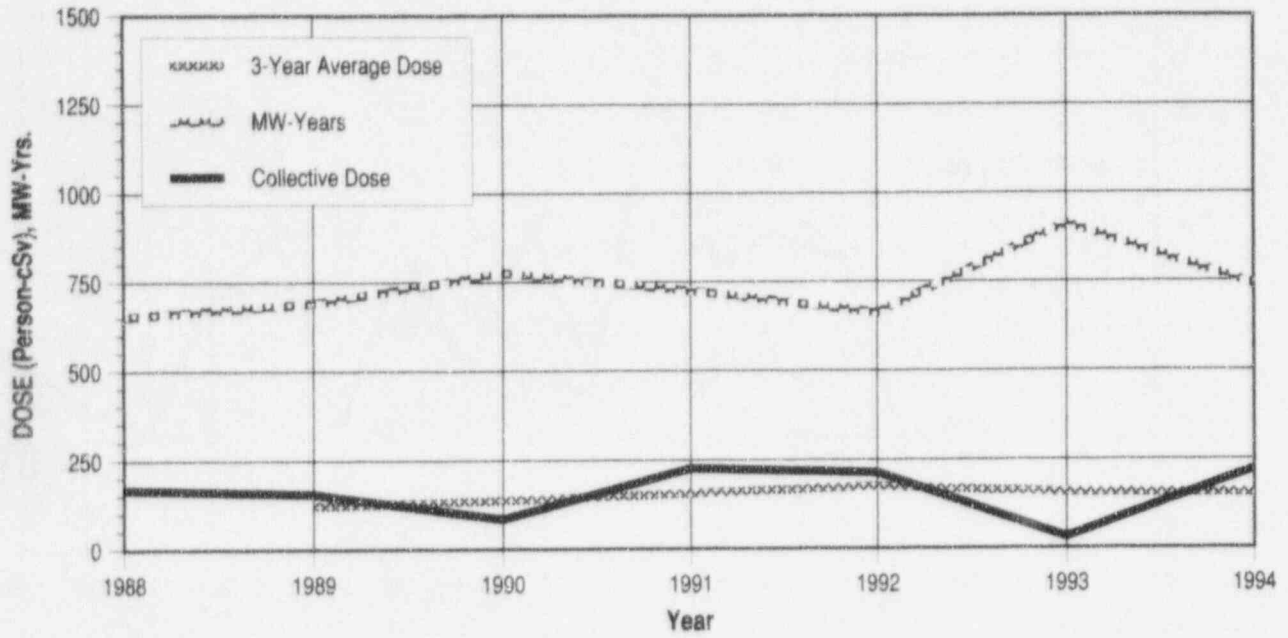


APPENDIX E (continued)

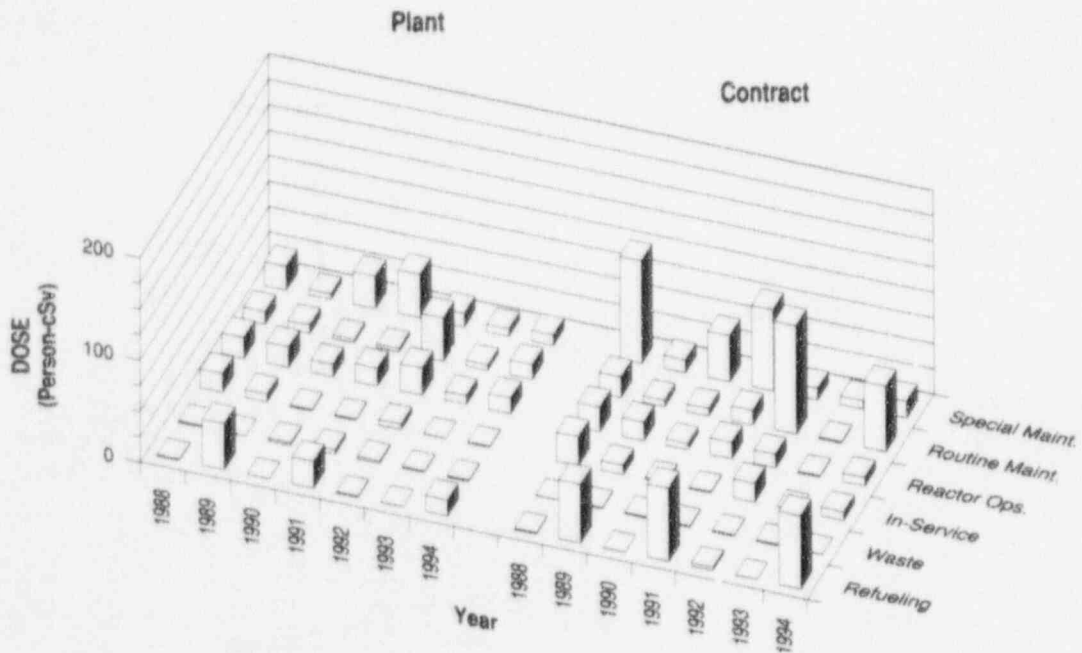
HARRIS

Dose-Performance Indicators

PWR



Breakdown by Job Function

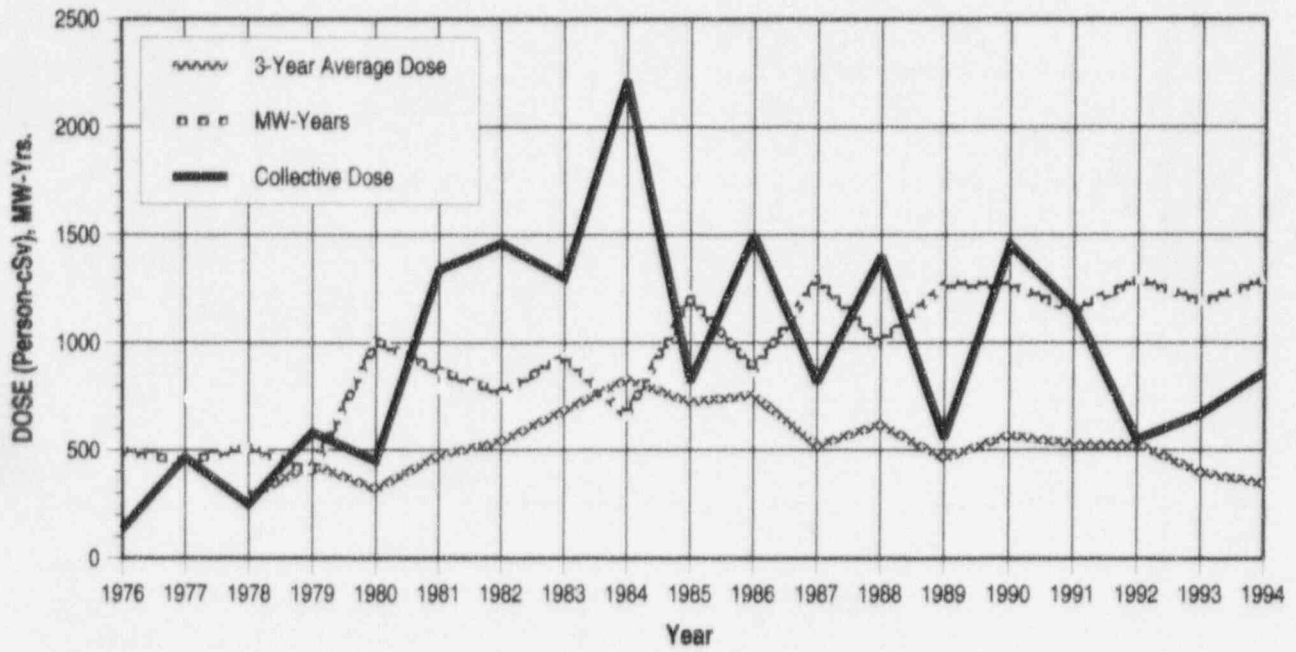


APPENDIX E (continued)

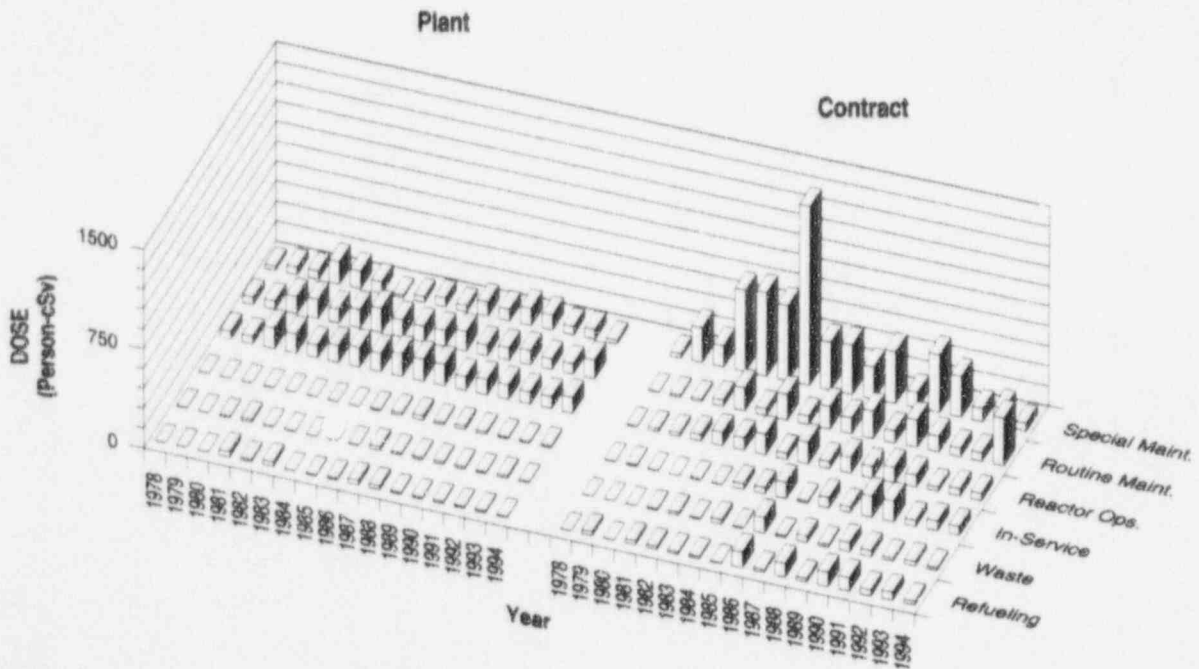
HATCH 1, 2

Dose-Performance Indicators

BWR



Breakdown by Job Function

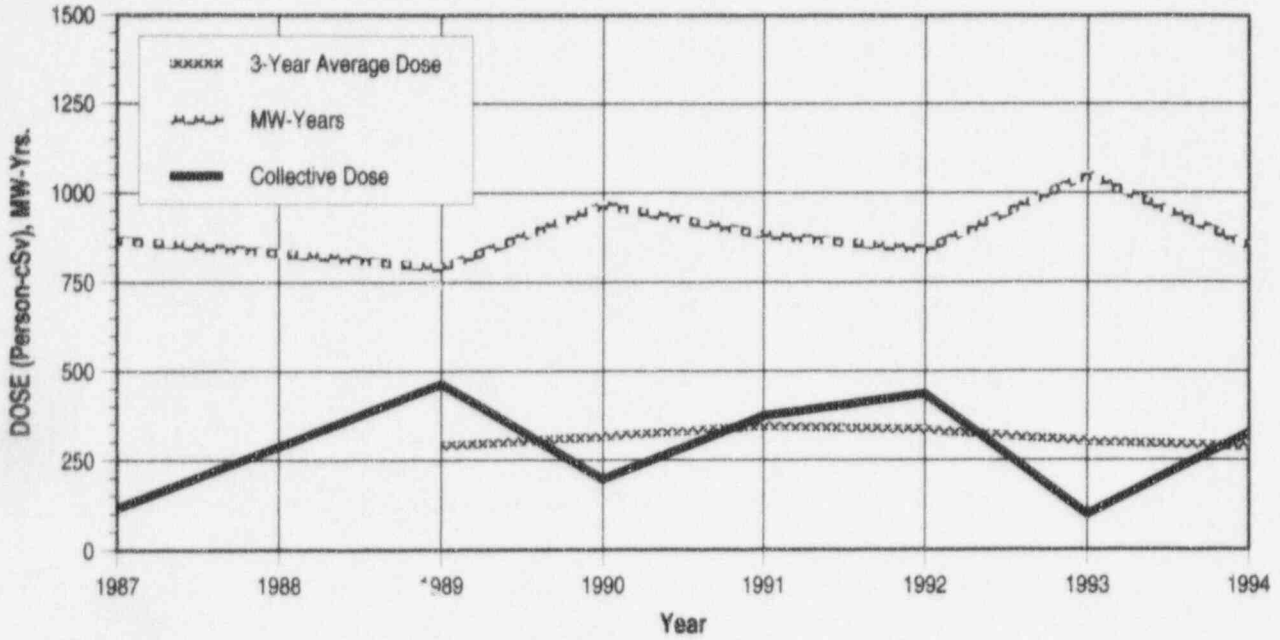


APPENDIX E (continued)

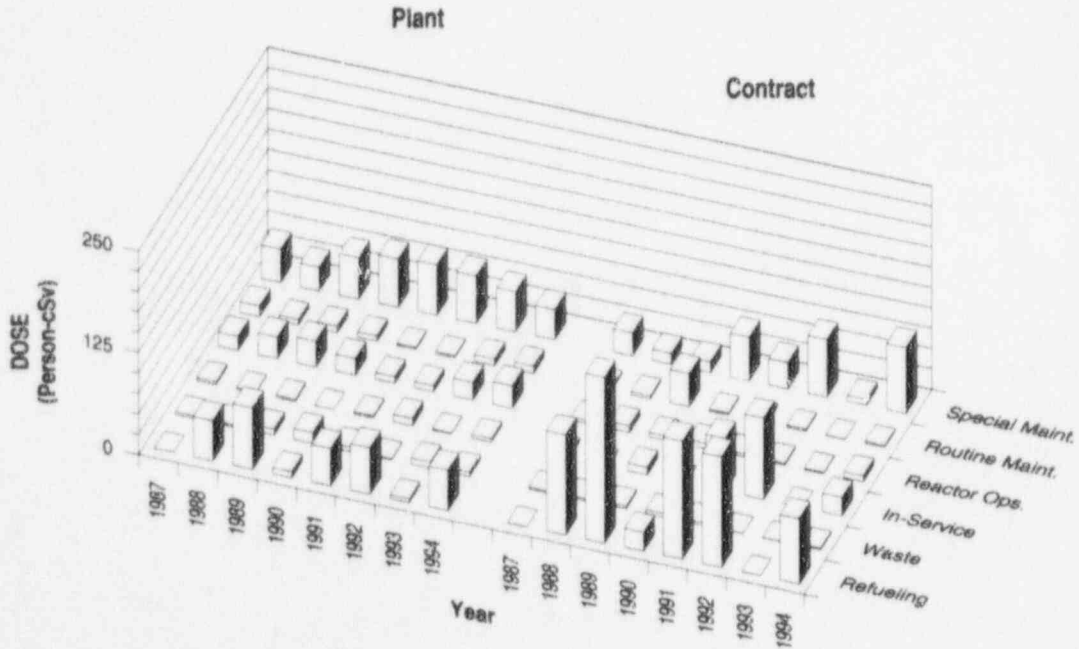
HOPE CREEK 1

Dose-Performance Indicators

BWR



Breakdown by Job Function

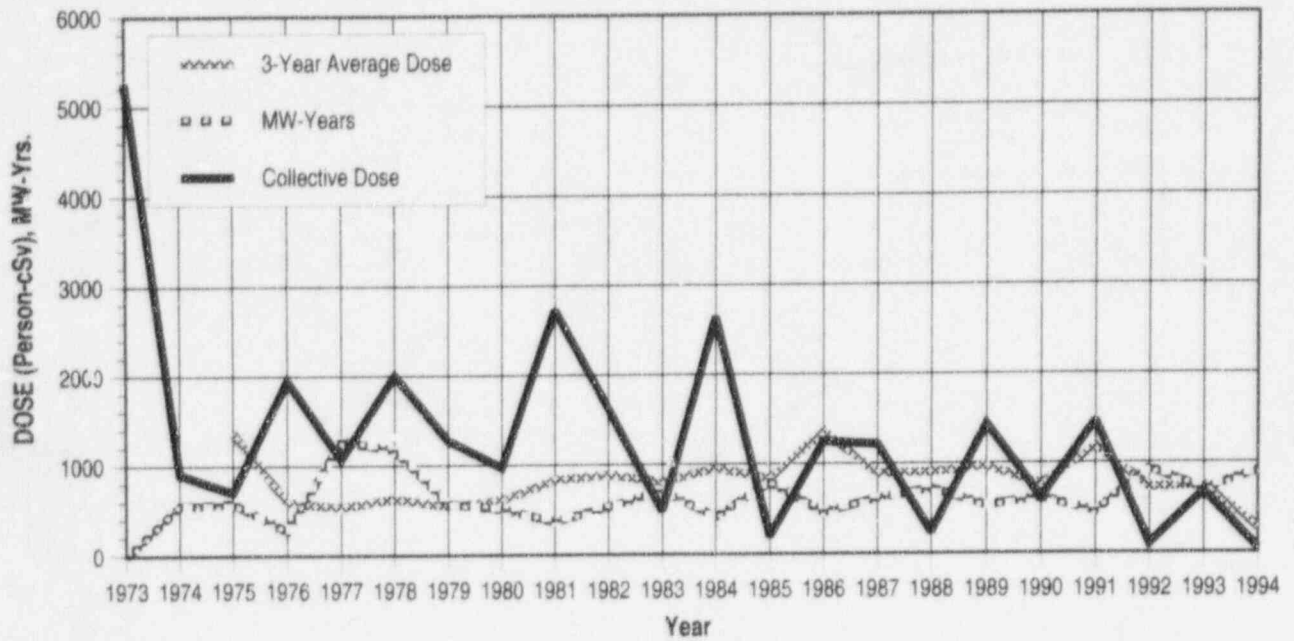


APPENDIX E (continued)

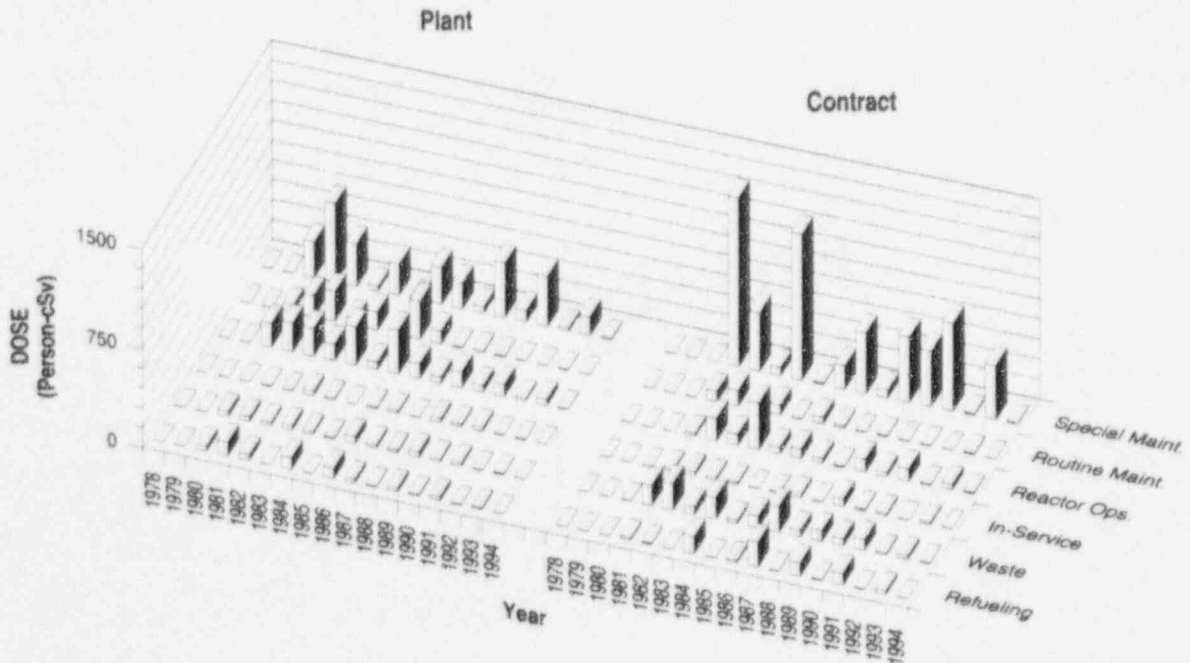
INDIAN POINT 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

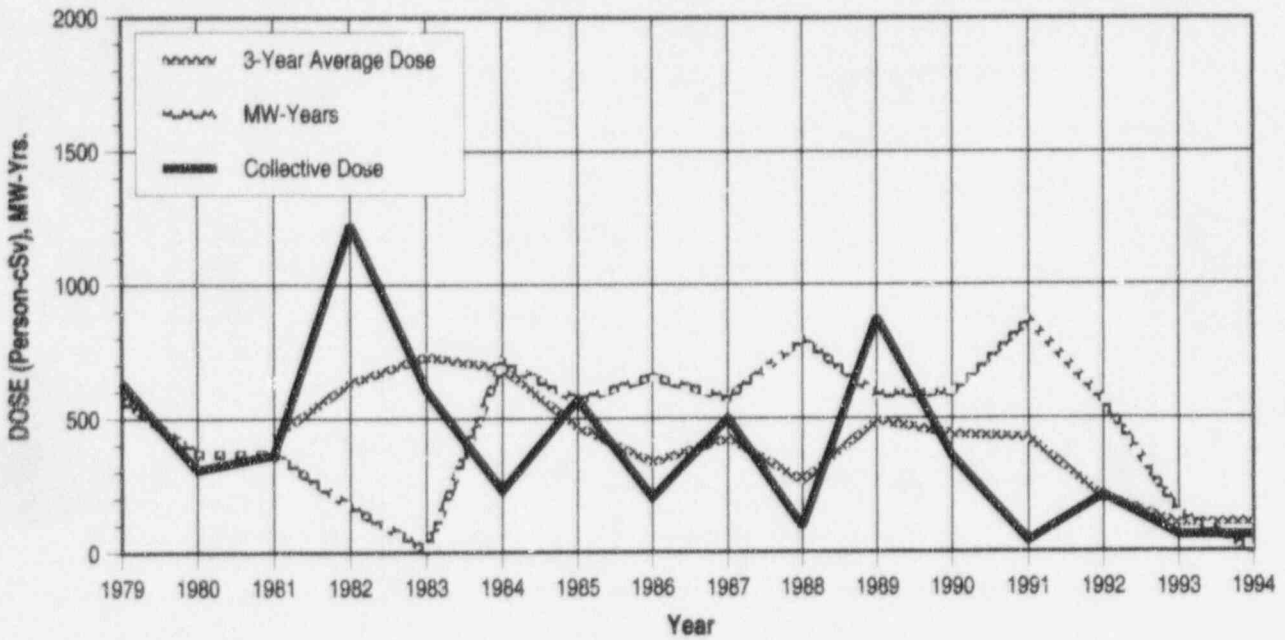


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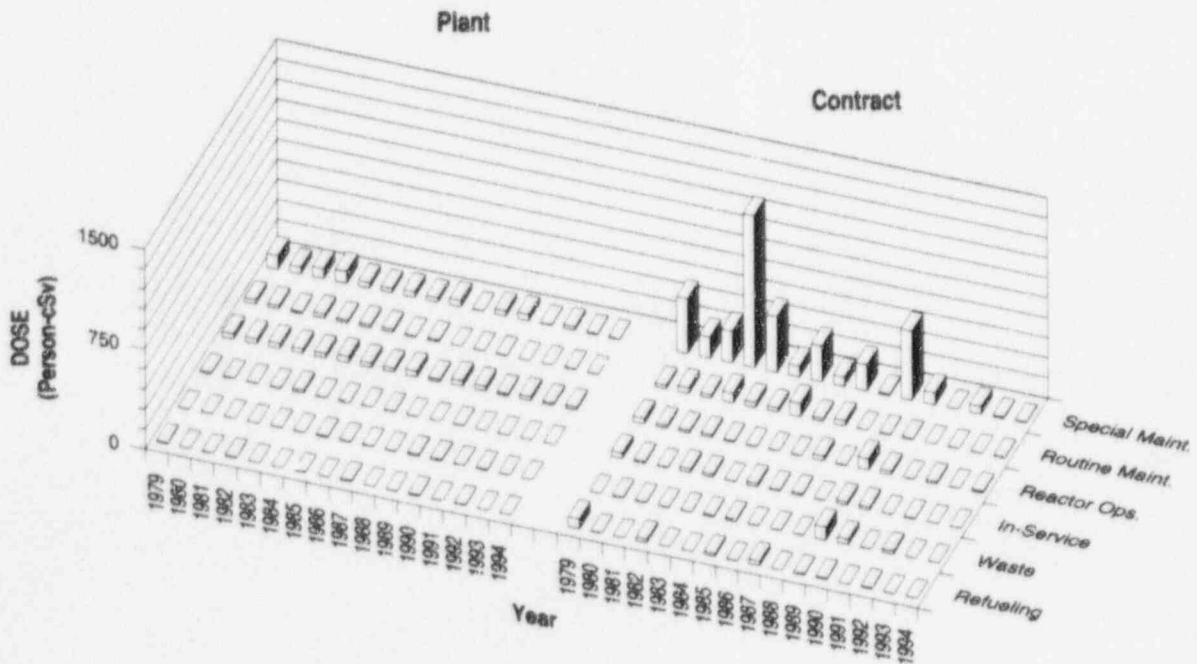
INDIAN POINT 3

Dose-Performance Indicators

PWR



Breakdown by Job Function

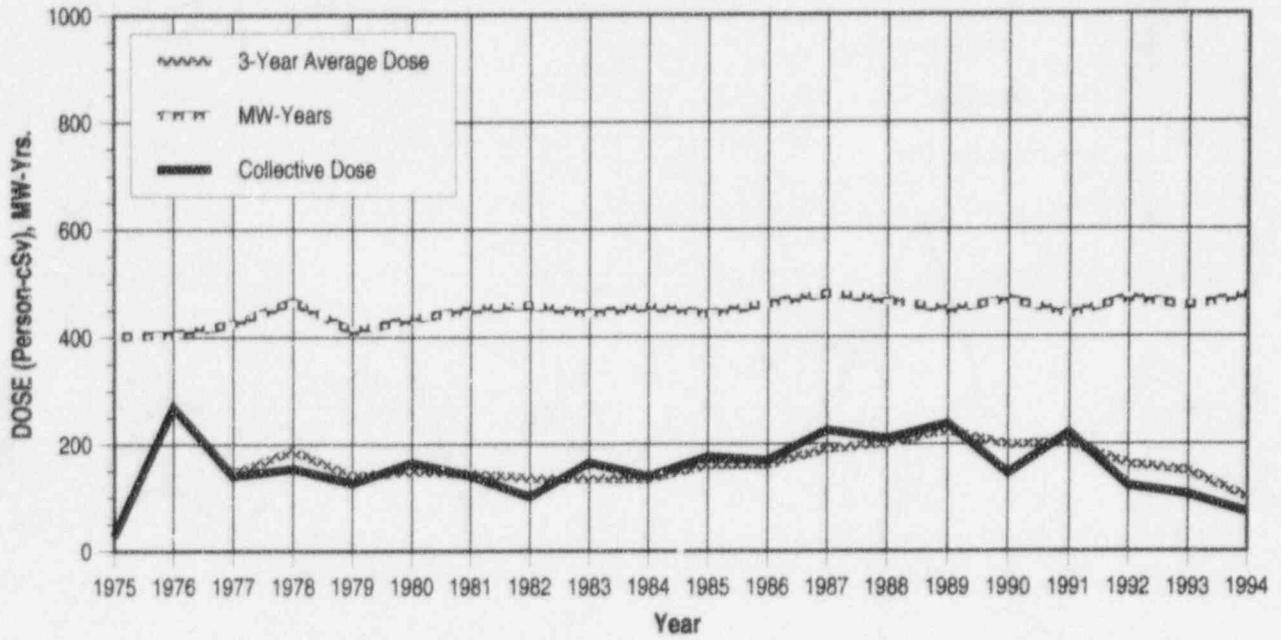


APPENDIX E (continued)

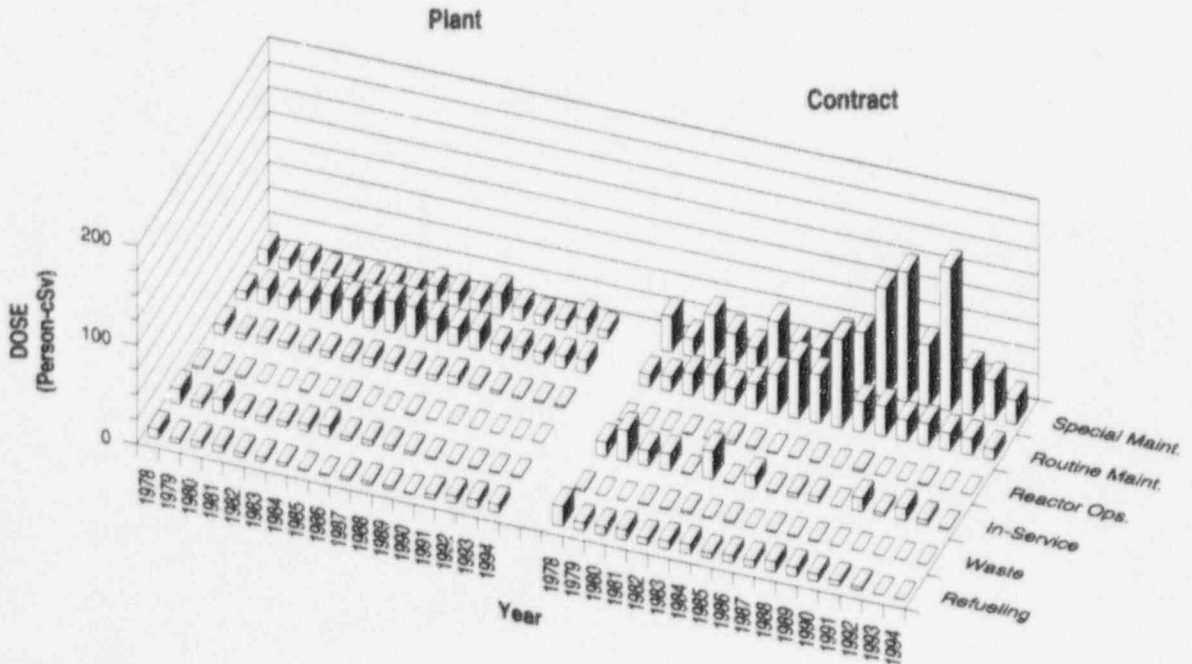
KEWAUNEE

Dose-Performance Indicators

PWR



Breakdown by Job Function

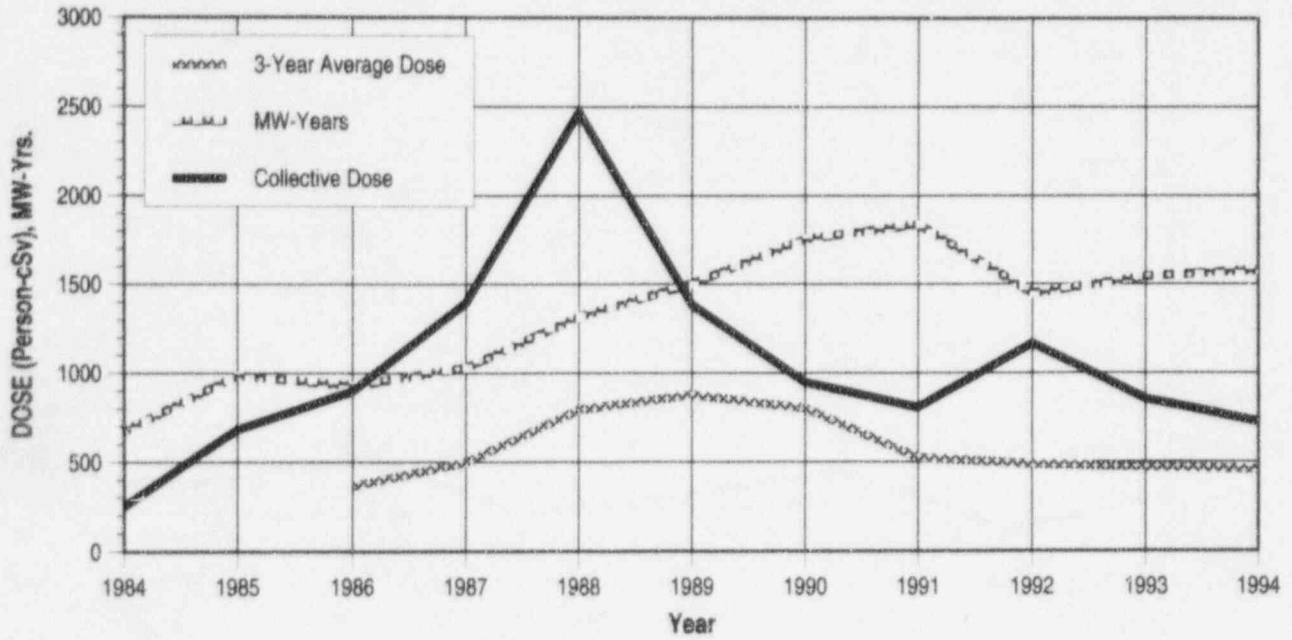


APPENDIX E (continued)

