
Occupational Radiation Exposure at Commercial Nuclear Power Reactors 1979

Annual Report

**U.S. Nuclear Regulatory
Commission**

Office of Management and Program Analysis

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PREVIOUS REPORTS IN SERIES

1. T. D. Murphy, "A Compilation of Occupational Radiation Exposure from Light Water Cooled Nuclear Power Plants, 1969-1973," USAEC Report WASH-1311, May 1974.
2. T. D. Murphy, C. S. Hinson, "Occupational Radiation Exposure at Light Water Cooled Power Reactors, 1969-1974," USNRC Report NUREG-75/032, June 1975.
3. T. D. Murphy, et al, "Occupational Radiation Exposure at Light Water Cooled Power Reactors, 1969-1975," USNRC Report NUREG-0109, August 1976.
4. L. A. Johnson, "Occupational Radiation Exposure at Light Water Cooled Power Reactors, 1969-1976," USNRC Report NUREG-0323, March 1978.
5. L. A. Johnson, "Occupational Radiation Exposure at Light Water Cooled Power Reactors, 1977," USNRC Report NUREG-0482, May 1979.
6. B. G. Brooks, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors, 1978," USNRC Report NUREG-0594, November 1979.

ABSTRACT

This report presents an updated compilation of occupational radiation exposures at commercial nuclear power reactors for the years 1969 through 1979. It is published annually and is available at all NRC Public Document Rooms, or may be purchased from either of the organizations identified on the inside of the front cover of this report. The bulk of the information contained in this document was derived from reports submitted to the United States Nuclear Regulatory Commission in accordance with requirements of individual plant technical specifications and in accordance with 20.407 of Title 10, Chapter 1, Code of Federal Regulations (10 CFR §20.407).

This report now contains data received from the 67 light water cooled reactors (LWRs) that had been declared to be in commercial operation for at least one full year as of December 31, 1979. This represents an increase of three reactors over the number contained in last year's report. Both the total number of personnel monitored at LWRs and the number of workers that received measurable doses during 1979 increased by about 40% to values of 109,160 and 64,073, respectively. The total collective dose for 1979 is estimated to be 39,759 man-rem, which is a 25% increase over last year's value of 31,804. The result was that the average dose per worker decreased slightly to 0.62 rem, while the average collective dose per reactor increased by approximately 19% to a value of 593 man-rem. The collective dose per megawatt-year of generated electricity by each reactor also increased to an average value of 1.3 man-rem per megawatt-year from last year's value of 1.0.

For the first time, the report presents a summary and some analyses of the exposure data contained in the "termination reports" that have been submitted to the Commission pursuant to 10 CFR §20.408 by nuclear power licensees. As of December 31, 1979, personal identification and exposure information had been collected and computerized for some 120,000 of these terminating reactor personnel. Analysis of these data indicate that there are now about 1,500 quarterly transient* workers each year who incur an average dose of 0.47 rem and some 3,200 yearly transient* workers who incur an average dose of 1.05 rem. Further analysis of the termination data indicated that 55% of the workers who are less than 35 years of age receive 56% of the collective dose.

* Transient workers are those workers who begin and end their employment or work assignment at two or more different licensed facilities within one calendar quarter (quarterly transients) or one calendar year (yearly transients).

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OCCUPATIONAL RADIATION EXPOSURE AT
COMMERCIAL NUCLEAR POWER REACTORS
1979

1. INTRODUCTION

In 1974 the NRC staff began changing the technical specifications of operating nuclear power reactors to require them to submit an annual report which would indicate the number of individuals exposed and their cumulative annual doses, broken down by type of personnel, work function, and occupation. (This format for reporting is contained in Regulatory Guide 1.16, "Reporting of Operating Information - Appendix A Technical Specifications," and is similar to that shown in Appendix C of this report.) Regarding data for previous years, each reactor licensee was requested to provide similar information for each year since 1969 in which they had a unit in commercial operation. In every instance, an estimate of the total collective dose (man-rems) incurred by all individuals monitored during the year was provided; however, the number of workers who received measurable doses could not always be determined. The information given in Appendix A, therefore, is not complete for all plants for the years 1969 through 1972.

On February 4, 1974, 10 CFR §20.407 was amended to require licensed power reactors, among other licensees, to submit an annual statistical report indicating the distribution of the whole body doses of all individuals monitored at each facility. These reports (see Appendix B) allow an estimate to be made of the total collective dose, and of the number of workers receiving measurable doses. These values were used throughout this report (except for Tables 8, 9, 10 and Appendix C) for the years 1973 through 1979.

The plant operating data, such as plant capacity and megawatt-years of electricity generated, was obtained or derived from data included in various issues of the "Operating Units Status Report," (Ref. 1), and from the report "U. S. Central Station Nuclear Power Plants, 1976" (Ref. 2).

This report, and each of its predecessors summarizes information reported during previous years. However, more plant specific data, such as the annual reports submitted by each plant pursuant to 10 CFR 20.407 and Regulatory Guide 1.16, may be found in those documents listed on the front cover of this report. Additional operating data and statistics for each year after 1972 may be found in a series of reports, "Nuclear Power Plant Operating Experience" (Refs. 3, 4, 5, 6, and 7). The next report in this series (NUREG/CR-1496), which contains data for 1979, should be published by June 1981. These documents are available at all NRC public document rooms, or they may be purchased from the National Technical Information Service as shown in the Reference section.

2. SUMMARY OF OCCUPATIONAL MONITORING DATA AND POWER GENERATION

2.1 Definitions of Terms and Sources of Data

2.1.1 Number of Reactors

Tables 1 through 3 provide summaries of the plant data given in Appendix A for boiling water reactors (BWRs), pressurized water reactors (PWRs), and all light water cooled reactors (LWRs), respectively. The number of reactors included each year (those without parentheses) are those reactors that had been in commercial operation for at least one full year as of December 31 of each of the indicated years. The figure shown in parentheses (for the years 1969-1972) is the number of reactors that provided both the number of individuals that received measurable doses (referred to as "workers") while visiting or working at the facility and the summation of the annual whole body doses (called man-rem) of all of these workers. The annual collective doses shown in parentheses and the other information marked with an asterisk are also based on the data submitted by the number of reactors shown in parentheses.

2.1.2 Collective Dose

The collective dose (in man-rem) shown for the four years 1969 through 1972 was obtained by special request made to the licensee or from monthly and semi-annual operating reports that had been previously submitted pursuant to plant technical specifications. When possible, the number of workers receiving measurable doses was obtained in the same manner. Beginning with 1973, the total collective dose and the number of workers receiving measurable doses were obtained from the annual reports submitted pursuant to 10 CFR §20.407. From these reports, the annual collective dose was calculated by summing the products obtained by multiplying the number of individuals shown in each of the dose ranges (shown in Table 7 and Appendix B) by the midpoint of each range. Past experience has shown that the actual mean dose of individuals reported in each dose range is less than the midpoint of the range. Thus the collective doses shown in this report may be about 10% too high.

2.1.3 Breakdown of Collective Dose

In Appendix A, the collective dose that was calculated from the §20.407-type annual reports is broken down by work function (operations and maintenance) and by personnel type (contractor, and station and utility combined) for each plant site. The proportion of man-rem in each type is the same as that reported in the plant's annual report required by its technical specifications (see 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 columns in Appendix C) was determined. (2) The ratio of this dose to the total collective dose (the last number in the last columns in Appendix C) was calculated and multiplied by the total collective dose that had been estimated using the §20.407-type annual reports. This product is the number of man-rem shown in the column headed "Operations"

TABLE 1

SUMMARY OF ANNUAL INFORMATION REPORTED BY COMMERCIAL BOILING WATER REACTORS

1969 - 1979

Year	Number Of Reactors Included	Annual Collective Doses (Man-rem)	No. of Workers With Measurable Doses	Gross MW-Yrs Electric Generated	Average Dose Per Worker (Rems)	Average Collective Dose Per Reactor (Man-rem)	Average No. Personnel With Measurable Doses Per Reactor	Average Man-rem Per MW-Yr	Average MW-Yrs Generated Per Reactor	Average Rated Capacity (MW _e) Net
1969	3 (2)	586 (300)	290*	192	1.03*	195	145*	3.1	64	112
1970	6 (4)	764 (510)	1,321*	912	0.39*	127	330*	0.8	152	267
1971	7 (5)	1,784 (1,069)	1,873*	1,308	0.57*	255	375*	1.4	187	339
1972	10 (7)	2,858 (2,130)	2,258*	3,058	0.94*	286	323*	0.9	306	434
1973	12	4,564	5,340	3,394	0.85	380	445	1.3	283	459
1974	14	7,095	8,769	4,059	0.81	507	626	1.7	290	513
1975	18	12,611	14,607	5,786	0.86	701	812	2.2	321	611
1976	23	12,626	17,859	8,586	0.71	549	776	1.5	373	647
1977	23	19,042	21,388	9,098	0.89	828	930	2.1	396	645
1978	25	15,096	20,278	11,774	0.74	604	811	1.3	471	668
1979	25	18,322	25,245	11,671	0.73	733	1,010	1.6	467	669

*During the years 1969 through 1972, all plants reported collective doses but a few did not submit the number of personnel that received measurable doses. The number of reactors that did report doses and number of workers is given in parentheses in the second column. The collective doses shown in parentheses in the third column, as well as the asterisked numbers in the remaining columns, are all based on the data submitted by the number of reactors shown in parentheses. This correction, and others, changed some of the values from those appearing in earlier NUREG documents.

TABLE 2
SUMMARY OF ANNUAL INFORMATION REPORTED BY
COMMERCIAL PRESSURIZED WATER REACTORS

1969 - 1979

Year	Number Of Reactors Included	Annual Collective Doses (Man-rem)	No. of Workers With Measurable Doses	Gross MW-Yrs Electric Generated	Average Dose Per Worker (Rems)	Average Collective Dose Per Reactor (Man-rem)	Average No. Personnel With Measurable Doses Per Reactor	Average Man-rem Per MW-Yr	Average MW-Yrs Generated Per Reactor	Average Rated Capacity (MW _e) Net
1969	4 (3)	661 (363)	454*	1,097	0.80*	165	151*	0.6	274	349
1970	4 (3)	2,738 (1,099)	1,340*	979	0.82*	684	447*	2.8	245	349
1971	6 (4)	1,844 (912)	905*	1,912	1.01*	307	226*	1.0	319	399
1972	8 (5)	3,708 (2,083)	1,885*	2,544	1.11*	464	377*	1.5	318	446
1973	12	9,399	9,440	3,770	1.00	783	787	2.5	314	533
1974	20	6,627	9,697	6,824	0.68	331	485	1.0	341	619
1975	26	8,268	10,884	11,983	0.76	318	419	0.7	461	643
1976	30	13,807	17,588	13,325	0.79	460	586	1.0	444	675
1977	34	13,469	20,878	17,346	0.65	396	614	0.8	510	699
1978	39	16,713	25,720	19,840	0.65	429	659	0.8	509	723
1979	42	21,437	38,828	18,249	0.55	510	924	1.2	434	729

*During the years 1969 through 1972, all plants reported collective doses but a few did not submit the number of personnel that received measurable doses. The number of reactors that did report doses and number of workers is given in parentheses in the second column. The collective doses shown in parentheses in column 3, as well as the asterisked numbers in the remaining columns, are all based on the data submitted by the number of reactors shown in parentheses. This correction, and others, changed some of the values from those appearing in earlier NUREG documents.

TABLE 3
SUMMARY OF ANNUAL INFORMATION REPORTED
BY COMMERCIAL LIGHT WATER COOLED REACTORS

1969 - 1979

Year	Number Of Reactors Included	Annual Collective Doses (Man-rems)	No. of Workers With Measurable Doses	Gross MW-Yrs Electric Generated	Average Dose Per Worker (Rems)	Average Collective Dose Per Reactor (Man-rems)	Average No. Personnel With Measurable Doses Per Reactor	Average Man-rems Per MW-Yr	Average MW-Yrs Generated Per Reactor	Average Rated Capacity (MW _e) Net
1969	7 (5)	1,247 (663)	744*	1,289	0.89*	178	149*	1.0	184	247
1970	10 (7)	3,502 (1,609)	2,661*	1,892	0.60*	350	380*	1.9	189	300
1971	13 (9)	3,628 (1,981)	2,778*	3,220	0.71*	280	309*	1.1	248	367
1972	18 (12)	6,566 (4,213)	4,143*	5,602	1.02*	365	345*	1.2	311	408
1973	24	13,963	14,780	7,164	0.94	582	616	1.9	299	496
1974	34	13,722	18,466	10,883	0.74	404	543	1.3	320	575
1975	44	20,879	25,491	17,769	0.82	475	579	1.2	404	630
1976	53	26,433	35,447	21,911	0.75	499	669	1.2	413	663
1977	57	32,511	42,266	26,444	0.77	570	742	1.2	464	677
1978	64	31,809	45,998	31,614	0.69	497	719	1.0	494	702
1979	67	39,759	64,073	29,920	0.62	593	956	1.3	447	705

*During the years 1969 through 1972, all plants reported collective doses but a few did not submit the number of personnel that received measurable doses. The number of reactors that did report doses and number of workers is given in parentheses in the second column. The collective doses shown in parentheses in the third column, as well as the asterisked numbers in the remaining columns, are all based on the data submitted by the number of reactors shown in parentheses. This correction, and others, changed some of the values from those appearing in earlier NUREG documents.

in Appendix A. (3) The number of man-remS shown in the column headed "Maintenance and Others" in Appendix A was determined by first summing the collective doses incurred by workers in the five remaining functions, given in Appendix C, and then calculating the fraction that this dose is of the total collective dose. This fraction was multiplied by the total collective dose estimated from the §20.407-type annual report to yield the number of man-remS shown in this column of Appendix A. (4) A similar procedure was followed in determining the number of man-remS in the type of personnel columns "Contractor" and "Station & Utility" in Appendix A.

2.1.4 Workers With Measurable Whole Body Doses

The number of workers with measurable doses, rather than the total number of individuals monitored, is shown in Tables 1 through 3 and Appendix A. These values were used to calculate the average annual dose per worker and the average number of personnel per reactor. This was done to delete those individuals, many of whom probably did not routinely work in radiation areas (and were monitored for convenience or for identification purposes), who may have received exposures too small to be detected by personnel monitoring devices.

2.1.5 Megawatt-years of Electricity

The number of gross megawatt-years (MW-Yrs) of electric energy generated each year by each facility is shown in Appendix A. 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 a year. The gross megawatt-years of generated electricity that are presented in Tables 1 through 3 are the sums of that produced by all of the reactors included each year. This sum is divided by the number of those reactors included each year to yield the average amount of electric energy generated (MW-Yrs) per reactor, which is also shown in Tables 1 through 3.

2.1.6 Collective Dose per Megawatt-year

The number of megawatt-years generated was also used to determine average values of the annual collective dose per megawatt-year generated. This was calculated by dividing the total collective dose by the total gross megawatt-years generated to yield a quotient, having the units "man-remS per MW-Yr," that is used as a measure of the doses incurred by workers at power reactors in relation to the gross electric energy produced. This value was also calculated for each reactor site and is presented in Tables 4 through 6 and Appendix A.

2.1.7 Average Rated Capacity

The average rated capacity, shown in Tables 1 through 3, was found by dividing the sum of the net maximum dependable capacities (Net MWe) of the reactors by the number of reactors included each year. The net maximum dependable capacity is defined to be 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 is the "capacity" shown for each plant in Appendix C.

2.2 Average Annual Occupational Doses

Some of the data presented in Tables 1 through 3 is graphically displayed in Figures 1 and 2. Figure 1 indicates that for all LWRs the average annual values for three of the four parameters plotted for 1979 increased somewhat from their 1978 values. Only the average dose per worker appears to have decreased slightly to about 0.6 rems. As can be seen from Figure 2, these increases were due to increases in the values of these parameters calculated for both BWRs and PWRs. For example, the number of workers per reactor reached all-time highs at both types of facilities, with 1,010 workers at BWRs and 924 workers at PWRs. Also, the man-rems (collective dose) per megawatt-year of electricity increased at both types of facilities, combined, for the first time in six years. This is in contrast to the rather sharp decline in these parameters that was exhibited by the BWRs in 1978; and the average values of all four of the parameters plotted in Figure 2 for BWRs generally remain larger than those for PWRs, as they have for five out of the last six years.

To further assist in the identification of any trends that might exist in the three parameters, average and mean collective dose per reactor and collective dose per megawatt-year, Figure 3 is presented. It displays the average and median* values of the collective dose per reactor for BWRs and for PWRs for the years 1973 through 1979. The range 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. One can see that in nearly every case the median is less than the average and the rectangles are closer to the lower values which would indicate that a majority of the plants usually report collective doses that are less than the average collective dose per reactor that is usually quoted.

2.3 Plant Rankings by Collective Dose Per Reactor

The number of reactors from which data has been collected is still rather small, and the information reported by a few reactors where unusual conditions or problems may have occurred could have a large impact on some of the statistics presented in this report. In an effort to identify those plants, Tables 4 and 5 list the BWRs and PWRs in ascending order of man-rems per reactor for each of the years 1975 through 1979. Two other parameters, dose per worker and collective dose per megawatt-year, are also given for each plant and could have been used in ranking the plants as well. Table 6 ranks the plants that had been in commercial operation for at least five years as of December 31, 1979. The values of the average dose per worker and collective dose per megawatt-year showed a decrease at both types of plants from those that had been calculated for the five years ending in 1978. It should be noted that there are significant differences in nuclear plant designs, even between plants of a given type. Therefore, one should be careful when attempting to draw conclusions from the data.

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

FIGURE 1
PLOTS OF AVERAGE AND TOTAL ANNUAL VALUES
AT ALL LIGHT WATER COOLED REACTORS

1969 - 1979

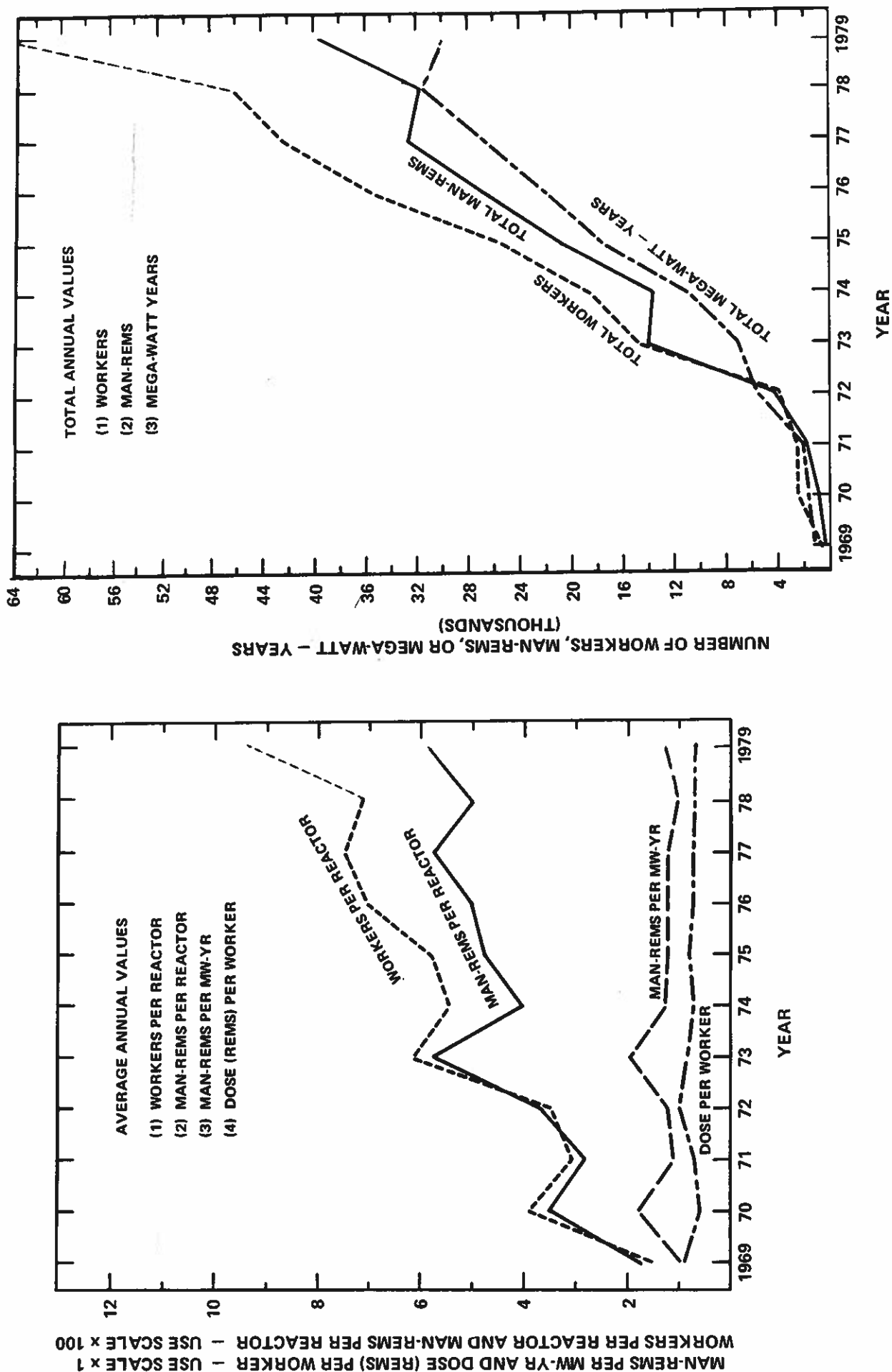


FIGURE 2
PLOTS OF AVERAGE ANNUAL VALUES
AT BOILING AND PRESSURIZED WATER REACTORS

1969 - 1979

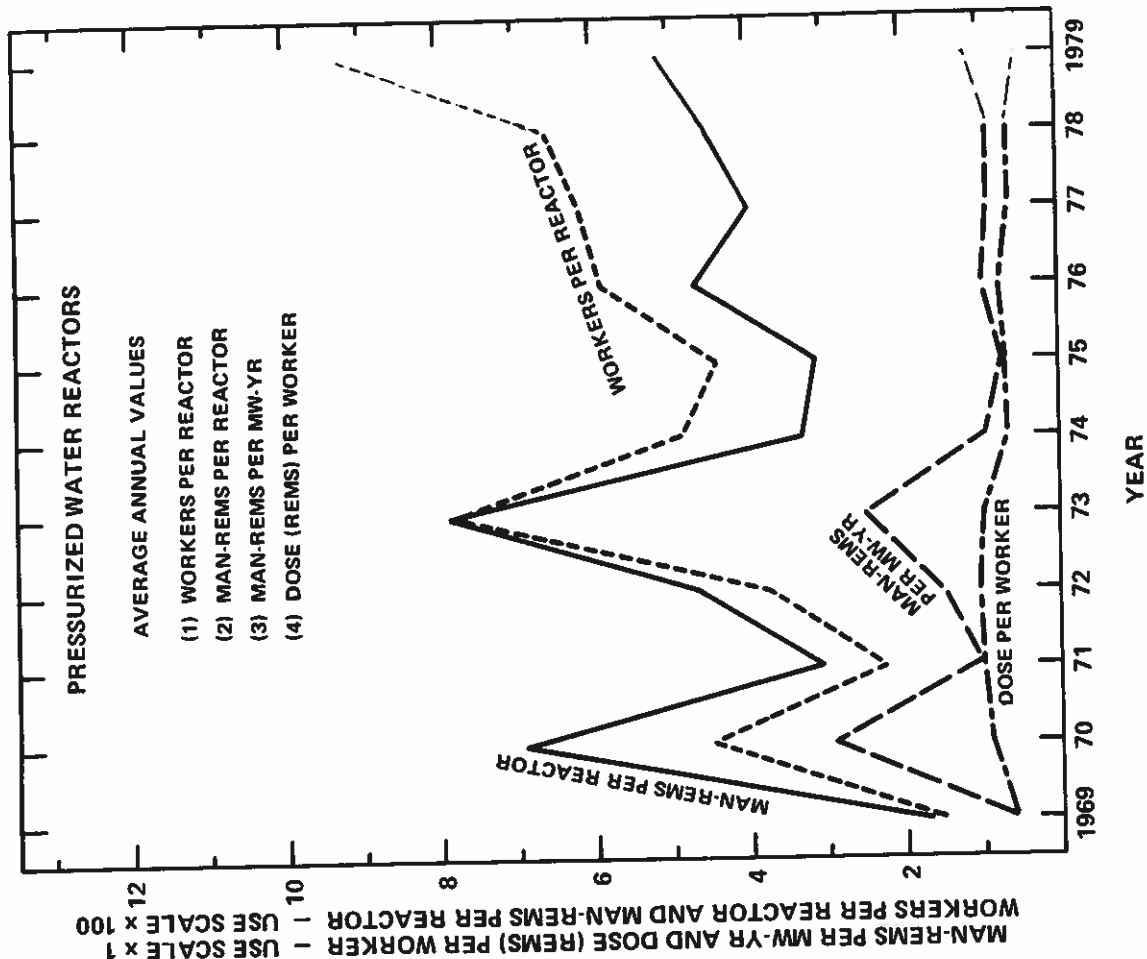
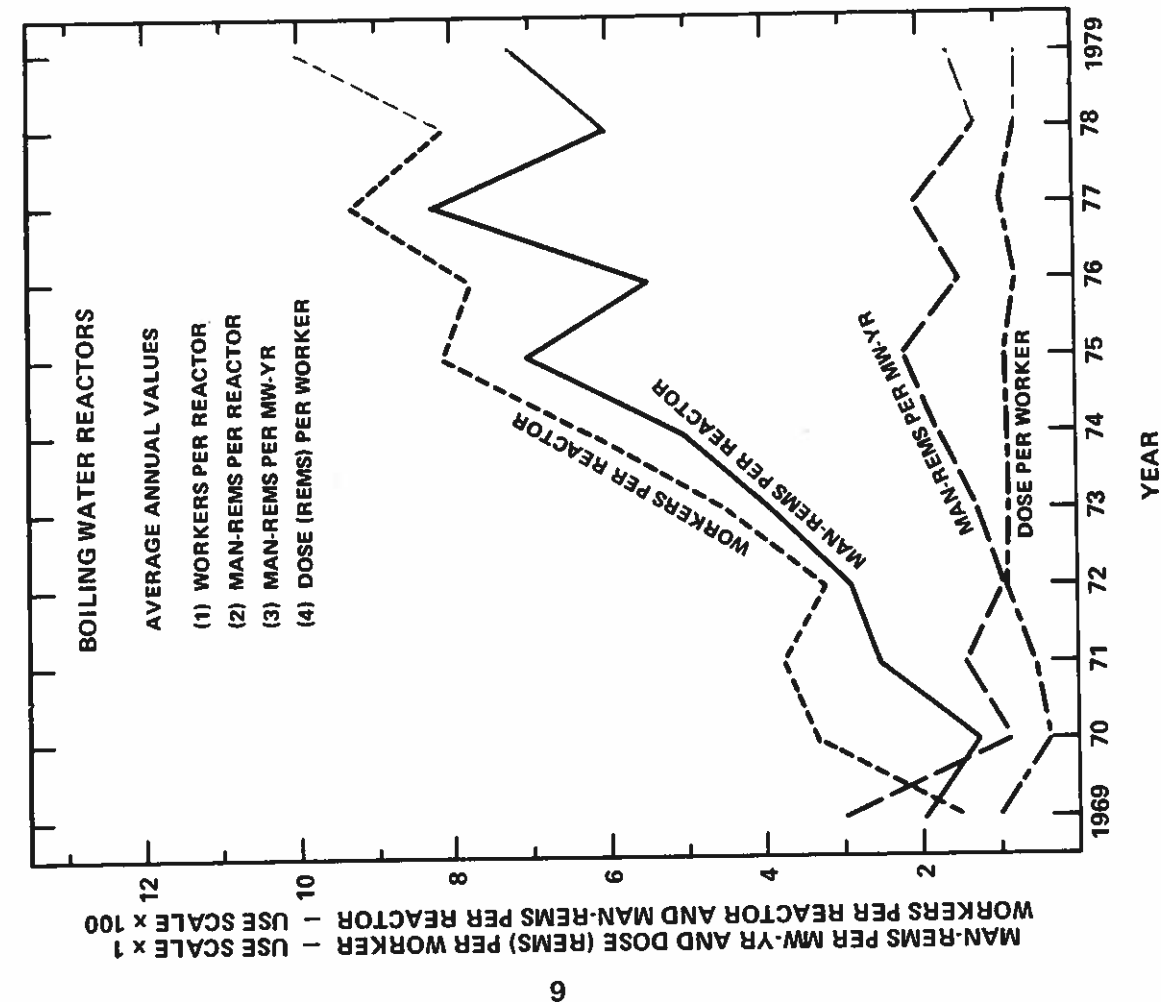