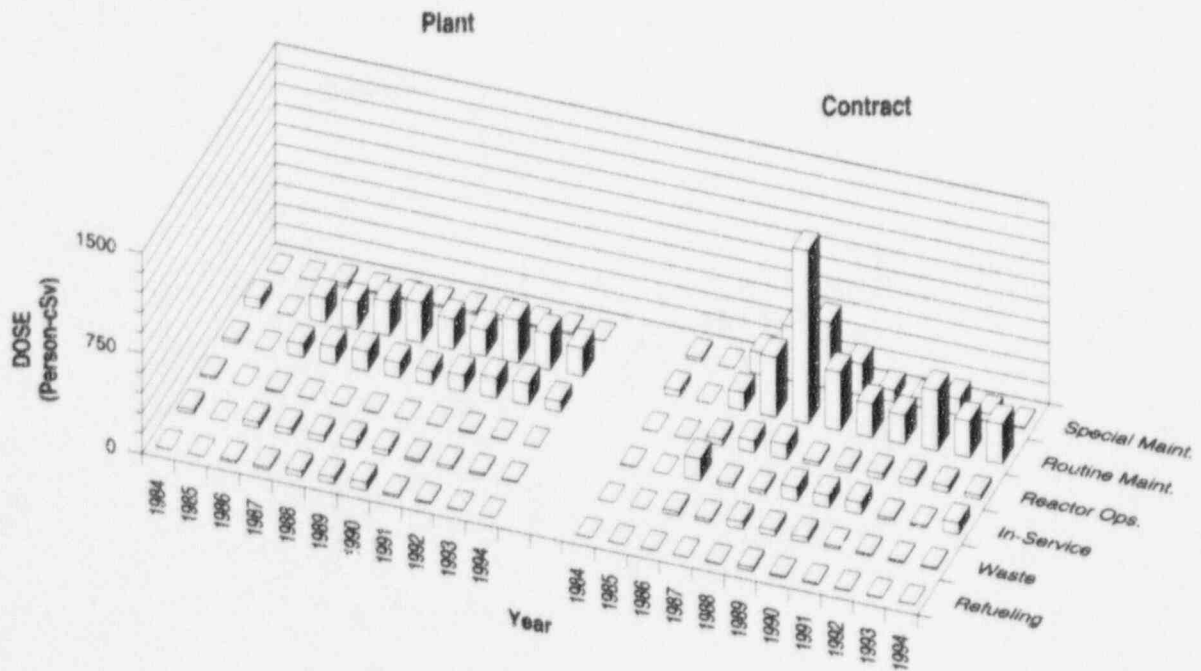
LASALLE 1, 2

Dose-Performance Indicators

BWR



Breakdown by Job Function

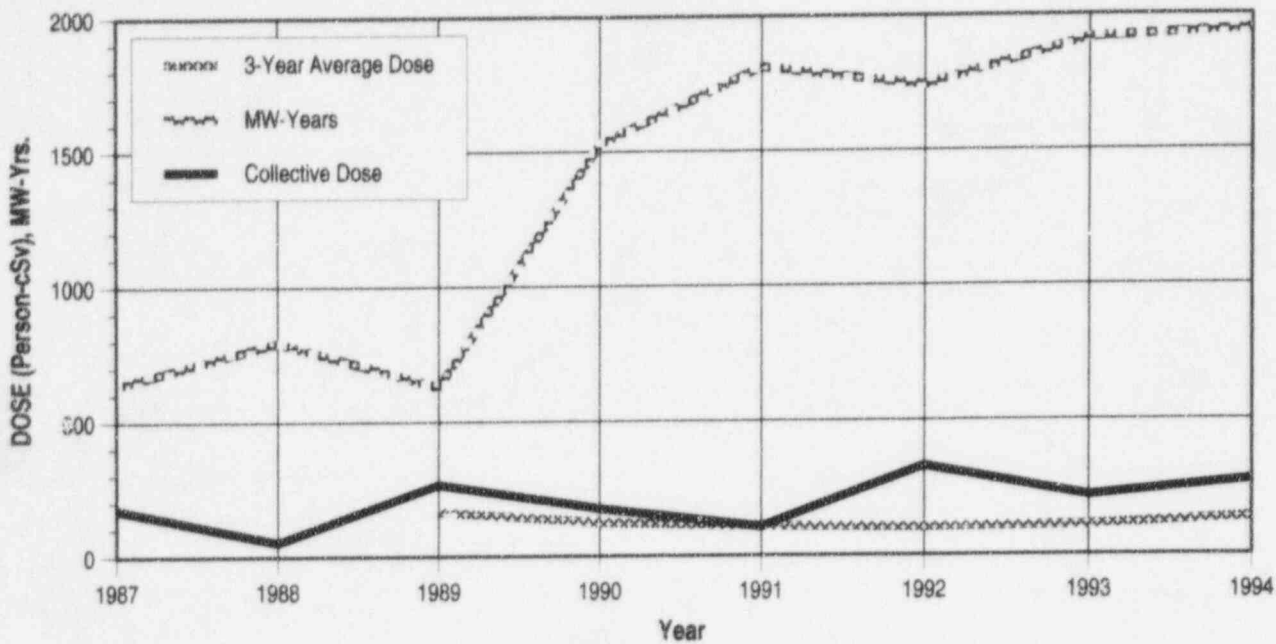


APPENDIX E (continued)

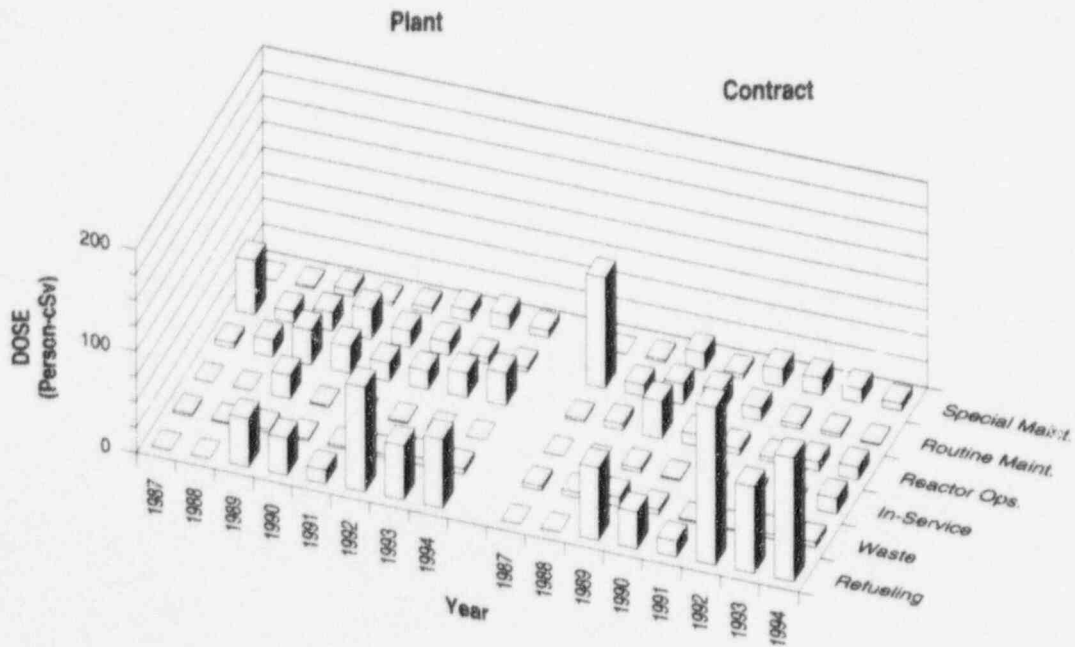
LIMERICK 1, 2

Dose-Performance Indicators

BWR



Breakdown by Job Function

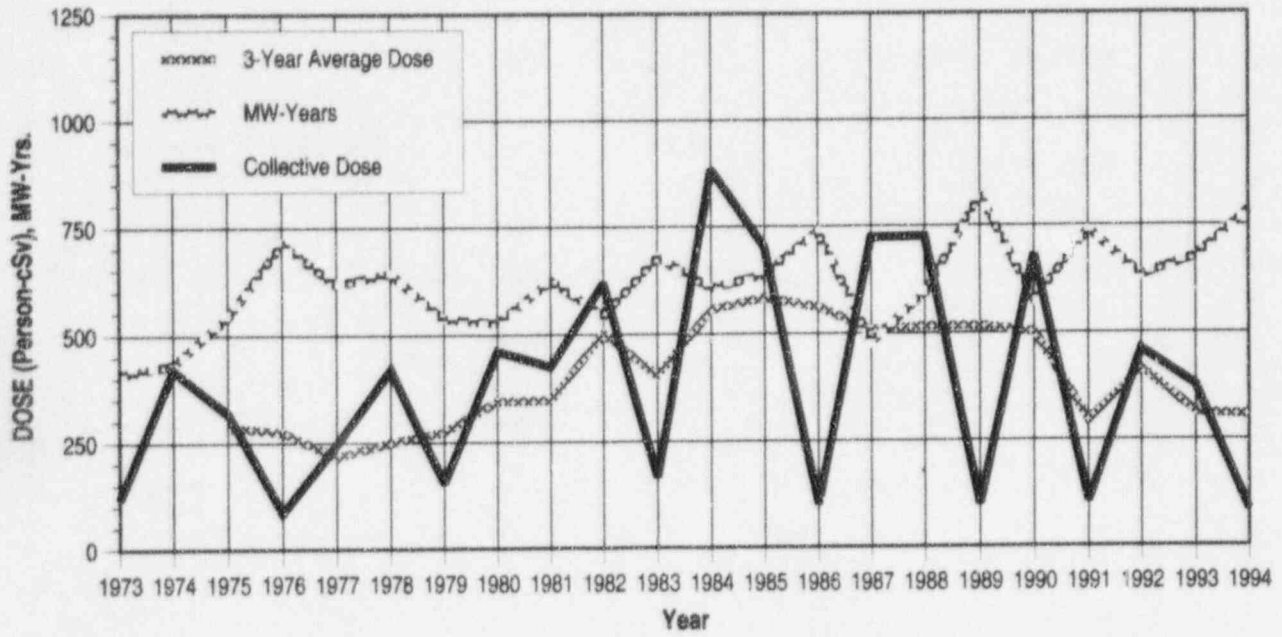


APPENDIX E (continued)

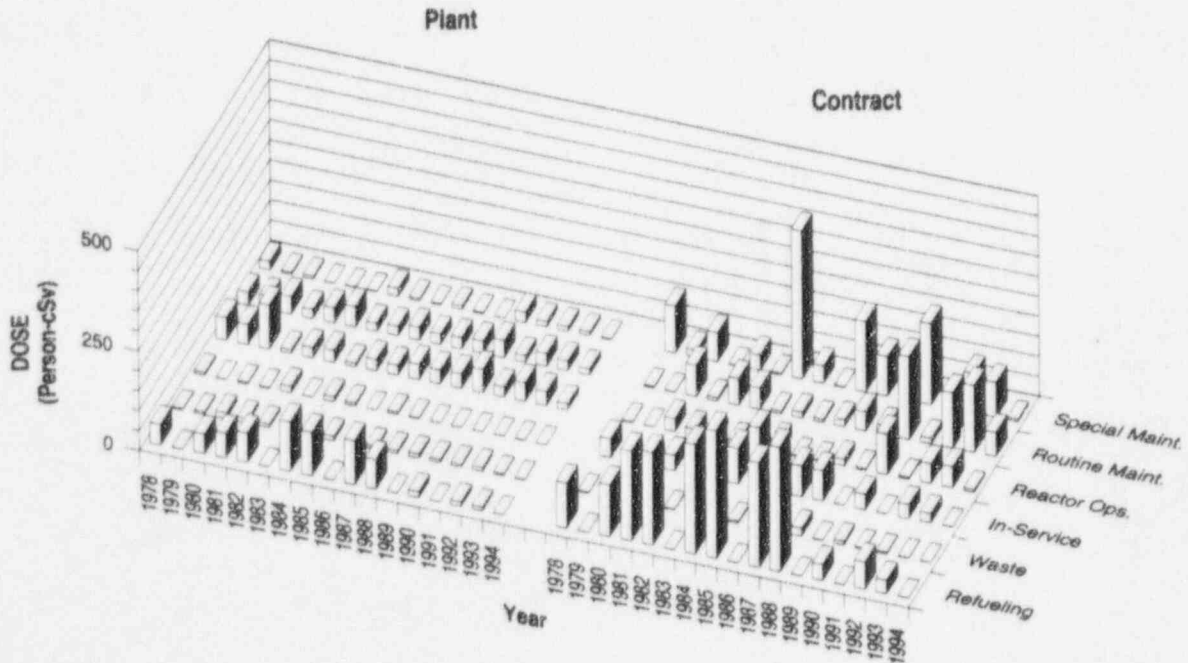
MAINE YANKEE

Dose-Performance Indicators

PWR



Breakdown by Job Function

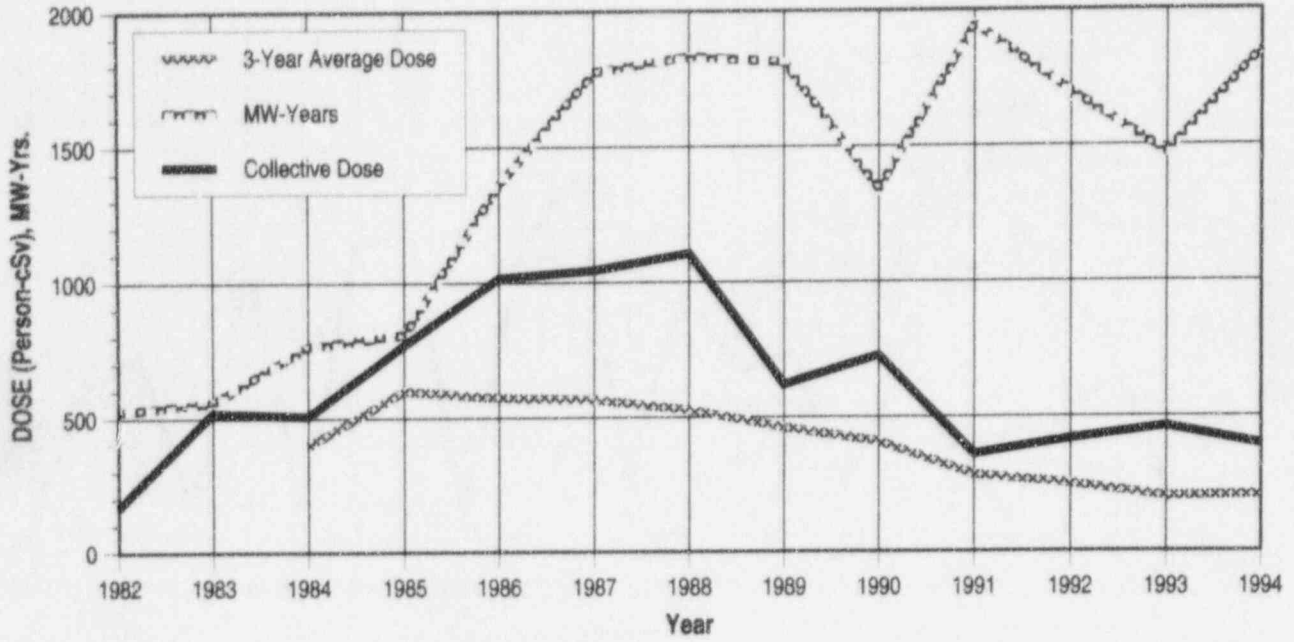


APPENDIX E (continued)

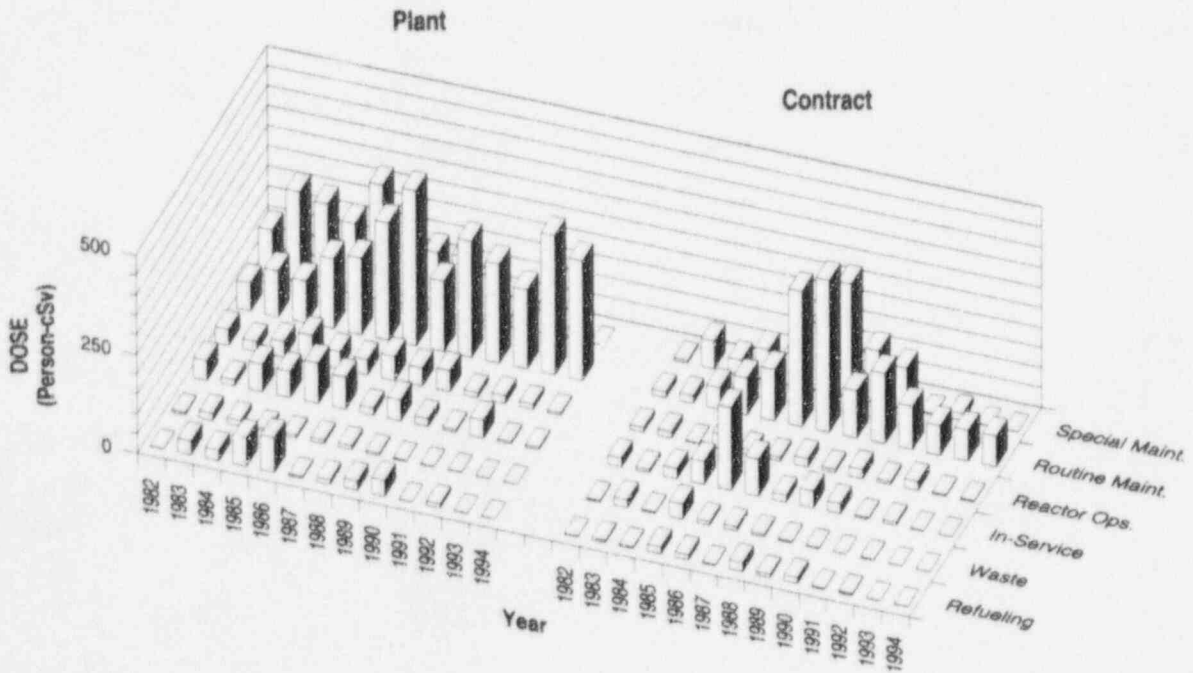
MCGUIRE 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

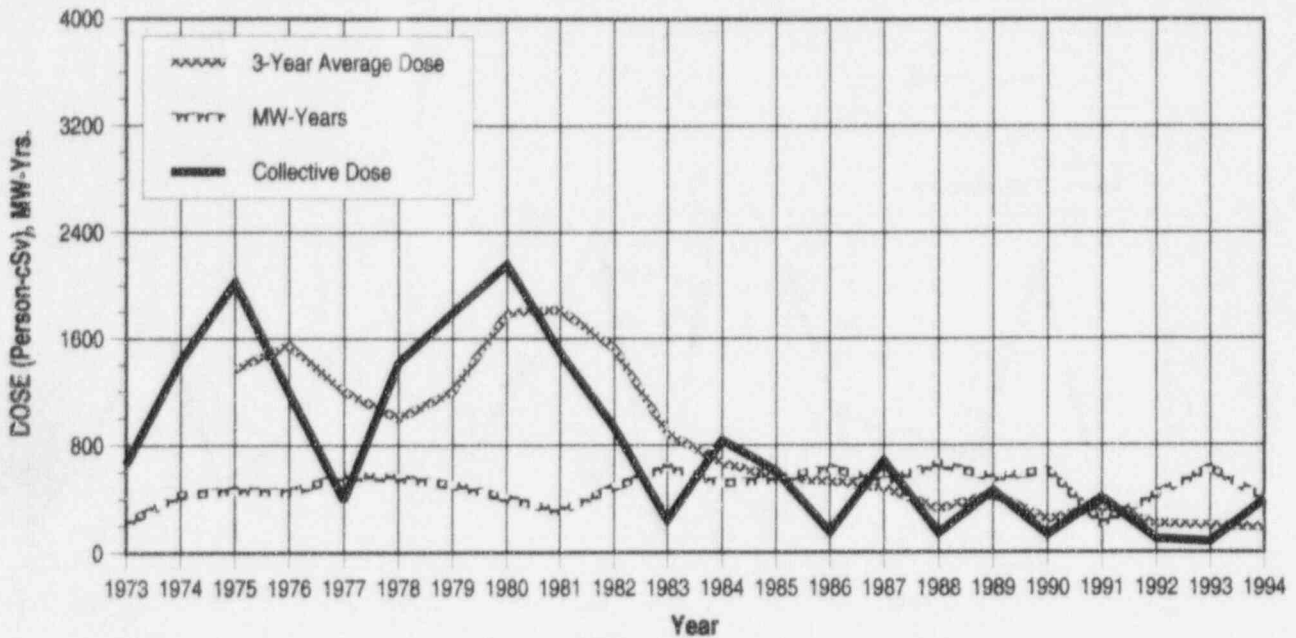


APPENDIX E (continued)

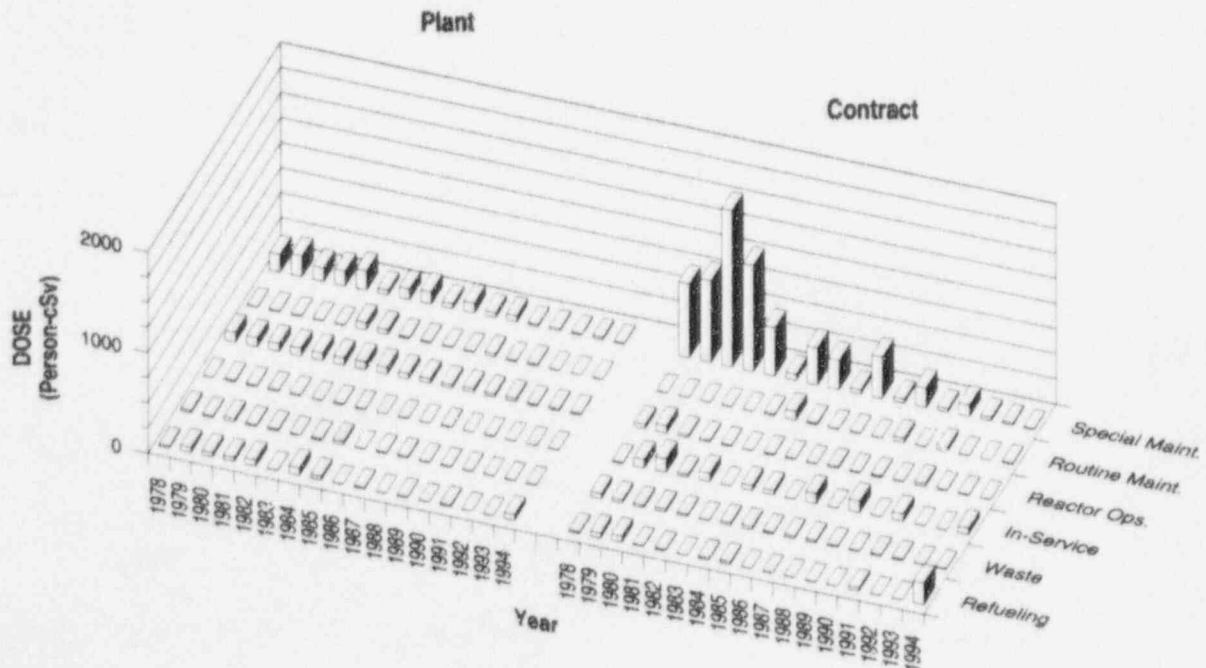
MILLSTONE POINT 1

Dose-Performance Indicators

BWR



Breakdown by Job Function

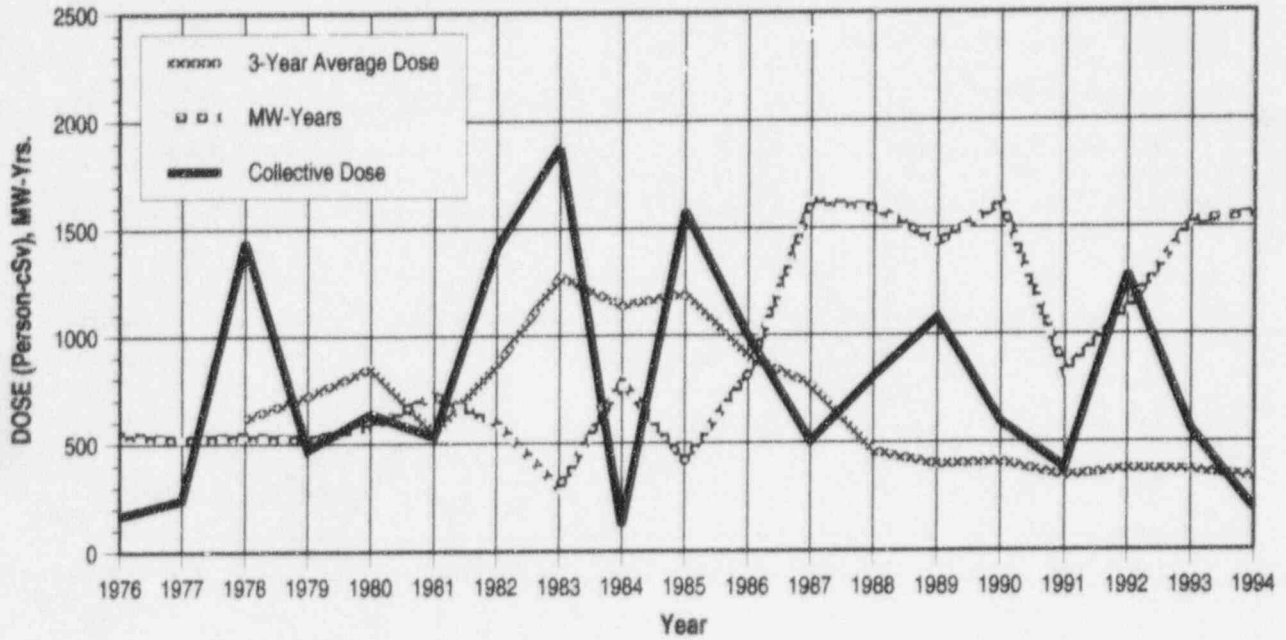


APPENDIX E (continued)

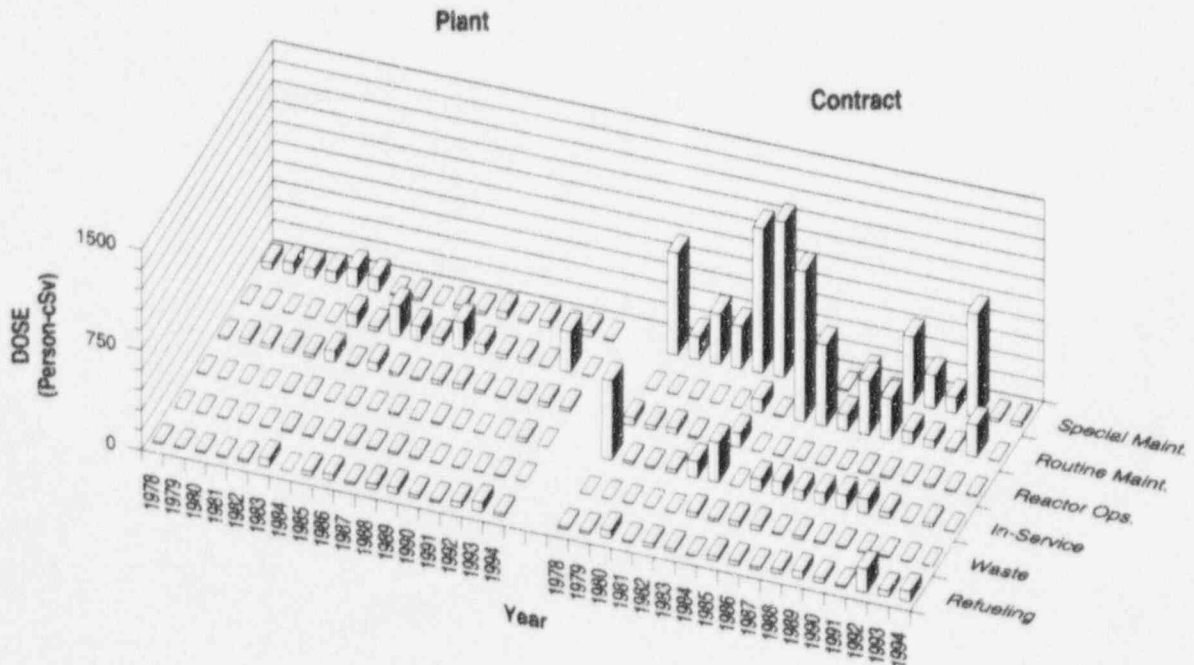
MILLSTONE POINT 2, 3

Dose-Performance Indicators

PWR



Breakdown by Job Function

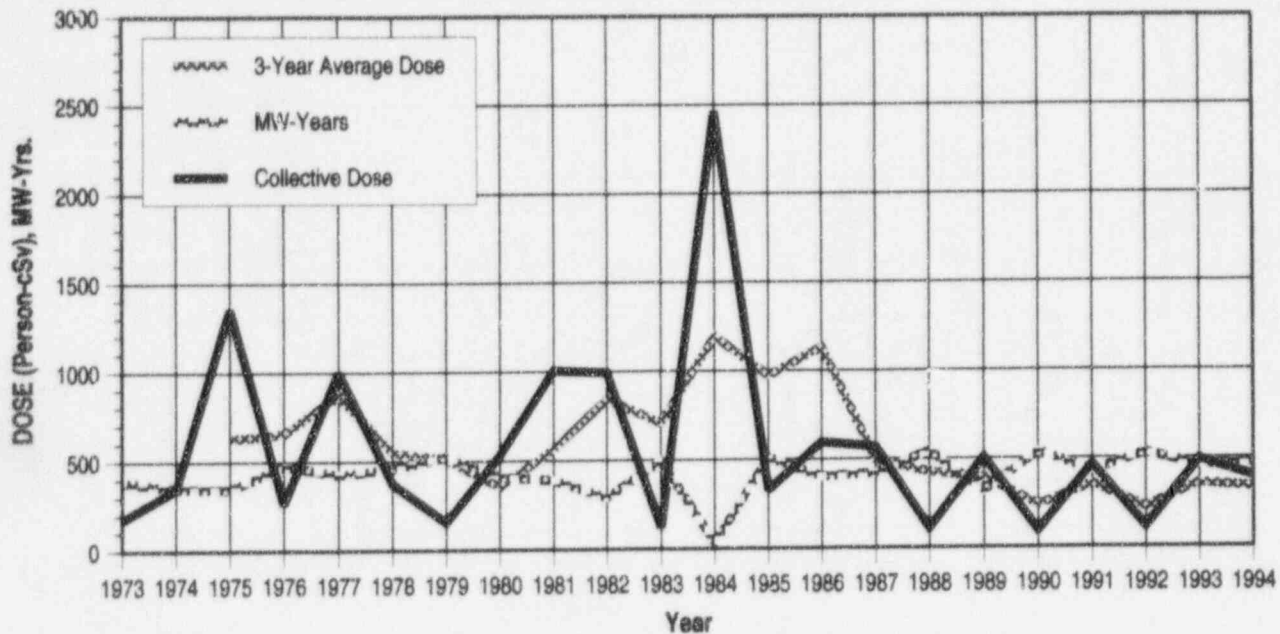


APPENDIX E (continued)

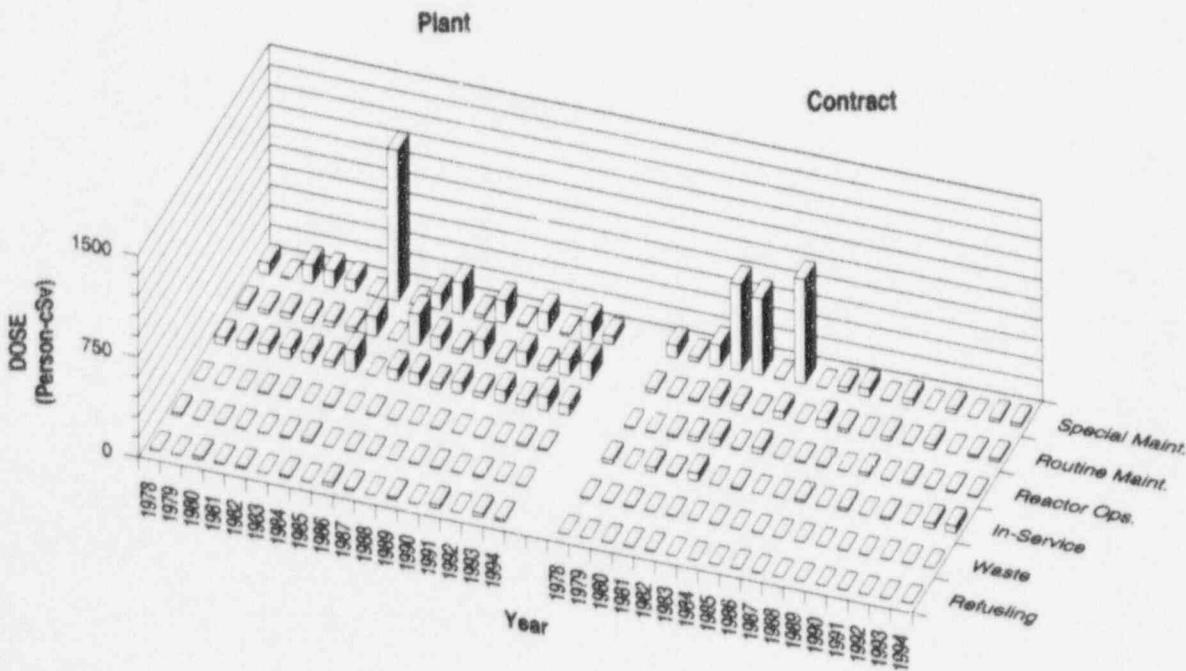
MONTICELLO

Dose-Performance Indicators

BWR



Breakdown by Job Function

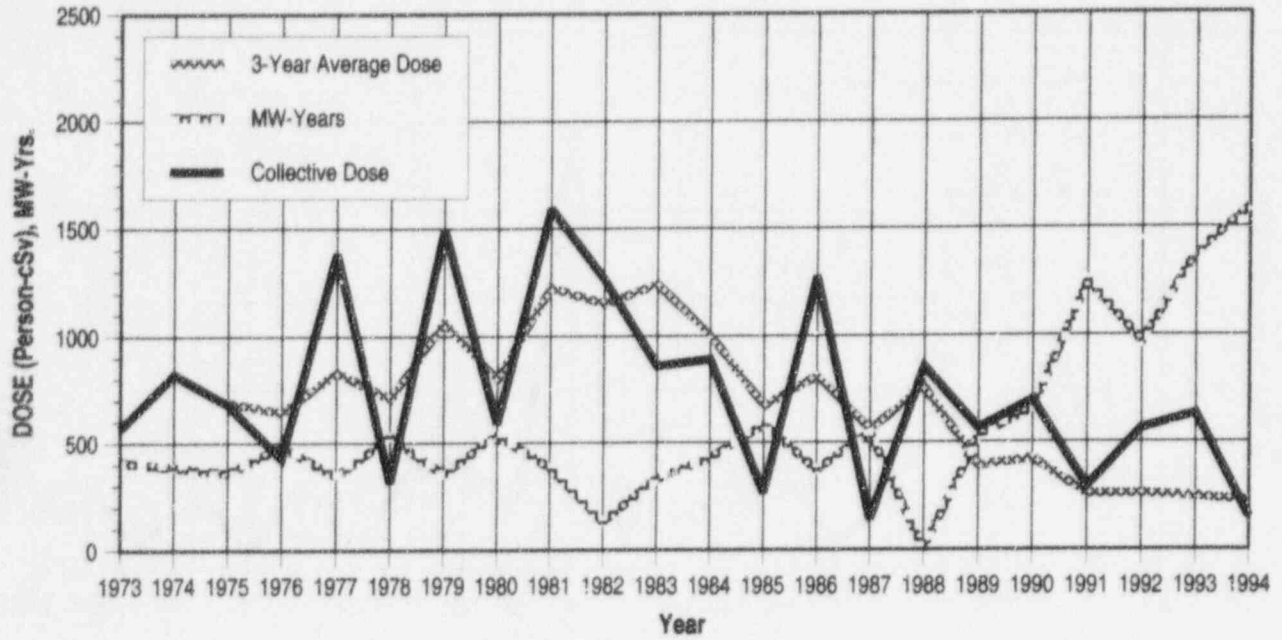


APPENDIX E (continued)

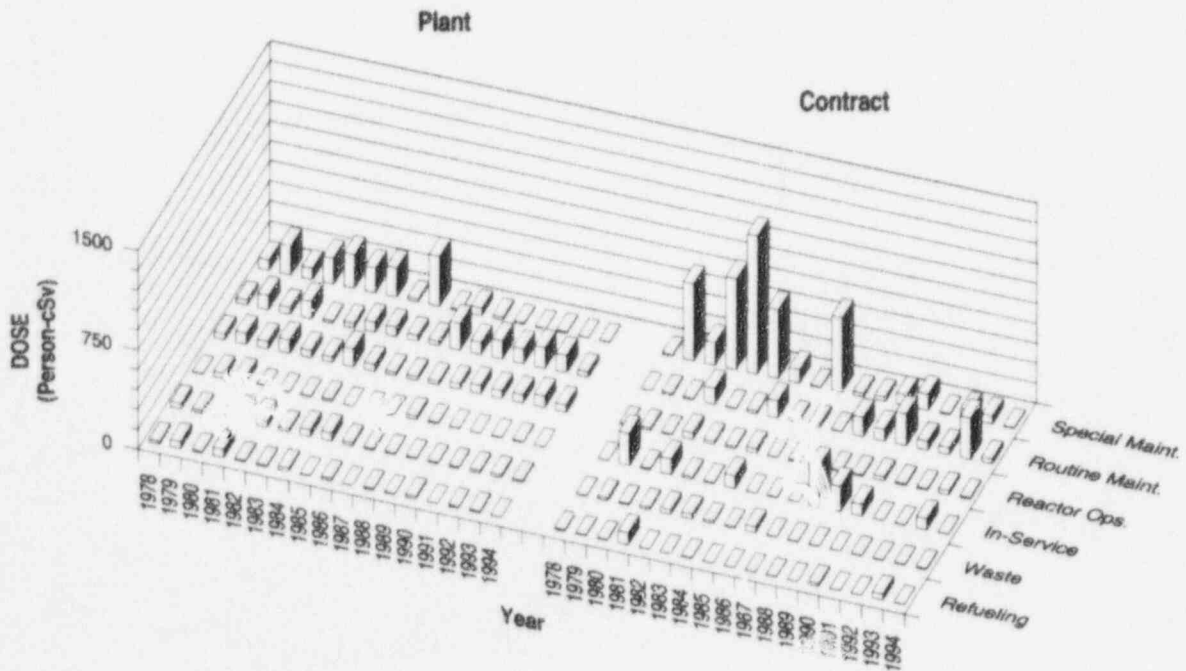
NINE MILE POINT 1, 2

Dose-Performance Indicators

BWR



Breakdown by Job Function

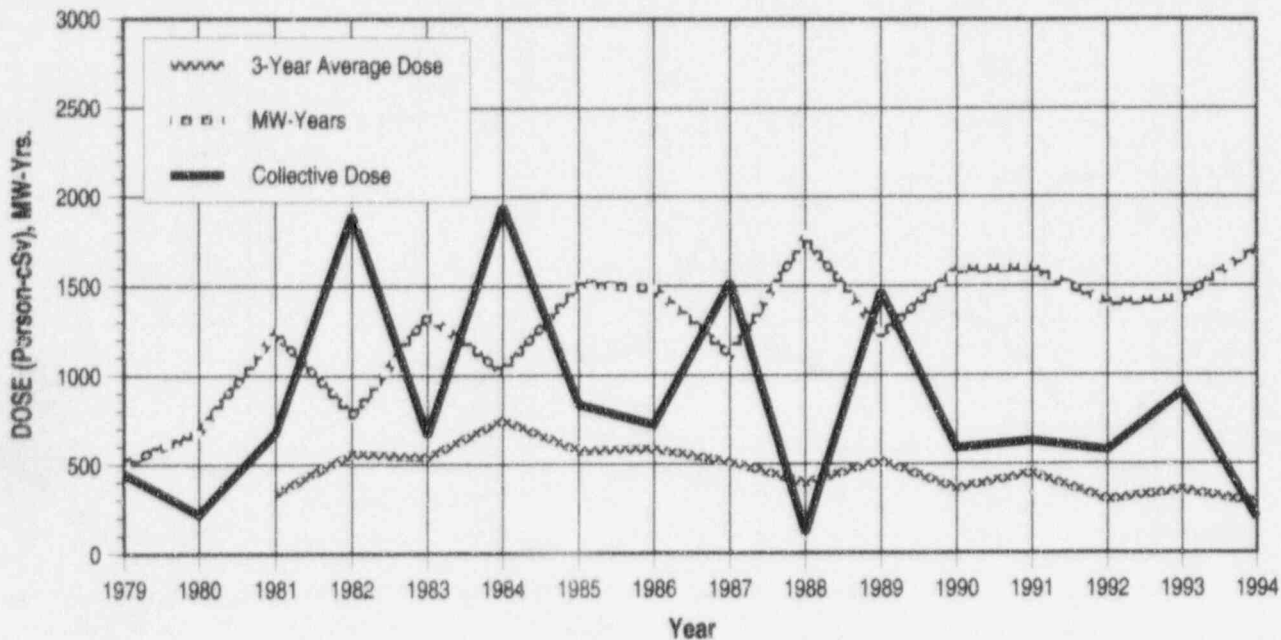


APPENDIX E (continued)

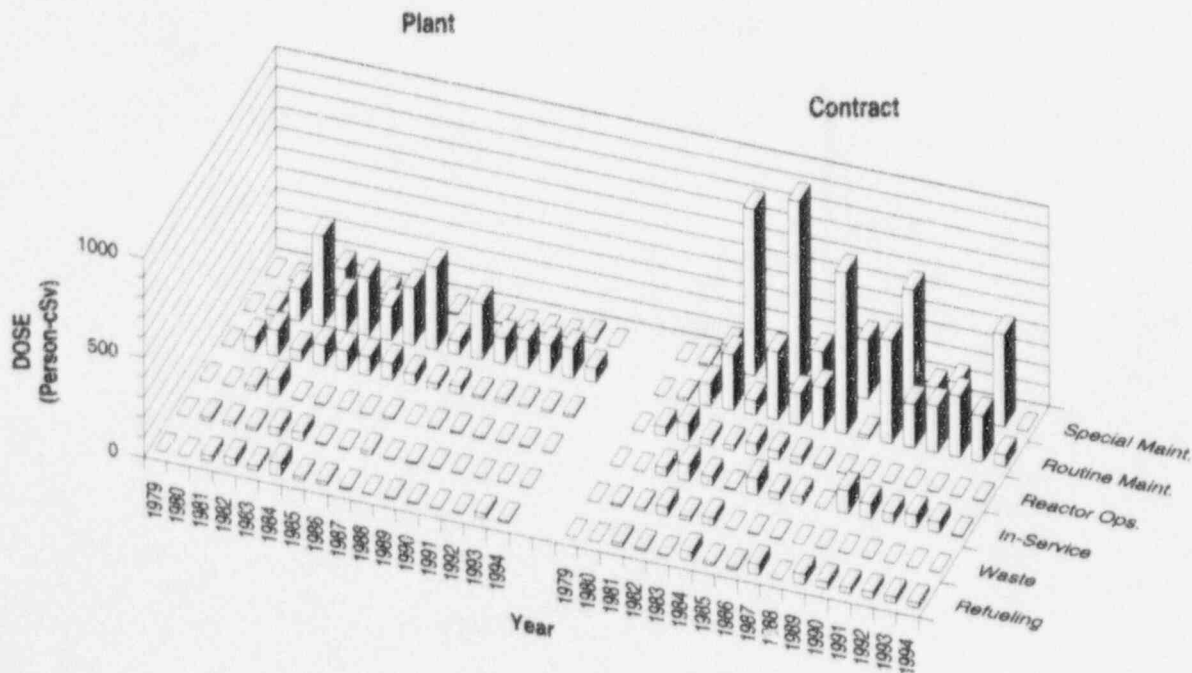
NORTH ANNA 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

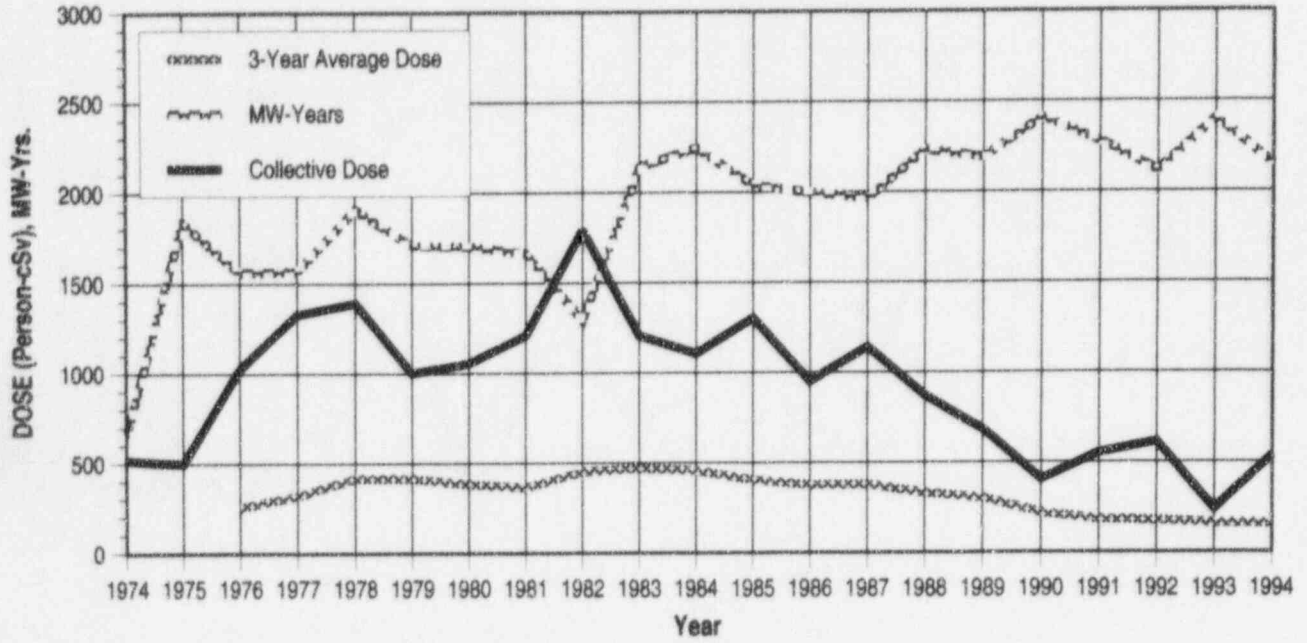


APPENDIX E (continued)

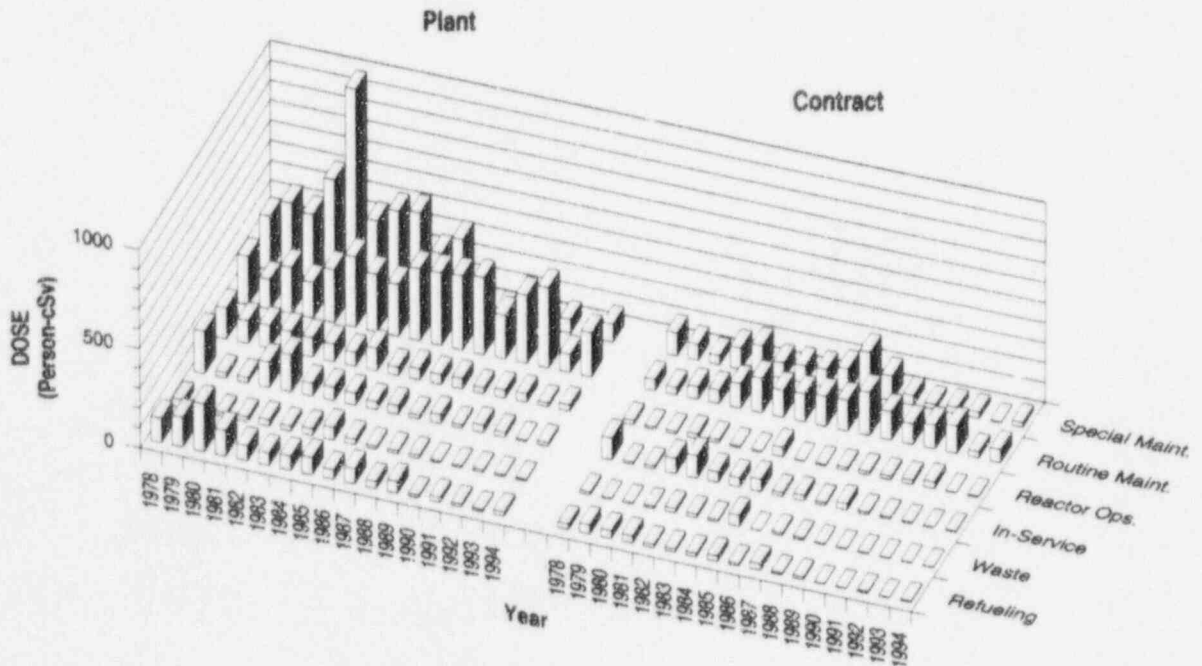
OCONEE 1, 2, 3

Dose-Performance Indicators

PWR



Breakdown by Job Function

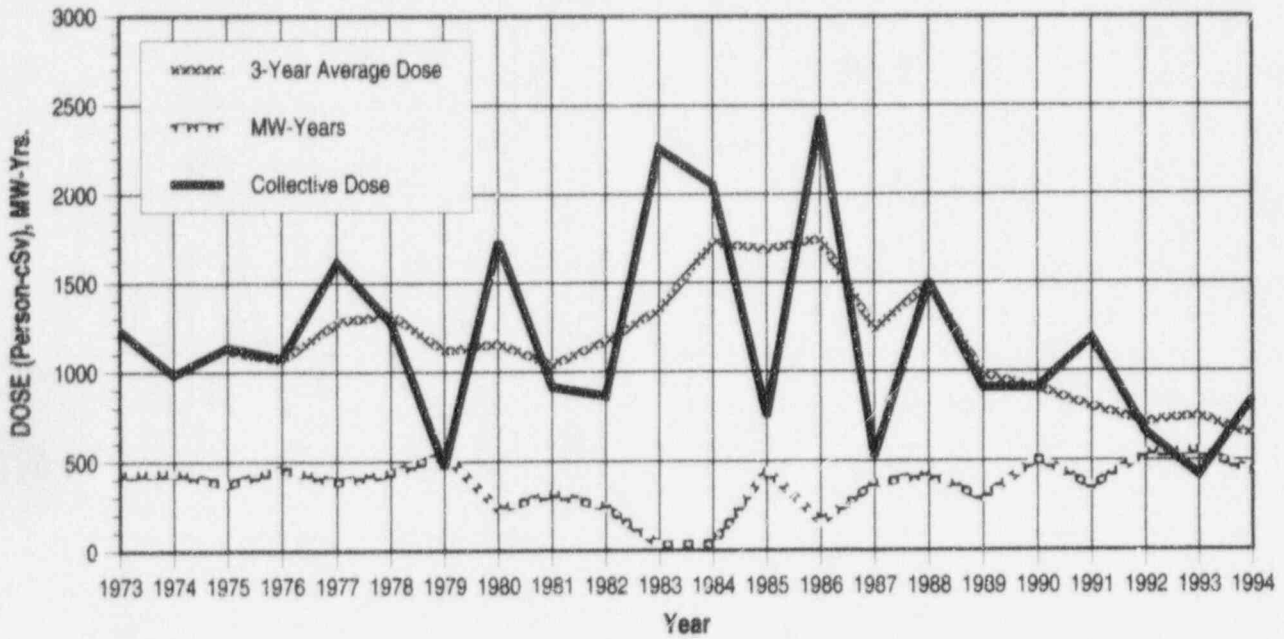


APPENDIX E (continued)

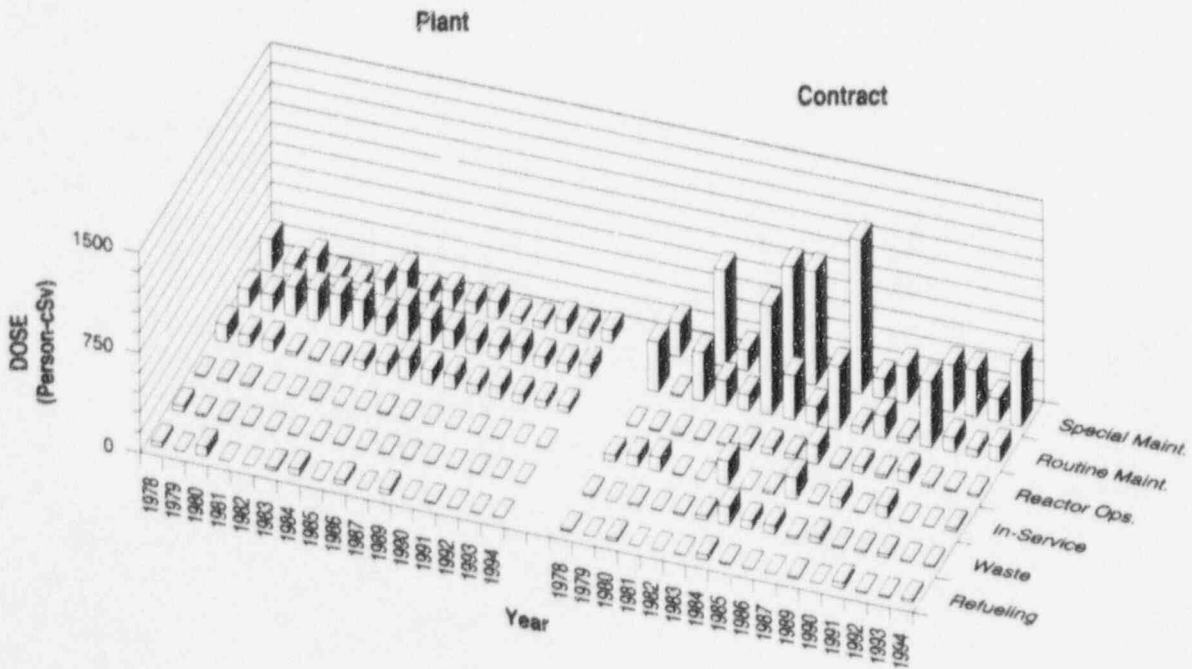
OYSTER CREEK

Dose-Performance Indicators

BWR



Breakdown by Job Function

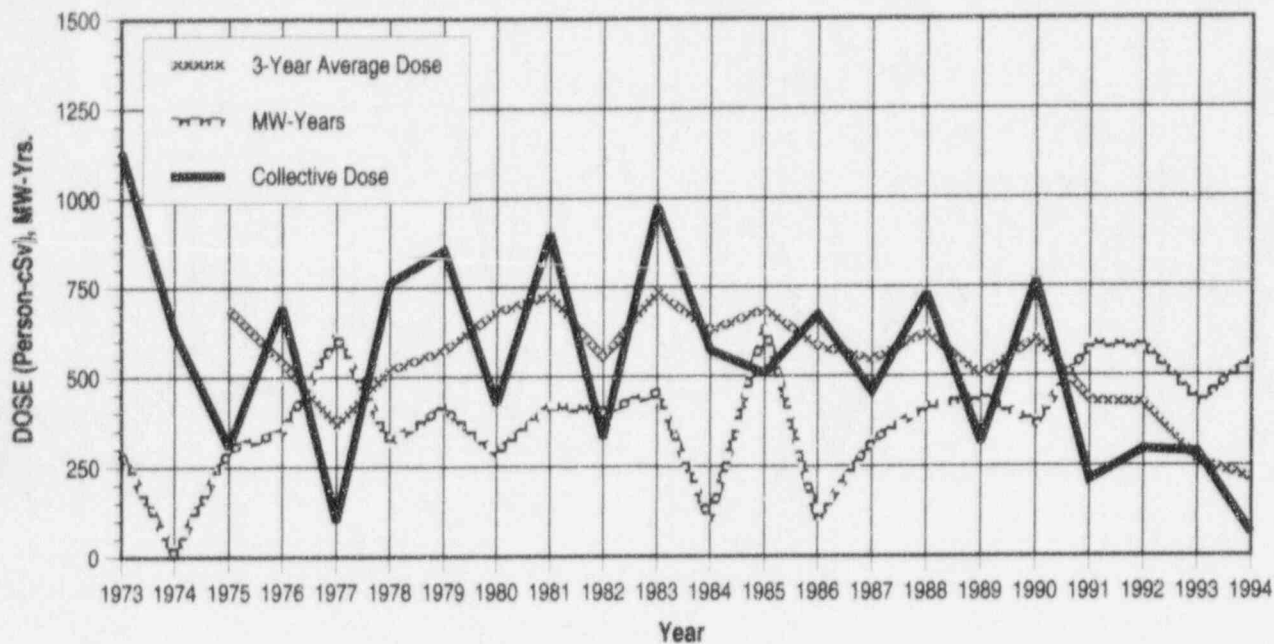


APPENDIX E (continued)

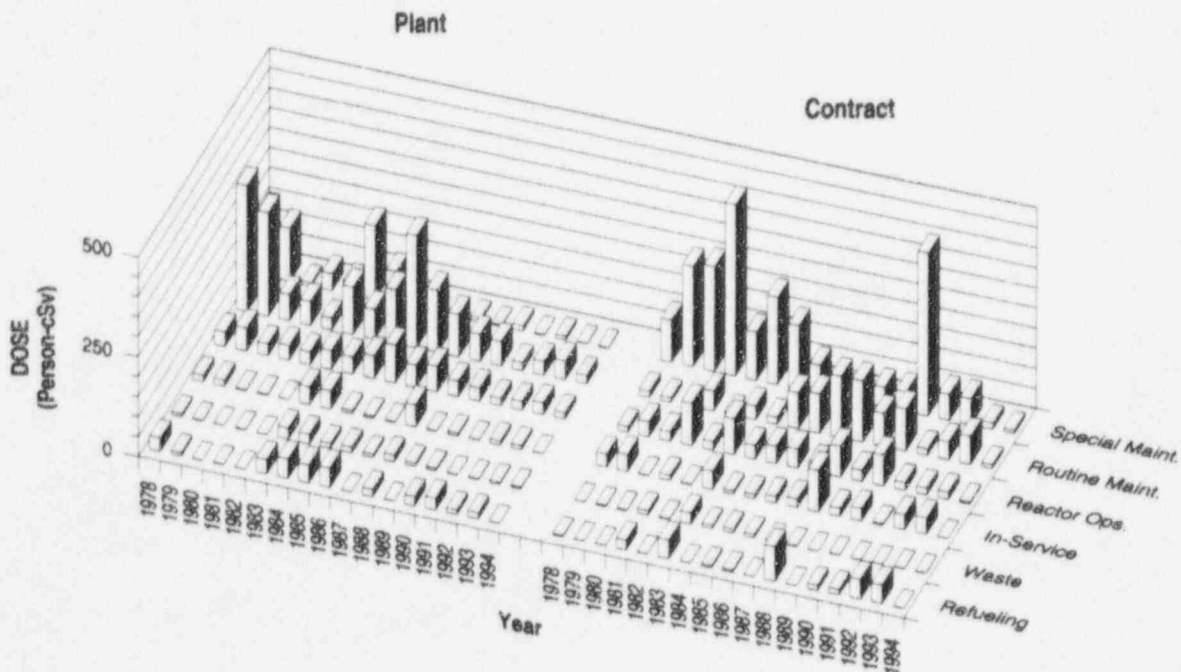
PALISADES

Dose-Performance Indicators

PWR



Breakdown by Job Function

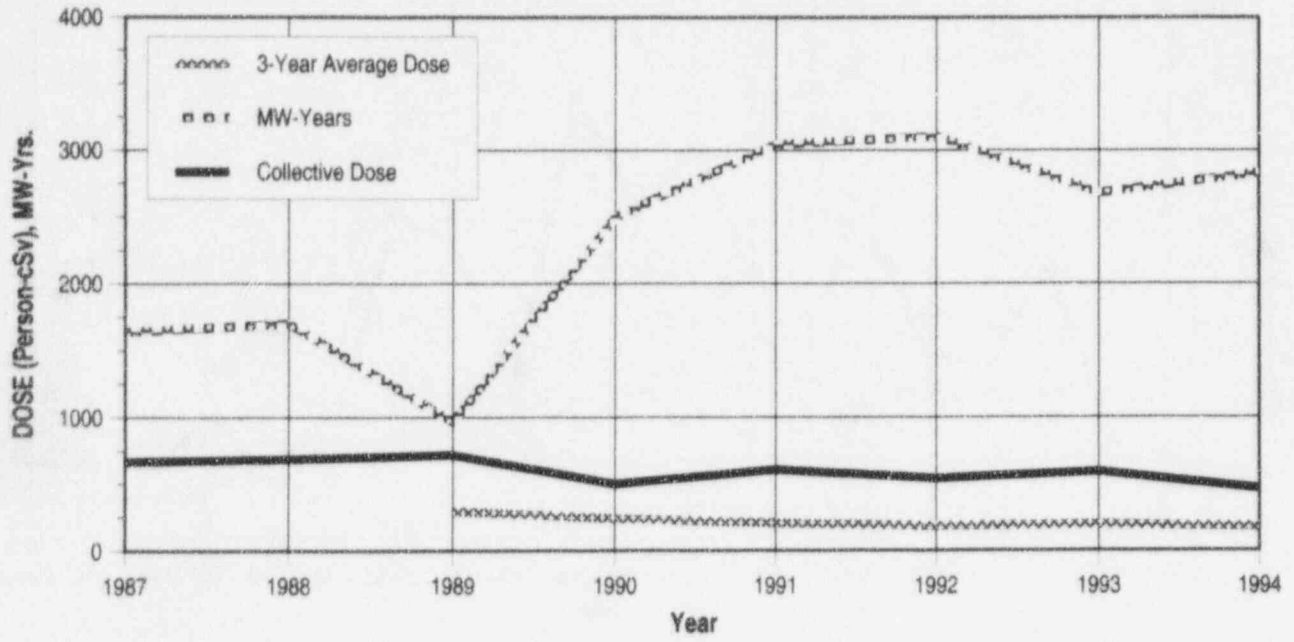


APPENDIX E (continued)