FIGURE 3
AVERAGE, MEDIAN, AND EXTREME VALUES OF THE COLLECTIVE DOSE PER REACTOR
1973-1979

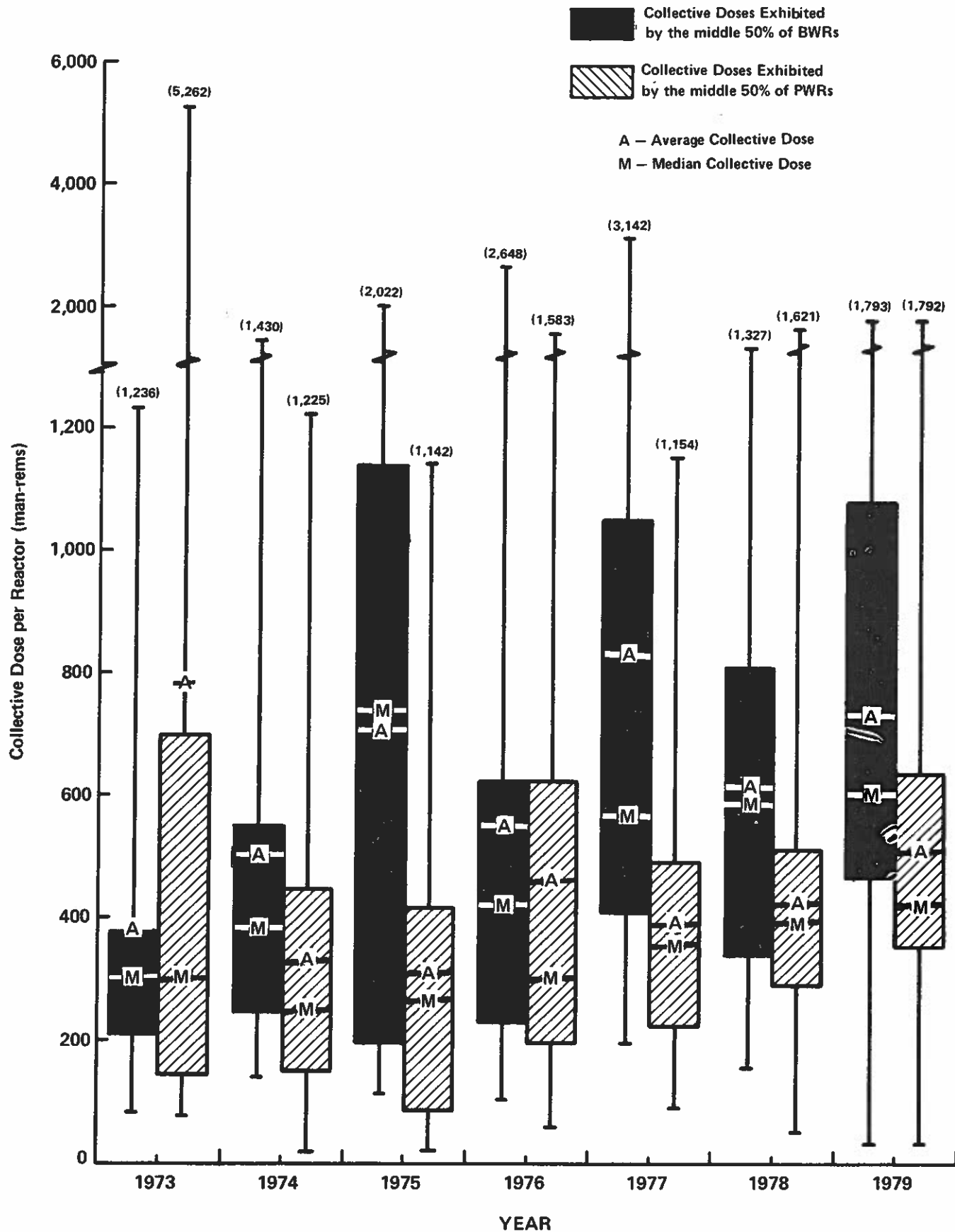


TABLE 4
BOILING WATER REACTORS
LISTED IN ASCENDING ORDER OF MAN-REMS PER REACTOR

1975 - 1979

1975				1976				1977				1978				1979			
Site Name	1 Man- Rems per Site	Dose per Worker (Rems)	Man- Rems per MW-Yr.	Site Name	1 Man- Rems per Site	Dose per Worker (Rems)	Man- Rems per MW-Yr.	Site Name	1 Man- Rems per Site	Dose per Worker (Rems)	Man- Rems per MW-Yr.	Site Name	1 Man- Rems per Site	Dose per Worker (Rems)	Man- Rems per MW-Yr.	Site Name	1 Man- Rems per Site	Dose per Worker (Rems)	Man- Rems per MW-Yr.
Peach Bottom 2&3	228	0.23	0.19	Duane Arnold	105	0.30	0.35	Cooper Station	198	0.63	0.37	Cooper Station	158	0.53	0.27	Humboldt Bay	31	0.23	PRODUCED NO POWER
Cooper Station	117	0.20	0.26	La Crosse	110	0.83	5.23	La Crosse	225	1.59	20.36	La Crosse	164	0.90	7.60	Monticello	157	0.42	0.30
Vermont Yankee	153	0.54	0.36	Brown Ferry 1&2	234	0.11	0.69	Vermont Yankee	258	0.40	0.61	Big Rock Point	175	0.61	3.60	La Crosse	186	1.22	7.75
Big Rock Point	180	0.60	5.15	Hatch	134	0.21	0.27	Duane Arnold	299	0.56	0.84	Hatch 1	248	0.19	0.48	Cooper	221	0.52	0.37
La Crosse	234	1.42	7.31	Fitzpatrick	202	0.34	0.41	Big Rock Point	334	0.72	7.59	Nine Mile Point	314	0.56	0.56	Duane Arnold	275	0.36	0.78
Browns Ferry 1	325	0.14	2.01	Monticello	263	0.81	0.55	Millstone Point 1	394	0.37	0.68	Humboldt Bay	335	1.05	—	Big Rock Point	455	0.73	35.00
Humboldt Bay	339	1.28	7.53	Big Rock Point	289	0.59	9.97	Browns Ferry 1&2	863	0.46	0.65	Vermont Yankee	339	0.36	0.87	Oyster Creek	467	0.55	0.86
Nine Mile Point	681	1.05	1.90	Brunswick 2	326	0.26	1.10	Hatch 1	465	0.36	1.04	Monticello	375	0.55	0.82	Browns Ferry 1,2,3	1,667	0.62	0.70
Pilgrim 1	798	1.69	2.59	Cooper Station	350	0.46	0.81	Quad Cities 1&2	1031	1.14	1.06	Brunswick 1&2	1004	0.69	0.86	Hatch	582	0.27	1.45
Quad Cities 1&2	1618	1.49	1.55	Vermont Yankee	411	0.50	1.06	Dresden 1,2&3	1694	0.91	1.49	Dresden 1,2&3	1792	0.75	0.90	Dresden 1,2,3	1,800	0.75	1.78
Oyster Creek	1140	0.94	3.05	Peach Bottom 2&3	840	0.39	0.61	Monticello	1000	1.16	2.34	Browns Ferry 1,2,8,3	1317	0.59	0.80	Peach Bottom 2,3	1,388	0.61	0.80
Dresden 1,2&3	3423	1.48	4.83	Nine Mile Point	428	1.09	0.89	Peach Bottom 2&3	2036	0.72	1.94	Quad Cities 1&2	1618	1.34	1.44	Fitzpatrick	859	1.01	2.46
Monticello	1353	1.00	3.92	Dresden 1,2&3	1680	0.96	3.95	Fitzpatrick	1080	0.78	2.34	Fitzpatrick	909	1.00	1.83	Pilgrim	1,015	0.41	1.77
Millstone Point 1	2022	0.78	4.35	Humboldt Bay	683	1.31	29.70	Brunswick 2	1120	0.74	3.86	Duane Arnold	974	0.86	6.53	Quad Cities 1,2	2,158	1.28	2.01
Averages per Reactor	701	0.86	2.18	Quad Cities 1&2	1851	1.35	1.74	Nine Mile Point	1383	1.27	3.99	Millstone 1	1239	0.89	2.23	Vermont Yankee	1,170	0.96	2.85
				Oyster Creek	1078	0.68	2.37	Oyster Creek	1614	0.96	4.18	Oyster Creek	1279	0.91	2.96	Brunswick 1,2	2,603	0.90	3.21
				Millstone 1	1194	0.87	2.66	Humboldt Bay	1905	1.79	PRODUCED NO POWER	Pilgrim	1327	0.80	2.55	Nine Mile Point	1,497	1.13	4.23
				Pilgrim 1	2648	2.01	9.23	Pilgrim 1	3142	1.67	9.31	Averages per Reactor	604	0.74	1.35	Millstone Point 1	1,793	1.01	3.55
				Averages per Reactor	547	0.71	1.52	Averages per Reactor	828	0.89	2.1					Averages per Reactor	733	0.73	1.57

¹For those sites with more than one operating reactor, the numbers of man-rem per reactor is obtained by dividing the number of man-rem reported by the site by the number of reactors.

TABLE 5
PRESSURIZED WATER REACTORS
LISTED IN ASCENDING ORDER OF MAN-REMS PER REACTOR

1975 - 1979

1975	1976	1977	1978	1979
Site Name	Site Name	Site Name	Site Name	Site Name
Man- Rems per Site	Man- Rems per Site	Man- Rems per Site	Man- Rems per Site	Man- Rems per Site
Dose per Worker (Rems)	Dose per Worker (Rems)	Dose per Worker (Rems)	Dose per Worker (Rems)	Dose per Worker (Rems)
Man- Rems per MW-Yr.	Man- Rems per MW-Yr.	Man- Rems per MW-Yr.	Man- Rems per MW-Yr.	Man- Rems per MW-Yr.
Arkansas 1	Rancho Seco	Beaver Valley	Davis Besse	Davis Besse
21	58	87	48	30
0.14	0.19	0.26	0.11	0.10
0.04	0.22	0.27	0.15	0.08
Kewaunee	Yankee Rowe	Palisades	Farley 1	Prairie Island 1,2
28	59	100	108	180
0.27	0.39	0.30	0.20	0.30
0.07	0.42	0.16	0.15	0.21
Prairie Island 1&2	Calvert Cliffs 1	Kewaunee	Prairie Island 1&2	Fort Calhoun
123	74	140	221	126
0.26	0.15	0.45	0.40	0.28
0.15	0.10	0.33	0.24	0.29
Zion 1&2	Maine Yankee	Prairie Island 1&2	Haddam Neck	Rancho Seco
127	85	300	117	126
0.29	0.35	0.42	0.54	0.44
0.11	0.12	0.33	0.21	0.18
Three Mile Island 1	Cook 1	St. Lucie	Salem 1	Kewaunee
73	116	152	122	127
0.56	0.29	0.34	0.21	0.37
0.11	0.14	0.23	0.22	0.31
Yankee Rowe	Millstone Point 2	Trojan	Kewaunee	Yankee Rowe
116	168	174	154	127
0.47	0.27	0.32	0.46	0.33
0.80	0.32	0.22	0.33	0.85
Oconee 1,2&3	Point Beach 1&2	Point Beach 1&2	Point Beach 1&2	Beaver Valley
497	370	430	320	132
0.60	1.18	0.49	0.95	0.19
0.27	0.43	0.33	0.30	0.80
Point Beach 1&2	Prairie Island 1&2	Millstone Point 2	Arkansas 1	San Onofre
459	447	243	189	139
1.35	0.62	0.47	0.26	0.27
0.57	0.62	0.47	0.30	0.35
San Onofre	Kewaunee	Beaver Valley	Beaver Valley	Maine Yankee
292	270	245	190	154
0.69	0.75	0.63	0.29	0.39
0.75	0.57	0.40	0.42	0.29
Fort Calhoun	Zion 1&2	Calvert Cliffs 1 & 2	Calvert Cliffs 1 & 2	Trojan
294	571	500	500	257
0.63	1.17	0.42	0.36	0.41
1.17	0.50	0.42	0.42	0.80
Palisades	Three Mile Island 1	Yankee Rowe	Yankee Rowe	Point Beach 1,2
306	286	282	312	644
0.62	0.35	0.50	0.45	1.06
1.01	0.54	0.84	1.55	0.80
Maine Yankee	Arkansas 1	Cook 1	Oconee 1,2,3	Oconee 1,2,3
319	289	300	321	1,001
0.73	0.61	0.37	0.50	0.59
0.59	0.62	0.55	0.48	0.80
Indian Point 1* & 2	Fort Calhoun	Yankee Rowe	Cook 1,2	Cook 1,2
705	313	356	323	718
0.79	0.60	0.49	0.64	0.52
0.60	0.88	0.77	0.50	0.93
Turkey Point 3&4	Oconee 1,2&3	Indian Point 1* & 2	Arkansas	Arkansas
876	1026	1071	336	369
0.88	0.84	0.84	0.43	0.28
0.74	0.70	0.77	0.45	0.69
538	449	360	337	805
0.78	1.47	0.54	0.42	0.56
Haddam Neck	Haddam Neck	Three Mile Island 1	St. Lucie	Calvert Cliffs 1,2
703	1184	391	401	438
0.88	0.72	0.55	0.52	0.74
1.42	1.22	0.84	1.24	0.48
1.56	2.56	0.84	1.20	0.89
Surry 1&2	Palisades	San Onofre	Fort Calhoun	North Anna
1649	636	401	410	449
0.85	0.84	0.76	0.69	0.22
1.34	0.93	0.76	0.66	0.62
Robinson 2	Robinson 2	Oconee 1,2&3	Maine Yankee	Millstone Point 2
1142	715	1329	420	472
2.27	2.01	0.85	0.65	0.91
Averages per Reactor	San Onofre	Ginna	Ginna	Crystal River
318	880	455	450	495
0.69	0.66	1.28	0.85	0.43
	2.96	0.78	0.73	2.34
	7.14	1.06	0.63	4.40
	3.41	0.98	0.73	1.67
	3.41	0.98	1.03	1.12
	0.99	1.33	1.45	1.03
		2.02	1.52	2.23
		0.78	2.01	3.05
		0.65	3.02	2.07
		0.65	0.84	2.05
		0.65	0.84	2.35
		0.65	0.84	2.46
		0.65	0.84	10.45
		0.65	0.84	1.17

*Indian Point 1 was defueled in 1975.

¹For those sites with more than one operating reactor, the numbers of man-rem per reactor is obtained by dividing the number of man-rem reported by the site by the number of reactors.

TABLE 6
LIGHT WATER COOLED REACTORS
LISTED IN ASCENDING ORDER OF MAN-REMS PER REACTOR

Five Year Totals and Averages
1975 - 1979

BOILING WATER REACTORS						PRESSURIZED WATER REACTORS					
2 Site Name	1 Total Man-Rems per Site	Total Workers with Measurable Doses	Average Dose per Worker (Rems)	Total Mega-Watt Years	Average Man-Rems per MW-Yr.	2 Site Name	1 Total Man-Rems per Site	Total Workers with Measurable Doses	Average Dose per Worker (Rems)	Total Mega-Watt Years	Average Man-Rems per MW-Yr.
La Crosse	919	759	1.21	110	8.4	Prairie Island 1, 2	1,271	3,153	0.40	4,290	0.3
Cooper	1,043	2,380	0.44	2,595	0.4	Kewaunee	719	1,475	0.49	2,111	0.3
Big Rock Point	1,434	2,161	0.66	170	8.4	Yankee Rowe	940	2,132	0.44	716	1.3
Vermont Yankee	2,331	3,892	0.60	2,044	1.1	Point Beach 1,2	2,222	2,015	1.10	4,255	0.5
Peach Bottom 2,3	5,809	10,454	0.56	7,042	0.8	Arkansas 1	1,124	3,267	0.34	2,687	0.4
Monticello	3,148	3,589	0.88	2,228	1.4	Maine Yankee	1,223	2,223	0.55	3,052	0.4
Humboldt Bay	3,292	2,306	1.43	69	47.7	Fort Calhoun	1,440	2,567	0.56	1,652	0.9
Quad Cities 1,2	8,076	6,110	1.32	4,954	1.6	Oconee 1,2,3	5,246	7,375	0.71	8,583	0.6
Nine Mile Point	4,303	4,021	1.07	2,073	2.1	Zion 1,2	3,992	4,570	0.87	6,527	0.6
Dresden 1,2,3	10,126	10,271	0.99	5,223	1.9	San Onofre	2,559	4,024	0.64	1,692	1.5
Oyster Creek	5,578	6,718	0.83	2,189	2.5	Ginna	2,617	3,508	0.75	1,721	1.5
Pilgrim	8,930	7,790	1.15	2,006	4.4	Palisades	2,720	4,017	0.68	2,001	1.4
Grand Totals and Averages	54,990	60,451	0.91	30,703	1.8	Turkey Point 3,4	5,808	7,480	0.78	4,769	1.2
						Haddam Neck	3,072	3,775	0.81	2,514	1.2
						Robinson 2	4,463	4,477	1.00	2,561	1.7
						Surry 1,2	12,542	13,829	0.91	4,702	2.7
						Grand Totals & Averages	51,958	69,887	0.74	53,833	1.0

¹ For those sites with more than one operating reactor, the number of man-rem per reactor is obtained by dividing the number of man-rem by the number of reactors at the site.

² Multiple unit sites where all reactors had not completed one full year of commercial operation as of 12-31-75 are not included.

In general, one can see from the listings in Tables 4 through 6 that the plants having lower values of these three parameters each year are usually the newer plants. Some of the older, smaller plants also appear near the top of the listings since they report small collective doses; however, the ratio of their man-remS to the number of megawatt-years generated will be higher because of their limited power generation capacity. Usually, when a plant reports a large annual collective dose, and a large man-remS to megawatt-year ratio as well, it indicates that extensive maintenance or modifications were undertaken during the year. Also, numerous plants reported increases in their collective doses as a result of the actions that the NRC required operating reactors to take because of the Three Mile Island 2 accident and NRC's concern for seismic design deficiencies in safety-related piping. And, again in 1978, several PWRs reported substantial collective doses associated with the inspection and repair of steam generator tubes. Some major activities at BWRs that accounted for a portion of the 1979 collective dose were inspection and maintenance of shock suppressors, and maintenance and repair of various valves.

3. ANNUAL DOSE DISTRIBUTIONS

3.1 Annual Whole Body Dose Distributions

Table 7 indicates the distribution of the annual whole body doses received by workers at commercial LWRs during each of the years 1969 through 1979. One can see that prior to 1973 the reports had a different format such that there were only two dose ranges, 0.0 to 1.25 remS and 1.25 to 2.0 remS, for doses less than two remS. This did not allow an estimate of the collective dose, as previously described, to be made for these years. For the years after 1972, one can see that the annual collective dose increased nearly every year, and that the number of workers receiving measurable doses continually increased. However, the percentage of these workers who received annual doses in excess of 5 remS has remained at about 0.2% for the last two years. Appendix B displays the 1979 annual dose distributions reported by each licensed nuclear facility.

The distribution shown in Table 7 for 1979 is the sum of these reports. The §20.407-type annual reports submitted by each facility during previous years can be found in WASH-1350-R5 (Ref. 8), NUREG-0463, (Ref. 9) and NUREG-0594 (Ref. 10).

The compilation of the distribution reports submitted by each facility into one report, however, introduces an additional source of error. Since individuals are not identified in the annual distribution reports, an individual who was monitored by five different reactor facilities would have been counted once on each facility's report. Therefore, when the data were summed to determine the total number of individuals monitored by all facilities, this person would have been counted as five individuals rather than as one. This could affect the distribution of doses as well as the number of individuals and their average dose, because the individual would have been counted five times in the lower dose ranges rather than one time in a higher range in which his actual accumulated dose (the sum of his doses incurred at each facility) would have placed him. Further discussion of this is provided in Section 4.3.

TABLE 7 *
SUMMARY DISTRIBUTION OF ANNUAL WHOLE-BODY DOSES
AT COMMERCIAL LIGHT WATER COOLED REACTORS

1969 - 1979

Year	Number of Individuals with Whole Body Exposures in the Indicated Ranges (Rems)																Total Number Monitored	Annual Collective Doses (Man-rems)
	No Measurable Exposure	Measurable <0.10	0.10- 0.25	0.25- 0.50	0.50- 0.75	0.75- 1.0	1.0- 2.0	2.0- 3.0	3.0- 4.0	4.0- 5.0	5.0- 6.0	6.0- 7.0	7.0- 8.0	8.0- 9.0	9.0- 10.0	10.0- 11.0		
	0.0-1.25				1.25-2.0													
1969		2,479				128		134	65	25	5	2					2,838	
1970		6,839				146		166	163	88	98	8	1				7,509	
1971		8,586				410		315	137	105	17	11					9,581	
1972		14,095				688		532	199	111	46	21	9	6	6		15,713	
1973	19,043	5,494	1,698	1,214	740	652	2,468	1,584	422	251	125	71	38	16	7		33,823	13,963**
1974	20,472	6,735	2,887	2,056	1,182	906	2,503	1,378	471	226	86	30	6				38,938	13,722**
1975	18,854	8,841	3,674	2,750	1,685	1,339	3,948	1,872	691	423	169	60	24	12		1	44,343	20,879**
1976	25,704	12,821	5,130	4,135	2,520	2,030	4,880	2,354	789	487	188	70	26	11	5	1	60,521	26,433**
1977	24,868	13,970	6,534	5,050	3,258	2,486	6,162	2,837	1,130	569	141	66	36	21	6		67,134	32,511**
1978	30,143	16,639	6,943	5,504	3,399	2,498	6,405	2,989	1,080	418	67	26	8			(>12) 2	76,121	31,804**
1979	45,087	24,301	9,846	8,159	5,189	3,479	7,934	3,307	1,251	477	86	28	13	2		(11-12) 1	109,160	39,759**

* Summary of reports submitted in accordance with 10 CFR 20.407 by plants that had been in commercial operation for at least one full year as of December 31 of each of the indicated years.