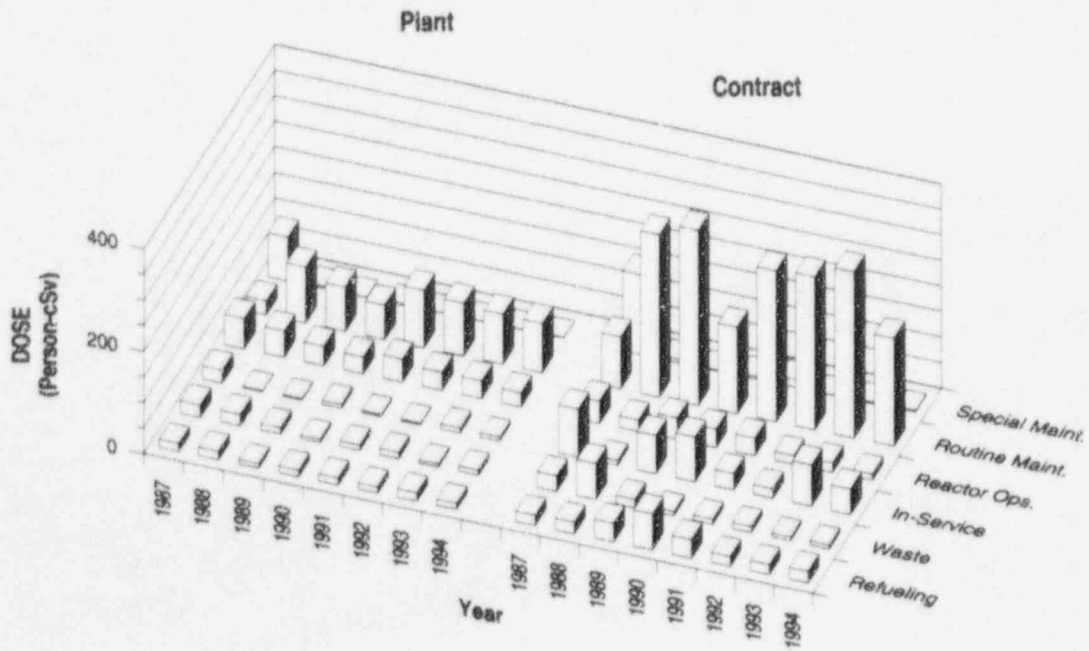
PALO VERDE 1, 2, 3

Dose-Performance Indicators

PWR



Breakdown by Job Function

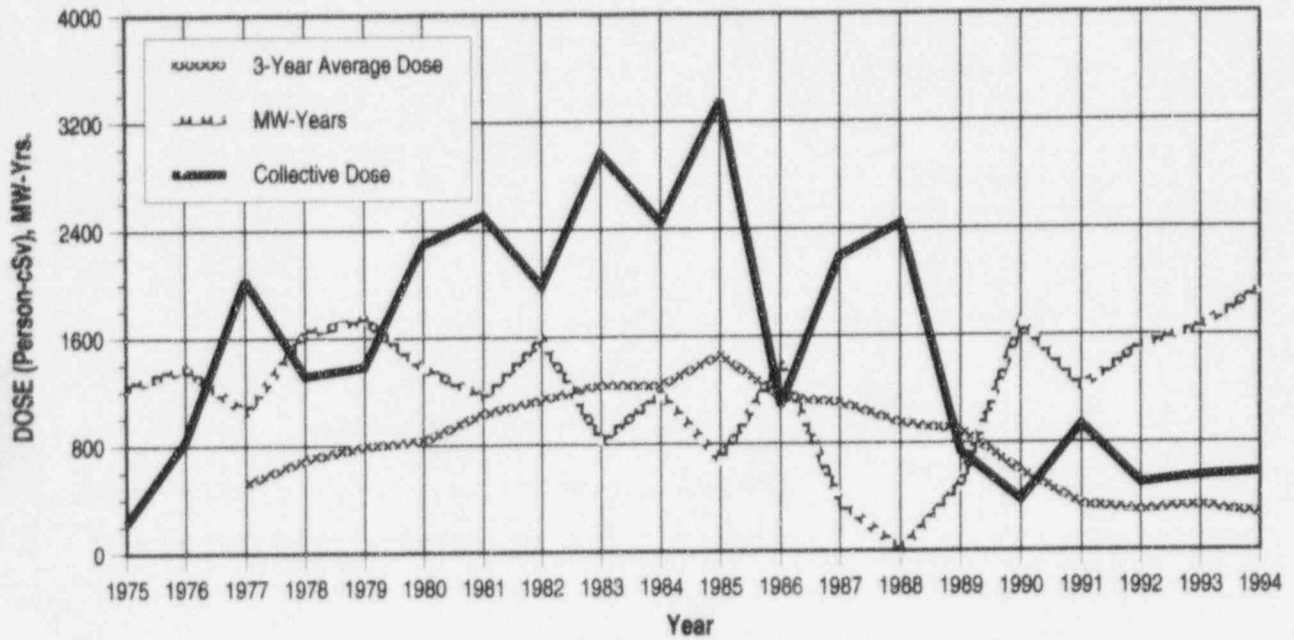


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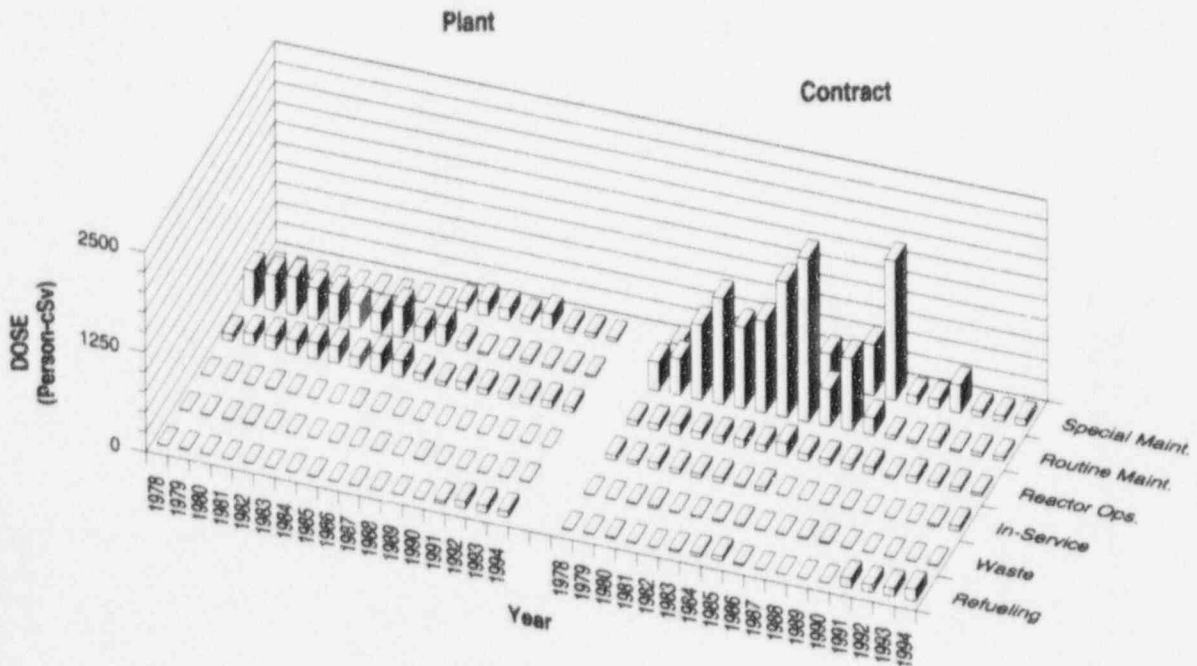
PEACH BOTTOM 2, 3

Dose-Performance Indicators

BWR



Breakdown by Job Function

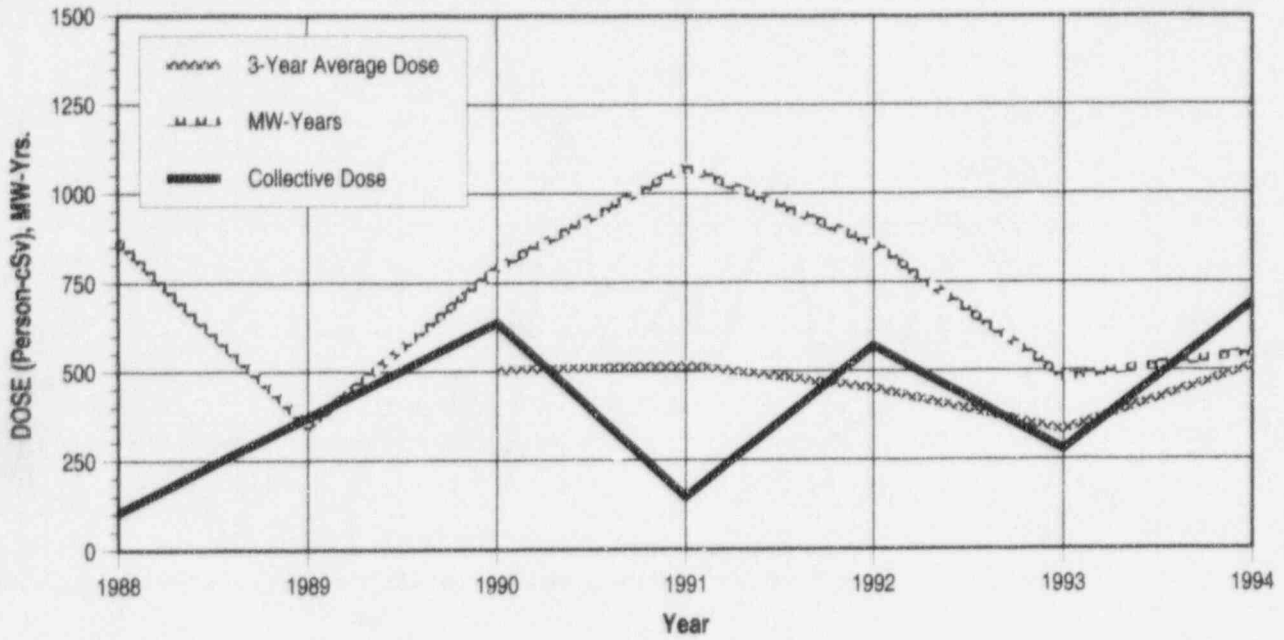


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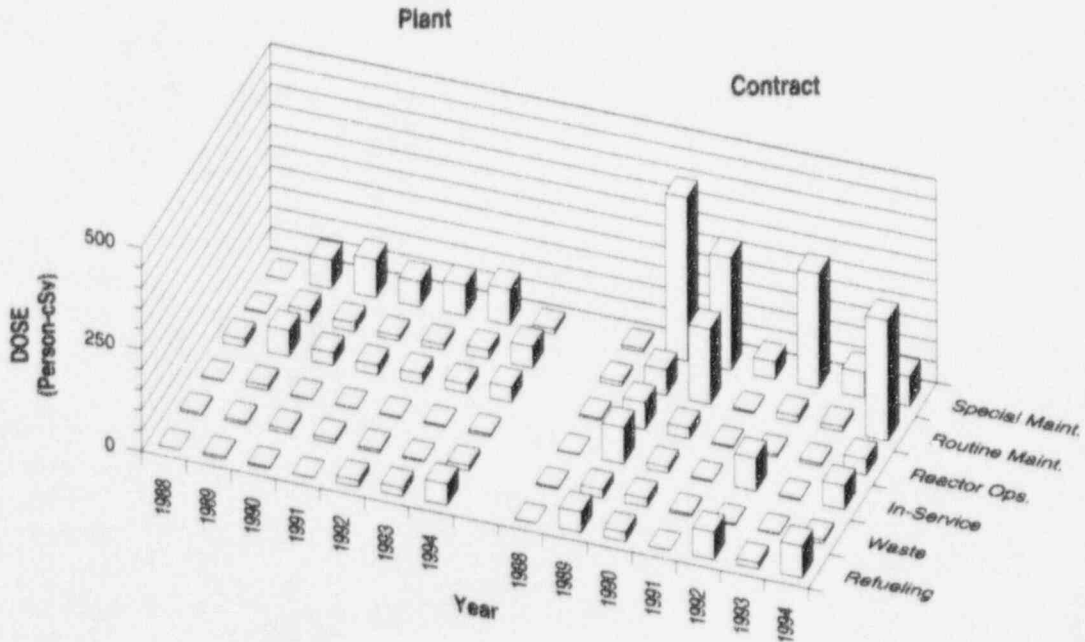
PERRY

Dose-Performance Indicators

BWR



Breakdown by Job Function

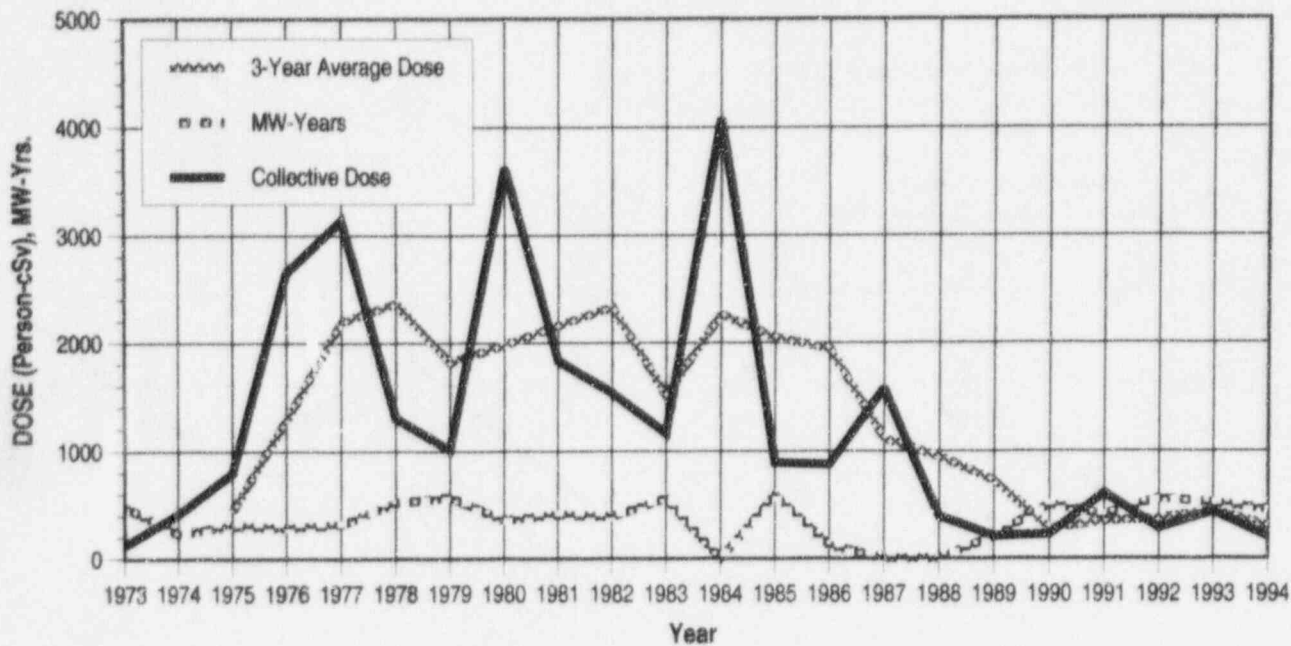


APPENDIX E (continued)

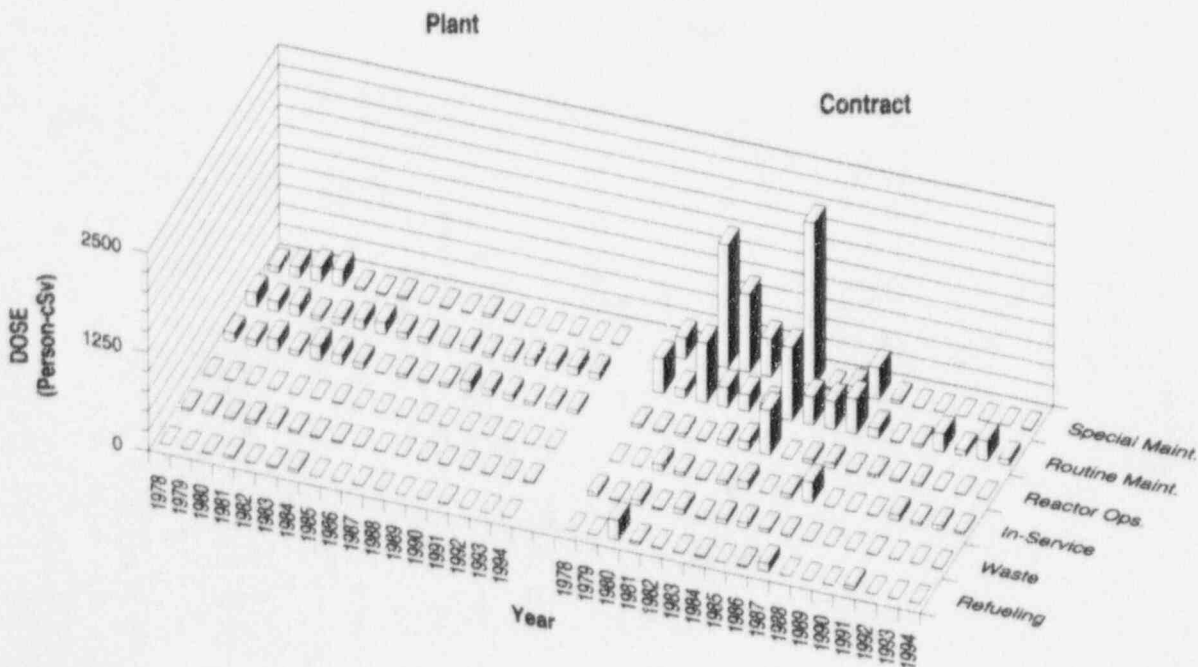
PILGRIM

Dose-Performance Indicators

BWR



Breakdown by Job Function

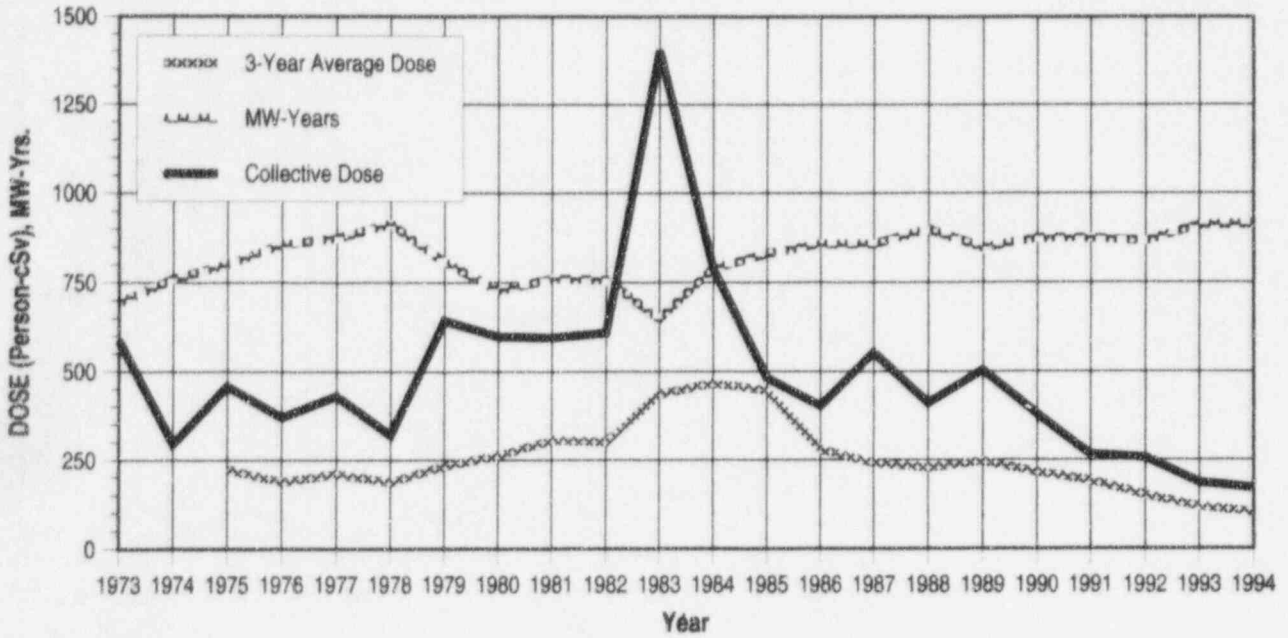


APPENDIX E (continued)

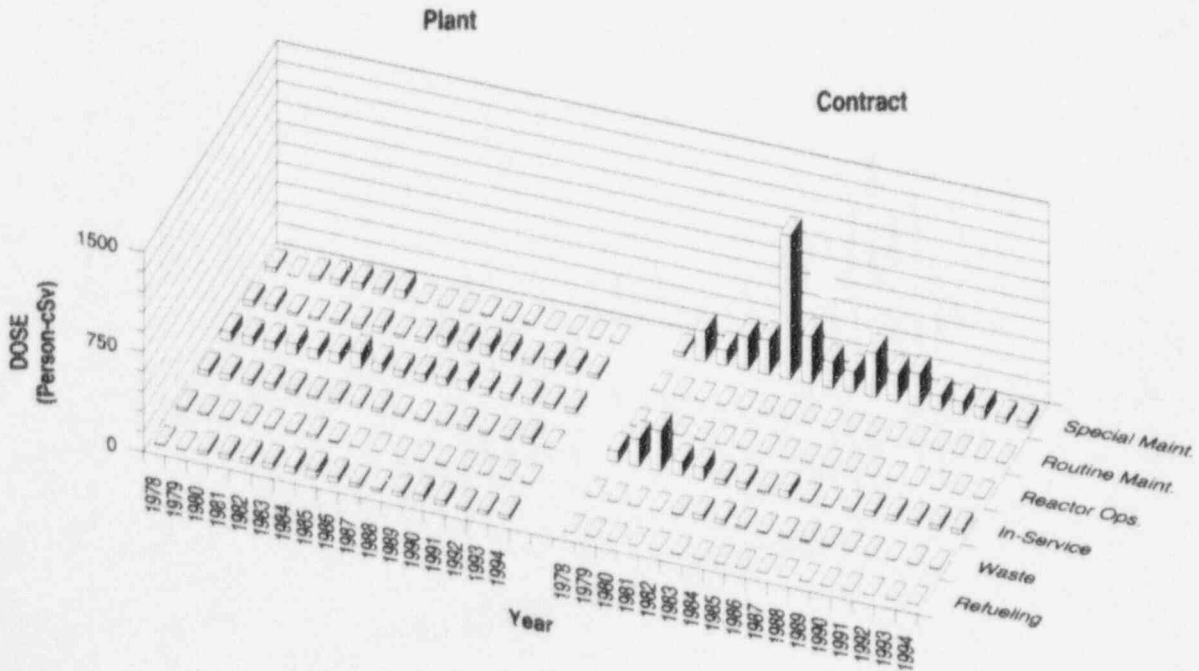
POINT BEACH 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

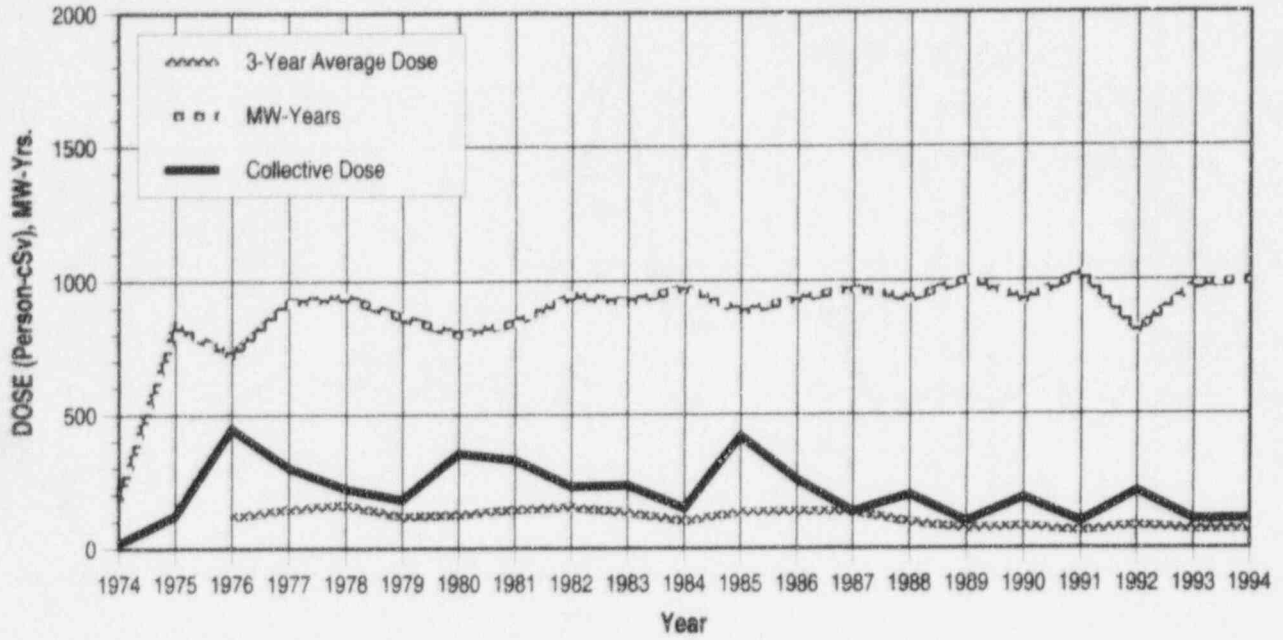


APPENDIX E (continued)

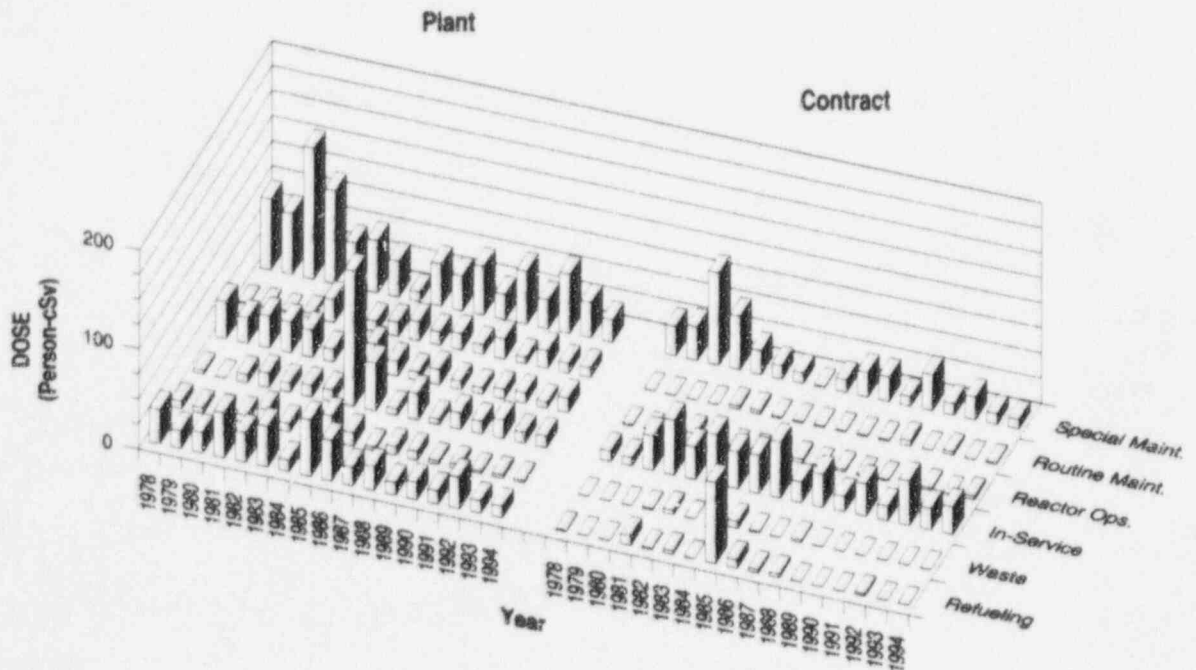
PRAIRIE ISLAND 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

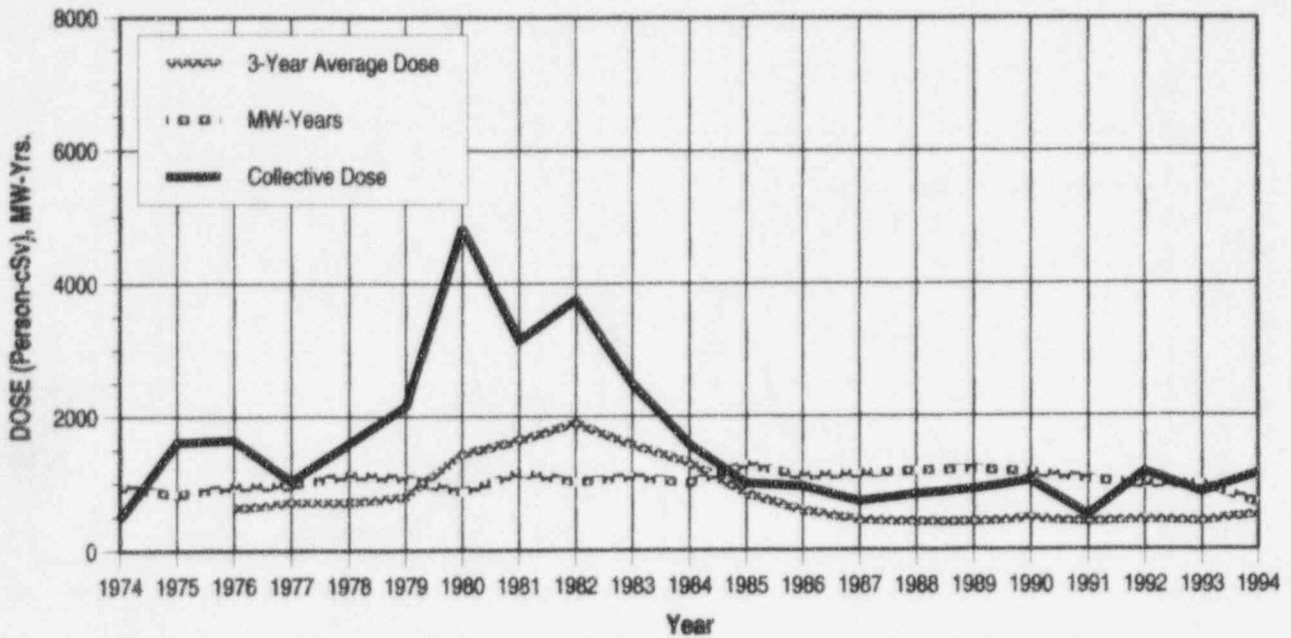


APPENDIX E (continued)

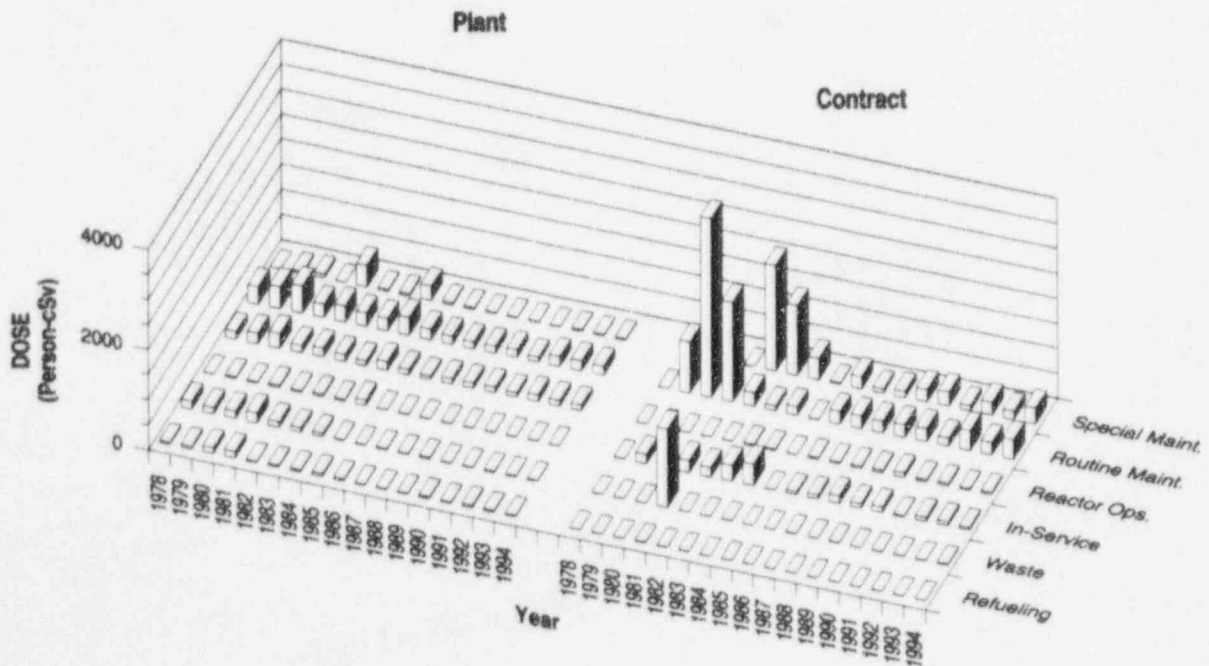
QUAD CITIES 1, 2

Dose-Performance Indicators

BWR



Breakdown by Job Function

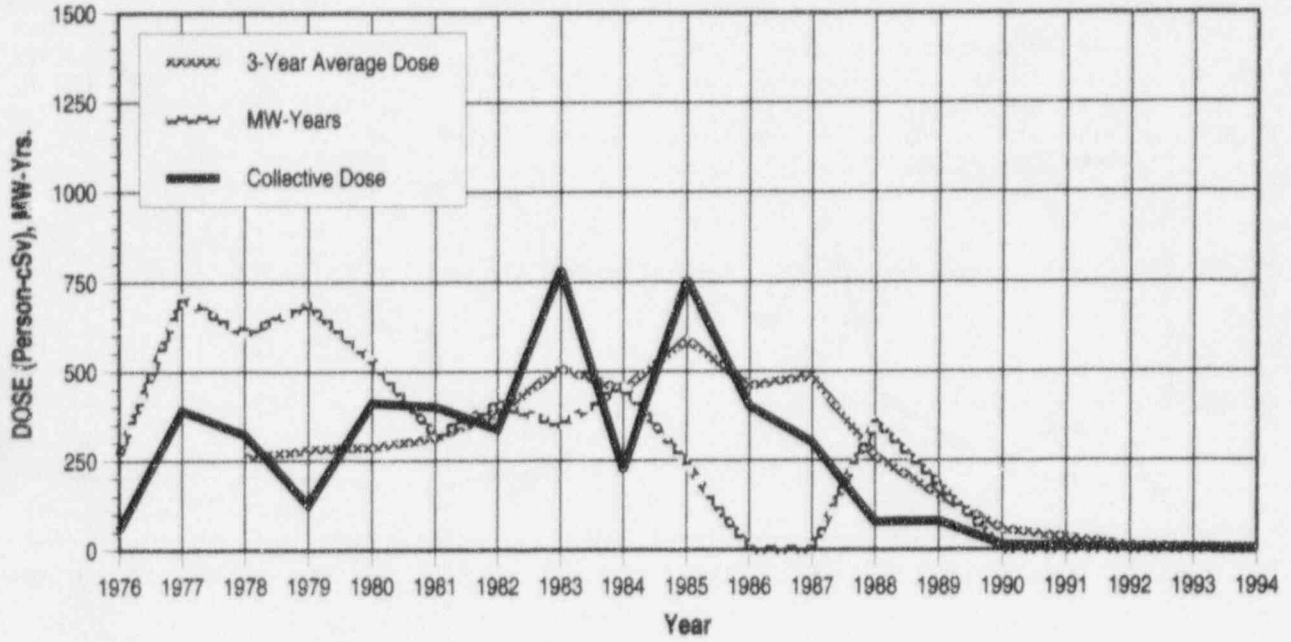


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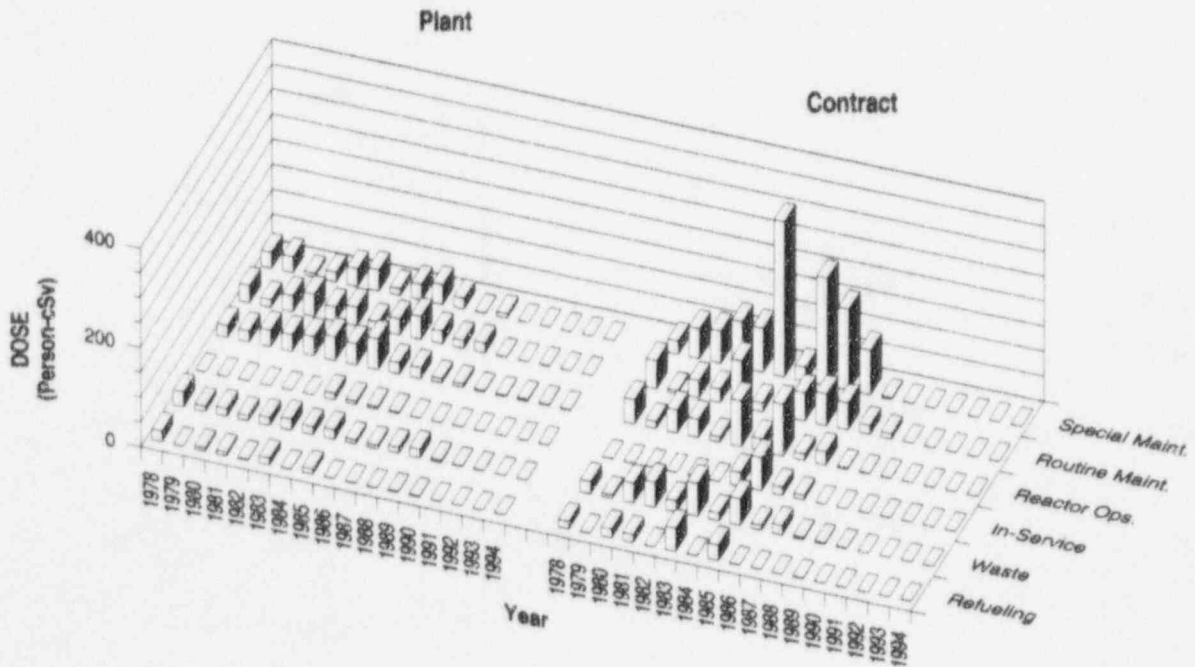
RANCHO SECO

Dose-Performance Indicators

PWR



Breakdown by Job Function

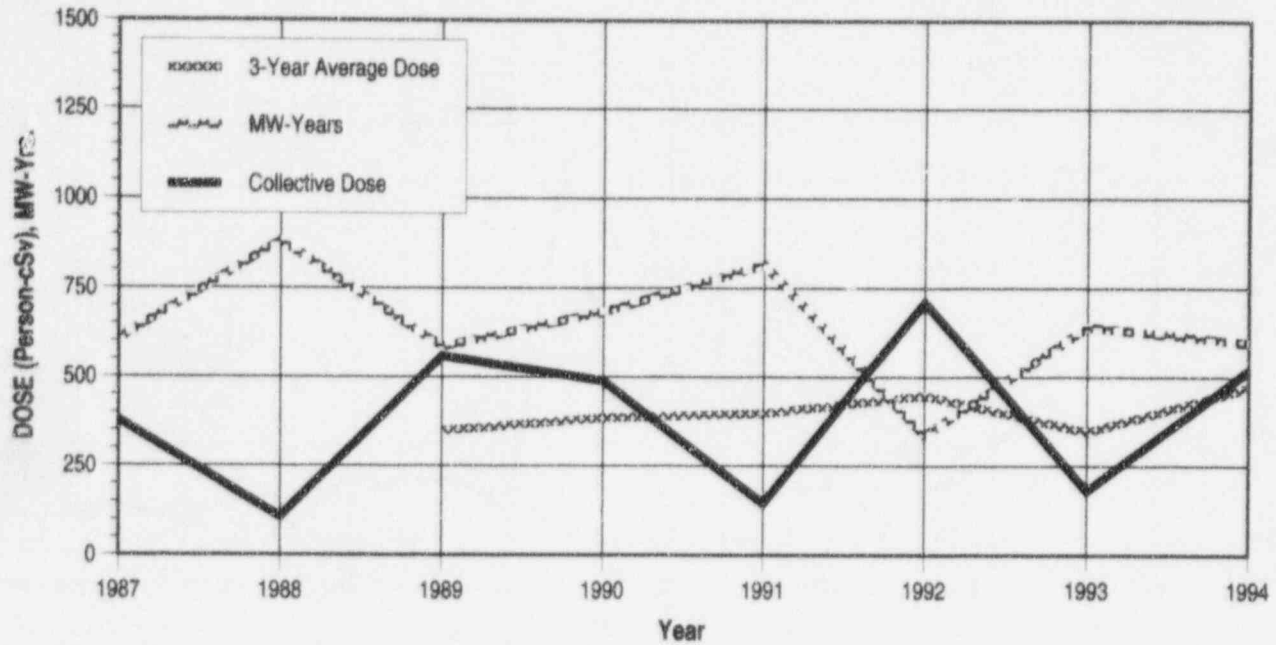


APPENDIX E (continued)

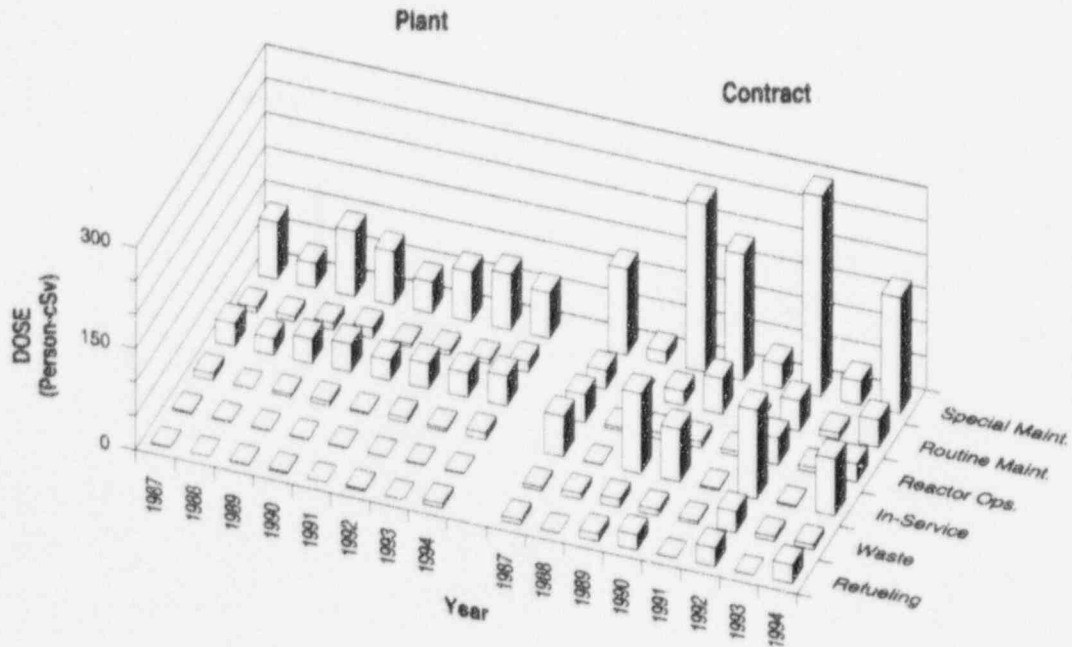
RIVER BEND 1

Dose-Performance Indicators

BWR



Breakdown by Job Function

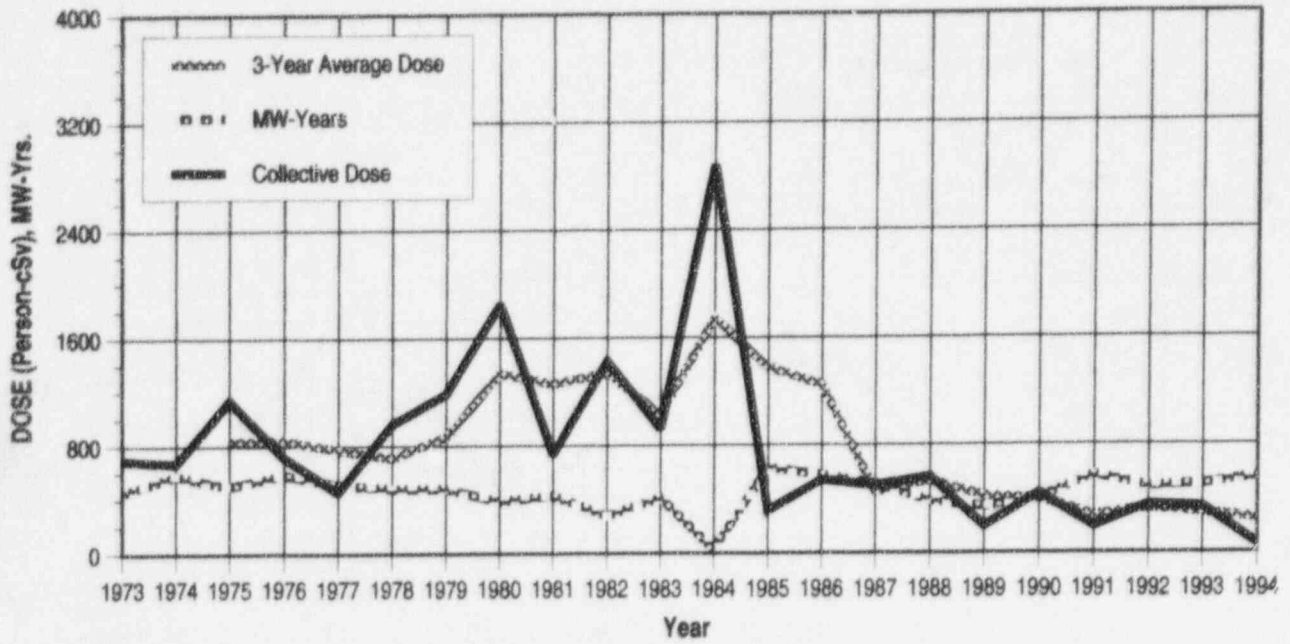


APPENDIX E (continued)

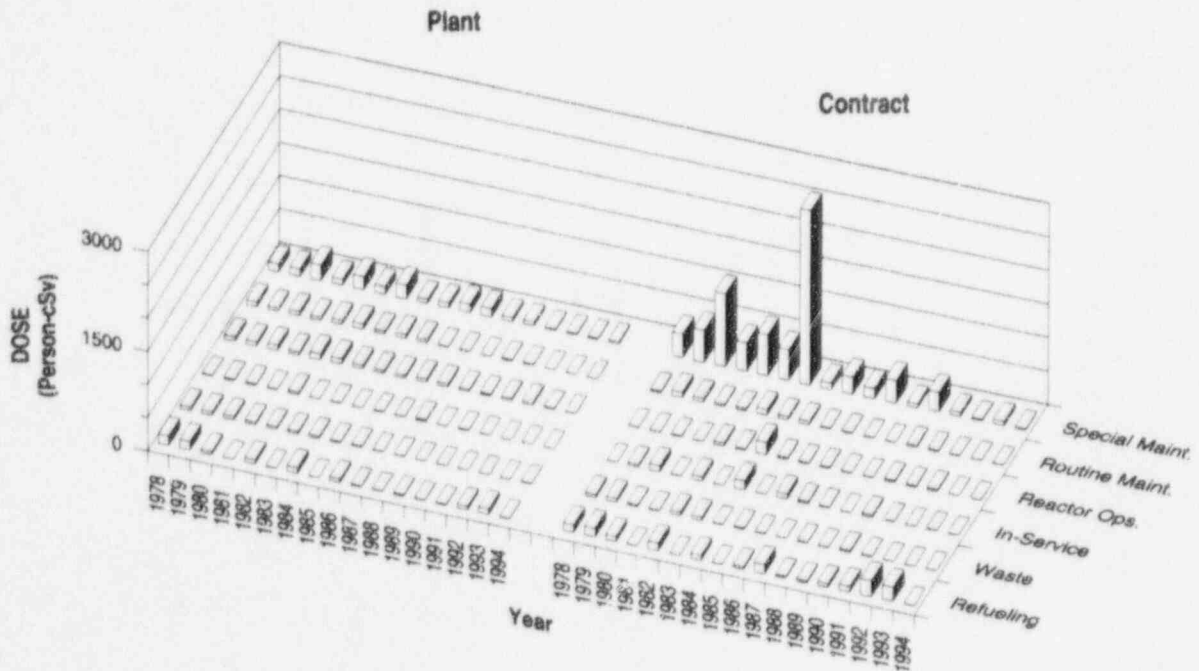
ROBINSON 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

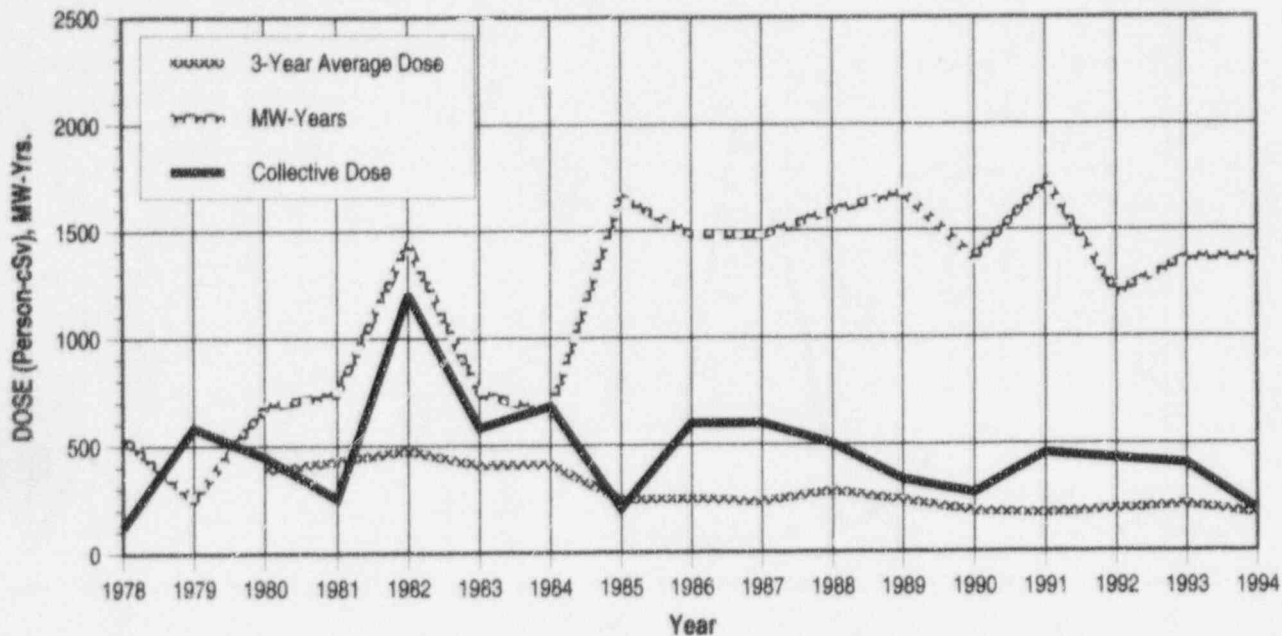


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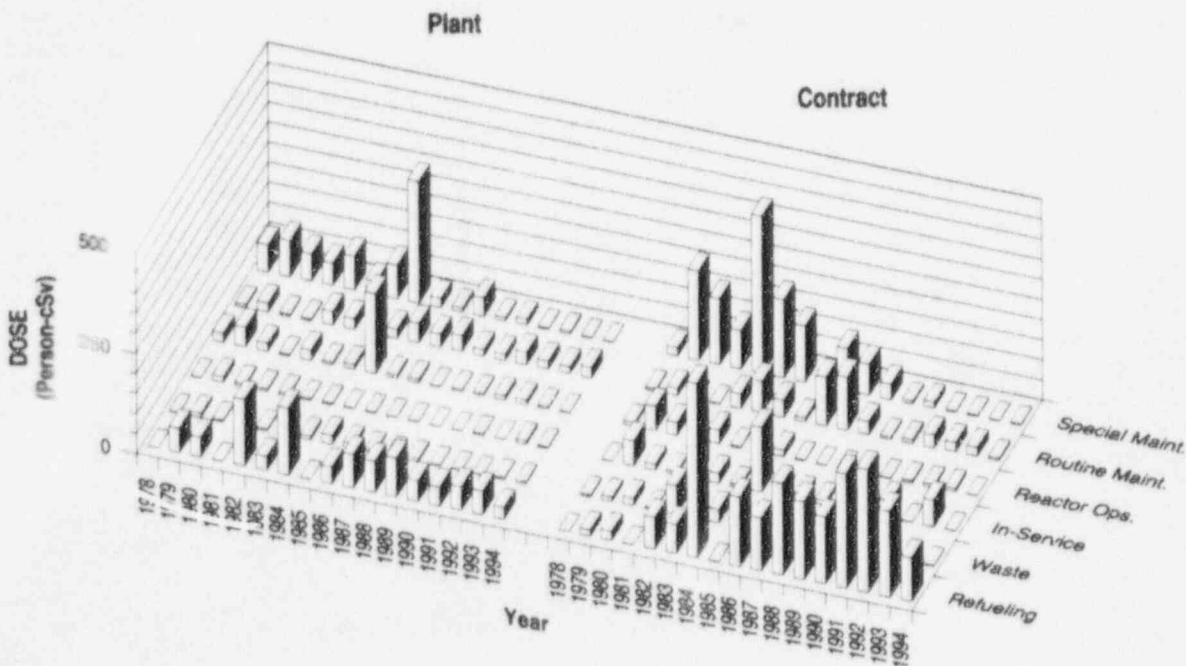
SALEM 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

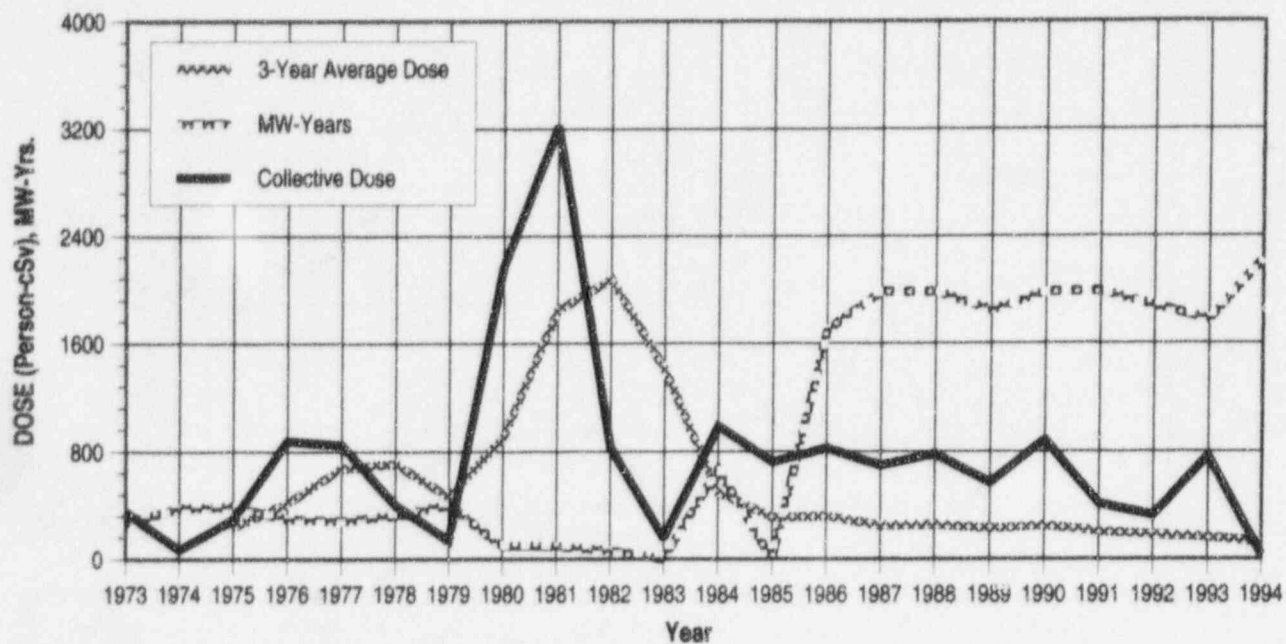


APPENDIX E (continued)

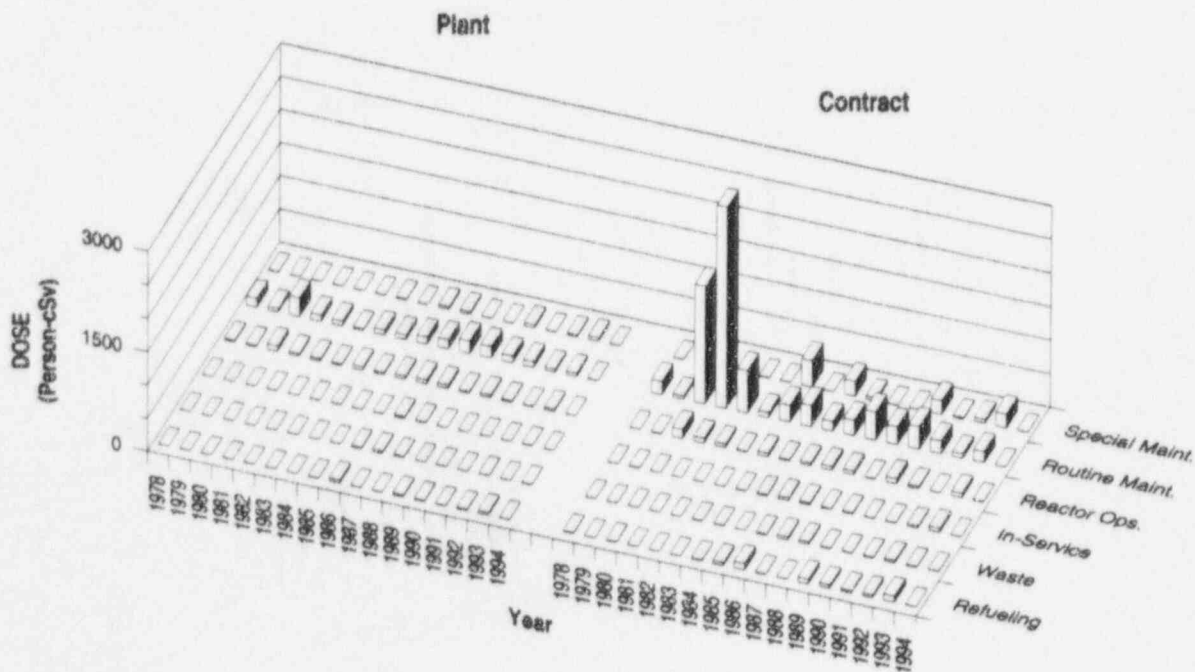
SAN ONOFRE 1, 2, 3

Dose-Performance Indicators

PWR



Breakdown by Job Function

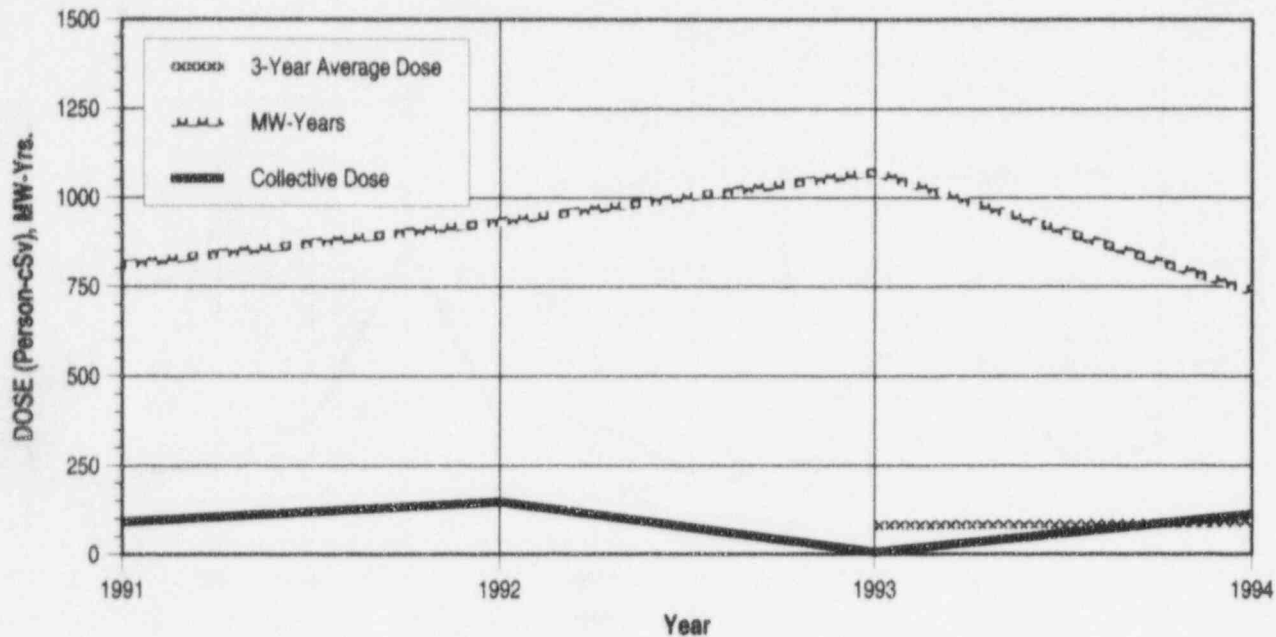


APPENDIX E (continued)