** The collective doses were not reported by the plants but were calculated by the staff by using the method described in this document.

3.2 Dose Distributions by Work and Job Function

Tables 8, 9 and 10 summarize the annual data submitted in accordance with plant technical specifications in the format described in Regulatory Guide 1.16. The licensees are requested to record the collective doses received by station employees, utility employees, and contract workers among various prescribed work functions and occupations. The report submitted by each station for 1979 is contained in Appendix C. One should note that in some cases, the licensee data had to be modified slightly in order to fit one of the prescribed categories.

Table 8 provides a detailed summary of the distribution of collective dose by work function, and personnel types for BWRs, PWRs and all LWRs. It shows that contract workers performing special maintenance at LWRs incur the largest collective dose. Table 9 presents a more general summary of this data for the last five years, and one can see that workers involved in routine and special maintenance activities continue to incur about 70% of the total cumulative dose. At BWRs (Table 8) workers involved in these activities received 70.5% of the cumulative dose, a decrease of about 9% from last year's value, while at PWRs these workers received 67.0% of the cumulative dose, an increase of about 15% from last year's value. The portions of the cumulative dose received by workers during inservice inspection and refueling at PWRs are 10.4% and 8.5%, respectively; at BWRs such workers received 7.3% and 4.4%, respectively, of the collective dose. Overall, the contractor personnel received 58% of the collective dose, and the station and utility employees received the remaining 42% at LWRs.

Table 10 presents the distribution of the collective dose at all LWRs among five occupations. As expected, maintenance personnel incurred the majority (71.4%) of the collective dose, with contractor maintenance personnel receiving 16.2% more than the station and utility maintenance employees.

Supervisory personnel received only 2.7% of the dose, while workers in the remaining three occupations - operations, health physics, and engineering - received 9.8%, 8.2%, and 7.8%, respectively, of the collective dose. The total collective dose, 31,222.1 man-rems, shown in Table 10 does not equal that shown in Table 8 because several sites did not provide the distribution of the collective dose by occupation. Also, the collective doses shown in Tables 8 and 10 do not equal those shown in other tables in the report because they are the sum of the doses taken from the type of annual reports shown in Appendix C rather than the collective dose that was calculated from the §20.407-type annual reports.

3.3 High Temperature Gas Cooled Reactor (HTGR)

The only HTGR operating in the United States is the Fort St. Vrain plant near Denver, Colorado. It is owned by the Public Service Company of Colorado who was licensed to operate the plant on December 21, 1973. The 330 MWe (net) rated plant achieved initial criticality on January 31, 1974, and began generating electricity in December 1976. However, the plant has been restricted to power levels less than 100% and did not declare commercial operability until July 1, 1979.

TABLE 8
ANNUAL COLLECTIVE DOSES
BY OCCUPATION AND PERSONNEL TYPE

1979

Work Function	Station Employees		Utility Employees		Contract Workers & Others		Total per Function	
	MAN-REMS	% OF TOTAL	MAN-REMS	% OF TOTAL	MAN-REMS	% OF TOTAL	MAN-REMS	% OF TOTAL
<u>BOILING WATER REACTORS</u>								
REACTOR OPERATIONS & SURVEILLANCE	1443.2	8.7 %	88.2	0.5 %	706.2	4.2 %	2237.6	13.4 %
ROUTINE MAINTENANCE	2579.6	15.5 %	1238.1	7.4 %	2738.0	16.4 %	6555.6	39.3 %
INSERVICE INSPECTION	126.8	0.8 %	108.0	0.6 %	983.8	5.9 %	1224.7	7.3 %
SPECIAL MAINTENANCE	690.8	4.1 %	465.1	2.8 %	4057.4	24.3 %	5213.3	31.2 %
WASTE PROCESSING	437.3	2.6 %	7.4	0.0 %	272.8	1.6 %	717.5	4.3 %
REFUELING	348.8	2.1 %	68.9	0.4 %	316.1	1.9 %	733.8	4.4 %
TOTALS	5626.5	33.7 %	1975.7	11.8 %	9080.3	54.4 %	16682.5	100.0 %
<u>PRESSURIZED WATER REACTORS</u>								
REACTOR OPERATIONS & SURVEILLANCE	1593.0	8.0 %	123.2	0.6 %	487.3	2.5 %	2203.6	11.1 %
ROUTINE MAINTENANCE	1880.5	9.5 %	407.3	2.1 %	1794.2	9.1 %	4082.0	20.6 %
INSERVICE INSPECTION	240.5	1.2 %	210.4	1.1 %	1602.4	8.1 %	2053.3	10.4 %
SPECIAL MAINTENANCE	1103.8	5.6 %	1053.1	5.3 %	7023.9	35.5 %	9180.8	46.4 %
WASTE PROCESSING	275.7	1.4 %	19.7	0.1 %	311.5	1.6 %	606.9	3.1 %
REFUELING	601.9	3.0 %	309.8	1.6 %	768.7	3.9 %	1680.4	8.5 %
TOTALS	5695.4	28.8 %	2123.6	10.7 %	11988.0	60.5 %	19807.0	100.0 %
<u>ALL LIGHT WATER REACTORS</u>								
REACTOR OPERATIONS & SURVEILLANCE	3036.2	8.3 %	211.4	0.6 %	1193.6	3.3 %	4441.2	12.2 %
ROUTINE MAINTENANCE	4460.1	12.2 %	1645.3	4.5 %	4532.2	12.4 %	10637.6	29.2 %
INSERVICE INSPECTION	367.3	1.0 %	318.4	0.9 %	2592.3	7.1 %	3278.0	9.0 %
SPECIAL MAINTENANCE	1794.6	4.9 %	1518.2	4.2 %	11081.2	30.4 %	14394.0	39.4 %
WASTE PROCESSING	713.0	2.0 %	27.2	0.1 %	584.3	1.6 %	1324.5	3.6 %
REFUELING	950.7	2.6 %	378.7	1.0 %	1084.8	3.0 %	2414.2	6.6 %
TOTALS	11321.9	31.0 %	4099.2	11.2 %	21068.4	57.7 %	36489.5	100.0 %

TABLE 9
PERCENTAGES OF ANNUAL COLLECTIVE DOSE
AT LWRS BY WORK FUNCTION

Work Function	Percent of Dose				
	1975	1976	1977	1978	1979
Reactor Operations and Surveillance	10.8%	10.2%	10.5%	13.3%	12.2%
Routine Maintenance	52.6%	31.0%	28.1%	31.5%	29.2%
Inservice Inspection	3.0%	6.0%	6.4%	7.7%	9.0%
Special Maintenance	19.0%	40.0%	42.5%	35.9%	39.4%
Waste Processing	6.9%	5.0%	5.8%	5.0%	3.6%
Refueling	7.7%	7.9%	6.7%	6.6%	6.6%

TABLE 10
ANNUAL COLLECTIVE DOSES
BY WORK FUNCTION AND PERSONNEL TYPE

1979

Occupation	Station Employees		Utility Employees		Contract Workers & Others		Total per Occupation	
	MAN-REMS	% OF TOTAL	MAN-REMS	% OF TOTAL	MAN-REMS	% OF TOTAL	MAN-REMS	% OF TOTAL
<u>BOILING WATER REACTORS</u>								
MAINTENANCE	2897.5	17.4 %	1762.8	10.6 %	8049.5	48.3 %	12709.8	76.2 %
OPERATIONS	1444.2	8.7 %	16.2	0.1 %	244.3	1.5 %	1704.7	10.2 %
HEALTH PHYSICS	599.1	3.6 %	38.7	0.2 %	340.0	2.0 %	977.8	5.9 %
SUPERVISORY	302.0	1.8 %	8.4	0.1 %	71.7	0.4 %	382.1	2.3 %
ENGINEERING	383.7	2.3 %	149.6	0.9 %	374.8	2.2 %	908.1	5.4 %
TOTALS	5626.5	33.7 %	1975.7	11.8 %	9080.3	54.4 %	16682.5	100.0 %
<u>PRESSURIZED WATER REACTORS</u>								
MAINTENANCE	2587.3	17.8 %	1368.4	9.4 %	5627.6	38.7 %	9583.3	65.9 %
OPERATIONS	1066.1	7.3 %	51.5	0.4 %	226.7	1.6 %	1344.3	9.2 %
HEALTH PHYSICS	513.8	3.5 %	95.7	0.7 %	986.0	6.8 %	1595.5	11.0 %
SUPERVISORY	267.0	1.8 %	42.5	0.3 %	165.8	1.1 %	475.3	3.3 %
ENGINEERING	292.0	2.0 %	178.4	1.2 %	1070.8	7.4 %	1541.2	10.6 %
TOTALS	4726.2	32.5 %	1736.5	11.9 %	8076.9	55.6 %	14539.6 ^a	100.0 %
<u>ALL LIGHT WATER REACTORS</u>								
MAINTENANCE	5484.8	17.6 %	3131.2	10.0 %	13677.1	43.8 %	22293.1	71.4 %
OPERATIONS	2510.2	8.0 %	67.8	0.2 %	471.0	1.5 %	3049.0	9.8 %
HEALTH PHYSICS	1112.9	3.6 %	134.4	0.4 %	1326.0	4.2 %	2573.3	8.2 %
SUPERVISORY	569.0	1.8 %	50.9	0.2 %	237.5	0.8 %	857.4	2.7 %
ENGINEERING	675.8	2.2 %	327.9	1.1 %	1445.6	4.6 %	2449.3	7.8 %
TOTALS	10352.7	33.2 %	3712.2	11.9 %	17157.2	55.0 %	31222.1 ^a	100.0 %

^a The remaining 5,267.4 man-rem of the total doses shown in Table 8 were not categorized by personnel occupation by the Indian Point 1 & 2, North Anna, Point Beach 1 & 2, and Surry 1 & 2 plants.

As shown in the following table, annual whole body doses incurred by workers at the plant have been minimal. No one has exceeded an annual dose of 0.25 rems, and the average dose per worker remains at about 0.05 rems. For the six years ending on December 31, 1979, the total collective dose for workers at the site was 15.6 man-rems, and a total of 124.3 megawatt-years of electricity had been generated. This yields a total six-year average of 0.1 man-rems per megawatt-year.

TABLE 11
ANNUAL DOSES AT FORT ST. VRAIN
1974 - 1979

No. of Individuals with Annual Doses in Ranges (Rems)				Total No. of Individuals Monitored	Annual Collective Dose (Man-Rems)	Gross MW-Yrs. Generated	Average Measurable Dose Per Worker (Rems)
Year	No Measurable Dose	Measurable <0.10	0.10 - 0.25				
1974	1597	63	1	1,661	3.3	0.0	0.05
1975	1263	0	0	1,263	0.0	0.0	0.00
1976	1362	25	0	1,387	1.3	2.8	0.05
1977	946	55	1	1,002	2.9	29.8	0.05
1978	896	34	0	930	1.7	75.7	0.05
1979	1149	170	2	1,271	6.4	16.0	0.05

4. TERMINATION DATA SUBMITTED PURSUANT TO 10 CFR §20.408

4.1 Termination Reports, 1969-1979

In 1969 the NRC (then the Atomic Energy Commission) began requiring operating nuclear power facilities and three other types* of licensees to submit personnel identification and exposure information upon the termination of each monitored person's employment or work assignment in the licensee's facility. The appropriate information on each report is manually coded and entered into the Commission's computerized Radiation Exposure Information and Reporting System at Oak Ridge, Tennessee. The data are retrievable through numerous ways - social security number, name, facility, etc. - which allows statistical analysis of the data, as well as the tracing of individual dose histories. During the years that this information has been collected, some 400,000 termination records have been received for approximately 120,000 individuals who have been reported as having terminated their employment at nuclear power plants. The figures given for the number of reports and the number of individuals are different because numerous individuals have been terminated more than once over the years and because some individuals may have had external doses reported for more than one part of the body, as well as estimates of internal depositions of radioactive material, each of which is counted as one record. Table 12 provides a breakdown of this information

* Industrial radiographers; fuel processors, fabricators, and reprocessors; and manufacturers and distributors of specified quantities of byproduct material.

for individuals terminating during each of the eleven years and shows that the number of such records continues to increase each year.

TABLE 12
TERMINATION REPORTS FOR REACTOR PERSONNEL
1969 - 1979

<u>Year</u>	<u>Number of Termination Records</u>	<u>Number of Terminating Individuals</u>
1969	790	727
1970	2,126	1,908
1971	2,346	2,197
1972	4,997	3,888
1973	11,525	9,071
1974	16,946	11,603
1975	38,376	22,627
1976	63,593	35,294
1977	80,398	36,548
1978	84,544	36,680
1979	98,509	43,624

4.2 Transient Workers per Calendar Quarter

One use that is being made of the information contained in the termination reports is the examination of the doses being received by short-term workers. Since nearly half of the termination reports indicated periods of exposure that were less than 90 days, it is possible that several thousand individuals could have been employed by two or more licensees during the same calendar quarter. Thus, by defining a "transient" worker to be a radiation worker who began and terminated employment at two or more different licensed facilities within one calendar quarter, one could examine the doses of those workers most likely to approach the quarterly limits without their present employer's knowledge since they move so rapidly among facilities.

Table 13 displays some of the information gathered from these termination reports that were submitted by the licensed nuclear power facilities. The number of these workers has increased more than twentyfold during the five years 1972 through 1976, but now appears to have leveled off for the last three years. This reflects the rate of growth of the nuclear power industry and its need for short-term workers. One can see from the top part of the table that the average individual dose (which is close to being a quarterly dose for most of these workers) has shown a decreasing trend during this time and fell to its lowest value of 0.45 rems in 1978. In 1979 it remained about the same at 0.47 rems. The lower half of the table breaks down the information shown in the first part and presents the doses of the workers employed by two, three and four or more different reactor licensees. One can see that the majority of these workers were reported by two different licensees during a quarter, while those terminated by three or more licensees generally showed

TABLE 13
TRANSIENT WORKERS PER CALENDAR QUARTER
AT NUCLEAR POWER FACILITIES
1972 - 1979*

Year	No. of Commercial Reactors	No. of Workers Terminated by Two or More Licensees	Collective Dose (Man-rem)	Average Dose (Rems)
1972	18	57	57	1.00
1973	24	146	123	0.84
1974	34	285	157	0.56
1975	44	684	493	0.72
1976	53	1,257	889	0.71
1977	57	1,435	851	0.59
1978	64	1,500	680	0.45
1979	67	1,460	684	0.47

Year	No. of Workers Terminated by Two Licensees	Collective Dose (Man-rem)	Average Dose (Rems)	No. of Workers Terminated by Four Licensees	Collective Dose (Man-rem)	Average Dose (Rems)
1972	54	52	0.96	1	2	2.00
1973	133	108	0.81	2	2	1.00
1974	255	132	0.52	2	1	0.50
1975	609	427	0.70	5	4	0.80
1976	1,095	720	0.66	17	23	1.35
1977	1,271	718	0.56	17	18	1.06
1978	1,303	590	0.45	32	15	0.47
1979*	1,280	571	0.45	26	15	0.58

* Data for 1979 may not be 100% complete.

higher average doses. Examinations of these records have revealed that some individuals have worked for as many as five different NRC licensees during one calendar quarter. However, only one instance was found in which a worker may have slightly exceeded his quarterly limit of three rems as a result of his working at two different licensed facilities within one calendar quarter. That is not to say that no other workers' doses have exceeded the quarterly limit because the records of those who were employed by a second licensee for a period spanning the end of a calendar quarter could not be examined in this manner, and the records of those employed by other than the four categories of NRC licensees are not submitted to the NRC.

4.3 Transient Workers per Calendar Year

Since the number of transient workers per calendar quarter comprise only a small percentage of the total number of individuals terminating each year, it was decided to change the criteria such that the records of more workers would be examined. This was done by selecting the records of all individuals who began and terminated two or more periods of employment with at least two different reactor facilities within one calendar year and by summing each worker's whole body doses. An examination of this data would allow one to determine the average individual dose for these workers as well as to help determine the impact that the inclusion of these individuals in each of two or more licensees' annual reports had on the statistics obtained from the compilation of the annual reports into one annual summary for all nuclear power facilities. (This is one of the problems mentioned in Section 3.1.)

Table 14a presents the actual distribution of these transient workers' doses as determined from the above-described termination reports and compares it with the distribution of the whole body doses as they would have appeared in a compilation of the annual statistical reports submitted by each of the nuclear power facilities. One can see that during the last three years (1977-1979) there were about 3,200 workers that worked at two or more nuclear power facilities during each year. The collective dose incurred by these workers, however, has tended to decrease such that the average measurable dose has fallen from 1.29 to 1.05 rems, but it is still twice as large as the average dose computed from the compilation of the data as it would have appeared in the summary of these licensees' annual reports. This is the result of the 3,200 workers being counted as 8,000 workers because they were reported by as many as nine different facilities.

Table 14b illustrates the impact that the multiple reporting of these transient workers had on the staff's compilations of the annual statistical reports for the last three years. Since each nuclear power facility reports the distribution of the doses received by workers while monitored by that particular facility during the year, one would expect that a compilation 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 about the same, the total number of workers and the average dose could be affected by this multiple reporting. This was found to be true.

TABLE 14a

Actual and Compiled Dose Distributions of Transient Workers Per Calendar Year at LWRs

Type of Distribution and Year	Number of Individuals with Whole Body Doses in the Ranges (Rems)																	Total Workers	Total Man-Rems	Avg. Dose (Rems)	Avg. Meas. Dose (Rems)	
	Less than Measurable	Meas'ble < 0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.00	1.00-2.00	2.00-3.00	3.00-4.00	4.00-5.00	5.00-6.00	6.00-7.00	7.00-8.00	8.00-9.00	9.00-10.00	10.00-11.00	11.00-12.00					>12.0
ACTUAL DISTRIBUTION OF TRANSIENTS - 1977	228	782	300	236	184	151	500	381	213	100	50	23	11	2				3,161	b 3,776	1.19	1.29	
COMPILED DISTRIBUTION OF TRANSIENTS - 1977	1,594	2,357	804	768	552	417	1,013	382	55	8	5							7,935	b 3,776	0.48	0.60	
ACTUAL DISTRIBUTION OF TRANSIENTS - 1978	302	869	316	286	166	144	462	293	159	106	46	15	2	0	1			3,167	b 3,193	1.01	1.11	
COMPILED DISTRIBUTION OF TRANSIENTS - 1978	2,025	2,402	916	780	495	377	859	246	51	11	0	2						8,164	b 3,193	0.39	0.52	
ACTUAL DISTRIBUTION OF TRANSIENTS - 1979	312	713	317	300	229	212	541	339	150	46	24	6	1					3,190	b 3,014	0.94	1.05	
COMPILED DISTRIBUTION OF TRANSIENTS - 1979	1,832	2,171	1,020	846	678	375	814	225	35	2	1							7,999	b 3,014	0.38	0.49	

TABLE 14b

Effects of Transient Workers on Annual Statistical Compilations

a	COMPILED STATISTICAL DISTRIBUTION - 1977	27,671	15,523	6,750	5,179	3,300	2,500	6,174	2,838	1,130	569	141	66	36	21	6			71,904	32,731	0.46	0.74
c	ADJUSTED STATISTICAL DISTRIBUTION - 1977	26,305	13,948	6,246	4,647	2,932	2,234	5,661	2,857	1,288	661	186	89	47	23	6			67,130	32,643	0.49	0.80
a	COMPILED STATISTICAL DISTRIBUTION - 1978	30,278	17,785	7,002	5,537	3,410	2,507	6,415	2,989	1,079	418	67	26	8	0	0	0	2	77,523	31,910	0.41	0.68
c	ADJUSTED STATISTICAL DISTRIBUTION - 1978	28,555	16,252	6,402	5,043	3,081	2,274	6,018	3,036	1,189	513	113	39	10	0	1	0	2	72,526	31,823	0.44	0.72
a	COMPILED STATISTICAL DISTRIBUTION - 1979	46,236	24,421	9,848	8,159	5,189	3,479	7,934	3,307	1,251	477	86	28	13	2	0	0	1	110,431	39,765	0.36	0.62
c	ADJUSTED STATISTICAL DISTRIBUTION - 1979	44,716	22,963	9,145	7,613	4,740	3,316	7,661	3,421	1,366	521	109	34	14	2	0	0	1	105,622	39,591	0.38	0.65

^aBased on data submitted by all reactors, although all of them may not have been in commercial operation for a full year.^bCollective dose found by summing the actual doses reported for these workers on their termination reports.^cDistribution found by subtracting the actual from the compiled distribution shown in Table 14a and then subtracting this difference from the compiled statistical distribution shown in Table 14b.

In each of the three years shown, there were about 3,300 too many workers indicated as having received measurable doses, and too few of these workers were shown in the higher dose ranges. For example, in 1977 the compiled annual reports indicated that 270 individuals received doses greater than five rems, while the adjusted distribution indicated that there were at least 451 such workers. This resulted in an average measurable dose of 0.81 rems rather than the 0.74 rems obtained from the compiled reports. Although the number of these transient workers has remained about the same, the number of them with doses exceeding five rems has decreased considerably, possibly due to the anticipated changes in the dose limits. In 1979 the compiled annual reports indicated 130 workers with doses exceeding five rems, while the adjusted compilation indicated some 160 such workers. The number of these transient workers receiving measurable doses is only about 5% of the total number receiving measurable doses during the year, and their impact on the statistics derived from compilations of the annual summary reports appears to be diminishing.

4.4 Age and Dose Distribution of Terminated Workers

Since some of the termination reports provide the birth date of the individual, one could examine these records and determine the age and dose distributions of the workers terminating during the year. Table 15 indicates the results of such examinations for the years 1975, 1978 and 1979 for power reactor personnel. One can see that the age and dose distributions of the workers terminating during these three years has remained about the same. From 1975 to 1979 there was a slight increase in the percentage of younger workers (less than 35 years old) terminating employment at power reactors, the largest increase being in the number of 20 to 24 year-olds which went from 12% to 15%. Workers less than 35 years of age continue to comprise a little more than half of the terminated personnel, and they receive a comparable portion of the collective dose. Figure 4 graphically displays the age and dose distributions of those workers terminating during 1979 for whom a birth date was reported.

4.5 Career Doses

The termination data also permit estimation of the whole body doses accumulated by the workers monitored by nuclear power facilities when they terminate their employment. This was done by summing each individual's periods of exposure and corresponding whole body doses to give the cumulative occupational dose that the individual received during his "career" at nuclear power facilities. It should be noted that the data are limited in several ways: (1) It is not always known whether the dates given in the termination reports indicate the worker's complete period of employment or just the period that he was monitored while assigned to work in radiation areas. Also, in many instances the dates reflect the processing frequency of the personnel monitoring devices rather than the exact periods of exposure. (2) The data may contain some dual reporting of exposure periods and doses. However, much of this has been corrected by editing the data for overlapping periods of exposure reported for an individual by the same facility and by including only those periods and doses reported by nuclear power facilities.