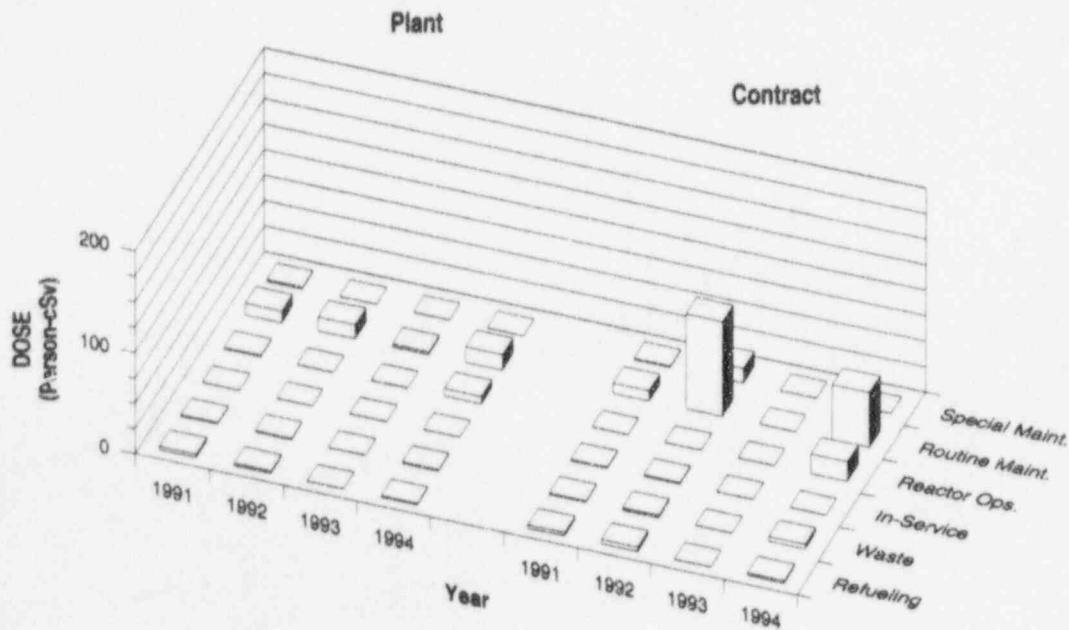
SEABROOK

Dose-Performance Indicators

PWR



Breakdown by Job Function

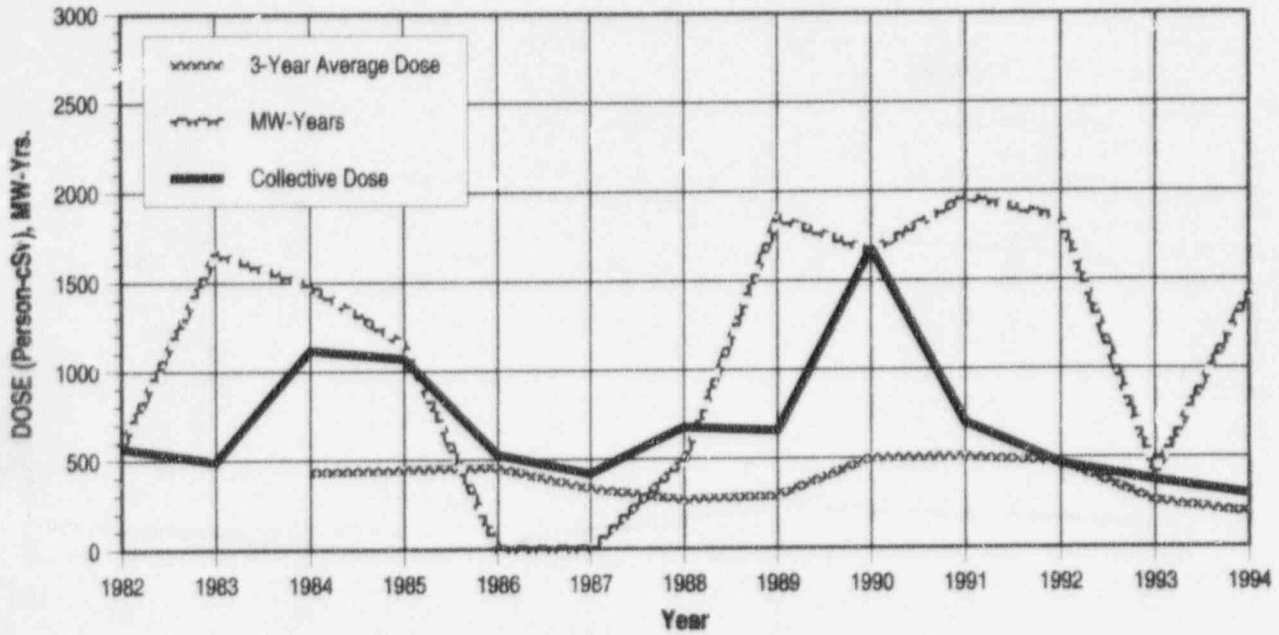


APPENDIX E (continued)

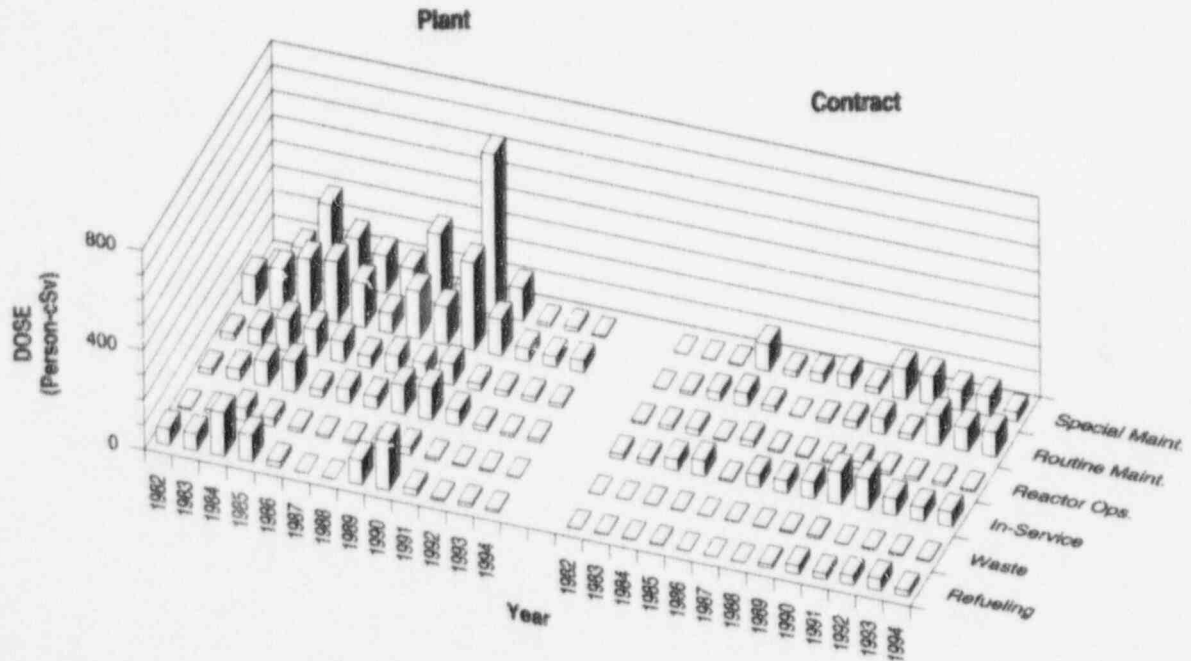
SEQUOYAH 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

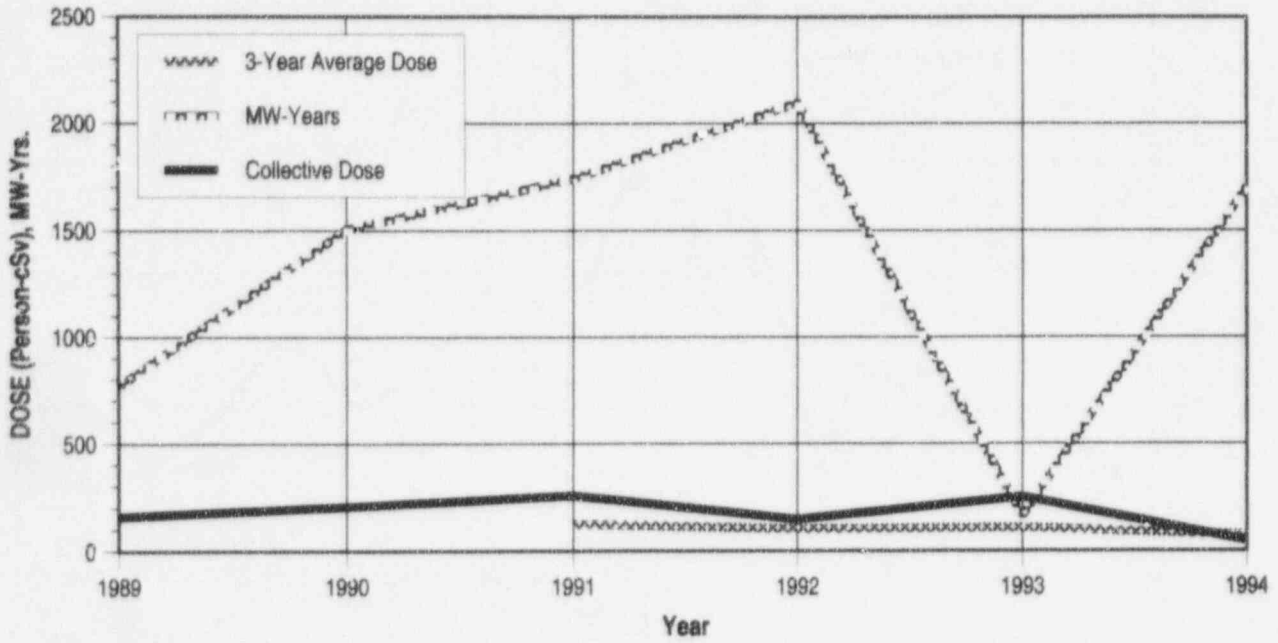


APPENDIX E (continued)

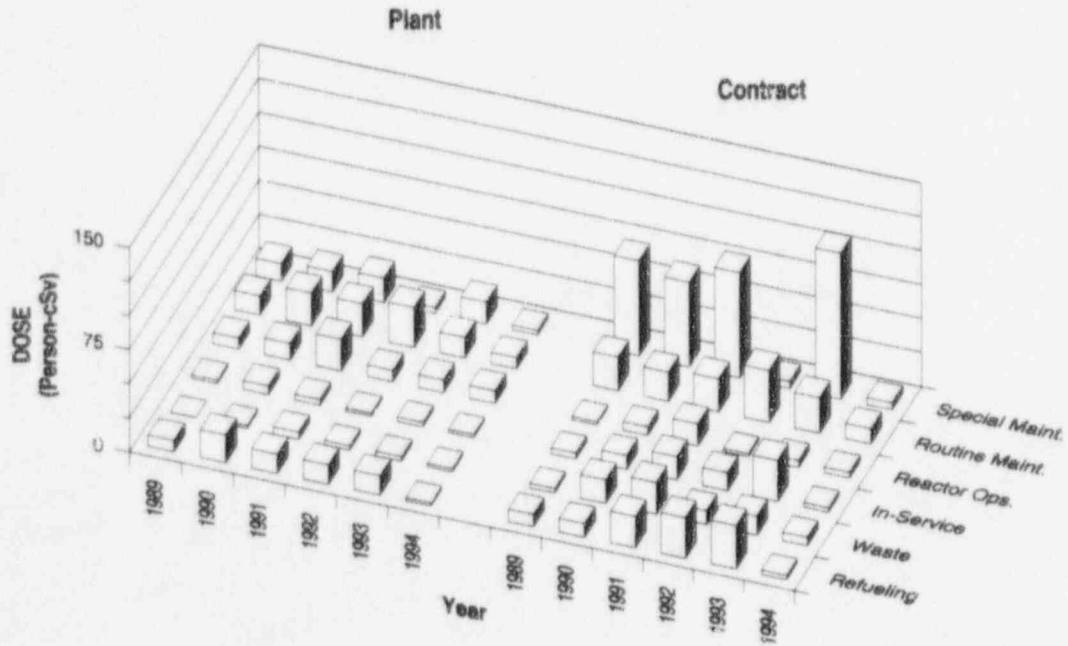
SOUTH TEXAS 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

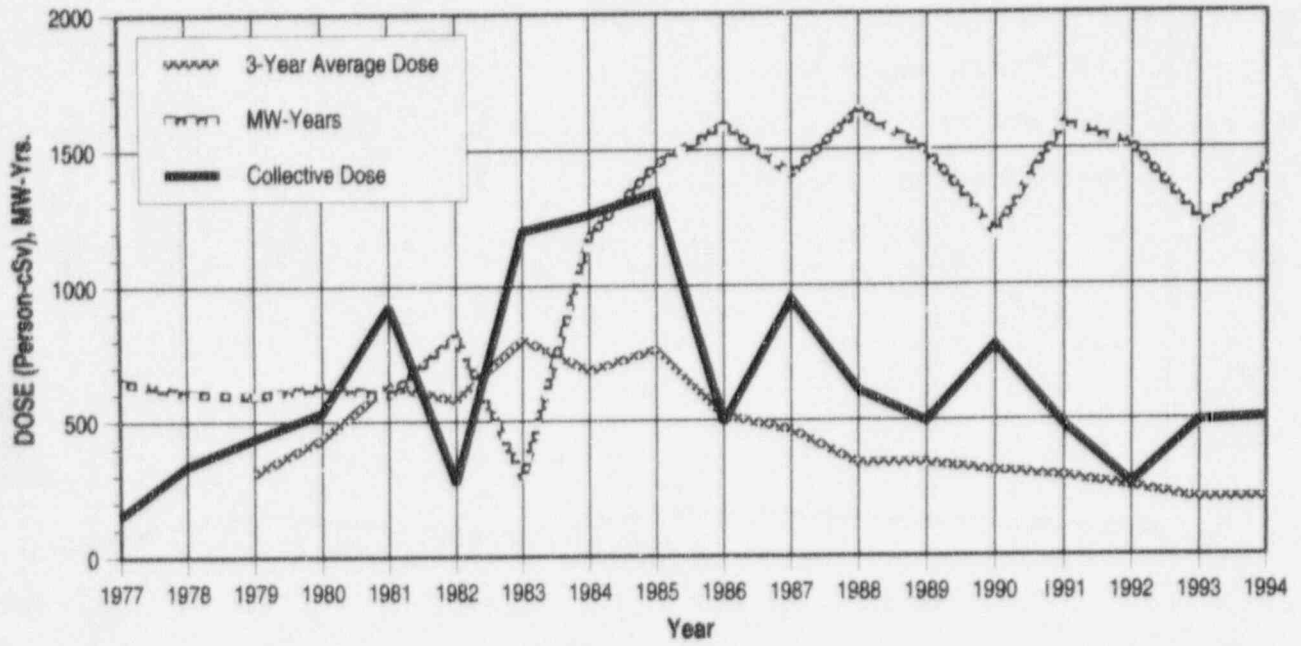


APPENDIX E (continued)

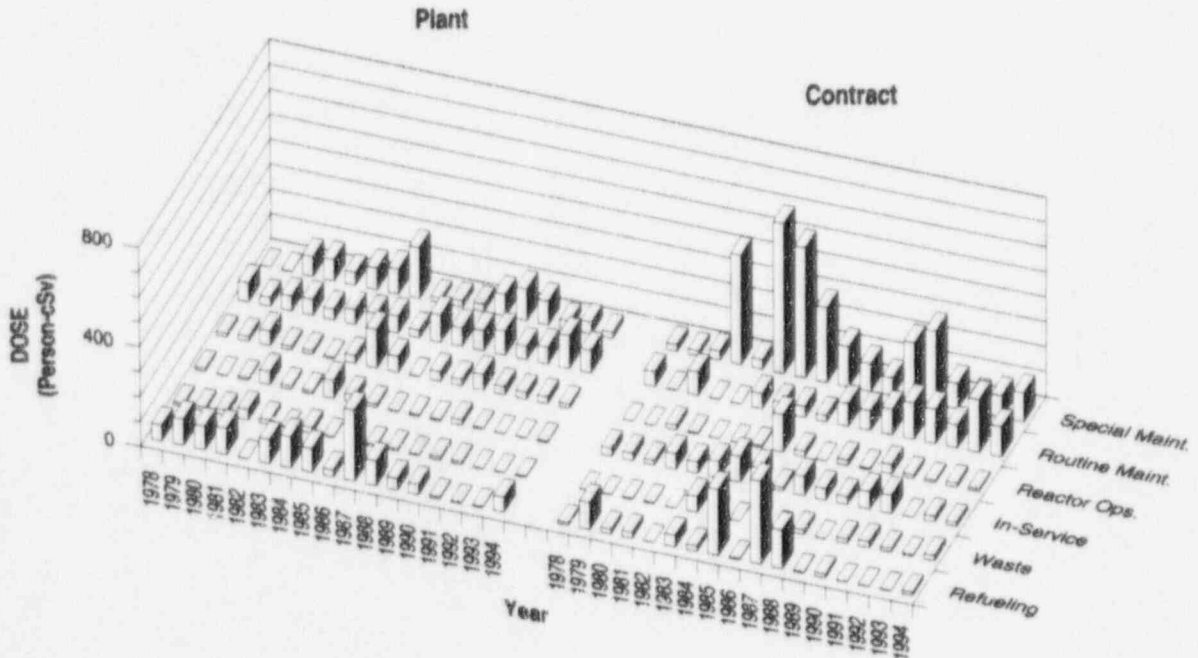
ST. LUCIE 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

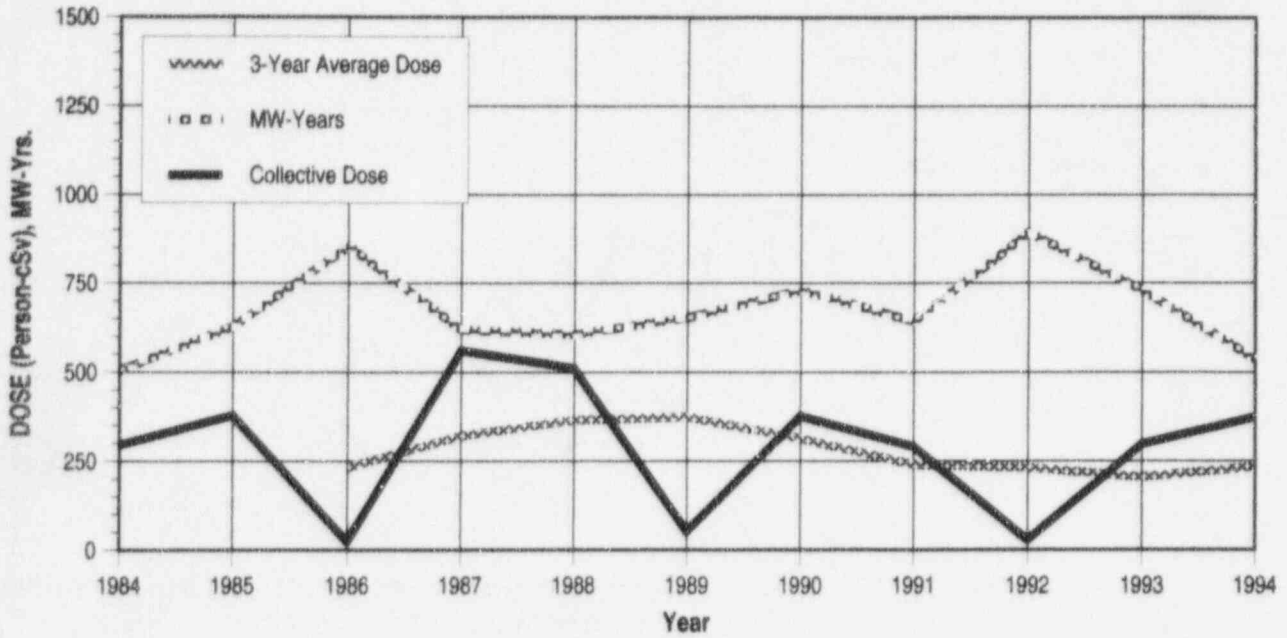


APPENDIX E (continued)

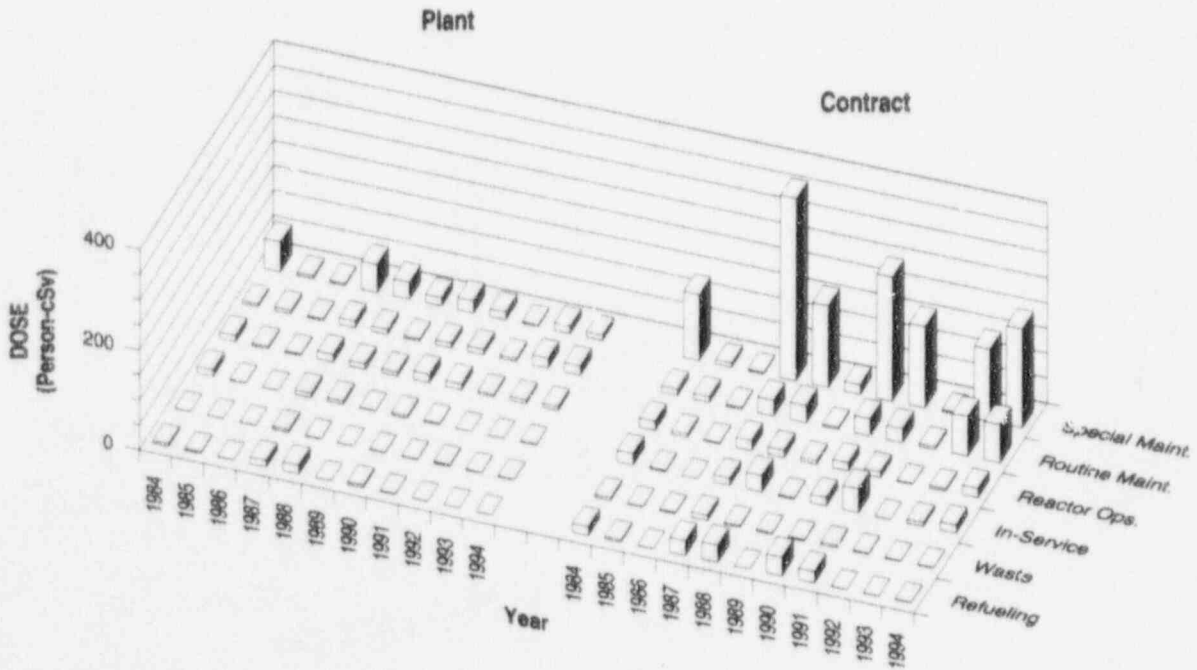
SUMMER 1

Dose-Performance Indicators

PWR



Breakdown by Job Function

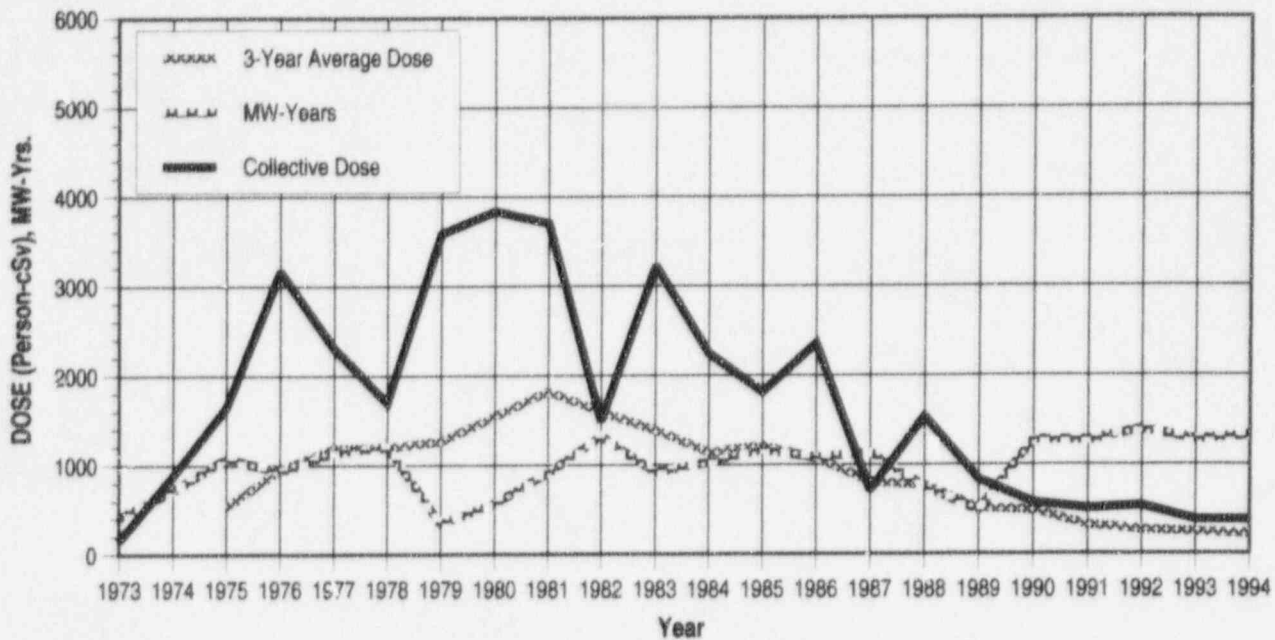


APPENDIX E (continued)

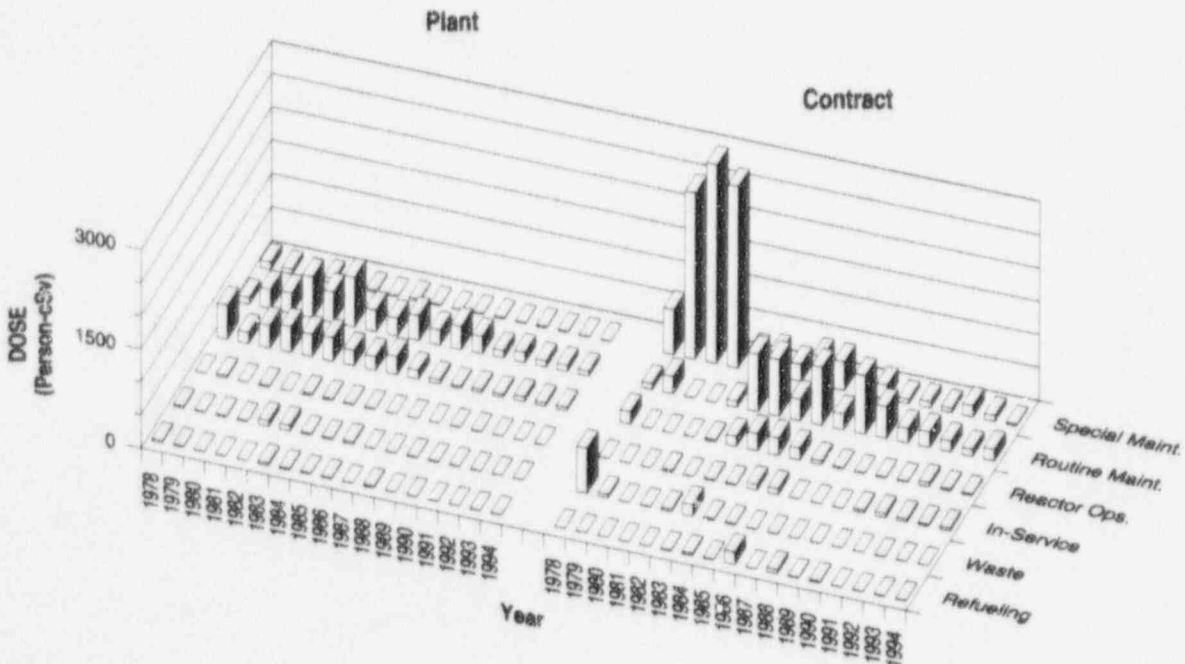
SUMMARY 1.2

Dose-Performance Indicators

PWR



Breakdown by Job Function

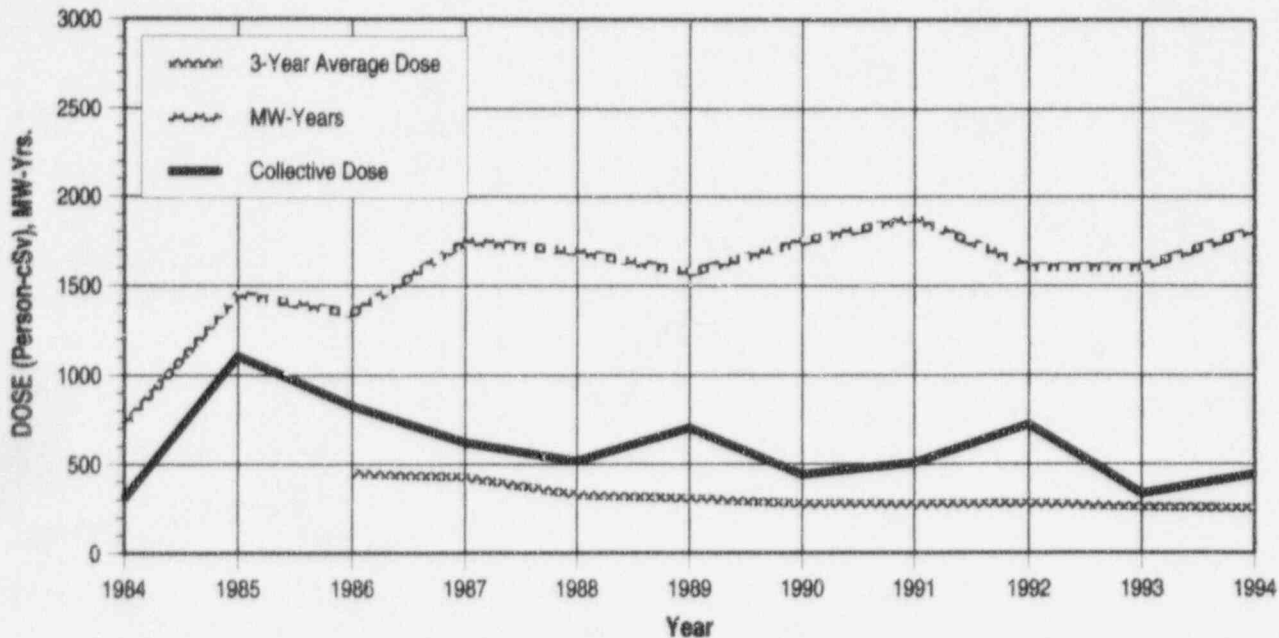


APPENDIX E (continued)