TABLE 15

AGE AND DOSE DISTRIBUTION OF TERMINATING REACTOR PERSONNEL

Age Range, Years	1975			1978			1979		
	Terminating Workers Number	% of Total	Collective Dose Man-rem % of Total	Terminating Workers Number	% of Total	Collective Dose Man-rem % of Total	Terminating Workers Number	% of Total	Collective Dose Man-rem % of Total
18 - 19	323	(2%)	78 (2%)	334	(2%)	72 (1%)	314	(1%)	79 (1%)
20 - 24	1,659	(12%)	751 (15%)	2,904	(14%)	1,690 (15%)	3,284	(15%)	1,528 (15%)
25 - 29	2,488	(19%)	991 (20%)	4,101	(19%)	2,504 (22%)	4,425	(20%)	2,356 (23%)
30 - 34	2,232	(17%)	825 (16%)	3,983	(19%)	2,356 (21%)	4,302	(19%)	2,034 (20%)
35 - 39	1,679	(12%)	619 (12%)	2,846	(13%)	1,466 (13%)	2,987	(13%)	1,397 (14%)
40 - 44	1,428	(11%)	535 (10%)	2,140	(10%)	1,079 (10%)	2,144	(10%)	855 (9%)
45 - 49	1,297	(10%)	418 (8%)	1,706	(8%)	809 (7%)	1,719	(8%)	665 (7%)
50 - 55	1,077	(8%)	342 (7%)	1,520	(7%)	685 (6%)	1,430	(6%)	541 (5%)
56 - 59	700	(5%)	241 (5%)	1,087	(5%)	414 (4%)	1,059	(5%)	396 (4%)
> 60	493	(4%)	233 (5%)	682	(3%)	250 (2%)	696	(3%)	229 (2%)
Totals	13,376	(100%)	5,033 (100%)	21,303	(100%)	11,305 (100%)	22,360	(100%)	10,080 (100%)

FIGURE 4

AGE AND DOSE DISTRIBUTIONS OF PERSONNEL TERMINATING IN 1979

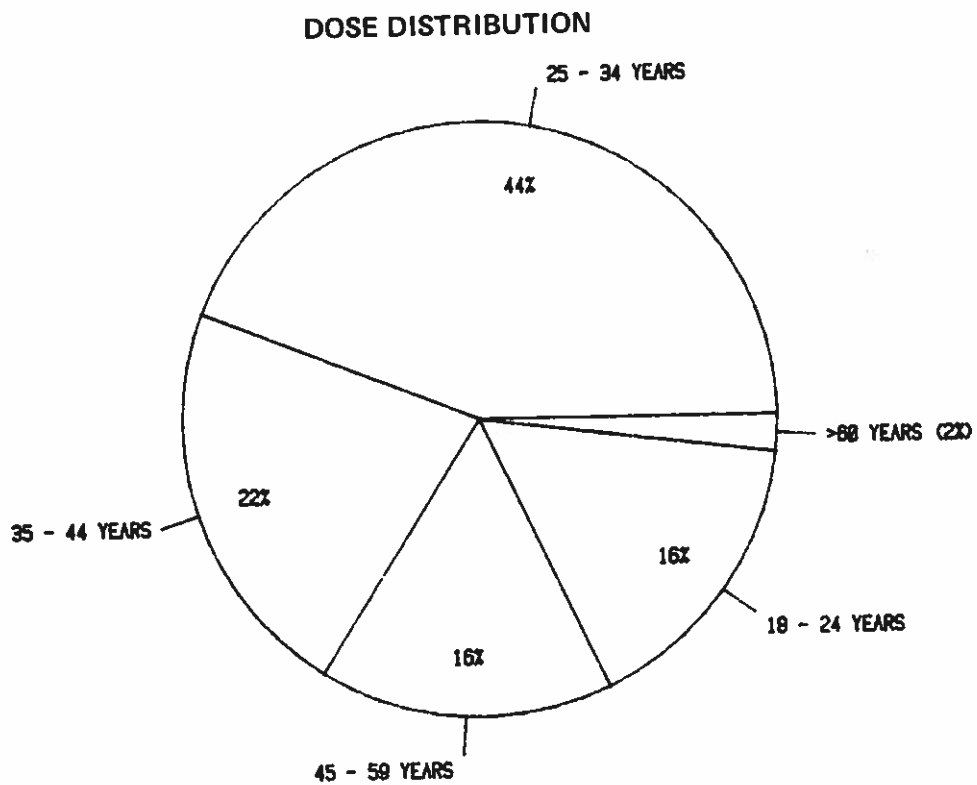
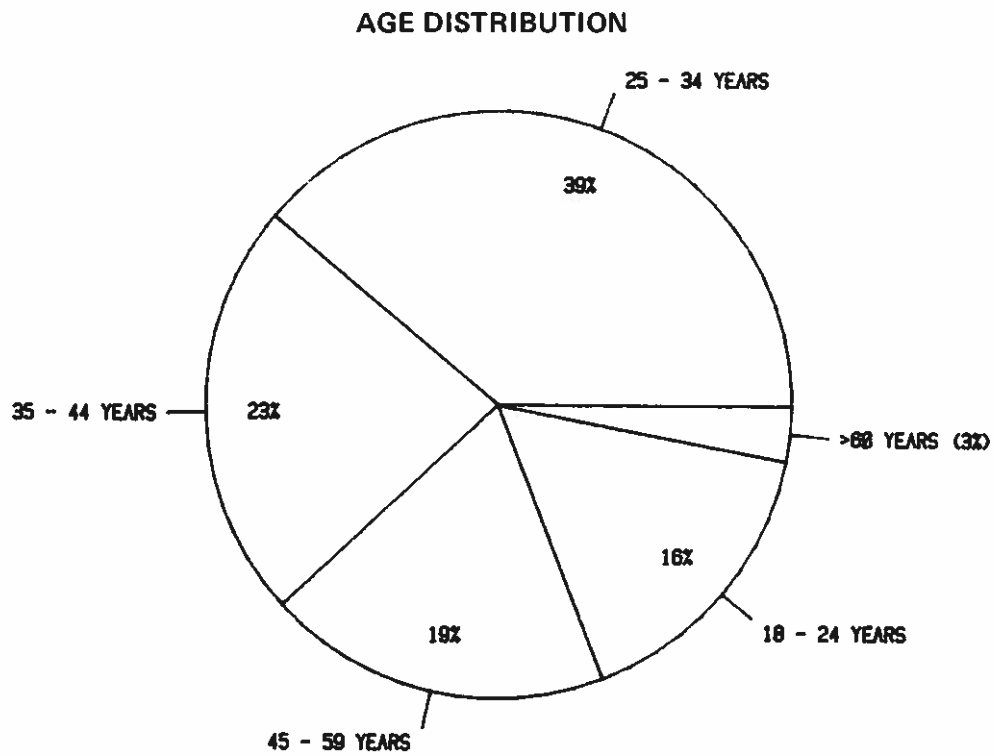


Table 16 presents the results of this analysis of the data reported for individuals terminating during the years 1969 through 1977. One can see that the average measurable dose ranges from 0.56 rems for periods less than 90 days to a high of 13.54 rems for the 15 to 20 year period. It appears that there are only a few individuals that approach an annual average of five rems. However, since there is such a small number of workers having longer periods of employment, these average doses may change appreciably as more data is collected and analyzed.

5. PERSONNEL OVEREXPOSURES

Table 17 presents the number and types of personnel overexposures that have been reported by power reactors pursuant to 10 CFR 20.403 and 20.405 since 1971. One can see that in 1979 the number of overexposed individuals increased over last year's figure, and that the majority of individuals continued to receive exposures only slightly above the applicable quarterly limits specified in 10 CFR 20.101. There were two incidents in 1979, however, in which larger doses were incurred. In one of them a shift supervisor at the Surry Unit 2 plant received a whole body dose of 10.09 rems when he entered the area beneath the reactor vessel to search for a leak. He was unaware that the radiation levels had increased because the radioactive in-core detector thimbles had been retracted from the core.

The second incident occurred at the Three Mile Island Unit 2 station on August 28 when six individuals entered a valve room in the Fuel Handling Building to inspect and tighten leaking valves. The leaking water was highly radioactive as a result of the March 28, 1979 accident (Ref. 11). The initial surveys failed to properly account for the doses that might be incurred from beta radiation and the six workers received the following skin overexposures: 166 rems, 161 rems, 40 rems, 29 rems, 26 rems, and 13 rems. The two individuals with the larger skin doses also received overexposures to the hands of 82 rems and 38 rems, respectively. Further details of this incident may be found in the "Report to Congress on Abnormal Occurrences" (Ref. 12).

TABLE 16

**Career Doses for Power Reactor Personnel
Terminating During the Years 1969-1977**

<u>Total Length of Employment</u>	<u>Number of Individuals Monitored</u>	<u>Number of Workers with Measurable Doses</u>	<u>Total Collective Dose (Man-rems)</u>	<u>Average Measurable Dose for the Period (Rems)</u>	<u>Highest Cumulative Whole Body Dose (Rems)</u>
0 - 90 Days	38,545	22,640	12,759	0.56	10
90 Days - 1 Yr.	15,053	10,738	10,240	0.95	20
1 - 2 Yrs.	3,742	2,816	3,893	1.38	18
2 - 3 Yrs.	1,155	862	1,507	1.75	18
3 - 4 Yrs.	516	468	752	1.61	18
4 - 5 Yrs.	178	161	514	3.19	21
5 - 10 Yrs.	237	217	676	3.12	27
10 - 15 Yrs.	45	36	359	9.97	60
15 - 20 Yrs.	16	13	176	13.54	40
> 20 Yrs.	33	19	103	5.42	27

TABLE 17

PERSONNEL OVEREXPOSURES AT POWER REACTORS

1971 - 1979

Year	Number of Workers Overexposed to External Radiation	Sum of Whole Body Doses (Man-rem)	Maximum Whole Body Dose (Rems)	Number of Workers Exposed to Excessive Concentrations of Radioactive Material	Maximum Exposure
1971	2	4.5	3.1	21	6.1 rem (thyroid)
1972	16	49.7	5.1	2	2000 MPC-hrs
1973	19	61.2	4.0	0	—
1974	43	155.9	6.1	12	433 MPC-hrs
1975	14	44.2	3.8	7	13.5 rem (lung)
1976	20	74.3	10.1	1	248 MPC-hrs
1977	27	52.9	3.6	0	—
1978	9	71.1	27.3	0	—
1979	21	43.4	10.1	0	—

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

APPENDIX A*

Personnel, Dose and Power Generation Summary

1969 -- 1979

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

Appendix A
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function	Man-rem per Contract	Man-rem per Type Station & Utility	Average Dose per Worker (Rems)	Man-rem per MW-Yr
ARKANSAS 1 Docket 50-313; DPR-51 1st commercial operation 12/74 Type - PWR Capacity - 836 MWe	1975	588.0	76.5	147	21				0.14	0.0
	1976	464.6	56.6	476	289	27	100	189	0.61	0.6
	1977	610.3	76.8	601	256	28	111	145	0.43	0.4
	1978	627.2	77.5	722	189	32	109	80	0.26	0.3
	1979	397.0	55.3	1321	369	54	252	117	0.28	0.9
BEAVER VALLEY 1 Docket 50-334; DPR-66 1st commercial operation 10/76 Type - PWR Capacity - 800 MWe	1977	355.6	57.0	331	87	8	58	29	0.26	0.2
	1978	304.2	40.8	646	190	11	152	38	0.29	0.6
	1979	221.0	40.0	704	132	22	67	65	0.19	0.6
BIG ROCK POINT Docket 50-155, DPR-6 1st commercial operation 3/63 Type - BWR Capacity - 64 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	42	234	0.98	6.8
	1975	35.1	59.8	300	180	58	20	160	0.60	5.1
	1976	29.5	50.1	488	289	82	105	184	0.59	9.8
	1977	43.6	73.4	465	334	94	60	274	0.72	7.7
	1978	48.5	77.9	285	175	93	9	166	0.61	3.6
	1979	13.0	23.5	623	455	89	102	353	0.73	35.0
BROWNS FERRY 1, 2, 3 Docket 50-259, 50-260, 50-296; DPR-33, -52, -68 1st commercial operation 8/74, 3/75, 3/77 Type - BWR Capacity - 1065, 1065, 1065 MWe	1975	161.7	17.8	2380	325				0.14	2.0
	1976	337.6	26.9	2207	234				0.11	0.7
	1977	1327.5	73.0	1858	863	60	249	614	0.46	0.6
	1978	1992.1	73.5	2376	1792	4	259	1533	0.75	0.9
	1979	2393.0	79.1	2689	1667	0	289	1378	0.62	0.7

Appendix A (Continued)
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Operations	Man-rem per Maint. & Others	Man-rem per Contractor	Man-rem per Station & Utility	Average Dose per Worker (Rems)	Man-rem per MW-Yr
BRUNSWICK 2, 1 Docket 50-324, 50-325; DPR-62, -71 1st commercial operation 11/75, 3/77 Type - BWR Capacity - 790, 790 MWe	1976	297.2	56.0	1265	326	15	311	222	104	0.26	1.1
	1977	291.1	55.7	1512	1119	48	1071	782	337	0.74	3.8
	1978	1173.1	83.7	1458	1004	99	905	695	309	0.69	0.8
	1979	810.0	60.1	2891	2602	97	2505	2074	528	0.90	3.2
CALVERT CLIFFS 1, 2 Docket 50-317, 50-318; DPR-53, -69 1st commercial operation 5/75, 4/77 Type - PWR Capacity - 810, 810 MWe	1976	753.4	95.2	507	74	28	46	8	66	0.15	0.1
	1977	583.0	72.1	2265	547	36	511	224	323	0.24	0.9
	1978	1188.5	75.8	1391	500	13	487	143	357	0.36	0.4
	1979	1161.0	74.0	1428	805	33	772	423	382	0.56	0.7
COOK 1, 2 Docket 50-315; DPR-58, -74 1st commercial operation 8/75, 7/78 Type - PWR Capacity - 1044 MWe, 1100 MWe	1976	807.4	83.1	395	116	13	103	71	45	0.29	0.1
	1977	573.0	76.1	802	299	21	278	138	161	0.37	0.5
	1978	744.8	73.6	778	336	49	287	139	197	0.43	0.4
	1979	1373.0	65.3	1445	718	45	673	454	264	0.50	0.5
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	0.2
	1976	433.3	75.5	763	350	39	311	210	140	0.46	0.8
	1977	538.2	86.2	315	197	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	89	132	0.52	0.4
CRYSTAL RIVER 3 Docket 50-302; DPR-72 1st commercial operation 3/77 Type - PWR Capacity - 797 MWe	1978	311.5	41.4	643	321	8	313	244	77	0.50	1.0
	1979	453.0	58.9	1150	495	29	466	346	149	0.43	1.1

Appendix A (Continued)
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function Operations	Man-rem per Maint. & Others	Man-rem per Contractor	Man-rem per Station & Utility	Average Dose per Worker (Rems)	Man-rem per MW-Yr
DAVIS-BESSE 1 Docket 50-346; NPF-3 1st commercial operation 11/77 Type - PWR Capacity - 906 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
DRESDEN 1, 2, 3 Docket 50-010, 50-237, 50-249; DPR-2, -19, -25 1st commercial operation 7/60, 7/70, 11/71 Type - BWR Capacity - 197, 772, 773 MWe	1969	99.7			286						2.9
	1970	163.1			143						0.9
	1971	394.5			715						1.8
	1972	1243.7			728						0.6
	1973	1112.2		1341	939	143	796	344	595	0.70	0.8
	1974	842.5	54.9	1594	1662			57	1605	1.04	2.0
	1975	708.1	54.6	2310	3423	271	3152	2252	1171	1.48	4.8
	1976	1127.2	80.8	1746	1680	228	1452	749	931	0.96	1.5
	1977	1132.9	77.0	1862	1693	316	1377	693	1000	0.91	1.5
	1978	1242.2	79.5	1946	1529	204	1325	619	910	0.79	1.2
	1979	1013.0	74.7	2407	1800	191	1609	641	1159	0.75	1.8
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	1112	974	59	915	932	42	0.88	6.5
	1979	352.0	78.0	757	275	35	240	219	56	0.36	0.8
FARLEY 1 Docket 50-348; NPF-2 1st commercial operation 12/77 Type - PWR Capacity - 829 MWe	1978	713.8	86.5	527	108	39	69	34	74	0.20	0.1
	1979	211.0	28.6	1227	643	108	535	460	183	0.52	3.0

Appendix A (Continued)
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Personnel Contractor	Man-rem per Station & Utility	Average Dose per Worker (Rems)	Man-rem per MW-Yr
						Operations	Maint. & Others				
FITZPATRICK Docket 50-333; DPR-59 1st commercial operation 7/75 Type - BWR Capacity - 800 MWe	1976	489.0	71.6	600	202	14	1066	937	143	0.34	0.4
	1977	460.5	68.4	1380	1080	166	743	597	312	0.78	2.3
	1978	497.0	72.1	904	909	169	690	538	321	1.00	1.8
	1979	349.0	50.8	850	859					1.01	2.5
FORT CALHOUN Docket 50-285; DPR-40 1st commercial operation 9/73 Type - PWR Capacity - 456 MWe	1974	294.0	83.5	327	71			24	47	0.22	0.2
	1975	252.3	67.4	469	294	28	285	92	202	0.63	1.2
	1976	265.9	69.5	516	313	33	264	38	275	0.61	1.2
	1977	351.8	79.4	535	297	59	351	72	225	0.56	0.8
	1978	342.3	75.1	596	410	19	107	151	259	0.69	1.2
	1979	440.0	95.7	451	126			47	79	0.28	0.3
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	1032	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	1225					1.39	4.8
	1975	365.2	76.7	685	538	29	607	210	426	0.78	1.5
	1976	248.8	58.2	758	636	15	386	120	281	0.84	2.5
	1977	365.6	85.5	530	401	20	430	98	352	0.76	1.1
	1978	386.5	80.6	657	450	68	524	207	385	0.68	1.2
	1979	355.0	72.8	878	592					0.67	1.7

Appendix A (Continued)
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Personnel Type	Average Dose per Worker (Rems)	Man-rem per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor		
HADDAM NECK (CONN. YANKEE) Docket 50-213; DPR-61 1st commercial operation 1/68 Type - PWR Capacity - 550 MWe	1969	438.5		138	106			27	0.77	0.2
	1970	424.7		734	689			463	0.94	1.6
	1971	502.2		289	342			166	1.18	0.7
	1972	515.6		355	325			181	0.91	0.6
	1973	293.1		951	697			544	0.73	2.4
	1974	521.4	91.2	550	201				0.36	0.4
	1975	494.3	89.9	795	703	20	683		0.88	1.4
	1976	482.9	82.5	644	449	5	444	253	0.70	0.9
	1977	480.7	83.9	894	641	59	582	440	0.72	1.3
	1978	563.4	98.6	216	117	25	92	18	0.54	0.2
	1979	493.0	87.5	1226	1161	73	1088	783	0.95	2.4
HATCH 1 Docket 50-321; DPR-57 1st commercial operation 12/75 Type - BWR Capacity - 717 MWe	1976	496.3	83.8	630	134	79	55	4	0.21	0.3
	1977	446.8	66.3	1303	465	96	369	220	0.36	1.0
	1978	513.0	72.8	1304	248	88	160	52	0.19	0.5
	1979	401.0	54.6	2131	582	85	497	382	0.27	1.5
HUMBOLDT BAY Docket 50-133; DPR-7 1st commercial operation 8/63 Type - BWR Capacity - 63 MWe	1969	44.6		125	164	69	95	12	1.31	3.7
	1970	49.3		115	209	130	79	37	1.82	4.2
	1971	39.6		140	292	114	178	65	2.09	7.4
	1972	43.1		127	253	81	172	57	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		1.28	7.5
	1976	23.5	46.4	523	683	37	646	112	1.31	29.1
	1977	0	0	1063	1904	24	1880	50	1.79	-
	1978	0	0	320	335	13	322	973	1.05	-
	1979	0	0	135	31	11	20	145	0.23	-
								2		

Appendix A (Continued)
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function Operations	Man-rem per Station & Utility	Average Dose per Worker (Rems)	Man-rem per MW-Yr
*INDIAN POINT 1, 2, 3 Docket 50-3, 50-247, 50-286; DPR-5, -26, -64 1st commercial operation 10/62, 8/73, 8/76 Type - PWR Capacity - 0, 859, 911 MWe	1969	206.2			298				1.4
	1970	43.3			1639				37.8
	1971	154.0			768				5.0
	1972	142.3			967				6.8
	1973	0		2998	5262	709	2415	1.75	-
	1974	556.1	59.4	1019	910			0.89	1.6
	1975	584.4	74.8	891	705	166	658	0.79	1.2
	1976	273.9	34.8	1590	1950	154	1778	1.23	7.1
	1977	1278.3	75.3	1391	1070	189	687	0.77	0.8
	1978	1172.3	67.8	1909	2006	260	1247	1.05	1.7
	1979	574.0	70.3	1349	1279	209	667	0.95	2.2
**INDIAN POINT 3	1979	568.0	66.5	808	636	63	154	0.79	1.1
KEWAUNEE Docket 50-305; DPR-43 1st commercial operation 6/74 Type - PWR Capacity - 519 MWe	1975	401.9	88.2	104	28	1	16	0.27	0.1
	1976	405.9	78.9	381	270	16	77	0.71	0.7
	1977	425.0	79.9	312	139	8	63	0.44	0.3
	1978	466.6	89.5	335	154	11	65	0.46	0.3
	1979	412.0	79.0	343	127	6	48	0.37	0.3
LACROSSE Docket 50-409; DPR-45 1st commercial operation 11/69 Type - BWR Capacity - 48 MWe	1970	15.3			111		40	0.72	7.2
	1971	33.1		218	158			1.14	4.8
	1972	29.2		151	172			1.41	5.9
	1973	24.4		157	221			1.21	9.1
	1974	37.9	81.0	115	139	89	133	1.42	3.7
	1975	32.0	69.6	165	234			1.59	7.3
	1976	21.2	47.6	118	111	40	105	0.94	5.2
	1977	11.3	33.7	141	224	60	216	1.59	19.8
	1978	21.6	62.0	182	164	69	158	0.90	7.6
	1979	24.0	71.8	153	186	65	165	1.22	7.7

*INDIAN POINT 1 was defueled in 1975. It had a capacity of 265 MWe.

**INDIAN POINT 3 was purchased by a different utility and now reports separately.

Appendix A (Continued)
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rems	Man-rems per Work Function Operations	Man-rems per Function Maint. & Others	Man-rems per Contractor	Man-rems per Personnel Type Station & Utility	Average Dose per Worker (Rems)	Man-rems per MW-Yr
MAINE YANKEE Docket 50-309; DPR-36 1st commercial operation 12/72 Type - PWR Capacity - 772 MWe	1973	408.7		782	117			59	58	0.15	0.3
	1974	432.6	68.7	619	420	64	356	188	232	0.68	1.0
	1975	542.9	79.9	440	319	15	304	181	138	0.72	0.6
	1976	712.2	95.0	244	85	27	58	26	59	0.35	0.1
	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	0.6
	1979	537.0	68.4	393	154	70	84	26	128	0.39	0.3
MILLSTONE POINT 1 Docket 50-245; DPR-21 1st commercial operation 3/71 Type - BWR Capacity - 654 MWe	1972	377.6		612	596	50	546	340	256	0.97	1.6
	1973	225.1		1184	663	125	538	422	241	0.56	2.9
	1974	430.3	79.1	2477	1430					0.58	3.3
	1975	465.4	75.6	2587	2022					0.78	4.3
	1976	449.8	76.1	1377	1194	54	1140	955	239	0.87	2.6
	1977	575.7	89.6	1075	392	118	274	159	233	0.36	0.7
	1978	556.6	87.6	1391	1239	140	1099	907	332	0.89	2.2
	1979	505.0	77.3	1769	1793	198	1595	1326	467	1.01	3.6
MILLSTONE POINT 2 Docket 50-336; DPR-65 1st commercial operation 12/75 Type - PWR Capacity - 802 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	1420	1621	72	1549	1534	87	1.14	3.0
	1979	520.0	62.8	757	472	81	391	305	167	0.62	0.9
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	0.1
	1973	389.5		401	176	48	128	67	109	0.44	0.4
	1974	349.3	74.9	842	349			91	258	0.41	1.0
	1975	344.8	72.2	1353	1353					1.00	3.9
	1976	476.4	91.5	325	263	59	204	51	212	0.81	0.5
	1977	425.6	79.9	860	1000	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	51	106	0.42	0.3

Appendix A (Continued)
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Contractor	Man-rem per Station & Utility	Average Dose per Worker (Rems)	Man-rem per MW-Yr
						Operations	Maint. & Others				
NINE MILE POINT 1 Docket 50-220; DPR-63 1st commercial operation 12/69 Type - BWR Capacity - 610 MWe	1970	227.0		821	44	12	32	17	27	0.05	0.2
	1971	346.5		1006	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	883	199	1.09	0.9
	1977	347.4	59.2	1093	1383	41	1342	26	500	1.26	4.0
	1978	527.7	95.1	561	314	59	255	940	288	0.56	0.6
	1979	354.0	66.1	1326	1497	106	1391		557	1.13	4.2
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NORTH ANNA 1 Docket 50-338; DPR-1st commercial operation 6/78 Type - PWR Capacity - 898 MWe	1979	507.0	61.7	2025	449	78	371	190	259	0.22	0.9
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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 - PWR Capacity - 860, 860, 860 MWe	1974	650.6	60.1	844	517	18	499	144	373	0.61	0.8
	1975	1838.3	75.5	829	497	72	425	90	407	0.60	0.3
	1976	1561.4	63.0	1215	1026	65	961	219	807	0.84	0.6
	1977	1566.4	65.9	1595	1328	244	1084	294	1034	0.83	0.8
	1978	1909.0	75.8	1636	1393	179	1214	340	1053	0.85	0.7
	1979	1708.0	67.7	2100	1001	123	878	181	820	0.48	0.6
OYSTER CREEK Docket 50-219; DPR-16 1st commercial operation 12/69 Type - BWR Capacity - 620 MWe	1970	413.6		95	63	21	42	11	52	0.66	0.1
	1971	448.9		249	240	50	190	92	148	0.96	0.5
	1972	515.0		339	582	150	432	167	415	1.72	1.1
	1973	424.6		782	1236	195	1041	683	553	1.58	2.9
	1974	434.5	70.4	935	984	166	818	162	822	1.05	2.3
	1975	373.6	73.3	1210	1140	169	971	271	869	0.94	3.0
	1976	456.5	79.3	1582	1078	70	1008	587	491	0.68	2.4
	1977	385.7	70.1	1673	1614	76	1538	1048	566	0.96	4.2
	1978	431.8	74.3	1411	1279	134	1145	696	583	0.91	3.0
	1979	541.0	85.9	842	467	95	372	135	332	0.55	0.9