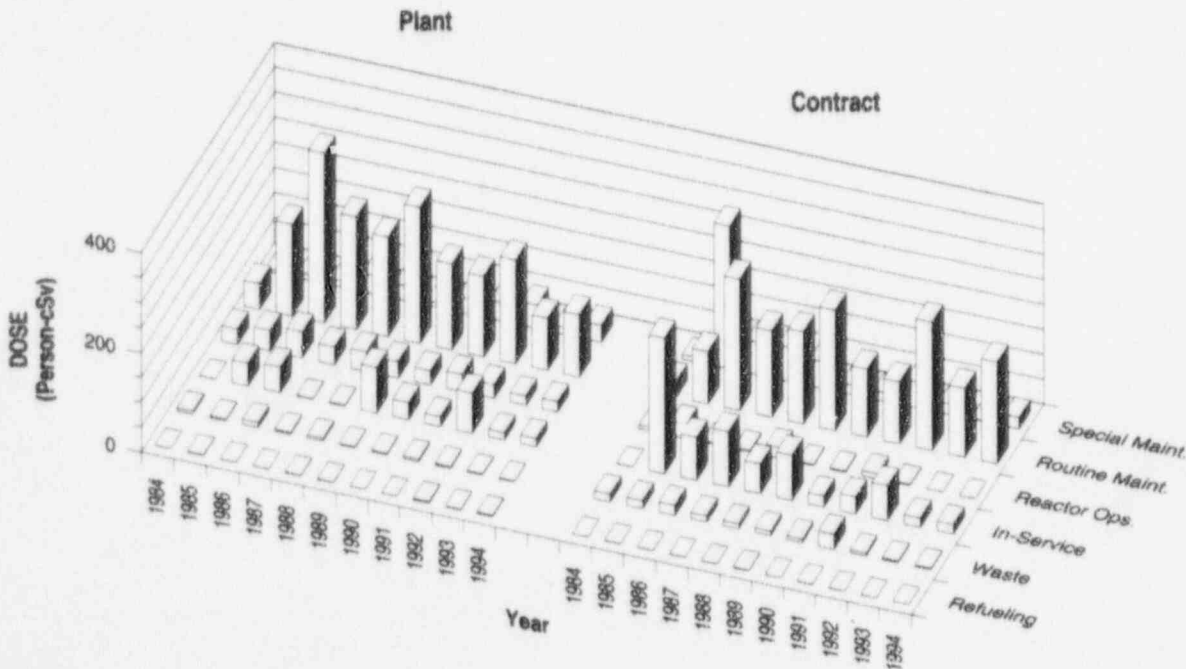
SUSQUEHANNA 1, 2

Dose-Performance Indicators

BWR



Breakdown by Job Function

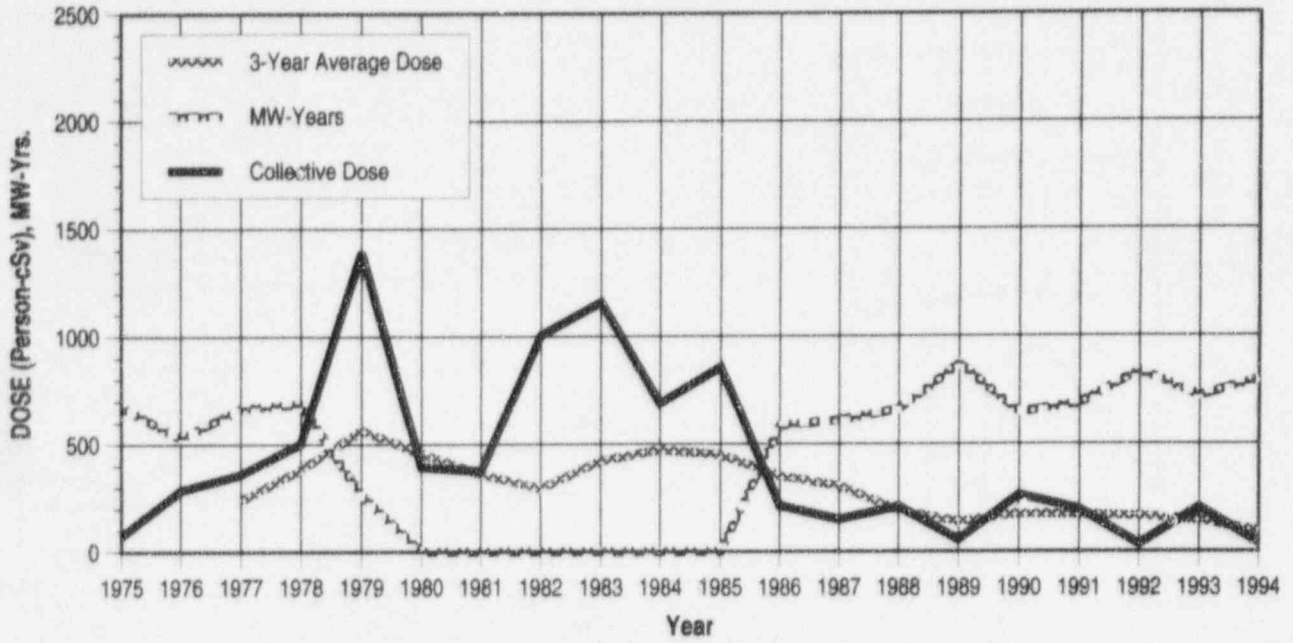


APPENDIX E (continued)

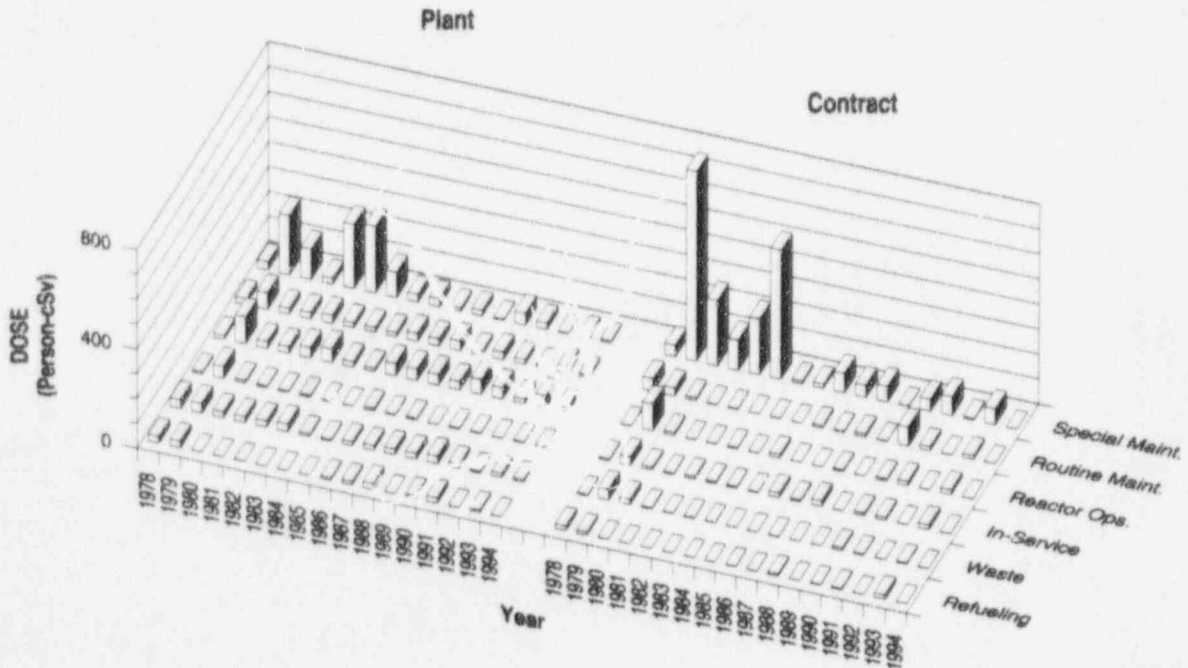
THREE MILE ISLAND 1

Dose-Performance Indicators

PWR



Breakdown by Job Function

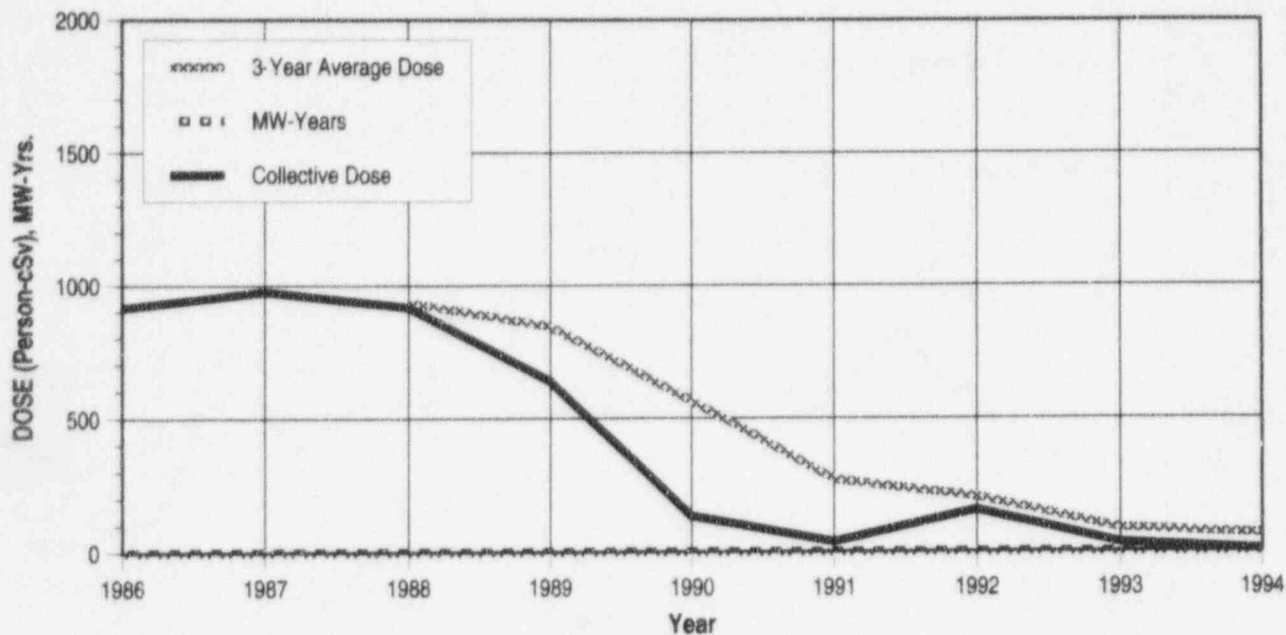


APPENDIX E (continued)

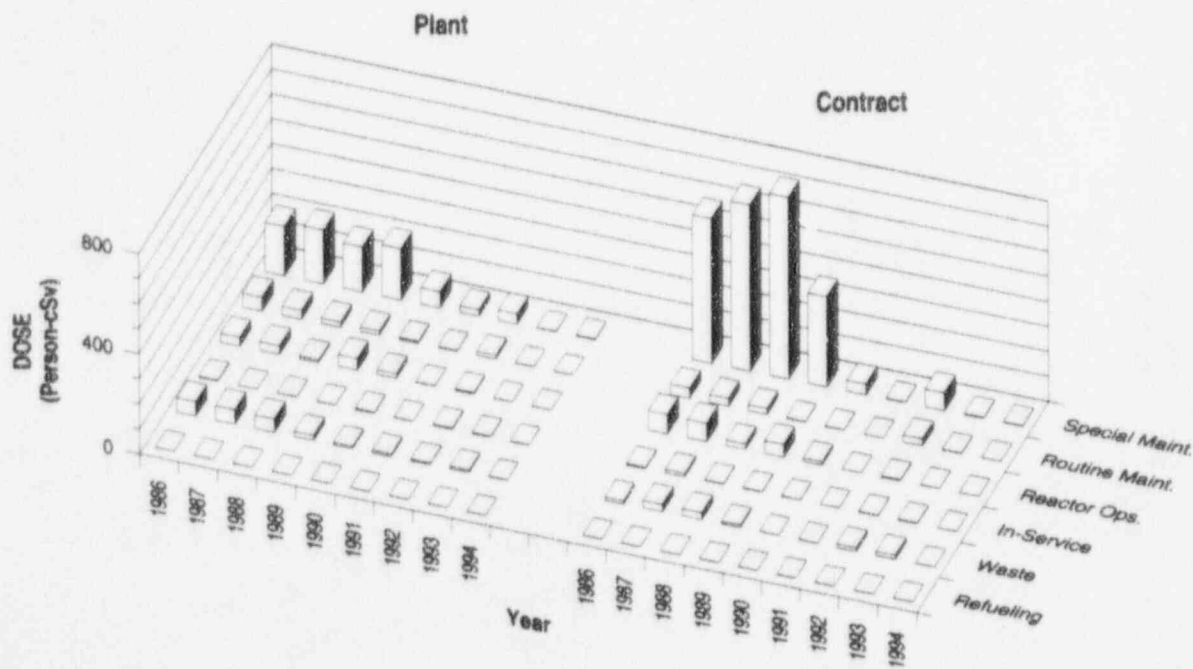
THREE MILE ISLAND 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

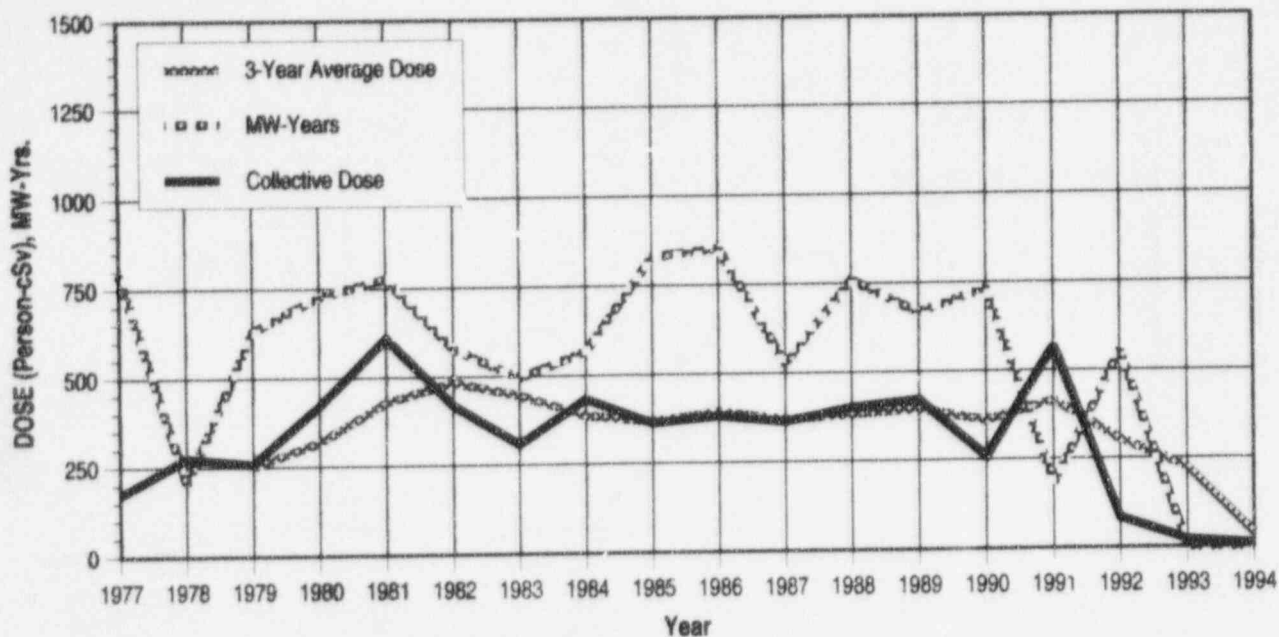


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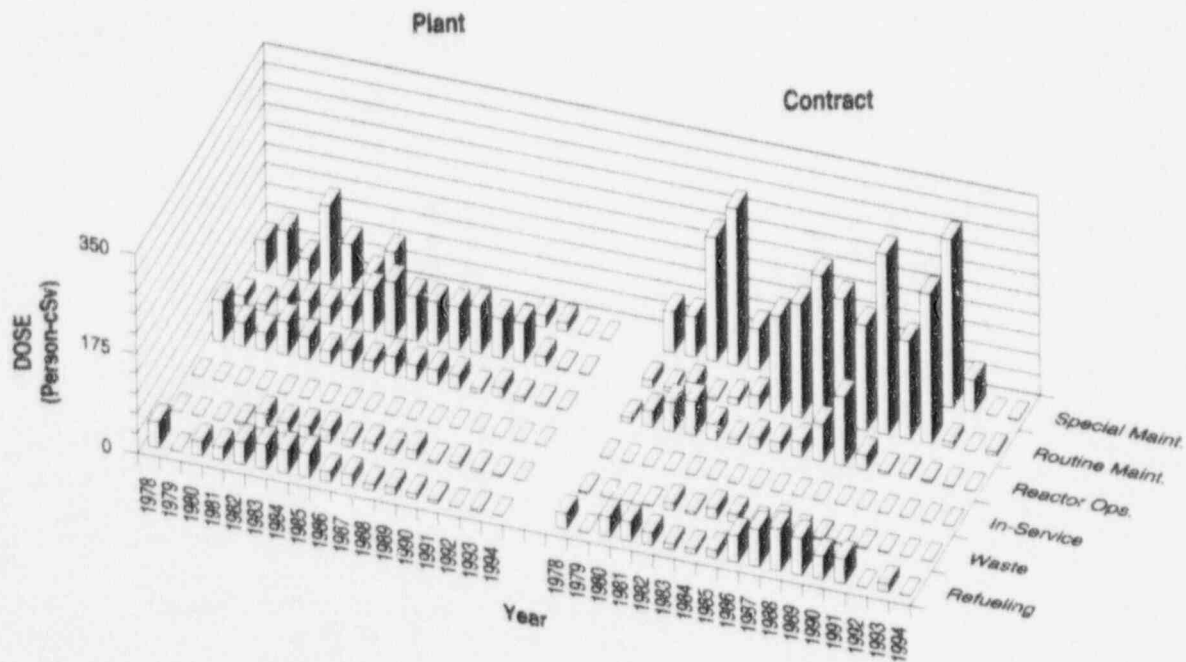
TROJAN

Dose-Performance Indicators

PWR



Breakdown by Job Function

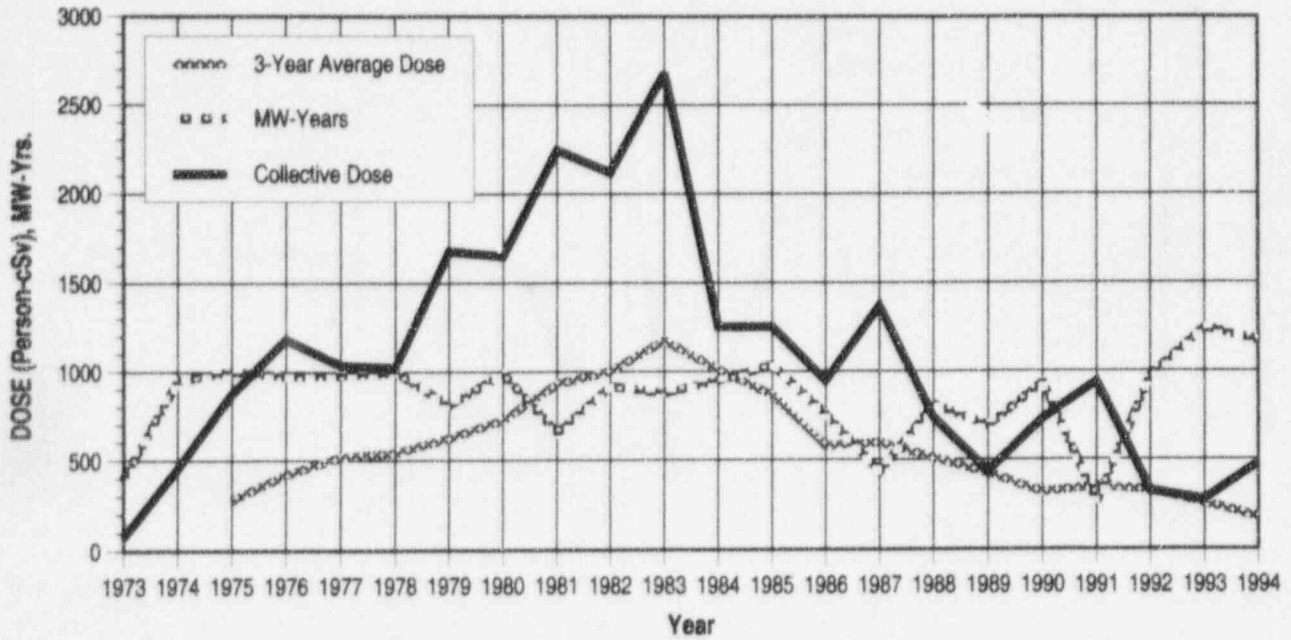


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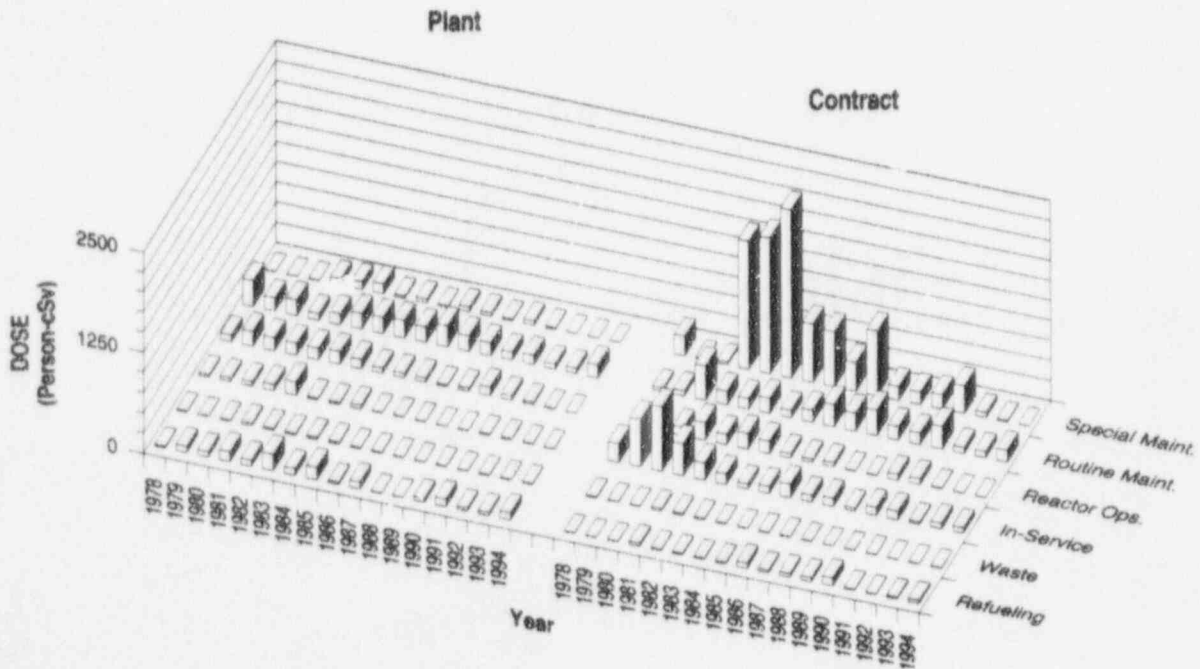
TURKEY POINT 3, 4

Dose-Performance Indicators

PWR



Breakdown by Job Function

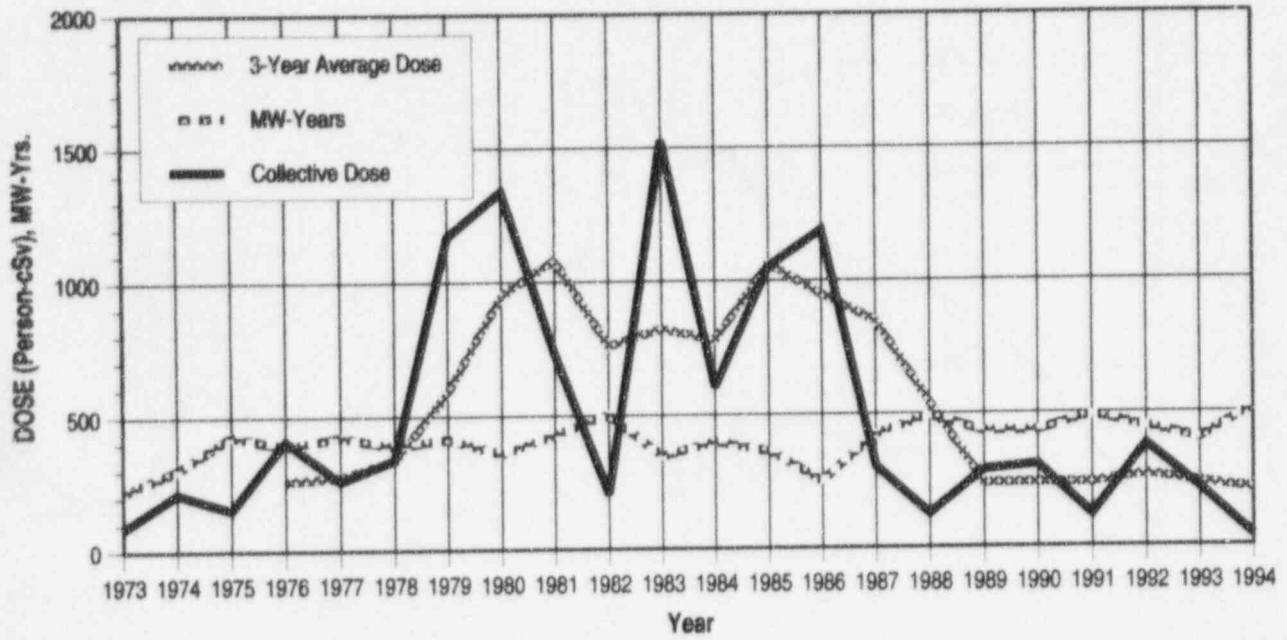


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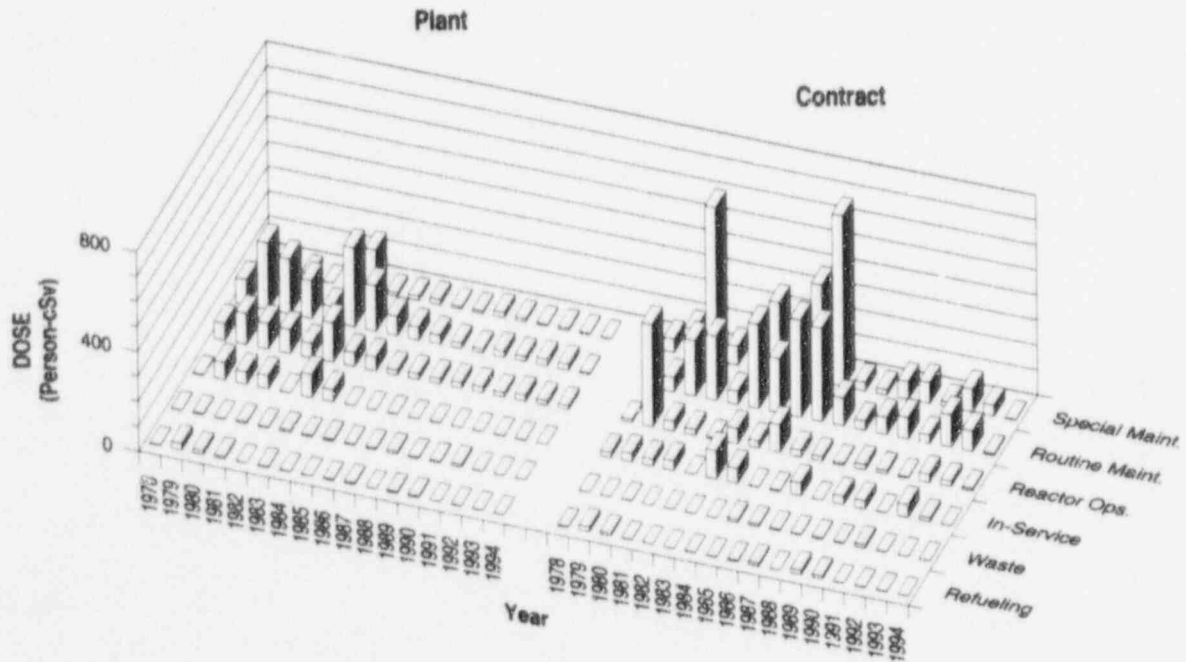
VERMONT YANKEE