Appendix A (Continued)
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function	Man-rem per Personnel Type	Average Dose per Worker (Rems)	Man-rem per MW-Yr
PALISADES Docket 50-255; DPR-20 1st commercial operation 12/71 Type - PWR Capacity - 635 MWe	1972	216.8		975	78				0.4
	1973	286.8		774	1133	16	661	1.16	3.9
	1974	10.7	5.5	495	627			0.81	58.6
	1975	302.0	64.5	742	306			0.62	1.0
	1976	346.9	55.2	332	696	23	109	0.94	2.0
	1977	616.6	91.4	849	100	13	23	0.30	0.2
	1978	320.2	49.7	1599	764	52	173	0.90	2.4
	1979	415.0	59.9		854	99	360	0.53	2.1
PEACH BOTTOM 2, 3 Docket 50-277, 50-278; DPR-44, -56 1st commercial operation 7/74, 12/74 Type - BWR Capacity - 1051, 1035 MWe	1975	1234.3	80.9	971	228			0.23	0.2
	1976	1379.2	73.0	2136	840	180	434	0.39	0.6
	1977	1052.4	58.7	2827	2036	223	1374	0.72	1.9
	1978	1636.3	84.0	2244	1317	162	709	0.59	0.8
	1979	1740.0	84.5	2276	1388	245	717	0.61	0.8
PILGRIM 1 Docket 50-293; DPR-35 1st commercial operation 12/72 Type - BWR Capacity - 669 MWe	1973	484.0		230	126			0.55	0.3
	1974	234.1	39.2	454	415	49		0.91	1.8
	1975	308.1	71.3	473	798	142	412	1.69	2.6
	1976	287.8	60.7	1317	2648	66	2270	2.01	9.2
	1977	316.6	61.4	1875	3142	146	2176	1.68	9.9
	1978	519.5	83.1	1667	1327	157	895	0.80	2.5
	1979	574.0	89.4	2458	1015	131	516	0.41	1.8

Appendix A (Continued)
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Personnel Contractor	Man-rem per Station & Utility	Average Dose per Worker (Rems)	Man-rem per MW-Yr
						Operations	Maintenance & Others				
POINT BEACH 1, 2 Docket 50-266, 50-301; DPR-24, -27 1st commercial operation 12/70, 10/72 Type - PWR Capacity - 495, 495 MWe	1971	393.4			164						0.4
	1972	378.3			580	72	516			1.17	1.5
	1973	693.7		501	588	70	225	81	214	0.74	0.8
	1974	760.2	81.3	400	295					1.35	0.4
	1975	801.2	82.9	339	459					1.18	0.6
	1976	857.3	86.7	313	370	58	312	107	263	1.03	0.4
	1977	873.9	87.3	417	429	63	366	212	217	0.95	0.5
	1978	914.4	90.9	336	320	71	249	111	209	1.06	0.3
	1979	808.0	80.8	610	644	65	579	449	195		0.8
PRAIRIE ISLAND 1, 2 Docket 50-282, 50-306; DPR-42, -60 1st commercial operation 12/73, 12/74 Type - PWR Capacity - 507, 507 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
QUAD CITIES 1, 2 Docket 50-254, 50-265; DPR-29, -30 1st commercial operation 2/73, 3/73 Type - BWR Capacity - 769, 769 MWe	1974	958.1	72.3	678	482			36	446	0.71	0.5
	1975	833.6	68.4	1083	1618	114	1504	692	926	1.49	1.9
	1976	951.2	73.1	1225	1651	269	1382	648	1003	1.35	1.7
	1977	970.1	84.0	907	1031	108	923	373	658	1.14	1.1
	1978	1124.5	88.6	1207	1618	156	1462	722	896	1.34	1.4
	1979	1075.0	84.6	1688	2158	215	1943	1250	908	1.28	2.0
RANCHO SECO 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	0.19	0.2
	1977	706.4	77.1	515	390	61	329	248	142	0.76	0.5
	1978	607.7	80.5	508	323	76	247	176	147	0.64	0.5
	1979	687.0	91.1	287	126	27	99	64	62	0.44	0.2

Appendix A (Continued)
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Contractor	Man-rems per Station & Utility	Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Operations	Maint. & Others				
ROBINSON 2 Docket 50-261; DPR-23 1st commercial operation 3/71 Type - PWR Capacity - 665 MWe	1972	580.0		245	215	42	173	137	78	0.88	0.4
	1973	455.1		831	695					0.84	1.5
	1974	578.1	83.3	853	672	185	487			0.79	1.2
	1975	501.8	72.7	849	1142					1.34	2.3
	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	1454	1188	60	1128	794	394	0.82	2.5
SALEM 1 Docket 50-272; DPR-70 1st commercial operation 6/77 Type - PWR Capacity - 1079 MWe	1978	546.4	55.6	574	122	28	94	32	90	0.21	0.2
	1979	250.0	25.5	1488	584	100	484	359	225	0.39	2.3
SAN ONOFRE 1 Docket 50-206; DPR-13 1st commercial operation 1/68 Type - PWR Capacity - 436 MWe	1969	314.1		123	42	10	32	5	37	0.34	0.1
	1970	365.9		251	155	13	142	59	96	0.62	0.4
	1971	362.1		121	50	12	38	3	47	0.41	0.1
	1972	338.5		326	256	29	227	117	139	0.78	0.8
	1973	273.7		570	353	40	313	168	185	0.62	1.3
	1974	377.8	86.1	219	71					0.32	0.2
	1975	389.0	87.4	424	292					0.69	0.7
	1976	297.9	70.2	1330	880	147	733	629	251	0.66	2.9
	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
ST. LUCIE 1 Docket 50-335; DPR-67 1st commercial operation 12/76 Type - PWR Capacity - 777 MWe	1977	649.1	84.7	445	152	26	126	92	60	0.34	0.2
	1978	606.4	76.5	797	337	15	322	140	197	0.42	0.6
	1979	592.0	74.0	907	438	25	413	209	229	0.48	0.7

Appendix A (Continued)
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Contractor	Man-rem per Station & Utility	Average Dose per Worker (Rems)	Man-rem per MW-Yr
						Operations	Maint. & Others				
SURREY 1, 2 Docket 50-280, 50-281; DPR-32, -37 1st commercial operation 12/72, 5/73 Type - PWR Capacity - 775, 775 MWe	1973	420.6		936	152					0.16	0.4
	1974	717.4	49.8	1715	884	72	812			0.51	1.2
	1975	1079.0	70.8	1948	1649	27	1622	1065	584	0.85	1.5
	1976	930.7	60.4	2753	3165	444	2721	1873	1292	1.15	3.4
	1977	1139.0	72.2	1860	2307	348	1959	1380	927	1.24	2.0
	1978	1210.6	77.2	2203	1837	726	1111	1029	808	0.83	1.5
	1979	343.0	42.3	5065	3584	173	3411	2975	609	0.71	10.4
THREE MILE ISLAND 1 Docket 50-289; DPR-50 1st commercial operation 9/74 Type - PWR Capacity - 788 MWe	1975	675.9	82.2	131	73			18	55	0.56	0.1
	1976	530.0	65.4	819	286	23	263	69	217	0.35	0.5
	1977	664.5	80.9	1122	359	15	344	128	231	0.32	0.5
	1978	690.0	85.1	1929	504	23	481	235	269	0.26	0.7
	1979	266.0	43.8	3975	1170	166	1004	762	408	0.29	4.4
TROJAN Docket 50-344; NPF-1 1st commercial operation 5/76 Type - PWR Capacity - 1080 MWe	1977	792.0	92.6	591	174	30	144	105	69	0.29	0.2
	1978	205.5	20.6	711	319	81	238	124	195	0.45	1.5
	1979	631.0	58.1	736	257	74	183	113	144	0.35	0.4
TURKEY POINT 3, 4 Docket 50-250, 50-251; DPR-31, -41 1st commercial operation 12/72, 9/73 Type - PWR Capacity - 665, 666 MWe	1973	401.9		444	78					0.18	0.2
	1974	953.6		794	454	88	366	202	252	0.57	0.5
	1975	1003.7	74.9	1176	876	270	606	559	317	0.74	0.9
	1976	974.2	71.2	1647	1184	89	1095	868	316	0.72	1.2
	1977	979.5	72.1	1319	1036	94	942	522	514	0.78	1.1
	1978	1000.2	78.8	1336	1032	90	942	546	486	0.77	1.0
	1979	811.0	62.4	2002	1680	299	1381	997	683	0.84	2.1

Appendix A (Continued)
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rems	Man-rems per Work Function Operations	Man-rems per Function Maint. & Others	Man-rems per Contract-Station & Utility	Average Dose per Worker (Rems)	Man-rems per MW-Yr
VERMONT YANKEE Docket 50-271; DPR-28 1st commercial operation 11/72 Type - BWR Capacity - 504 MWe	1973	222.1		244	85	24	192			
	1974	303.5		357	216	70	83	103	0.35	0.4
	1975	429.0	87.8	282	153	36	375	63	0.60	0.7
	1976	389.6	77.1	815	411	78	175	246	0.54	0.4
	1977	423.5	85.1	641	258	546	624	90	0.50	1.0
	1978	387.5	75.9	934	339			158	0.40	0.6
	1979	414.0	82.1	1220	1170			642	0.36	0.9
									0.96	2.8
YANKEE ROWE Docket 50-29; DPR-3 1st commercial operation 7/61 Type - PWR Capacity - 175 MWe	1969	138.3		193	215	83	132	78	1.11	1.5
	1970	146.1		355	255	90	165	158	0.72	1.7
	1971	173.5		155	90	46	44	19	0.58	0.5
	1972	78.7		282	255	63	192	146	0.90	3.2
	1973	127.1		133	99			47	0.74	0.8
	1974	111.3		243	205			99	0.84	1.8
	1975	145.1	82.4	249	116	52	64	66	0.47	0.8
	1976	152.2	89.8	152	59	17	42	4	0.39	0.4
	1977	124.6	73.9	725	356	28	328	174	0.49	2.9
	1978	145.0	81.0	565	282	26	256	95	0.50	1.9
	1979	149.0	81.6	441	127	16	111	52	0.29	0.9
ZION 1, 2 Docket 50-295, 50-304; DPR-39, -48 1st commercial operation 12/73, 9/74 Type - PWR Capacity - 1040, 1040 MWe	1974	425.3	71.1	306	56	17	110	13	0.18	0.1
	1975	1181.5	74.9	436	127	64	507	49	0.29	0.1
	1976	1134.9	61.9	774	571	43	960	257	0.74	0.5
	1977	1358.6	75.0	784	1003	150	867	561	1.28	0.7
	1978	1613.5	80.2	1104	1017	168	1106	418	0.92	0.6
	1979	1238.0	67.6	1472	1274			747	0.87	1.0

APPENDIX B

**Annual Whole Body Doses at
Licensed Nuclear Power Facilities**

1979

ANNUAL WHOLE BODY DOSE AT LICENSED NUCLEAR POWER FACILITIES

1979

1979

Plant Name	Number of Individuals with Wholes Body Doses in the Following Ranges (Rems)															Total Number Monitored	Number with Meas-urable Exposure	Total Man-Rems
	No Meas-urable Exposure	Meas-urable <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	5.0-6.0	6.0-7.0	7.0-8.0	8.0-9.0	9.0-10.0			
Arkansas 1	462	630	268	220	82	42	77	2								1,783	1,321	369
Beaver Valley	697	400	153	77	50	17	7									1,401	704	132
Big Rock Point	28	318	67	40	33	21	73	40	11	6	1	6	6	1		651	623	455
Browns Ferry 1, 2 & 3	5,710	786	421	399	297	215	417	134	20							9,399	2,689	1,667
Brunswick 1 & 2	1,290	884	353	315	255	188	452	236	150	58						4,181	2,891	2,602
Calvert Cliffs 1 & 2	507	462	241	207	167	92	198	41	12	8						1,935	1,428	805
Cook 1 & 2	758	488	281	234	134	98	149	50	11							2,203	1,445	718
Cooper Station	756	189	44	44	46	29	56	15	2	1						1,182	426	221
Crystal River	811	423	209	207	107	63	115	26								1,961	1,150	495

Appendix B (Continued)

ANNUAL WHOLE BODY DOSE AT LICENSED NUCLEAR POWER FACILITIES

Plant Name	Number of Individuals with Wholes Body Doses in the Following Ranges (Rems)															Total Number Monitored	Number with Measurable Exposure	Total Man-Rems
	No Measurable Exposure	Measurable <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	5.0-6.0	6.0-7.0	7.0-8.0	8.0-9.0	9.0-10.0			
Davis-Besse 1	313	237	44	20	2	0	1									617	304	30
Dresden 1, 2 & 3	1,282	835	422	288	156	82	285	229	95	9	5	1				3,689	2,407	1,800
Duane Arnold	866	359	105	120	53	46	66	7	1							1,623	757	275
Farley 1	705	369	233	205	111	80	209	18	1	0	1					1,932	1,227	643
Fitzpatrick	395	275	95	97	59	49	116	64	55	34	6					1,245	850	859
Fort Calhoun	171	265	49	60	35	14	23	4	1							622	451	126
Ginna	234	273	136	104	73	65	165	52	9	1						1,112	878	592
Haddam Neck	919	274	181	155	107	79	239	122	52	17						2,145	1,226	1,162
Hatch 1	1,384	1,115	385	295	138	65	127	6								3,515	2,131	582

ANNUAL WHOLE BODY DOSE AT LICENSED NUCLEAR POWER FACILITIES
1979

Plant Name	Number of Individuals with Wholes Body Doses in the Following Ranges (Rems)															Total Number Monitored	Number with Measurable Exposure	Total Man-Rems
	No Measurable Exposure	Measurable <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	5.0-6.0	6.0-7.0	7.0-8.0	8.0-9.0	9.0-10.0			
Humboldt Bay	26	84	16	15	7	9	4									161	135	31
Indian Point 1 & 2	486	250	187	209	110	113	263	173	37	7						1,835	1,349	1,279
Indian Point 3	365	135	139	113	106	98	152	52	7	5	1					1,173	808	636
Kewaunee	452	138	58	45	43	35	24									795	343	127
LaCrosse	43	57	6	12	7	8	17	23	20	3						196	153	186
Maine Yankee	279	175	63	53	36	22	37	7								672	393	154
Millstone 1	558	575	238	199	169	136	364	246	69	5						2,559	2,001	1,793
Millstone 2	147	151	62	52	45	35	96	65	18	1						672	525	472
Monticello	767	180	45	46	30	30	28	10	3							1,139	372	157

Appendix B (Continued)
1979

ANNUAL WHOLE BODY DOSE AT LICENSED NUCLEAR POWER FACILITIES

1979

Plant Name	Number of Individuals with Wholes Body Doses in the Following Ranges (Rems)															Total Number Monitored	Number with Measurable Exposure	Total Man-Rems
	No Measurable Exposure	Measurable <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	5.0-6.0	6.0-7.0	7.0-8.0	8.0-9.0	9.0-10.0			
Nine Mile Point	493	242	178	153	121	97	240	190	72	33						1,819	1,326	1,497
North Anna 1	230	1,363	223	176	124	37	91	9	2							2,255	2,025	449
Oconee 1, 2 & 3	580	821	373	265	191	119	258	71	2							2,680	2,100	1,001
Oyster Creek	165	340	148	78	51	45	133	40	7							1,007	842	467
Palisades	64	747	235	164	109	73	162	57	37	15						1,663	1,599	854
Peach Bottom 2 & 3	1,310	662	249	476	287	186	303	73	26	14						3,586	2,276	1,388
Pilgrim	339	1,430	310	254	96	57	176	71	45	19						2,797	2,458	1,015
Point Beach 1 & 2	136	97	53	50	72	70	187	60	20	1						746	610	644
Prairie Island 1 & 2	320	289	109	77	51	31	34	3								914	594	180

ANNUAL WHOLE BODY DOSE AT LICENSED NUCLEAR POWER FACILITIES
1979

Plant Name	Number of Individuals with Wholes Body Doses in the Following Ranges (Rems)															Total Number Monitored	Number with Measurable Exposure	Total Man-Rems
	No Measurable Exposure	Measurable <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	5.0-6.0	6.0-7.0	7.0-8.0	8.0-9.0	9.0-10.0			
Quad Cities 1 & 2	833	272	262	173	154	106	344	167	74	103	28	3	2			2,521	1,688	2,158
Rancho Seco	367	130	58	26	15	8	42	8								654	287	126
Robinson 2	656	440	213	175	110	88	238	122	51	17						2,110	1,454	1,188
Salem 1	605	626	269	246	120	70	122	30	3	2						2,093	1,488	584
San Onofre	429	309	76	44	36	24	30	2								950	521	139
St. Lucie 1	634	308	199	145	57	48	121	27	2							1,541	907	438
Surry 1 & 2	5,755	2,082	811	468	336	199	605	314	136	54	35	18	5	1	1	10,820	5,065	3,584
Three Mile Island 1 & 2	6,873	2,068	719	523	248	152	222	32	6	5						10,848	3,975	1,170
Trojan	697	298	152	123	69	34	53	7								1,433	736	258

ANNUAL WHOLE BODY DOSE AT LICENSED NUCLEAR POWER FACILITIES

1979

1979

Plant Name	Number of Individuals with Whole Body Doses in the Following Ranges (Rems)															Total Number Monitored	Number with Measurable Exposure	Total Man-Rems	
	No Measurable Exposure	Measurable <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	5.0-6.0	6.0-7.0	7.0-8.0	8.0-9.0	9.0-10.0				
Turkey Point 3 & 4	993	518	299	283	198	126	337	131	72	32	6						2,995	2,002	1,680
Vermont Yankee	469	247	165	190	127	89	201	131	47	20	3						1,689	1,220	1,170
Yankee Rowe	1,140	220	71	61	47	19	23										1,581	441	127
Zion 1 & 2	588	465	173	178	112	70	252	140	75	7							2,060	1,472	1,274
Fort St. Vrain	1,149	120	2														1,271	122	6

APPENDIX C
Number of Personnel and Man-rem
by Work and Job Function
1979

Note: A 't' preceding a plant name indicates that the licensee's input was recategorized by NRC staff.

Appendix C

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

Plant: Arkansas 1 (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	14	1	2		4.303	0.144	0.282	
Operating Personnel	18	1	0		10.039	0.487	0.0	
Health Physics Personnel	12	0	52		7.199	0.0	16.202	
Supervisory Personnel	1	0	0		0.142	0.0	0.0	
Engineering Personnel	0	0	2		0.0	0.0	0.294	
TOTAL	45	2	56	103	21.683	0.631	16.778	39.092
Routine Maintenance								
Maintenance Personnel	84	6	72		26.293	1.455	18.619	
Operating Personnel	0	0	0		0.0	0.0	0.0	
Health Physics Personnel	0	0	1		0.0	0.0	0.217	
Supervisory Personnel	1	0	3		0.112	0.0	0.780	
Engineering Personnel	0	0	4		0.0	0.0	0.654	
TOTAL	85	6	80	171	26.405	1.455	20.270	48.130
In-Service Inspection								
Maintenance Personnel	0		34		0.0		7.533	
Operating Personnel	0		0		0.0		0.0	
Health Physics Personnel	0		2		0.0		0.230	
Supervisory Personnel	1		0		0.213		0.0	
Engineering Personnel	0		11		0.0		2.809	
TOTAL	1	0	47	48	0.213	0.0	10.572	10.785
Special Maintenance								
Maintenance Personnel	40	2	211		9.434	0.397	87.270	
Operating Personnel	0	0	0		0.0	0.0	0.0	
Health Physics Personnel	0	0	3		0.0	0.0	0.608	
Supervisory Personnel	3	0	4		0.789	0.0	1.301	
Engineering Personnel	1	10	27		0.216	1.478	6.213	
TOTAL	44	12	245	301	10.439	1.875	95.392	107.706
Waste Processing								
Maintenance Personnel	23	2	0		4.425	0.607	0.0	
Operating Personnel	2	0	0		0.291	0.0	0.0	
Health Physics Personnel	2	0	1		0.425	0.0	0.206	
Supervisory Personnel	1	0	0		0.492	0.0	0.0	
Engineering Personnel	0	0	0		0.0	0.0	0.0	
TOTAL	28	2	1	31	5.633	0.607	0.206	6.446
Refueling								
Maintenance Personnel	33	3	32		10.764	1.147	23.707	
Operating Personnel	3	0	0		0.476	0.0	0.0	
Health Physics Personnel	5	0	23		1.537	0.0	7.794	
Supervisory Personnel	5	0	4		0.606	0.0	2.062	
Engineering Personnel	4	0	12		0.992	0.0	5.357	
TOTAL	50	3	71	124	14.375	1.147	38.920	54.442
Total By Job Function								
Maintenance Personnel	194	14	351	559	55.219	3.750	137.411	196.380
Operating Personnel	23	1	0	24	10.806	0.487	0.0	11.293
Health Physics Personnel	19	0	82	101	9.161	0.0	25.257	34.418
Supervisory Personnel	12	0	11	23	2.354	0.0	4.143	6.497
Engineering Personnel	5	10	56	71	1.208	1.478	15.327	18.013
GRAND TOTAL	253	25	500	778	78.748	5.715	182.138	266.601

Appendix C (Continued)

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

Plant: Beaver Valley (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	2	0	14		0.23	0.0	3.33	
Operating Personnel	19	0	0		3.28	0.0	0.0	
Health Physics Personnel	4	1	10		0.69	0.11	2.66	
Supervisory Personnel	0	0	1		0.0	0.0	0.18	
Engineering Personnel	4	0	20		1.00	0.0	6.26	
TOTAL	29	1	45	75	5.20	0.11	12.43	17.74
Routine Maintenance								
Maintenance Personnel	62	5	94		40.07	1.62	32.58	
Operating Personnel	2	0	0		0.21	0.0	0.0	
Health Physics Personnel	4	5	15		0.62	0.66	2.89	
Supervisory Personnel	3	0	2		1.15	0.0	0.34	
Engineering Personnel	7	1	11		1.70	0.11	2.30	
TOTAL	78	11	122	211	43.75	2.39	38.11	84.25
In-Service Inspection								
Maintenance Personnel			7				1.63	
Operating Personnel			0				0.0	
Health Physics Personnel			0				0.0	
Supervisory Personnel			0				0.0	
Engineering Personnel			4				0.83	
TOTAL	0	0	11	11	0.0	0.0	2.46	2.46
Special Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
Waste Processing								
Maintenance Personnel	1		0		0.12		0.0	
Operating Personnel	0		0		0.0		0.0	
Health Physics Personnel	0		1		0.0		0.10	
Supervisory Personnel	1		0		0.22		0.0	
Engineering Personnel	0		0		0.0		0.0	
TOTAL	2	0	1	3	0.34	0.0	0.10	0.44
Refueling								
Maintenance Personnel			1				0.10	
Operating Personnel			0				0.0	
Health Physics Personnel			1				0.15	
Supervisory Personnel			0				0.0	
Engineering Personnel			0				0.0	
TOTAL	0	0	2	2	0.0	0.0	0.25	0.25
Total By Job Function								
Maintenance Personnel	65	5	116	186	40.42	1.62	37.64	79.68
Operating Personnel	21	0	0	21	3.49	0.0	0.0	3.49
Health Physics Personnel	8	6	27	41	1.31	0.77	5.80	7.88
Supervisory Personnel	4	0	3	7	1.37	0.0	0.52	1.89
Engineering Personnel	11	1	35	47	2.70	0.11	9.39	12.20
GRAND TOTAL	109	12	181	302	49.29	2.50	53.35	105.14

Appendix C (Continued)

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

Plant: † Big Rock Point (BWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	14	43	0		5.669	8.154	0.0	
Operating Personnel	49	18	130		34.862	2.437	6.172	
Health Physics Personnel	16	4	0		2.767	0.0	0.0	
Supervisory Personnel	34	2	0		12.982	0.045	0.0	
Engineering Personnel	29	48	0		11.700	3.169	0.0	
TOTAL	142	115	130	387	67.980	13.805	6.172	87.957
Routine Maintenance								
Maintenance Personnel	49	59	37		87.687	85.288	2.778	
Operating Personnel	2	7	32		0.132	0.0	13.894	
Health Physics Personnel	14	9	0		12.858	8.800	0.0	
Supervisory Personnel	17	0	0		3.030	0.0	0.0	
Engineering Personnel	13	0	0		0.400	0.0	0.0	
TOTAL	95	75	69	239	104.107	94.088	16.672	214.867
In-Service Inspection								
Maintenance Personnel	25	14	0		0.863	4.907	0.0	
Operating Personnel	27	7	70		0.906	0.759	31.584	
Health Physics Personnel	10	4	0		0.272	0.0	0.0	
Supervisory Personnel	18	2	0		1.308	0.549	0.0	
Engineering Personnel	17	34	0		2.530	4.116	0.0	
TOTAL	97	61	70	228	5.879	10.331	31.584	47.794
Special Maintenance								
Maintenance Personnel	21	0	0		2.967	0.0	0.0	
Operating Personnel	0	7	83		0.0	0.773	33.865	
Health Physics Personnel	10	4	0		26.636	0.519	0.0	
Supervisory Personnel	17	0	0		0.719	0.0	0.0	
Engineering Personnel	13	1	0		0.173	0.052	0.0	
TOTAL	61	12	83	156	30.495	1.344	33.865	65.704
Waste Processing								
Maintenance Personnel	23	11	0		0.513	0.856	0.0	
Operating Personnel	23	0	2		0.685	0.0	0.989	
Health Physics Personnel	2	0	0		0.054	0.0	0.0	
Supervisory Personnel	17	0	0		0.012	0.0	0.0	
Engineering Personnel	0	0	0		0.0	0.0	0.0	
TOTAL	65	11	2	78	1.264	0.856	0.989	3.109
Refueling								
Maintenance Personnel	7	0	0		0.002	0.0	0.0	
Operating Personnel	40	2	12		15.426	0.038	11.699	
Health Physics Personnel	0	0	0		0.0	0.0	0.0	
Supervisory Personnel	23	0	0		2.472	0.0	0.0	
Engineering Personnel	13	0	0		0.030	0.0	0.0	
TOTAL	83	2	12	97	17.930	0.038	11.699	29.667
Total By Job Function								
Maintenance Personnel	139 (49)	127 (73)	37 (37)	303 (159)	97.701	99.205	2.778	199.684
Operating Personnel	141 (49)	41 (18)	329 (155)	511 (222)	52.011	4.007	98.203	154.221
Health Physics Personnel	52 (16)	21 (9)	0	73 (25)	42.587	9.319	0.0	51.906
Supervisory Personnel	126 (34)	4 (2)	0	130 (36)	20.523	0.594	0.0	21.117
Engineering Personnel	85 (29)	83 (48)	0	168 (77)	14.833	7.337	0.0	22.170
GRAND TOTAL	543 (177)	276 (150)	366 (192)	1,185 (519)	227.655	120.462	100.981	449.098

*Workers may be counted in more than one category. Number in parentheses is total number of individuals.