Dose-Performance Indicators

BWR



Breakdown by Job Function

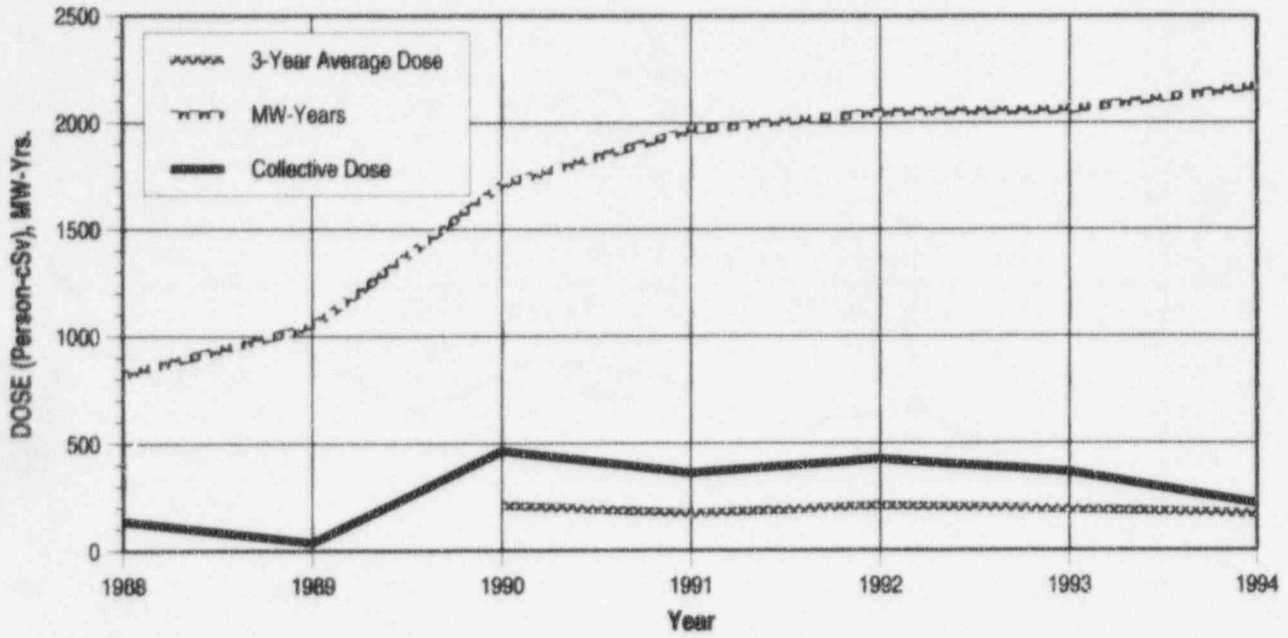


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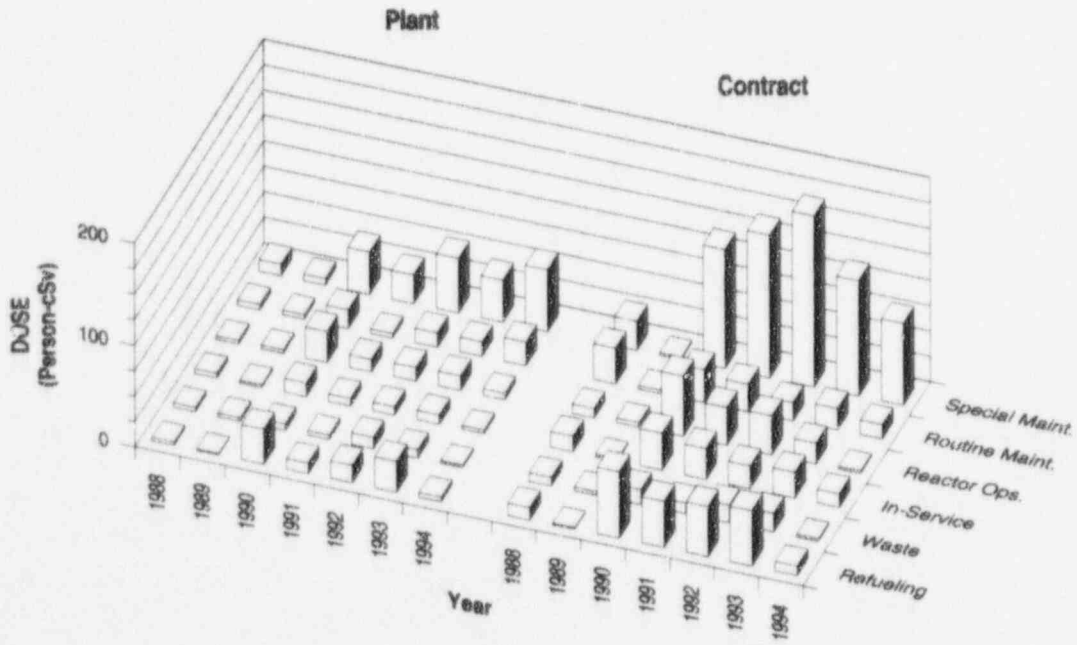
VOGTLE 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function

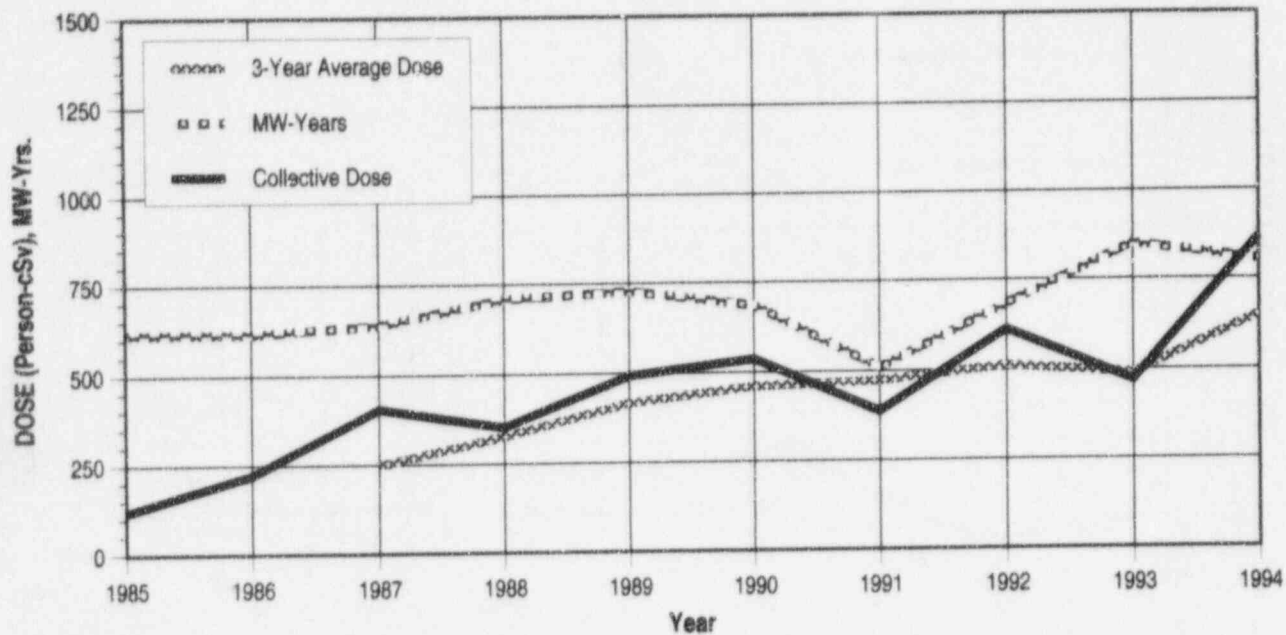


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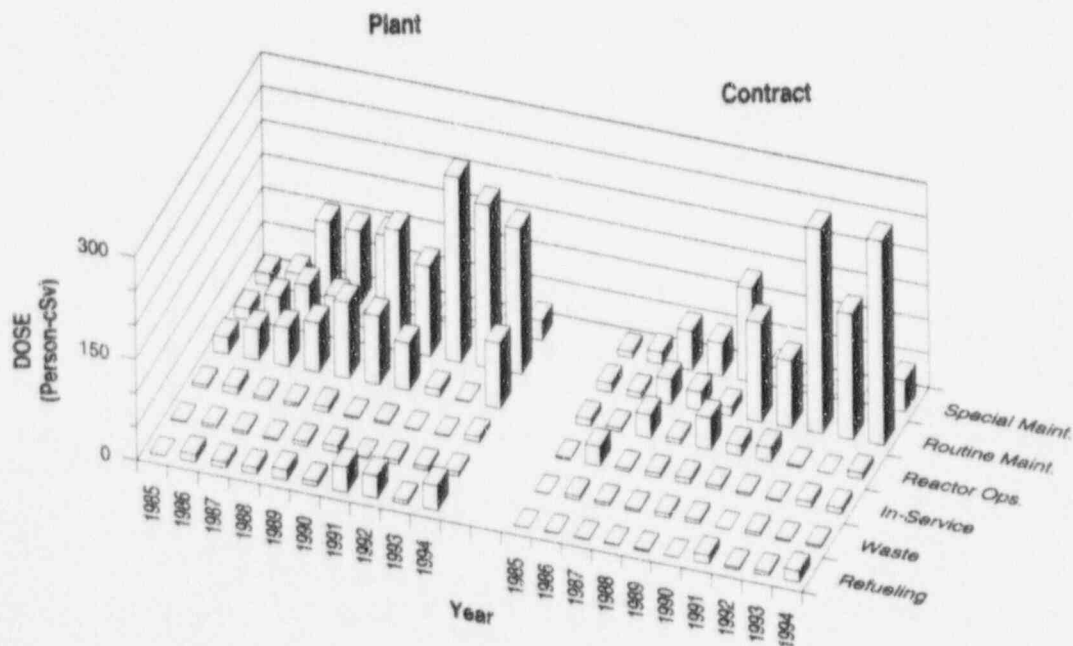
WASHINGTON NUCLEAR 2

Dose-Performance Indicators

BWR



Breakdown by Job Function

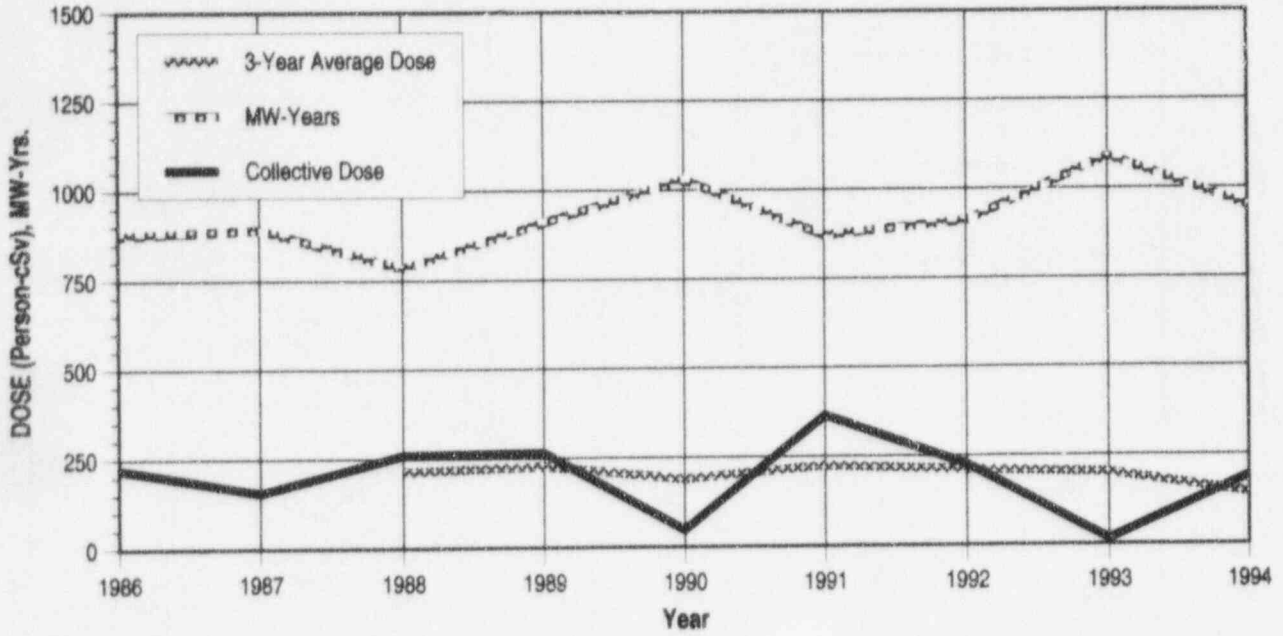


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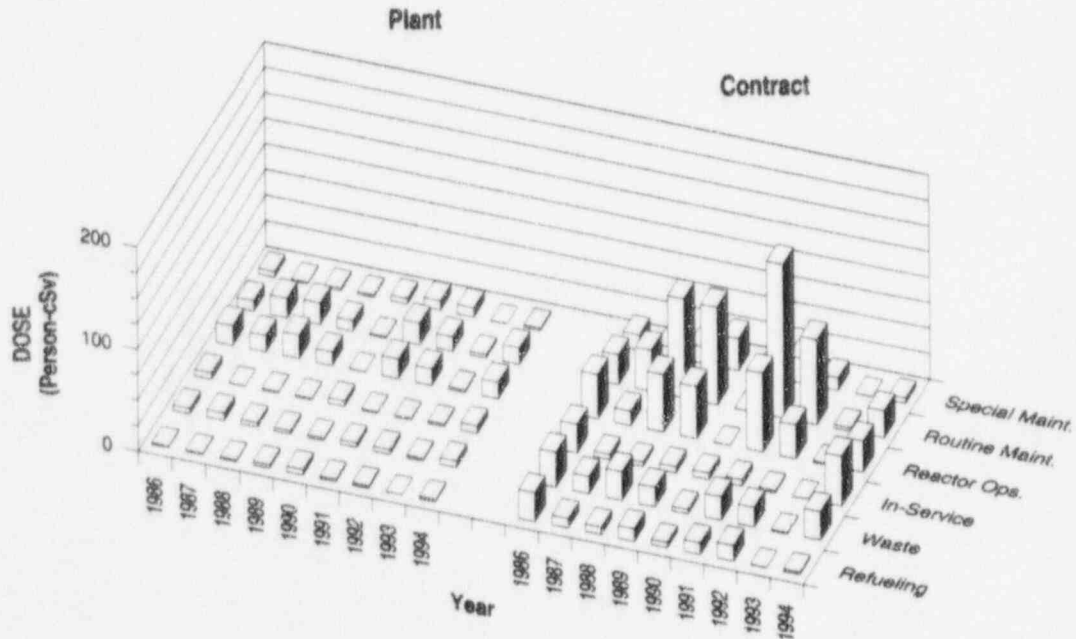
WATERFORD 3

Dose-Performance Indicators

PWR



Breakdown by Job Function

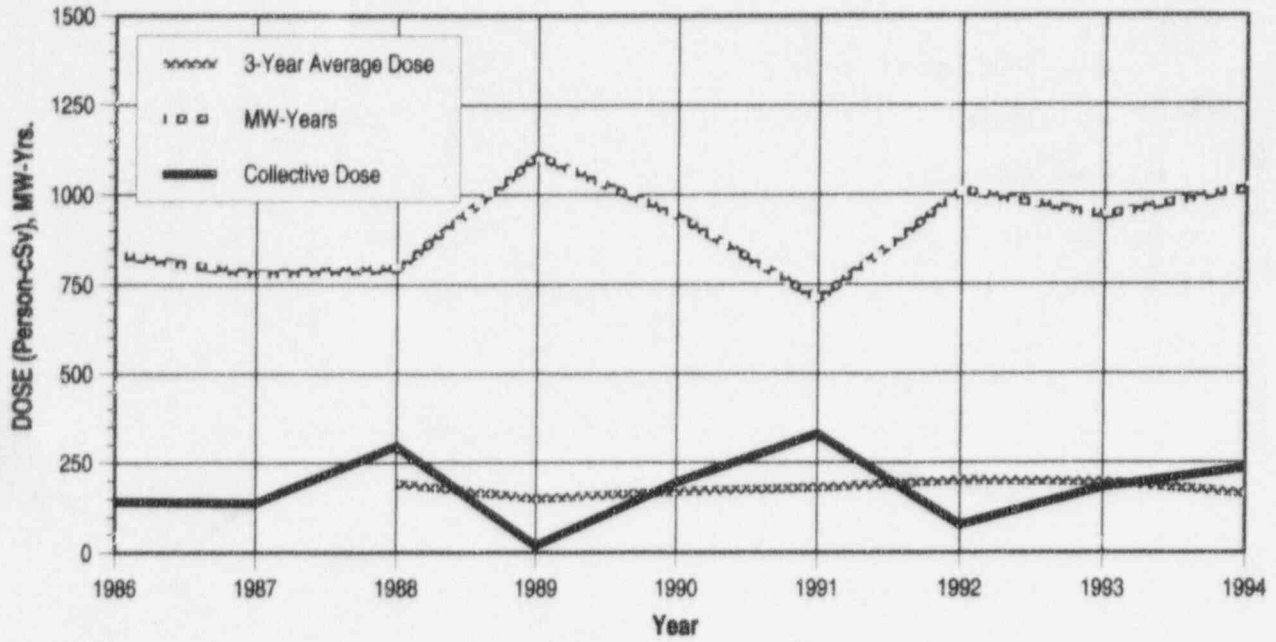


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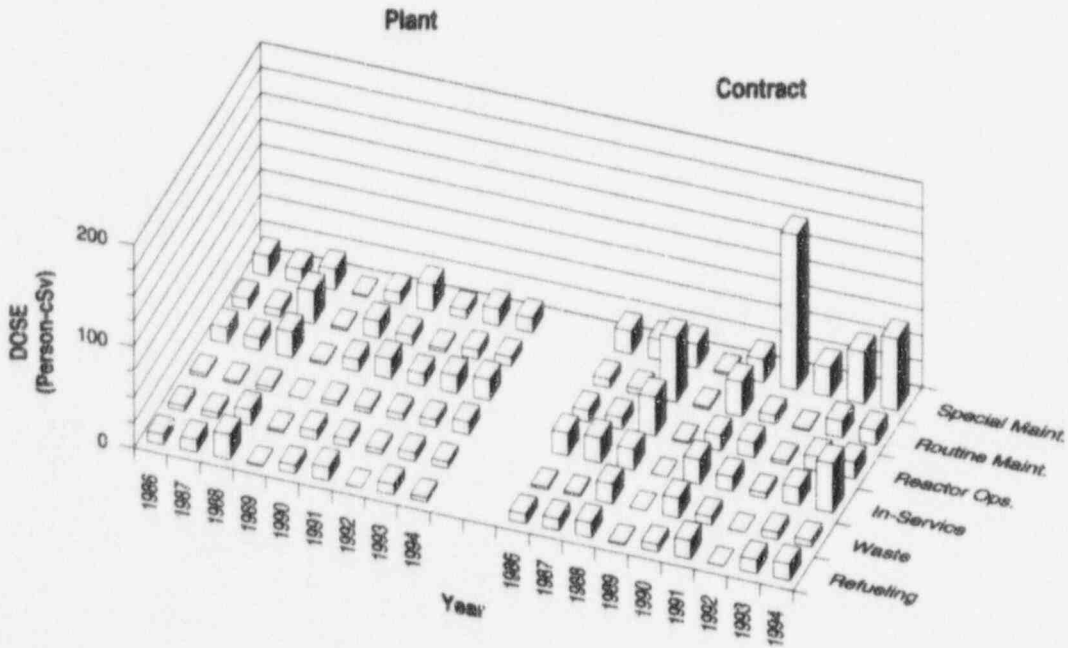
WOLF CREEK 1

Dose-Performance Indicators

PWR



Breakdown by Job Function

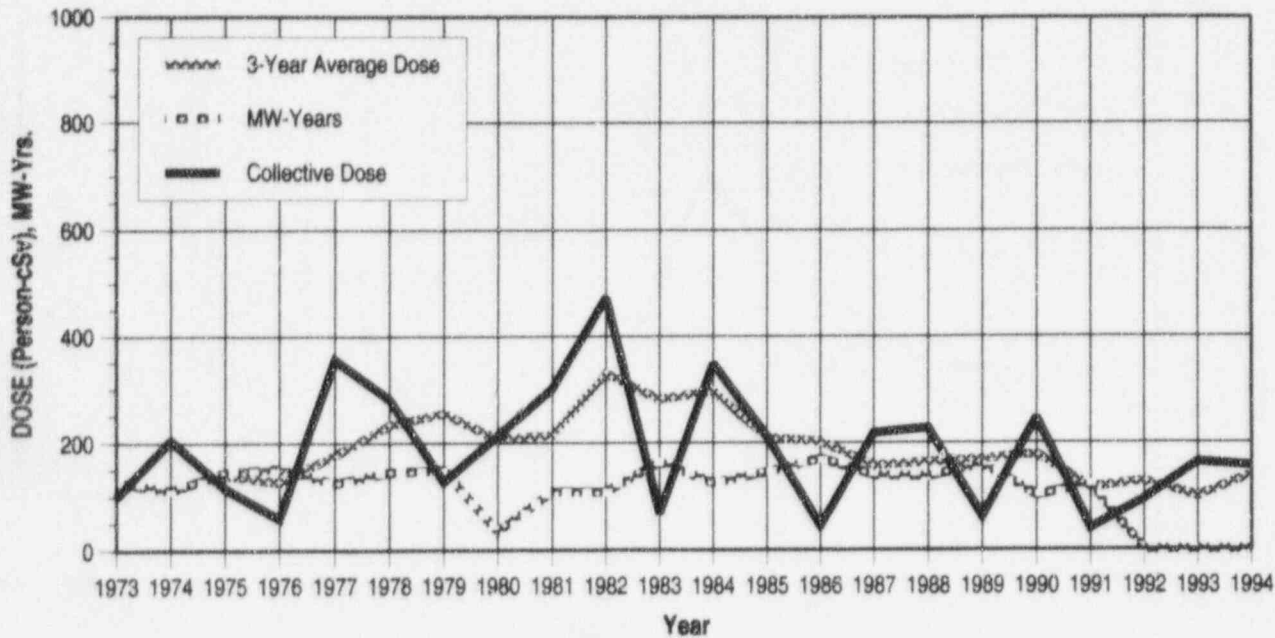


APPENDIX E (continued)

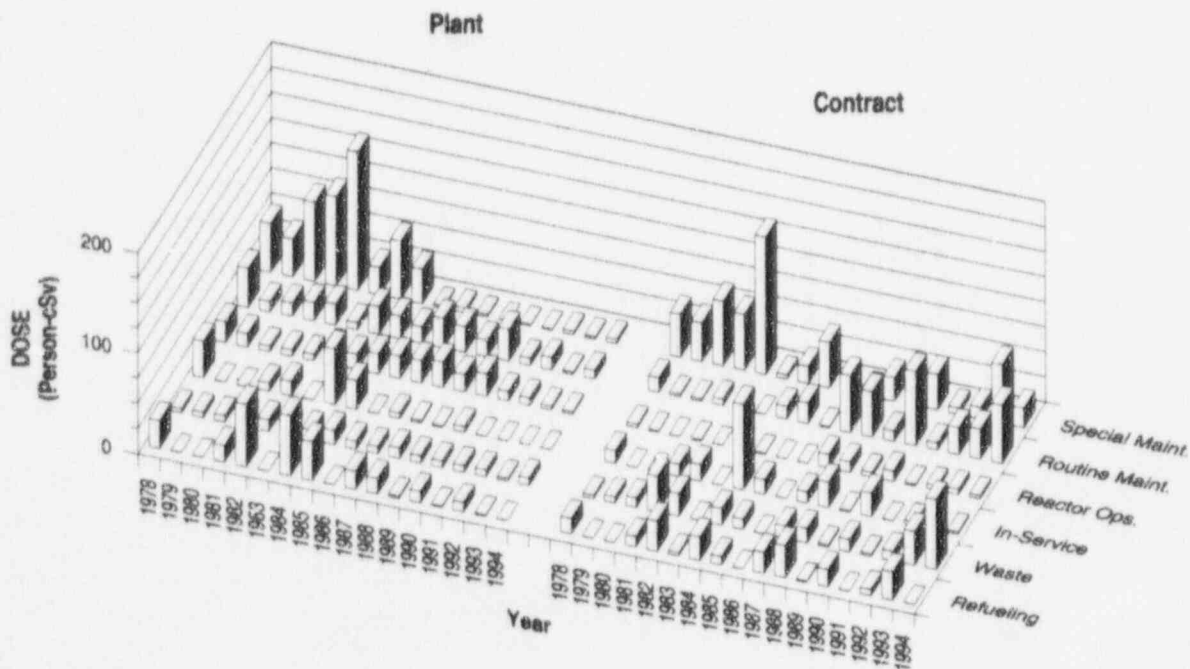
YANKEE-ROWE

Dose-Performance Indicators

PWR



Breakdown by Job Function

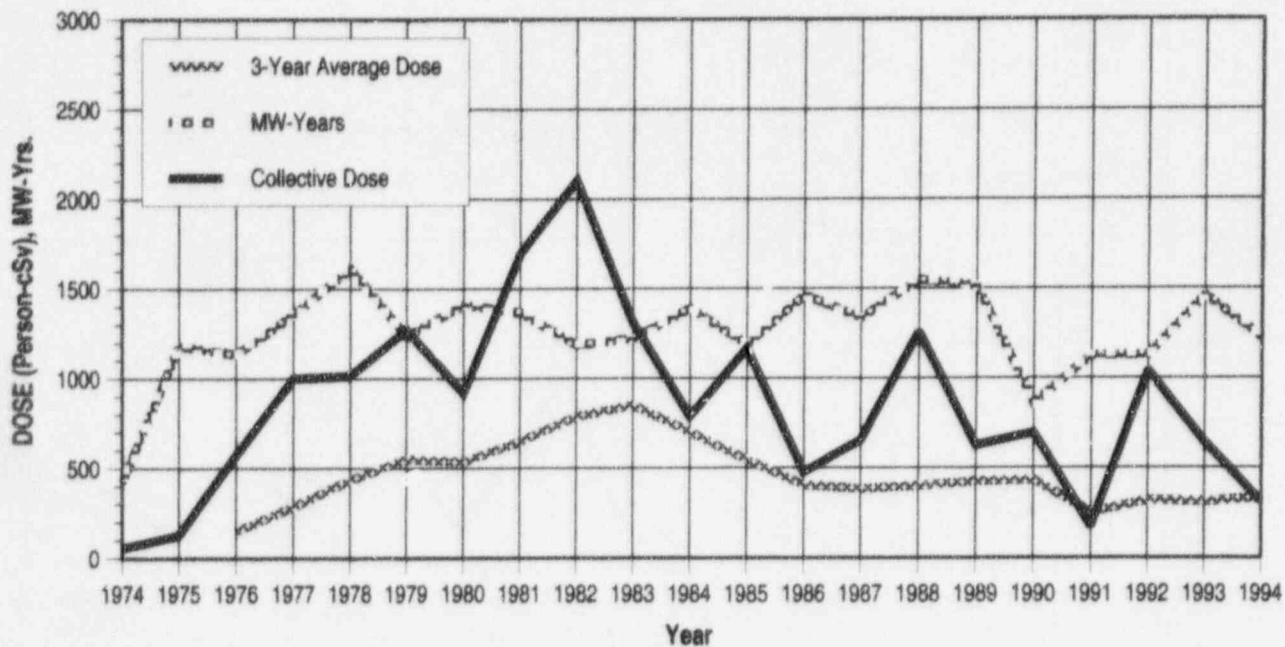


APPENDIX E (continued)

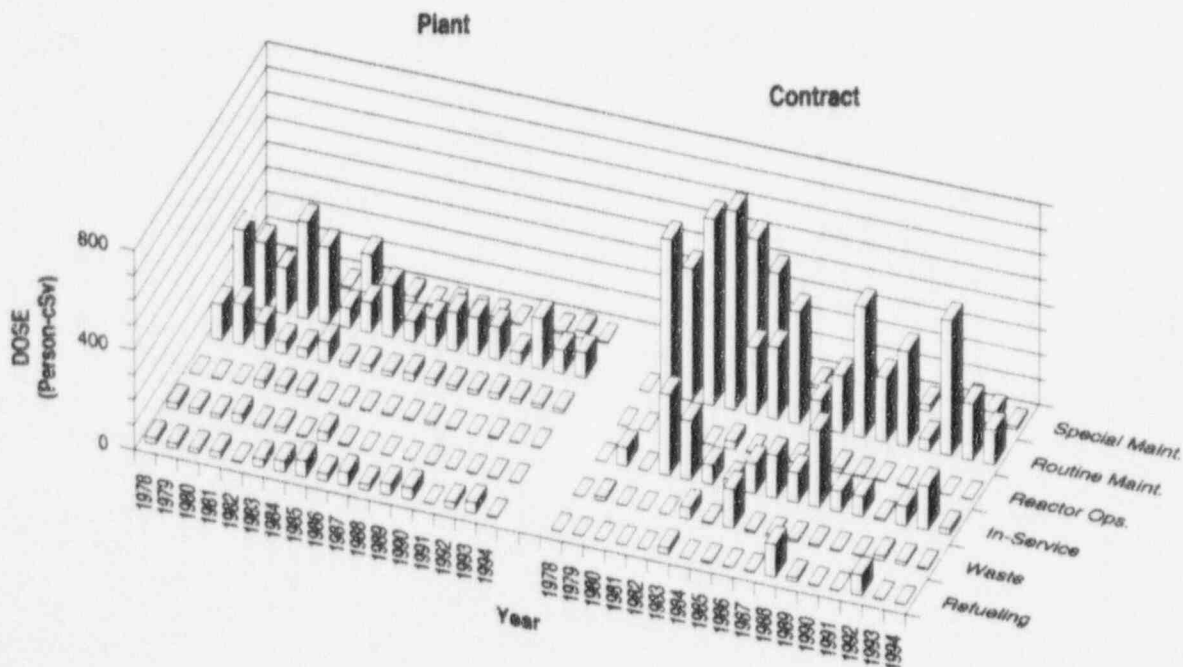
ZION 1, 2

Dose-Performance Indicators

PWR



Breakdown by Job Function



APPENDIX F

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

1987-1994

APPENDIX F*
SUMMARY OF ANNUAL WHOLE BODY DOSE DISTRIBUTIONS BY YEAR AND REACTOR TYPE
1987 - 1994

YEAR AND REACTOR TYPE	Number of Individuals with Whole Body Doses in the Ranges (cSv or rems)														TOTAL NUMBER MONITORED	NUMBER WITH MEAS. DOSE	TOTAL COLLECTIVE DOSE (cSv, person-rem)
	No Meas	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	7.00-12.0	>12.0			
1994 - PWRs	54,623	20,630	10,597	7,492	3,081	1,311	1,017	17							98,968	44,145	9,442
1994 - BWRs	30,322	15,898	8,036	6,754	3,719	2,191	2,306	198	6						89,430	39,108	12,082
1994 - LWRs	85,145	36,528	18,633	14,248	6,800	3,502	3,323	215	6						168,398	83,253	21,534
1993 - PWRs	57,216	25,579	12,348	9,665	4,636	2,224	2,052	83	1						113,804	56,588	14,142
1993 - BWRs	35,779	16,340	7,845	6,400	3,728	2,224	2,862	151	1	1					75,131	39,352	12,221
1993 - LWRs	92,995	41,919	20,193	16,065	8,364	4,448	4,714	234	2	1					188,935	95,940	26,363
1992 - PWRs	56,859	28,220	12,503	10,259	4,926	2,287	2,802	245	6						117,907	61,048	15,985
1992 - BWRs	39,594	17,740	8,094	6,583	3,955	2,339	2,666	204	11	3					81,689	42,095	13,309
1992 - LWRs	96,453	45,960	20,597	17,142	8,881	4,626	5,468	449	17	3					199,596	103,143	29,294
1991 - PWRs	57,815	28,514	11,876	9,387	4,857	2,462	2,972	371	30						118,084	60,269	16,510
1991 - BWRs	37,527	17,384	7,076	5,732	3,409	1,975	2,802	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	28,515
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	5,780	8,525	1,215	84	1					201,895	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	20,361
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	92,852	46,762	19,478	15,859	8,814	5,541	8,701	1,189	99	11					200,906	108,254	35,930
1988 - PWRs	47,866	27,177	11,014	9,280	5,563	3,541	5,405	829	127	4			1		110,787	62,921	22,786
1988 - BWRs	47,679	16,044	6,736	5,809	3,311	2,397	4,859	1,129	215	5					87,984	40,305	17,983
1988 - LWRs	95,545	43,221	17,750	14,899	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	8,826	5,152	3,442	6,187	988	124	10					111,467	62,597	23,684
1987 - BWRs	43,888	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

* 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 1994. 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 20.220 and the technical specifications of nuclear power plants. The 1994 annual reports submitted by about 303 licensees indicated that approximately 152,028 individuals were monitored, 141,901 of whom were monitored by nuclear power facilities. They incurred an average individual dose of 0.1 rem (cSv) and an average measurable dose of about 0.31 rem (cSv). Analyses of transient worker data indicate that 18,178 individuals completed work assignments at two or more licensees during the monitoring year. The dose distributions are adjusted each year to account for the duplicate reporting of transient workers by multiple licensees. In 1994, the average measurable dose calculated from reported data was 0.28 cSv (rem). The corrected dose distribution resulted in an average measurable dose of 0.31 cSv (rem).

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

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Power Reactors
Collective Dose
Average Dose
Transient Workers
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