Appendix C (Continued)

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

Plant: † Browns Ferry 1, 2, 3 (BWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
Routine Maintenance								
Maintenance Personnel	331	731	97		176.6	511.5	49.1	
Operating Personnel	196	0	0		72.8	0.0	0.0	
Health Physics Personnel	40	17	29		16.4	4.8	12.2	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	32	82	1		22.8	32.3	0.1	
TOTAL	599	830	127	1,556	288.6	548.6	61.4	898.6
In-Service Inspection								
Maintenance Personnel			4				0.8	
Operating Personnel			0				0.0	
Health Physics Personnel			0				0.0	
Supervisory Personnel			0				0.0	
Engineering Personnel			0				0.0	
TOTAL	0	0	4	4	0.0	0.0	0.8	0.8
Special Maintenance								
Maintenance Personnel	0	114	109		0.0	42.9	128.3	
Operating Personnel	1	0	0		0.2	0.0	0.0	
Health Physics Personnel	1	0	2		0.1	0.0	0.3	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	9	6	0		2.8	1.9	0.0	
TOTAL	11	120	111	242	3.1	44.8	128.6	176.5
Waste Processing								
Maintenance Personnel	2				0.2			
Operating Personnel	7				1.2			
Health Physics Personnel	0				0.0			
Supervisory Personnel	0				0.0			
Engineering Personnel	0				0.0			
TOTAL	9	0	0	9	1.4	0.0	0.0	1.4
Refueling								
Maintenance Personnel	0	69	3		0.0	17.1	0.6	
Operating Personnel	21	0	0		6.2	0.0	0.0	
Health Physics Personnel	0	0	0		0.0	0.0	0.0	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	6	2	0		0.9	0.7	0.0	
TOTAL	27	71	3	101	7.1	17.8	0.6	25.5
Total By Job Function								
Maintenance Personnel	333	914	213	1,460	176.8	571.5	178.8	927.1
Operating Personnel	225	0	0	225	80.4	0.0	0.0	80.4
Health Physics Personnel	41	17	31	89	16.5	4.8	12.5	33.8
Supervisory Personnel	0	0	0	0	0.0	0.0	0.0	0.0
Engineering Personnel	47	90	1	138	26.5	34.9	0.1	61.5
GRAND TOTAL	646	1,021	245	1,912	300.2	611.2	191.4	1,102.8

Appendix C (Continued)

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

Plant: Brunswick 1, 2 (BWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	1.6	0.0	0.2		2.705	0.004	0.301	
Operating Personnel	34.5	0.7	56.0		46.447	0.710	12.528	
Health Physics Personnel	13.9	2.0	0.0		16.777	3.220	0.0	
Supervisory Personnel	1.7	0.7	2.0		0.305	0.074	0.518	
Engineering Personnel	14.8	0.4	1.5		7.282	0.141	0.804	
TOTAL	66.5	3.8	59.7	130.0	73.516	4.149	14.151	91.816
Routine Maintenance								
Maintenance Personnel	59.7	4.2	144.6		81.981	2.901	211.349	
Operating Personnel	1.0	0.0	0.0		1.421	0.024	0.0	
Health Physics Personnel	6.4	1.1	7.8		7.750	1.626	7.076	
Supervisory Personnel	0.4	0.0	0.0		0.079	0.0	0.0	
Engineering Personnel	4.9	0.1	2.3		2.429	0.047	1.213	
TOTAL	72.4	5.4	154.7	232.5	93.660	4.598	219.638	317.896
In-Service Inspection								
Maintenance Personnel	0.0	0.0	0.0		0.0	0.0	0.0	
Operating Personnel	0.0	0.0	0.0		0.0	0.0	0.0	
Health Physics Personnel	0.3	0.1	6.9		0.397	0.127	6.057	
Supervisory Personnel	0.1	0.5	0.0		0.013	0.050	0.0	
Engineering Personnel	0.0	0.7	9.0		0.0	0.354	4.392	
TOTAL	0.4	1.3	15.9	17.6	0.410	0.531	10.449	11.390
Special Maintenance								
Maintenance Personnel	67.4	40.2	913.2		107.391	27.630	1,228.265	
Operating Personnel	9.7	0.0	0.0		12.372	0.036	0.0	
Health Physics Personnel	8.0	4.9	34.2		9.735	4.015	30.610	
Supervisory Personnel	1.3	0.9	0.9		0.232	0.099	0.527	
Engineering Personnel	16.3	27.4	90.7		8.026	11.109	89.498	
TOTAL	102.7	73.4	1,039.0	1,215.1	137.756	42.889	1,348.900	1,529.545
Waste Processing								
Maintenance Personnel	30.8	0.8	107.7		47.337	0.222	168.422	
Operating Personnel	21.1	0.7	0.0		28.838	0.544	0.0	
Health Physics Personnel	6.3	1.1	4.1		7.635	1.635	3.790	
Supervisory Personnel	0.3	0.0	0.0		0.045	0.0	0.0	
Engineering Personnel	1.9	0.0	2.3		0.935	0.018	1.213	
TOTAL	60.4	2.6	114.1	177.1	84.790	2.419	173.425	260.634
Refueling								
Maintenance Personnel	15.0	9.7	136.8		28.150	6.606	168.244	
Operating Personnel	13.4	0.5	0.0		16.970	0.087	0.0	
Health Physics Personnel	1.0	1.8	20.7		1.194	1.174	18.201	
Supervisory Personnel	0.2	0.9	0.1		0.051	0.099	0.059	
Engineering Personnel	0.0	2.3	9.0		0.0	1.065	9.398	
TOTAL	29.6	15.2	166.6	211.4	46.365	9.031	195.902	251.298
Total By Job Function								
Maintenance Personnel	174.5	54.9	1,302.5	1,531.9	267.564	37.363	1,776.581	2,081.508
Operating Personnel	79.7	1.9	56.0	137.6	106.048	1.401	12.528	119.977
Health Physics Personnel	35.9	11.0	73.7	120.6	43.488	11.797	65.734	121.019
Supervisory Personnel	4.0	3.0	3.0	10.0	0.725	0.322	1.104	2.151
Engineering Personnel	37.9	30.9	114.8	183.6	18.672	12.734	106.518	137.924
GRAND TOTAL	332.0	101.7	1,550.0	1,983.7	436.497	63.617	1,962.465	2,462.579

Appendix C (Continued)

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

Plant: Calvert Cliffs 1, 2 (PWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	2		0		0.516		0.0	
Operating Personnel	24		0		12.337		0.0	
Health Physics Personnel	21		16		9.564		4.180	
Supervisory Personnel	8		0		1.745		0.0	
Engineering Personnel	1		0		0.171		0.0	
TOTAL	56	0	16	72	24.333	0.0	4.180	28.513
* Routine Maintenance								
Maintenance Personnel	81	26	135		38.060	5.266	43.495	
Operating Personnel	16	1	15		4.404	0.140	3.533	
Health Physics Personnel	1	0	9		0.157	0.0	1.509	
Supervisory Personnel	9	1	3		3.343	0.270	0.840	
Engineering Personnel	3	0	10		0.511	0.0	2.957	
TOTAL	110	28	172	310	46.475	5.676	52.334	104.485
* In-Service Inspection								
Maintenance Personnel	6	69	173		3.922	46.155	102.596	
Operating Personnel	5	1	21		0.920	0.147	11.263	
Health Physics Personnel	0	0	3		0.0	0.0	0.426	
Supervisory Personnel	2	1	4		0.318	0.151	1.352	
Engineering Personnel	7	3	21		1.883	0.897	7.455	
TOTAL	20	74	222	316	7.043	47.350	123.092	177.485
* Special Maintenance								
Maintenance Personnel	78	117	234		67.830	46.089	111.052	
Operating Personnel	31	5	11		10.221	0.918	3.989	
Health Physics Personnel	12	47	143		3.470	16.945	54.914	
Supervisory Personnel	10	2	5		6.749	1.415	1.329	
Engineering Personnel	7	0	29		2.909	0.0	15.091	
TOTAL	138	171	422	731	91.179	65.367	186.375	342.921
* Waste Processing								
Maintenance Personnel	0	0	0		0.0	0.0	0.0	
Operating Personnel	0	0	0		0.0	0.0	0.0	
Health Physics Personnel	6	10	3		2.455	2.756	0.656	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	0	0	0		0.0	0.0	0.0	
TOTAL	6	10	3	19	2.455	2.756	0.656	5.867
* Refueling								
Maintenance Personnel	36	31	8		17.728	15.868	1.731	
Operating Personnel	21	1	1		3.191	0.562	0.139	
Health Physics Personnel	0	1	0		0.0	0.349	0.0	
Supervisory Personnel	11	1	0		3.126	0.473	0.0	
Engineering Personnel	2	0	6		0.313	0.0	1.349	
TOTAL	70	34	15	119	24.358	17.252	3.219	44.829
* Total By Job Function								
Maintenance Personnel	203 (101)	243 (190)	550 (318)	996 (609)	128.056	113.378	258.874	500.308
Operating Personnel	97 (60)	8 (9)	48 (33)	153 (102)	31.073	1.767	18.924	51.764
Health Physics Personnel	40 (22)	58 (51)	174 (156)	272 (229)	15.646	20.050	61.685	97.381
Supervisory Personnel	40 (23)	5 (3)	12 (9)	57 (35)	15.281	2.309	3.521	21.111
Engineering Personnel	20 (12)	3 (4)	66 (54)	89 (70)	5.787	0.897	26.852	33.536
* GRAND TOTAL	400 (218)	317 (257)	850 (570)	1,567 (1,045)	195.843	138.401	369.856	704.100

*Workers may be counted in more than one category. Number in parentheses is total number of individuals.

Appendix C (Continued)

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

Plant: Cook 1, 2 (PWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	59	0	39		3.168	0.0	2.159	
Operating Personnel	65	0	0		33.171	0.0	0.0	
Health Physics Personnel	10	0	5		1.161	0.0	0.523	
Supervisory Personnel	12	4	1		2.232	0.106	0.015	
Engineering Personnel	6	0	1		0.971	0.0	0.105	
TOTAL	152	4	46	202	40.703	0.106	2.802	43.611
* Routine Maintenance								
Maintenance Personnel	98	0	171		91.298	0.0	25.002	
Operating Personnel	7	0	0		0.521	0.0	0.0	
Health Physics Personnel	13	0	17		4.296	0.0	2.592	
Supervisory Personnel	8	2	1		2.032	0.154	0.100	
Engineering Personnel	6	1	0		0.228	0.138	0.0	
TOTAL	132	3	189	324	98.375	0.292	27.694	126.361
* In-Service Inspection								
Maintenance Personnel	68	0	232		15.841	0.0	78.863	
Operating Personnel	9	0	0		1.244	0.0	0.0	
Health Physics Personnel	5	0	13		0.559	0.0	6.254	
Supervisory Personnel	8	7	7		3.025	1.001	4.493	
Engineering Personnel	8	1	0		0.585	0.107	0.0	
TOTAL	98	8	252	358	21.254	1.108	89.610	111.972
* Special Maintenance								
Maintenance Personnel	84	0	448		28.626	0.0	171.743	
Operating Personnel	2	0	0		0.063	0.0	0.0	
Health Physics Personnel	10	0	18		4.131	0.0	6.248	
Supervisory Personnel	6	16	18		0.576	12.802	5.379	
Engineering Personnel	5	14	5		0.469	5.609	0.960	
TOTAL	107	30	489	626	33.865	18.411	184.330	236.606
* Waste Processing								
Maintenance Personnel	53	0	131		12.009	0.0	57.084	
Operating Personnel	4	0	0		0.362	0.0	0.0	
Health Physics Personnel	12	0	15		6.423	0.0	2.673	
Supervisory Personnel	8	2	8		0.795	0.159	3.043	
Engineering Personnel	4	0	0		1.196	0.0	0.0	
TOTAL	81	2	154	237	20.785	0.159	62.800	83.744
* Refueling								
Maintenance Personnel	70	0	112		13.716	0.0	53.157	
Operating Personnel	1	0	0		0.059	0.0	0.0	
Health Physics Personnel	6	0	26		0.438	0.0	12.872	
Supervisory Personnel	10	1	6		2.340	0.107	3.823	
Engineering Personnel	6	0	1		2.061	0.0	0.121	
TOTAL	93	1	145	239	18.614	0.107	69.973	88.694
* Total By Job Function								
Maintenance Personnel	432 (98)	0 (0)	1,133 (642)	1,565 (740)	164.658	0.0	388.008	552.666
Operating Personnel	88 (65)	0 (0)	0 (0)	88 (65)	35.420	0.0	0.0	35.420
Health Physics Personnel	56 (14)	0 (0)	94 (34)	150 (48)	17.008	0.0	31.162	48.170
Supervisory Personnel	52 (23)	32 (17)	41 (22)	125 (62)	11.000	14.329	16.853	42.182
Engineering Personnel	35 (16)	16 (17)	7 (6)	58 (39)	5.510	5.854	1.186	12.550
* GRAND TOTAL	663 (216)	48 (34)	1,275 (704)	1,986 (954)	233.596	20.183	437.209	690.988

*Workers may be counted in more than one category. Number in parentheses is total number of individuals.

Appendix C (Continued)

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

Plant: Cooper (BWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN REM
* Reactor Operations & Surv.								
Maintenance Personnel	0		2		0.0		1.096	
Operating Personnel	39		0		24.234		0.0	
Health Physics Personnel	13		1		6.111		0.393	
Supervisory Personnel	9		1		6.411		0.116	
Engineering Personnel	12		2		7.446		0.426	
TOTAL	73	0	6	79	44.202	0.0	2.031	46.233
* Routine Maintenance								
Maintenance Personnel	44		70		49.427		55.999	
Operating Personnel	3		0		0.961		0.0	
Health Physics Personnel	8		0		2.340		0.0	
Supervisory Personnel	2		0		0.424		0.0	
Engineering Personnel	5		0		1.441		0.0	
TOTAL	62	0	70	132	54.593	0.0	55.999	110.592
* In-Service Inspection								
Maintenance Personnel	0		8		0.0		2.263	
Operating Personnel	0		0		0.0		0.0	
Health Physics Personnel	8		0		0.711		0.0	
Supervisory Personnel	0		2		0.0		1.223	
Engineering Personnel	1		0		0.154		0.0	
TOTAL	9	0	10	19	0.865	0.0	3.486	4.351
* Special Maintenance								
Maintenance Personnel	8	0	27		5.479	0.0	21.503	
Operating Personnel	2	0	0		0.330	0.0	0.0	
Health Physics Personnel	8	0	0		0.745	0.0	0.0	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	2	15	1		0.550	6.321	0.160	
TOTAL	20	15	28	63	7.104	6.321	21.663	35.088
* Waste Processing								
Maintenance Personnel	0				0.0			
Operating Personnel	8				2.375			
Health Physics Personnel	9				0.675			
Supervisory Personnel	1				0.058			
Engineering Personnel	0				0.0			
TOTAL	18	0	0	18	3.108	0.0	0.0	3.108
* Refueling								
Maintenance Personnel	0	0	0		0.0	0.0	0.0	
Operating Personnel	27				4.923			
Health Physics Personnel	8				0.132			
Supervisory Personnel	2				0.178			
Engineering Personnel	3				0.562			
TOTAL	40	0	0	40	5.795	0.0	0.0	5.795
* Total By Job Function								
Maintenance Personnel	52 (44)	0	107 (97)	159 (141)	54.906	0.0	80.861	135.767
Operating Personnel	79 (39)	0	0	79 (39)	32.823	0.0	0.0	32.823
Health Physics Personnel	54 (13)	0	1 (1)	55 (14)	10.714	0.0	0.393	11.107
Supervisory Personnel	14 (9)	0	3 (3)	17 (12)	7.071	0.0	1.339	8.410
Engineering Personnel	23 (13)	15 (15)	3 (3)	41 (31)	10.153	6.321	0.586	17.060
* GRAND TOTAL	222 (118)	15 (15)	114 (104)	351 (237)	115.667	6.321	83.179	205.167

*Workers may be counted in more than one category. Number in parentheses is total number of individuals.

Appendix C (Continued)

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

Plant: Crystal River 3 (PNR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	1				0.0	0.0		
Operating Personnel	21				13.60	0.01		
Health Physics Personnel	19				13.75	0.0		
Supervisory Personnel	1				0.0	0.0		
Engineering Personnel	0				0.0	0.0		
TOTAL	42	0	0	42	27.35	0.01	0.0	27.36
Routine Maintenance								
Maintenance Personnel	69	75	242		38.51	41.12	121.68	
Operating Personnel	19	0	1		3.89	0.0	0.17	
Health Physics Personnel	8	0	13		1.80	0.0	5.57	
Supervisory Personnel	14	0	34		3.89	0.11	14.64	
Engineering Personnel	1	2	34		0.26	1.13	15.66	
TOTAL	111	77	324	512	48.35	42.36	157.72	248.43
In-Service Inspection								
Maintenance Personnel	0	3	19		0.01	1.14	4.19	
Operating Personnel	0	0	0		0.09	0.02	0.0	
Health Physics Personnel	0	0	0		0.02	0.0	0.04	
Supervisory Personnel	1	0	3		0.04	0.0	0.84	
Engineering Personnel	7	1	12		1.35	0.49	1.55	
TOTAL	8	4	34	46	1.51	1.65	6.62	9.78
Special Maintenance								
Maintenance Personnel	8		135		4.44	0.09	125.38	
Operating Personnel	0		0		0.0	0.0	0.0	
Health Physics Personnel	0		29		0.0	0.0	17.56	
Supervisory Personnel	0		2		0.0	0.0	1.47	
Engineering Personnel	0		0		0.0	0.0	0.10	
TOTAL	8	0	166	174	4.44	0.09	144.51	149.04
Waste Processing								
Maintenance Personnel	14	6	22		3.85	1.33	6.60	
Operating Personnel	0	0	6		0.02	0.0	6.81	
Health Physics Personnel	2	0	0		0.16	0.0	0.00	
Supervisory Personnel	0	0	0		0.02	0.0	0.02	
Engineering Personnel	0	0	0		0.0	0.0	0.00	
TOTAL	16	6	28	50	4.05	1.33	13.43	18.81
Refueling								
Maintenance Personnel	6	17	6		2.49	6.18	2.06	
Operating Personnel	0	0	0		0.01	0.0	0.0	
Health Physics Personnel	0	0	0		0.0	0.0	0.0	
Supervisory Personnel	0	0	2		0.23	0.0	0.95	
Engineering Personnel	1	0	9		0.20	0.04	1.81	
TOTAL	7	17	17	41	2.93	6.22	4.82	13.97
Total By Job Function								
Maintenance Personnel	98	101	424	623	49.30	49.86	259.91	359.07
Operating Personnel	40	0	7	47	17.61	0.03	6.98	24.62
Health Physics Personnel	29	0	42	71	15.73	0.0	23.17	38.90
Supervisory Personnel	16	0	41	57	4.18	0.11	17.92	22.21
Engineering Personnel	9	3	55	67	1.81	1.66	19.12	22.59
GRAND TOTAL	192	104	569	865	88.63	51.66	327.10	467.39

Appendix C (Continued)

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

Plant: Davis-Besse (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	2		1		0.075		0.100	
Operating Personnel	20		0		3.700		0.0	
Health Physics Personnel	14		0		3.345		0.0	
Supervisory Personnel	2		0		0.015		0.0	
Engineering Personnel	0		3		0.0		0.075	
TOTAL	38	0	4	42	7.135	0.0	0.175	7.310
* Routine Maintenance								
Maintenance Personnel	62	3	15		7.150	0.345	1.565	
Operating Personnel	0	0	0		0.0	0.0	0.0	
Health Physics Personnel	0	0	0		0.0	0.0	0.0	
Supervisory Personnel	1	0	0		0.015	0.0	0.0	
Engineering Personnel	0	0	1		0.0	0.0	0.005	
TOTAL	63	3	16	82	7.165	0.345	1.570	9.080
* In-Service Inspection								
Maintenance Personnel	33	1	4		0.945	0.010	0.060	
Operating Personnel	0	0	0		0.0	0.0	0.0	
Health Physics Personnel	3	0	0		0.070	0.0	0.0	
Supervisory Personnel	4	0	0		0.170	0.0	0.0	
Engineering Personnel	0	0	12		0.0	0.0	0.580	
TOTAL	40	1	16	57	1.185	0.010	0.640	1.835
* Special Maintenance								
Maintenance Personnel	56	3	9		5.620	0.400	0.975	
Operating Personnel	0	0	0		0.0	0.0	0.0	
Health Physics Personnel	0	0	0		0.0	0.0	0.0	
Supervisory Personnel	4	0	0		0.600	0.0	0.0	
Engineering Personnel	0	0	12		0.0	0.0	0.995	
TOTAL	60	3	21	84	6.220	0.400	1.970	8.590
* Waste Processing								
Maintenance Personnel	17	2	1		1.045	0.025	0.135	
Operating Personnel	0	0	0		0.0	0.0	0.0	
Health Physics Personnel	0	0	0		0.0	0.0	0.0	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	0	0	0		0.0	0.0	0.0	
TOTAL	17	2	1	20	1.045	0.025	0.135	1.205
* Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
* Total By Job Function								
Maintenance Personnel	170	9	30	209	14.835	0.780	2.835	18.450
Operating Personnel	20	0	0	20	3.700	0.0	0.0	3.700
Health Physics Personnel	17	0	0	17	3.415	0.0	0.0	3.415
Supervisory Personnel	11	0	0	11	0.800	0.0	0.0	0.800
Engineering Personnel	0	0	28	28	0.0	0.0	1.655	1.655
GRAND TOTAL	218	9	58	285	22.750	0.780	4.490	28.020

*Workers may be counted in more than one category

Appendix C (Continued)

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

Plant: † Dresden 1, 2, 3 (BWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN REM
Reactor Operations & Surv.								
Maintenance Personnel	17	0			25.1	0.0		
Operating Personnel	127	0			106.9	0.0		
Health Physics Personnel	4	0			6.5	0.0		
Supervisory Personnel	52	0			11.6	0.0		
Engineering Personnel	134	270			64.9	10.1		
TOTAL	334	270	0	604	215.0	10.1	0.0	225.1
Routine Maintenance								
Maintenance Personnel	189		2,074		765.8		642.9	
Operating Personnel	12		0		17.7		0.0	
Health Physics Personnel	14		0		23.3		0.0	
Supervisory Personnel	92		0		80.9		0.0	
Engineering Personnel	39		0		7.2		0.0	
TOTAL	346	0	2,074	2,420	894.9	0.0	642.9	1,537.8
In-Service Inspection								
Maintenance Personnel	1		366		0.5		113.5	
Operating Personnel	5		0		7.1		0.0	
Health Physics Personnel	4		0		6.5		0.0	
Supervisory Personnel	0		0		0.0		0.0	
Engineering Personnel	51		0		9.5		0.0	
TOTAL	61	0	366	427	23.6	0.0	113.5	137.1
Special Maintenance								
Maintenance Personnel		219				48.9		
Operating Personnel		0				0.0		
Health Physics Personnel		0				0.0		
Supervisory Personnel		0				0.0		
Engineering Personnel		0				0.0		
TOTAL	0	219	0	219	0.0	48.9	0.0	48.9
Waste Processing								
Maintenance Personnel	1				2.0			
Operating Personnel	19				28.4			
Health Physics Personnel	23				37.3			
Supervisory Personnel	0				0.0			
Engineering Personnel	7				1.3			
TOTAL	50	0	0	50	69.0	0.0	0.0	69.0
Refueling								
Maintenance Personnel	7				10.4			
Operating Personnel	30				63.3			
Health Physics Personnel	12				19.6			
Supervisory Personnel	5				10.0			
Engineering Personnel	23				4.3			
TOTAL	77	0	0	77	107.6	0.0	0.0	107.6
Total By Job Function								
Maintenance Personnel	215	219	2,440	2,874	803.8	48.9	756.4	1,609.1
Operating Personnel	193	0	0	193	223.4	0.0	0.0	223.4
Health Physics Personnel	57	0	0	57	93.2	0.0	0.0	93.2
Supervisory Personnel	149	0	0	149	102.5	0.0	0.0	102.5
Engineering Personnel	254	270	0	524	87.2	10.1	0.0	97.3
GRAND TOTAL	868	489	2,440	3,797	1,310.1	59.0	756.4	2,125.5

Appendix C (Continued)

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

Plant: Duane Arnold (BWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	26	1	112		2.031	0.012	15.111	
Operating Personnel	20	0	2		1.557	0.0	0.557	
Health Physics Personnel	9	0	18		7.457	0.0	0.468	
Supervisory Personnel	3	0	23		0.085	0.0	6.330	
Engineering Personnel	4	0	36		0.275	0.0	3.966	
TOTAL	62	1	191	254	11.405	0.012	26.432	37.849
* Routine Maintenance								
Maintenance Personnel	27	1	80		8.420	0.221	6.612	
Operating Personnel	7	0	0		0.851	0.0	0.0	
Health Physics Personnel	1	0	1		0.042	0.0	0.005	
Supervisory Personnel	4	0	4		0.227	0.0	0.184	
Engineering Personnel	3	0	12		0.175	0.0	0.511	
TOTAL	42	1	97	140	9.715	0.221	7.312	17.248
* In-Service Inspection								
Maintenance Personnel	22	1	112		1.708	0.022	83.348	
Operating Personnel	6	0	2		0.181	0.0	1.206	
Health Physics Personnel	1	0	5		0.128	0.0	0.176	
Supervisory Personnel	3	0	9		0.446	0.0	5.325	
Engineering Personnel	5	0	50		1.054	0.0	20.120	
TOTAL	37	1	178	216	3.517	0.022	110.175	113.714
* Special Maintenance								
Maintenance Personnel	27	1	188		6.242	0.001	33.088	
Operating Personnel	28	0	2		17.734	0.0	0.117	
Health Physics Personnel	3	0	46		0.147	0.0	25.906	
Supervisory Personnel	6	0	23		2.205	0.0	10.924	
Engineering Personnel	3	0	39		0.227	0.0	3.967	
TOTAL	67	1	298	366	26.555	0.001	74.002	100.558
* Waste Processing								
Maintenance Personnel	2		50		1.666		15.045	
Operating Personnel	4		1		2.959		0.405	
Health Physics Personnel	4		1		2.801		0.383	
Supervisory Personnel	0		0		0.0		0.0	
Engineering Personnel	0		4		0.0		0.153	
TOTAL	10	0	56	66	7.426	0.0	15.986	23.412
* Refueling								
Maintenance Personnel	14		25		0.338		3.921	
Operating Personnel	25		0		1.419		0.0	
Health Physics Personnel	0		0		0.0		0.0	
Supervisory Personnel	3		0		0.298		0.0	
Engineering Personnel	2		0		0.020		0.0	
TOTAL	44	0	25	69	2.075	0.0	3.921	5.996
* Total By Job Function								
Maintenance Personnel	118 (29)	4 (1)	567 (221)	689 (251)	20.405	0.256	157.125	177.786
Operating Personnel	90 (34)	0	7 (3)	97 (37)	24.701	0.0	2.285	26.986
Health Physics Personnel	18 (10)	0	71 (47)	89 (57)	10.575	0.0	26.938	37.513
Supervisory Personnel	19 (7)	0	59 (27)	78 (34)	3.261	0.0	22.763	26.024
Engineering Personnel	17 (5)	0	141 (54)	158 (59)	1.751	0.0	28.717	30.468
* GRAND TOTAL	262 (85)	4 (1)	845 (352)	1,111 (438)	60.693	0.256	237.828	298.777

*Workers may be counted in more than one category. Number in parentheses is total number of individuals.

Appendix C (Continued)

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

Plant: Farley (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	73	0	19		4.052	0.0	1.609	
Operating Personnel	70	0	0		20.610	0.0	0.0	
Health Physics Personnel	20	0	65		8.448	0.0	33.873	
Supervisory Personnel	33	0	0		7.616	0.0	0.0	
Engineering Personnel	11	14	171		1.231	0.873	19.914	
TOTAL	207	14	255	476	41.957	0.873	55.396	98.226
Routine Maintenance								
Maintenance Personnel	77	0	31		7.408	0.0	16.359	
Operating Personnel	55	0	0		18.248	0.0	0.0	
Health Physics Personnel	11	0	35		1.425	0.0	1.784	
Supervisory Personnel	21	0	0		1.796	0.0	0.0	
Engineering Personnel	6	10	200		0.136	0.430	29.991	
TOTAL	170	10	266	446	29.013	0.430	48.134	77.577
In-Service Inspection								
Maintenance Personnel	23	0	29		0.474	0.0	10.571	
Operating Personnel	3	0	0		0.056	0.0	0.0	
Health Physics Personnel	3	0	11		0.073	0.0	0.355	
Supervisory Personnel	7	0	1		0.345	0.0	0.287	
Engineering Personnel	7	43	326		1.233	21.134	123.159	
TOTAL	43	43	367	453	2.181	21.134	134.372	157.687
Special Maintenance								
Maintenance Personnel	81	0	43		46.676	0.0	12.386	
Operating Personnel	52	0	0		4.475	0.0	0.0	
Health Physics Personnel	11	0	41		1.295	0.0	4.996	
Supervisory Personnel	32	0	1		6.740	0.0	0.104	
Engineering Personnel	10	29	391		1.296	3.798	149.345	
TOTAL	186	29	476	691	60.482	3.798	166.831	231.111
Waste Processing								
Maintenance Personnel	8	0	0		0.059	0.0	0.0	
Operating Personnel	13	0	0		1.239	0.0	0.0	
Health Physics Personnel	8	0	4		2.107	0.0	8.755	
Supervisory Personnel	5	0	0		1.880	0.0	0.0	
Engineering Personnel	0	2	8		0.0	0.021	0.061	
TOTAL	34	2	12	48	5.285	0.021	8.816	14.122
Refueling								
Maintenance Personnel	18		3		0.385		0.199	
Operating Personnel	3		0		0.012		0.0	
Health Physics Personnel	1		3		0.008		0.033	
Supervisory Personnel	8		0		0.108		0.0	
Engineering Personnel	0		19		0.0		2.947	
TOTAL	30	0	25	55	0.513	0.0	3.179	3.692
Total By Job Function								
Maintenance Personnel	280	0	125	405	59.054	0.0	41.124	100.178
Operating Personnel	196	0	0	196	44.640	0.0	0.0	44.640
Health Physics Personnel	54	0	159	213	13.356	0.0	49.796	63.152
Supervisory Personnel	106	0	2	108	18.485	0.0	0.391	18.876
Engineering Personnel	34	98	1,115	1,247	3.896	26.256	325.417	355.569
GRAND TOTAL	670	98	1,401	2,169	139.431	26.256	416.728	582.415

Appendix C (Continued)

NUMBER OF PERSONNEL AND MAN-REM BY WORK AND JOB FUNCTIONPlant: [†] Fitzpatrick (BWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	22		0		32		0	
Operating Personnel	55		54		62		7	
Health Physics Personnel	19		26		31		26	
Supervisory Personnel	2		0		0		0	
Engineering Personnel	0		0		0		0	
TOTAL	98	0	80	178	125	0	33	158
Routine Maintenance								
Maintenance Personnel	107		443		116		67	
Operating Personnel	0		0		0		0	
Health Physics Personnel	0		0		0		0	
Supervisory Personnel	0		22		0		3	
Engineering Personnel	0		0		0		0	
TOTAL	107	0	465	572	116	0	70	186
In-Service Inspection								
Maintenance Personnel	7		13		5		9	
Operating Personnel	0		0		0		0	
Health Physics Personnel	0		0		0		0	
Supervisory Personnel	1		0		0		0	
Engineering Personnel	12		121		7		31	
TOTAL	20	0	134	154	12	0	40	52
Special Maintenance								
Maintenance Personnel	0		323		0		347	
Operating Personnel	19		0		3		0	
Health Physics Personnel	0		0		0		0	
Supervisory Personnel	0		0		0		0	
Engineering Personnel	0		1		0		0	
TOTAL	19	0	324	343	3	0	347	350
Waste Processing								
Maintenance Personnel	3		3		2		1	
Operating Personnel	12		27		42		11	
Health Physics Personnel	0		0		0		0	
Supervisory Personnel	0		0		0		0	
Engineering Personnel	0		0		0		0	
TOTAL	15	0	30	45	44	0	12	56
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0	0	0	0
Total By Job Function								
Maintenance Personnel	139	0	782	921	155	0	424	579
Operating Personnel	86	0	81	167	107	0	18	125
Health Physics Personnel	19	0	26	45	31	0	26	57
Supervisory Personnel	3	0	22	25	0	0	3	3
Engineering Personnel	12	0	122	134	7	0	31	38
GRAND TOTAL	259	0	1,033	1,292	300	0	502	802

Appendix C (Continued)

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

Plant: Fort Calhoun (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	1	0	3		0.710	0.028	1.319	
Operating Personnel	13	0	0		6.440	0.007	0.0	
Health Physics Personnel	10	1	0		4.108	0.258	0.025	
Supervisory Personnel	0	0	0		0.175	0.0	0.0	
Engineering Personnel	8	3	0		2.366	1.762	0.059	
TOTAL	32	4	3	39	13.799	2.055	1.403	17.257
Routine Maintenance								
Maintenance Personnel	30	1	4		7.719	0.365	1.987	
Operating Personnel	0	0	0		0.041	0.0	0.0	
Health Physics Personnel	0	0	0		0.020	0.010	0.0	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	1	0	0		0.237	0.117	0.010	
TOTAL	31	1	4	36	8.017	0.492	1.997	10.506
In-Service Inspection								
Maintenance Personnel					0.010			
Operating Personnel					0.0			
Health Physics Personnel					0.005			
Supervisory Personnel					0.0			
Engineering Personnel					0.0			
TOTAL	0	0	0	0	0.015	0.0	0.0	0.015
Special Maintenance								
Maintenance Personnel	31	10	67		14.251	2.704	38.664	
Operating Personnel	8	0	0		2.245	0.002	0.0	
Health Physics Personnel	9	0	3		6.212	0.073	0.540	
Supervisory Personnel	2	0	0		0.606	0.040	0.0	
Engineering Personnel	8	15	0		6.886	5.543	0.259	
TOTAL	58	25	70	153	30.200	8.362	39.463	78.025
Waste Processing								
Maintenance Personnel	15				5.647	0.185	0.142	
Operating Personnel	6				1.682	0.0	0.0	
Health Physics Personnel	3				0.975	0.0	0.005	
Supervisory Personnel	0				0.010	0.0	0.0	
Engineering Personnel	0				0.078	0.066	0.079	
TOTAL	24	0	0	24	8.392	0.251	0.226	8.869
Refueling								
Maintenance Personnel		0			0.157	0.0	0.052	
Operating Personnel		0			0.023	0.0	0.0	
Health Physics Personnel		0			0.0	0.0	0.0	
Supervisory Personnel		0			0.010	0.0	0.0	
Engineering Personnel		1			0.043	0.164	0.0	
TOTAL	0	1	0	1	0.233	0.164	0.052	0.449
Total By Job Function								
Maintenance Personnel	77	11	74	162	28.494	3.282	42.164	73.940
Operating Personnel	27	0	0	27	10.431	0.009	0.0	10.440
Health Physics Personnel	22	1	3	26	11.320	0.341	0.570	12.231
Supervisory Personnel	2	0	0	2	0.801	0.040	0.0	0.841
Engineering Personnel	17	19	0	36	9.610	7.652	0.407	17.669
GRAND TOTAL	145	31	77	253	60.656	11.324	43.141	115.121

Appendix C (Continued)

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

Plant: Ginna (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	47	105	86		7.50	5.39	10.18	
Operating Personnel	27	0	0		22.99	0.0	0.0	
Health Physics Personnel	17	0	16		11.83	0.0	3.42	
Supervisory Personnel	17	1	0		5.59	0.93	0.0	
Engineering Personnel	0	5	0		0.0	0.59	0.0	
TOTAL	108	111	102	321	47.91	6.91	13.60	68.42
* Routine Maintenance								
Maintenance Personnel	48	172	130		47.93	60.45	31.92	
Operating Personnel	24	0	0		0.95	0.0	0.0	
Health Physics Personnel	16	0	16		5.00	0.0	6.32	
Supervisory Personnel	3	1	0		1.24	0.07	0.0	
Engineering Personnel	0	4	0		0.0	0.15	0.0	
TOTAL	91	177	146	414	55.12	60.67	38.24	154.03
* In-Service Inspection								
Maintenance Personnel	31	157	108		2.43	80.70	30.58	
Operating Personnel	12	0	0		2.04	0.0	0.0	
Health Physics Personnel	9	0	13		2.63	0.0	5.12	
Supervisory Personnel	16	1	0		3.25	0.05	0.0	
Engineering Personnel	0	4	0		0.0	2.08	0.0	
TOTAL	68	162	121	351	10.35	82.83	35.70	128.88
* Special Maintenance								
Maintenance Personnel	45	162	146		12.88	70.02	82.40	
Operating Personnel	12	0	0		0.86	0.0	0.0	
Health Physics Personnel	13	0	16		3.53	0.0	6.56	
Supervisory Personnel	15	1	0		2.15	0.17	0.0	
Engineering Personnel	0	4	0		0.0	0.89	0.0	
TOTAL	85	167	162	414	19.42	71.08	88.96	179.46
* Waste Processing								
Maintenance Personnel	25	24	6		3.13	1.02	0.19	
Operating Personnel	16	0	0		0.71	0.0	0.0	
Health Physics Personnel	7	0	7		0.63	0.0	0.39	
Supervisory Personnel	2	0	0		0.0	0.0	0.0	
Engineering Personnel	0	0	0		0.0	0.0	0.0	
TOTAL	50	24	13	87	4.47	1.02	0.58	6.07
* Refueling								
Maintenance Personnel	39	61	60		5.33	20.35	30.15	
Operating Personnel	5	0	0		4.25	0.0	0.0	
Health Physics Personnel	4	0	12		0.31	0.0	1.77	
Supervisory Personnel	9	0	0		0.54	0.0	0.0	
Engineering Personnel	0	0	0		0.0	0.0	0.0	
TOTAL	57	61	72	190	10.43	20.35	31.92	62.70
* Total By Job Function								
Maintenance Personnel	235 (48)	681 (195)	536 (161)	1,452 (404)	79.20	237.93	185.42	502.55
Operating Personnel	96 (27)	0 (0)	0 (0)	96 (27)	31.80	0.0	0.0	31.80
Health Physics Personnel	66 (17)	0 (0)	80 (16)	146 (33)	23.93	0.0	23.58	47.51
Supervisory Personnel	62 (17)	4 (1)	0 (0)	66 (18)	12.77	1.22	0.0	13.99
Engineering Personnel	0 (0)	17 (5)	0 (0)	17 (5)	0.0	3.71	0.0	3.71
* GRAND TOTAL	459 (109)	702 (201)	616 (177)	1,777 (487)	147.70	242.86	209.00	599.56

*Workers may be counted in more than one category. Number in parentheses is total number of individuals.

Appendix C (Continued)

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

Plant: Haddam Neck (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	4	2	3		3.90	0.30	1.04	
Operating Personnel	31	0	15		22.64	0.16	8.20	
Health Physics Personnel	6	1	39		4.43	0.20	16.08	
Supervisory Personnel	0	0	1		0.0	0.0	0.16	
Engineering Personnel	0	0	1		0.31	0.27	0.75	
TOTAL	41	3	59	103	31.28	0.93	26.23	58.44
Routine Maintenance								
Maintenance Personnel	29	113	88		51.13	75.33	84.90	
Operating Personnel	22	2	56		6.87	0.33	15.99	
Health Physics Personnel	15	0	115		13.74	0.37	69.57	
Supervisory Personnel	0	1	0		0.0	0.63	0.01	
Engineering Personnel	6	3	25		1.28	1.76	29.81	
TOTAL	72	119	284	475	73.02	78.42	200.28	351.72
In-Service Inspection								
Maintenance Personnel	2	0	14		1.02	0.11	9.31	
Operating Personnel	13	0	2		4.07	0.09	2.07	
Health Physics Personnel	1	0	1		0.39	0.01	0.62	
Supervisory Personnel	0	0	0		0.00	0.00	0.00	
Engineering Personnel	1	2	15		0.43	1.05	9.81	
TOTAL	17	2	32	51	5.91	1.26	21.81	28.98
Special Maintenance								
Maintenance Personnel	9	17	183		3.20	7.37	106.80	
Operating Personnel	2	2	10		1.08	1.36	4.29	
Health Physics Personnel	7	0	45		1.48	0.17	17.70	
Supervisory Personnel	0	1	2		0.0	0.22	1.20	
Engineering Personnel	2	12	35		0.92	4.45	19.39	
TOTAL	20	32	275	327	6.68	13.57	149.38	169.63
Waste Processing								
Maintenance Personnel	4	3	6		2.00	0.46	2.20	
Operating Personnel	16	0	1		5.06	0.0	0.26	
Health Physics Personnel	6	0	47		2.58	0.0	35.52	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	1	0	1		0.13	0.0	0.20	
TOTAL	27	3	55	85	9.77	0.46	38.18	48.41
Refueling								
Maintenance Personnel	23	75	78		12.71	40.61	77.98	
Operating Personnel	26	3	5		21.01	2.09	4.79	
Health Physics Personnel	4	0	65		1.16	0.20	50.84	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	2	3	33		1.03	1.28	52.86	
TOTAL	55	81	181	317	35.91	44.18	186.47	266.56
Total By Job Function								
Maintenance Personnel	71	210	372	653	73.96	124.18	282.23	480.37
Operating Personnel	110	7	89	206	60.73	4.03	35.60	100.36
Health Physics Personnel	39	1	312	352	23.78	0.95	190.33	215.06
Supervisory Personnel	0	2	3	5	0.0	0.85	1.37	2.22
Engineering Personnel	12	20	110	142	4.10	8.81	112.82	125.73
GRAND TOTAL	232	240	886	1,358	162.57	138.82	622.35	923.74

Appendix C (Continued)

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

Plant: E. I. Hatch (BWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	4	3	12		1		4	
Operating Personnel	106	1	0		42		0	
Health Physics Personnel	27	1	12		10		4	
Supervisory Personnel	1	0	4		0		1	
Engineering Personnel	5	1	23		1		9	
TOTAL	143	6	51	200	54	0	18	72
* Routine Maintenance								
Maintenance Personnel	95		38		41		8	
Operating Personnel	65		0		17		0	
Health Physics Personnel	5		0		1		0	
Supervisory Personnel	0		1		0		0	
Engineering Personnel	0		19		0		5	
TOTAL	165	0	58	223	59	0	13	72
* In-Service Inspection								
Maintenance Personnel		1	26				9	
Operating Personnel		0	0				0	
Health Physics Personnel		0	0				0	
Supervisory Personnel		0	1				0	
Engineering Personnel		0	2				0	
TOTAL	0	1	29	30	0	0	9	9
* Special Maintenance								
Maintenance Personnel	72	29	442		28	11	213	
Operating Personnel	24	0	0		6	0	0	
Health Physics Personnel	0	1	14		0	1	6	
Supervisory Personnel	0	0	9		0	0	5	
Engineering Personnel	9	22	77		2	7	32	
TOTAL	105	52	542	699	36	19	256	311
* Waste Processing								
Maintenance Personnel	1				0			
Operating Personnel	3				1			
Health Physics Personnel	0				0			
Supervisory Personnel	0				0			
Engineering Personnel	0				0			
TOTAL	4	0	0	4	1	0	0	1
* Refueling								
Maintenance Personnel	1	1	31		0		25	
Operating Personnel	4	0	0		1		0	
Health Physics Personnel	1	0	3		0		0	
Supervisory Personnel	0	1	2		0		1	
Engineering Personnel	0	0	4		0		1	
TOTAL	6	2	40	48	1	0	27	28
* Total By Job Function								
Maintenance Personnel	173 (113)	34 (34)	549 (496)	756 (643)	70	11	259	340
Operating Personnel	202 (164)	1 (1)	0 (0)	203 (165)	67	0	0	67
Health Physics Personnel	33 (32)	2 (2)	29 (24)	64 (58)	11	1	10	22
Supervisory Personnel	1 (1)	1 (0)	17 (9)	19 (10)	0	0	7	7
Engineering Personnel	14 (16)	23 (24)	125 (98)	162 (138)	3	7	47	57
* GRAND TOTAL	423 (326)	61 (61)	720 (627)	1,204 (1,014)	151	19	323	493

*Workers may be counted more than once. Numbers in parentheses is the total number of individuals.

Appendix C (Continued)

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

Plant: † Humboldt Bay (BWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	0				0.0			
Operating Personnel	20				6.3			
Health Physics Personnel	1				0.8			
Supervisory Personnel	1				0.2			
Engineering Personnel	1				0.1			
TOTAL	23	0	0	23	7.4	0.0	0.0	7.4
Routine Maintenance								
Maintenance Personnel	6				1.4			
Operating Personnel	0				0.0			
Health Physics Personnel	0				0.0			
Supervisory Personnel	0				0.0			
Engineering Personnel	0				0.0			
TOTAL	6	0	0	6	1.4	0.0	0.0	1.4
In-Service Inspection								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
Special Maintenance								
Maintenance Personnel	0	15			0.0	7.5		
Operating Personnel	0	0			0.0	0.0		
Health Physics Personnel	1	0			0.8	0.0		
Supervisory Personnel	1	0			0.3	0.0		
Engineering Personnel	0	0			0.0	0.0		
TOTAL	2	15	0	17	1.1	7.5	0.0	8.6
Waste Processing								
Maintenance Personnel	0		0		0.0		0.0	
Operating Personnel	1		1		1.3		1.2	
Health Physics Personnel	1		0		0.8		0.0	
Supervisory Personnel	1		0		0.5		0.0	
Engineering Personnel	1		0		0.2		0.0	
TOTAL	4	0	1	5	2.8	0.0	1.2	4.0
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
Total By Job Function								
Maintenance Personnel	6	15	0	21	1.4	7.5	0.0	8.9
Operating Personnel	21	0	1	22	7.6	0.0	1.2	8.8
Health Physics Personnel	3	0	0	3	2.4	0.0	0.0	2.4
Supervisory Personnel	3	0	0	3	1.0	0.0	0.0	1.0
Engineering Personnel	2	0	0	2	0.3	0.0	0.0	0.3
GRAND TOTAL	35	15	1	51	12.7	7.5	1.2	21.4

Appendix C (Continued)

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

Plant: Indian Point 1,2 (PWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	132			132	202.0			202.0
Routine Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	47			47	96.0			96.0
In-Service Inspection								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	1		7	8	1.0		12.1	13.1
Special Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	4	202	564	770	10.0	226.5	568.0	804.5
Waste Processing								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	36		3	39	7.0		2.9	9.9
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	10	76	12	98	17.4	84.5	8.0	109.9
Total By Job Function								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
GRAND TOTAL	230	278	586	1,094	333.4	311.0	591.0	1,235.4

Appendix C (Continued)

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

Plant: LaCrosse (BWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	0				0.145		0.0	
Operating Personnel	22				39.506		0.867	
Health Physics Personnel	7				8.633		0.020	
Supervisory Personnel	18				11.256		0.503	
Engineering Personnel	7				1.329		0.539	
TOTAL	54	0	0	54	60.869	0.0	1.929	62.798
* Routine Maintenance								
Maintenance Personnel	18				17.988	0.138	0.079	
Operating Personnel	11				2.552	0.0	0.0	
Health Physics Personnel	6				1.990	0.0	0.0	
Supervisory Personnel	4				1.319	0.0	0.0	
Engineering Personnel	1				0.206	0.0	0.009	
TOTAL	40	0	0	40	24.055	0.138	0.088	24.281
* In-Service Inspection								
Maintenance Personnel	3		11		1.065		14.339	
Operating Personnel	0		0		0.114		0.0	
Health Physics Personnel	1		0		0.286		0.0	
Supervisory Personnel	3		0		5.679		0.553	
Engineering Personnel	1		2		0.280		0.357	
TOTAL	8	0	13	21	7.424	0.0	15.249	22.673
* Special Maintenance								
Maintenance Personnel	16		0		20.136		0.0	
Operating Personnel	19		0		8.085		0.0	
Health Physics Personnel	5		0		3.444		0.0	
Supervisory Personnel	6		0		5.443		0.323	
Engineering Personnel	3		1		3.569		2.537	
TOTAL	49	0	1	50	40.677	0.0	2.860	43.537
* Waste Processing								
Maintenance Personnel	0				0.123		0.013	
Operating Personnel	6				1.273		0.0	
Health Physics Personnel	1				0.257		0.0	
Supervisory Personnel	1				1.842		0.0	
Engineering Personnel	1				1.290		0.0	
TOTAL	9	0	0	9	4.785	0.0	0.013	4.798
* Refueling								
Maintenance Personnel	10				4.501		0.059	
Operating Personnel	20				10.250		0.0	
Health Physics Personnel	6				2.615		0.0	
Supervisory Personnel	10				3.504		0.106	
Engineering Personnel	5				1.560		0.154	
TOTAL	51	0	0	51	22.430	0.0	0.319	22.749
Total By Job Function								
Maintenance Personnel	47 (18)		11 (11)	58 (29)	43.958	0.138	14.490	58.586
Operating Personnel	78 (22)		0	78 (22)	61.780	0.0	0.867	62.647
Health Physics Personnel	26 (7)		0	26 (7)	17.225	0.0	0.020	17.245
Supervisory Personnel	42 (18)		0	42 (18)	29.043	0.0	1.485	30.528
Engineering Personnel	18 (7)		3 (3)	21 (10)	8.234	0.0	3.596	11.830
GRAND TOTAL	211 (72)	0	14 (14)	225 (86)	160.240	0.138	20.458	180.836

*Workers may be counted more than once. Numbers in parentheses is the total number of individuals.

Appendix C (Continued)

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

Plant: Maine Yankee (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	2	0	0		1.086	0.0	0.058	
Operating Personnel	24	0	0		18.589	0.0	0.0	
Health Physics Personnel	9	0	0		13.991	0.095	0.0	
Supervisory Personnel	24	11	1		7.465	2.623	0.260	
Engineering Personnel	11	2	0		5.526	0.592	0.0	
TOTAL	70	13	1	84	46.657	3.310	0.318	50.285
Routine Maintenance								
Maintenance Personnel	28	0	2		31.003	0.0	0.425	
Operating Personnel	0	0	0		0.0	0.0	0.0	
Health Physics Personnel	0	0	0		0.0	0.0	0.0	
Supervisory Personnel	0	1	1		0.0	0.255	0.210	
Engineering Personnel	1	0	0		0.366	0.0	0.040	
TOTAL	29	1	3	33	31.369	0.255	0.675	32.299
In-Service Inspection								
Maintenance Personnel							0.145	
Operating Personnel							0.0	
Health Physics Personnel							0.0	
Supervisory Personnel							0.0	
Engineering Personnel							0.0	
TOTAL	0	0	0	0	0.0	0.0	0.145	0.145
Special Maintenance								
Maintenance Personnel	12	0	40		3.710	0.030	16.486	
Operating Personnel	0	0	0		0.325	0.0	0.0	
Health Physics Personnel	0	0	2		0.010	0.0	0.735	
Supervisory Personnel	0	0	0		0.0	0.017	0.0	
Engineering Personnel	2	2	0		0.550	0.558	0.200	
TOTAL	14	2	42	58	4.595	0.605	17.421	22.621
Waste Processing								
Maintenance Personnel	1				0.510		0.060	
Operating Personnel	2				4.887		0.0	
Health Physics Personnel	0				0.0		0.0	
Supervisory Personnel	0				0.0		0.0	
Engineering Personnel	0				0.0		0.0	
TOTAL	3	0	0	3	5.397	0.0	0.060	5.457
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
Total By Job Function								
Maintenance Personnel	43	0	42	85	36.309	0.030	17.174	53.513
Operating Personnel	26	0	0	26	23.801	0.0	0.0	23.801
Health Physics Personnel	9	0	2	11	14.001	0.095	0.735	14.831
Supervisory Personnel	24	12	2	38	7.465	2.895	0.470	10.830
Engineering Personnel	14	4	0	18	6.442	1.150	0.240	7.832
GRAND TOTAL	116	16	46	178	88.018	4.170	18.619	110.807

Appendix C (Continued)

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

Plant: Millstone 1 (BWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	16	0	137		12.13	0.66	44.55	
Operating Personnel	41	0	38		50.03	0.19	13.01	
Health Physics Personnel	18	2	34		15.06	4.14	12.16	
Supervisory Personnel	1	0	0		0.24	0.06	0.00	
Engineering Personnel	1	0	3		1.25	0.52	1.38	
TOTAL	77	2	212	291	78.71	5.57	71.10	155.38
Routine Maintenance								
Maintenance Personnel	12		5		4.07	0.02	1.73	
Operating Personnel	4		2		0.82	0.00	0.49	
Health Physics Personnel	1		0		0.26	0.16	0.10	
Supervisory Personnel	0		0		0.05	0.00	0.00	
Engineering Personnel	0		0		0.04	0.00	0.01	
TOTAL	17	0	7	24	5.24	0.18	2.33	7.75
In-Service Inspection								
Maintenance Personnel	3	1	63		2.05	0.60	20.94	
Operating Personnel	4	0	5		1.29	0.04	1.83	
Health Physics Personnel	2	1	8		0.55	0.54	2.18	
Supervisory Personnel	0	0	1		0.13	0.00	0.34	
Engineering Personnel	3	4	76		2.81	5.07	56.17	
TOTAL	12	6	153	171	6.83	6.25	81.46	94.54
Special Maintenance								
Maintenance Personnel	40	85	605		69.13	71.56	686.50	
Operating Personnel	38	2	80		15.04	1.69	63.69	
Health Physics Personnel	15	2	47		10.25	5.38	30.98	
Supervisory Personnel	3	1	4		0.79	0.33	2.90	
Engineering Personnel	15	19	53		11.21	21.36	25.81	
TOTAL	111	109	789	1,009	106.42	100.32	809.88	1,016.62
Waste Processing								
Maintenance Personnel	2	0	28		0.78	0.23	12.50	
Operating Personnel	22	0	18		8.88	0.00	14.10	
Health Physics Personnel	3	1	6		0.90	0.31	2.82	
Supervisory Personnel	0	0	0		0.00	0.00	0.00	
Engineering Personnel	0	0	1		0.17	0.00	0.53	
TOTAL	27	1	53	81	10.73	0.54	29.95	41.22
Refueling								
Maintenance Personnel	29	9	56		15.16	7.46	31.39	
Operating Personnel	30	0	4		15.70	0.08	2.12	
Health Physics Personnel	4	2	14		1.23	0.58	5.88	
Supervisory Personnel	1	0	0		0.28	0.00	0.00	
Engineering Personnel	5	4	13		1.72	3.40	5.37	
TOTAL	69	15	87	171	34.09	11.52	44.76	90.37
Total By Job Function								
Maintenance Personnel	102	95	894	1,091	103.32	80.53	797.61	981.46
Operating Personnel	139	2	147	288	91.76	2.00	95.24	189.00
Health Physics Personnel	43	8	109	160	28.25	11.11	54.12	93.48
Supervisory Personnel	5	1	5	11	1.49	0.39	3.24	5.12
Engineering Personnel	24	27	146	197	17.20	30.35	89.27	136.82
GRAND TOTAL	313	133	1,301	1,747	242.02	124.38	1,039.48	1,405.88

Appendix C (Continued)

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

Plant: Millstone 2 (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	4	0	2		1.82	0.52	2.40	
Operating Personnel	31	0	9		12.56	0.10	3.59	
Health Physics Personnel	14	3	33		9.06	4.74	17.41	
Supervisory Personnel	0	0	0		0.11	0.00	0.03	
Engineering Personnel	4	2	11		1.77	3.07	6.62	
TOTAL	53	5	55	113	25.32	8.43	30.05	63.80
Routine Maintenance								
Maintenance Personnel	7	1	2		1.76	1.22	1.34	
Operating Personnel	0	0	0		0.20	0.00	0.01	
Health Physics Personnel	0	0	0		0.09	0.00	0.00	
Supervisory Personnel	0	0	0		0.01	0.00	0.00	
Engineering Personnel	0	0	0		0.00	0.10	0.04	
TOTAL	7	1	2	10	2.06	1.32	1.39	4.77
In-Service Inspection								
Maintenance Personnel	0	0	1		0.21	0.00	0.77	
Operating Personnel	0	0	0		0.03	0.00	0.02	
Health Physics Personnel	0	0	0		0.05	0.00	0.06	
Supervisory Personnel	0	0	0		0.01	0.00	0.00	
Engineering Personnel	2	2	26		0.49	1.09	19.51	
TOTAL	2	2	27	31	0.79	1.09	20.36	22.24
Special Maintenance								
Maintenance Personnel	39	22	238		39.34	15.43	104.47	
Operating Personnel	29	0	41		7.80	0.02	14.89	
Health Physics Personnel	9	2	12		3.87	1.36	3.72	
Supervisory Personnel	0	0	6		0.07	0.00	2.55	
Engineering Personnel	9	11	82		2.69	8.92	42.14	
TOTAL	86	35	379	500	53.77	25.73	167.77	247.27
Waste Processing								
Maintenance Personnel	2	0	0		1.70	0.00	0.06	
Operating Personnel	3	0	1		1.67	0.00	1.10	
Health Physics Personnel	1	1	0		0.42	0.39	0.05	
Supervisory Personnel	0	0	0		0.00	0.00	0.00	
Engineering Personnel	0	0	0		0.10	0.08	0.13	
TOTAL	6	1	1	8	3.89	0.47	1.34	5.70
Refueling								
Maintenance Personnel	19		48		5.77	0.33	14.17	
Operating Personnel	4		0		1.54	0.00	0.19	
Health Physics Personnel	0		0		0.01	0.00	0.01	
Supervisory Personnel	0		0		0.00	0.00	0.00	
Engineering Personnel	0		15		0.21	0.21	3.89	
TOTAL	23	0	63	86	7.53	0.54	18.26	26.33
Total By Job Function								
Maintenance Personnel	71	23	291	385	50.60	17.50	123.21	191.31
Operating Personnel	67	0	51	118	23.80	0.12	19.80	43.72
Health Physics Personnel	24	6	45	75	13.50	6.49	21.25	41.24
Supervisory Personnel	0	0	6	6	0.20	0.00	2.58	2.78
Engineering Personnel	15	15	134	164	5.26	13.47	72.33	91.06
GRAND TOTAL	177	44	527	748	93.36	37.58	239.17	370.11

Appendix C (Continued)

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

Plant: † Monticello (BWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	40	5	35		11.321	0.520	1.709	
Operating Personnel	38	0	0		31.804	0.0	0.0	
Health Physics Personnel	10	0	0		5.933	0.0	0.0	
Supervisory Personnel	2	0	12		0.397	0.0	1.335	
Engineering Personnel	3	0	12		0.397	0.0	1.232	
TOTAL	93	5	59	157	49.852	0.520	4.276	54.648
* Routine Maintenance								
Maintenance Personnel	35	7	21		23.129	0.576	5.439	
Operating Personnel	16	0	3		2.028	0.0	1.615	
Health Physics Personnel	9	0	0		2.670	0.0	0.0	
Supervisory Personnel	1	0	3		0.078	0.0	0.173	
Engineering Personnel	2	0	4		0.079	0.0	0.174	
TOTAL	63	7	31	101	27.984	0.576	7.401	35.961
* In-Service Inspection								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
* Special Maintenance								
Maintenance Personnel	16	2	0		4.011	1.591	19.331	
Operating Personnel	2	0	0		0.165	0.0	0.0	
Health Physics Personnel	3	0	0		0.538	0.0	0.0	
Supervisory Personnel	1	1	13		0.029	0.064	4.829	
Engineering Personnel	0	0	14		0.029	0.065	4.829	
TOTAL	22	3	27	52	4.772	1.720	28.989	35.481
* Waste Processing								
Maintenance Personnel	16	2	0		1.432	0.110	0.0	
Operating Personnel	8	0	5		1.419	0.0	4.589	
Health Physics Personnel	8	0	0		1.044	0.0	0.0	
Supervisory Personnel	0	0	1		0.0	0.0	0.067	
Engineering Personnel	0	0	0		0.0	0.0	0.067	
TOTAL	32	2	6	40	3.895	0.110	4.723	8.728
* Refueling								
Maintenance Personnel	17	2			1.711	0.144		
Operating Personnel	16	0			1.257	0.0		
Health Physics Personnel	3	0			0.115	0.0		
Supervisory Personnel	1	0			0.026	0.0		
Engineering Personnel	0	0			0.026	0.0		
TOTAL	37	2	0	39	3.135	0.144	0.0	3.279
* Total By Job Function								
Maintenance Personnel	124	18	56 (56)	198 (198)	41.604	2.941	26.479	71.024
Operating Personnel	80	0	8 (8)	88 (88)	36.673	0.0	6.204	42.877
Health Physics Personnel	33	0	0 (0)	33 (33)	10.300	0.0	0.0	10.300
Supervisory Personnel	5	1	29 (16)	35 (22)	0.530	0.064	6.404	6.998
Engineering Personnel	5	0	30 (16)	35 (21)	0.531	0.065	6.302	6.898
* GRAND TOTAL	247	19	123 (96)	389 (362)	89.638	3.070	45.389	138.097

*Workers may be counted more than once. Numbers in parentheses is the total number of individuals.

Appendix C (Continued)

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

Plant: † Nine Mile Point (BWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	148	61	117		16.588	3.912	4.447	
Operating Personnel	32	0	0		18.598	0.0	0.0	
Health Physics Personnel	23	0	13		19.293	0.0	10.862	
Supervisory Personnel	50	0	6		17.055	0.0	0.295	
Engineering Personnel	16	11	17		4.227	0.802	0.494	
TOTAL	269	72	153	494	75.761	4.714	16.098	96.573
Routine Maintenance								
Maintenance Personnel	292	118	353		80.731	18.290	12.163	
Operating Personnel	30	0	0		1.216	0.0	0.0	
Health Physics Personnel	25	0	6		0.534	0.0	0.230	
Supervisory Personnel	31	0	11		1.847	0.0	0.495	
Engineering Personnel	17	12	27		0.819	1.243	0.548	
TOTAL	395	130	397	922	85.147	19.533	13.436	118.116
In-Service Inspection								
Maintenance Personnel	92	85	349		15.274	12.636	213.799	
Operating Personnel	13	0	0		0.584	0.0	0.0	
Health Physics Personnel	18	0	5		1.307	0.0	0.230	
Supervisory Personnel	32	3	15		4.979	0.032	6.118	
Engineering Personnel	19	23	49		1.501	2.331	13.751	
TOTAL	174	111	418	703	23.645	14.999	233.898	272.542
Special Maintenance								
Maintenance Personnel	645	367	1,024		120.988	77.245	534.654	
Operating Personnel	38	0	0		1.062	0.0	0.0	
Health Physics Personnel	51	0	9		2.569	0.0	0.762	
Supervisory Personnel	91	1	36		7.176	0.005	13.658	
Engineering Personnel	62	29	93		6.562	1.535	27.028	
TOTAL	887	397	1,162	2,446	138.357	78.785	576.102	793.244
Waste Processing								
Maintenance Personnel	77	11	78		11.320	0.859	16.287	
Operating Personnel	12	0	0		6.281	0.0	0.0	
Health Physics Personnel	10	0	3		0.867	0.0	0.116	
Supervisory Personnel	8	0	0		0.975	0.0	0.0	
Engineering Personnel	0	2	8		0.0	0.004	0.125	
TOTAL	127	13	89	229	19.443	0.863	16.528	36.834
Refueling								
Maintenance Personnel	114	45	42		21.012	12.272	3.653	
Operating Personnel	28	0	0		8.651	0.0	0.0	
Health Physics Personnel	15	0	0		1.562	0.0	0.0	
Supervisory Personnel	20	1	3		1.809	0.002	0.098	
Engineering Personnel	18	5	12		2.568	0.079	0.451	
TOTAL	195	51	57	303	35.602	12.353	4.202	52.157
Total By Job Function								
Maintenance Personnel	1,368	687	1,963	4,018	265.913	125.214	785.003	1,176.130
Operating Personnel	173	0	0	173	36.392	0.0	0.0	36.392
Health Physics Personnel	142	0	36	178	26.132	0.0	12.200	38.332
Supervisory Personnel	232	5	71	308	33.841	0.039	20.664	54.544
Engineering Personnel	132	82	206	420	15.677	5.994	42.397	64.068
GRAND TOTAL	2,047	774	2,276	5,097	377.955	131.247	860.264	1,369.466

Appendix C (Continued)

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

Plant: ^T North Anna (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	146	214	26	386	34.760	1.536	6.411	42.707
Routine Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	201	0	26	227	78.016	0.0	4.982	82.998
In-Service Inspection								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	12	0	50	62	0.416	0.0	10.332	10.748
Special Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	163	10	249	422	16.173	1.335	61.474	78.982
Waste Processing								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	44	0	25	69	1.412	0.0	0.922	2.334
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	130	14	173	317	7.355	0.158	19.488	27.001
Total By Job Function								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
GRAND TOTAL	696	238	549	1,483	138.132	3.029	103.609	244.770

Appendix C (Continued)

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

Plant: Oconee 1, 2, 3 (PIRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	128	138	46		11.280	12.522	4.685	
Operating Personnel	90	9	0		38.375	0.280	0.0	
Health Physics Personnel	70	34	28		23.058	3.725	3.035	
Supervisory Personnel	5	0	0		0.300	0.0	0.0	
Engineering Personnel	82	35	43		21.955	1.985	1.575	
TOTAL	375	216	117	708	94.968	18.512	9.295	122.775
* Routine Maintenance								
Maintenance Personnel	198	169	62		86.031	29.322	28.700	
Operating Personnel	85	3	0		11.685	0.060	0.0	
Health Physics Personnel	59	32	31		6.085	1.850	5.027	
Supervisory Personnel	6	1	0		0.200	0.210	0.0	
Engineering Personnel	62	28	29		7.620	2.055	1.120	
TOTAL	410	233	122	765	113.621	33.497	34.847	181.965
* In-Service Inspection								
Maintenance Personnel	48	56	2		7.010	13.600	0.020	
Operating Personnel	11	0	0		0.227	0.0	0.0	
Health Physics Personnel	27	13	20		1.120	0.275	1.230	
Supervisory Personnel	1	0	0		0.020	0.0	0.0	
Engineering Personnel	23	4	37		2.400	0.140	7.915	
TOTAL	110	73	59	242	10.777	14.015	9.165	33.957
* Special Maintenance								
Maintenance Personnel	239	322	37		121.554	140.180	13.978	
Operating Personnel	92	19	0		16.230	4.685	0.0	
Health Physics Personnel	70	42	38		10.287	7.885	9.990	
Supervisory Personnel	14	1	0		3.640	0.105	0.0	
Engineering Personnel	87	72	153		32.150	19.224	55.277	
TOTAL	502	456	228	1,186	183.861	172.079	79.245	435.185
* Waste Processing								
Maintenance Personnel	29	13	16		4.595	0.540	2.290	
Operating Personnel	71	0	0		8.975	0.0	0.0	
Health Physics Personnel	23	8	6		5.170	0.115	0.395	
Supervisory Personnel	2	0	0		0.755	0.0	0.0	
Engineering Personnel	18	3	3		6.605	0.195	0.115	
TOTAL	143	24	25	192	26.100	0.850	2.800	29.750
* Refueling								
Maintenance Personnel	146	213	29		45.740	60.295	5.160	
Operating Personnel	90	4	0		19.230	0.575	0.0	
Health Physics Personnel	30	24	37		3.120	2.020	11.420	
Supervisory Personnel	4	0	0		0.205	0.0	0.0	
Engineering Personnel	77	27	62		15.535	2.670	28.545	
TOTAL	347	268	128	743	83.830	65.560	45.125	194.515
* Total By Job Function								
Maintenance Personnel	788 (321)	911 (389)	192 (99)	1,891 (809)	276.210	256.459	54.833	587.502
Operating Personnel	439 (113)	35 (25)	0 (0)	474 (138)	94.722	5.600	0.0	100.322
Health Physics Personnel	279 (104)	153 (47)	160 (39)	592 (190)	50.840	15.870	31.097	97.807
Supervisory Personnel	32 (16)	2 (2)	0 (0)	34 (18)	5.120	0.315	0.0	5.435
Engineering Personnel	349 (134)	169 (85)	327 (194)	845 (413)	86.265	26.269	94.547	207.081
* GRAND TOTAL	1,887 (688)	1,270 (548)	679 (332)	3,836 (1,568)	513.157	304.513	180.477	998.147

*Workers may be counted in more than one category. Number in parentheses is total number of individuals.

Appendix C (Continued)

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

Plant: † Oyster Creek (BWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	56		63		6.627		3.971	
Operating Personnel	96		0		46.831		0.0	
Health Physics Personnel	18		31		16.037		5.996	
Supervisory Personnel	26		0		9.748		0.0	
Engineering Personnel	25		0		4.695		0.0	
TOTAL	221	0	94	315	83.938	0.0	9.967	93.905
Routine Maintenance								
Maintenance Personnel	106	27	101		53.381	14.492	10.169	
Operating Personnel	88	1	0		23.312	0.570	0.0	
Health Physics Personnel	26	0	20		23.096	0.0	2.246	
Supervisory Personnel	21	1	0		5.765	0.790	0.0	
Engineering Personnel	16	0	0		3.491	0.0	0.0	
TOTAL	257	29	121	407	109.045	15.852	12.415	137.312
In-Service Inspection								
Maintenance Personnel	83	0	184		13.338	0.0	76.120	
Operating Personnel	29	0	5		0.782	0.0	1.238	
Health Physics Personnel	2	0	0		0.170	0.0	0.0	
Supervisory Personnel	7	0	0		0.754	0.0	0.0	
Engineering Personnel	11	13	0		0.436	1.164	0.0	
TOTAL	132	13	189	334	15.480	1.164	77.358	94.002
Special Maintenance								
Maintenance Personnel	89	33	160		43.109	23.913	29.403	
Operating Personnel	58	3	10		6.222	1.003	2.319	
Health Physics Personnel	8	0	0		0.815	0.0	0.0	
Supervisory Personnel	10	1	0		4.076	0.615	0.0	
Engineering Personnel	14	13	0		2.912	2.243	0.0	
TOTAL	179	50	170	399	57.134	27.774	31.722	116.630
Waste Processing								
Maintenance Personnel	54				6.148			
Operating Personnel	33				6.171			
Health Physics Personnel	1				0.120			
Supervisory Personnel	4				1.368			
Engineering Personnel	0				0.0			
TOTAL	92	0	0	92	13.807	0.0	0.0	13.807
Refueling								
Maintenance Personnel	0		0		0.0		0.0	
Operating Personnel	29		0		3.061		0.0	
Health Physics Personnel	0		6		0.0		1.277	
Supervisory Personnel	0		0		0.0		0.0	
Engineering Personnel	0		0		0.0		0.0	
TOTAL	29	0	6	35	3.061	0.0	1.277	4.338
Total By Job Function								
Maintenance Personnel	388 (116)	60 (39)	508 (302)	956 (457)	122.603	38.405	119.663	280.671
Operating Personnel	333 (103)	4 (3)	15 (14)	352 (120)	86.379	1.573	3.557	91.509
Health Physics Personnel	55 (26)	0 (0)	57 (41)	112 (67)	40.238	0.0	9.519	49.757
Supervisory Personnel	68 (29)	2 (3)	0 (0)	70 (32)	21.711	1.405	0.0	23.116
Engineering Personnel	66 (29)	26 (22)	0 (0)	92 (51)	11.534	3.407	0.0	14.941
GRAND TOTAL	910 (303)	92 (67)	580 (357)	1,582 (727)	282.465	44.790	132.739	459.994

*Workers may be counted more than once. Numbers in parentheses is the total number of individuals.

Appendix C (Continued)

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

1979

Plant: Palisades (PWR)

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	2	6	0		0.563	4.609	0.224	
Operating Personnel	60	2	0		20.577	0.692	0.301	
Health Physics Personnel	29	34	64		12.592	12.115	32.835	
Supervisory Personnel	4	0	0		1.558	0.015	0.020	
Engineering Personnel	7	1	10		3.152	0.853	4.039	
TOTAL	102	43	74	219	38.442	18.284	37.419	94.145
Routine Maintenance								
Maintenance Personnel	197	148	14		131.913	99.883	6.808	
Operating Personnel	3	0	0		1.078	0.108	0.0	
Health Physics Personnel	2	0	1		0.494	0.311	0.230	
Supervisory Personnel	26	10	5		15.350	5.346	2.298	
Engineering Personnel	7	2	1		2.730	0.501	1.132	
TOTAL	235	160	21	416	151.565	106.149	10.468	268.182
In-Service Inspection								
Maintenance Personnel	0	7	23		0.064	6.630	13.125	
Operating Personnel	0	2	0		0.238	0.575	0.025	
Health Physics Personnel	0	0	0		0.008	0.008	0.048	
Supervisory Personnel	1	1	10		0.224	0.310	4.216	
Engineering Personnel	5	7	57		2.767	3.036	24.415	
TOTAL	6	17	90	113	3.301	10.559	41.829	55.689
Special Maintenance								
Maintenance Personnel	22	121	401		9.791	108.943	183.579	
Operating Personnel	0	1	0		0.058	0.200	0.135	
Health Physics Personnel	0	0	0		0.201	0.066	0.214	
Supervisory Personnel	3	11	7		1.211	5.101	2.400	
Engineering Personnel	4	5	149		2.896	3.220	62.647	
TOTAL	29	138	557	724	14.157	117.530	248.975	380.662
Waste Processing								
Maintenance Personnel	1	0	0		0.555	0.030	0.020	
Operating Personnel	0	0	0		0.270	0.073	0.0	
Health Physics Personnel	0	0	0		0.063	0.0	0.033	
Supervisory Personnel	0	1	0		0.050	0.191	0.165	
Engineering Personnel	0	0	5		0.005	0.010	1.647	
TOTAL	1	1	5	7	0.943	0.304	1.865	3.112
Refueling								
Maintenance Personnel	0				0.103	0.0	0.104	
Operating Personnel	22				6.943	0.003	0.0	
Health Physics Personnel	0				0.0	0.0	0.0	
Supervisory Personnel	0				0.190	0.0	0.0	
Engineering Personnel	0				0.063	0.003	0.037	
TOTAL	22	0	0	22	7.299	0.006	0.141	7.446
Total By Job Function								
Maintenance Personnel	222	282	438	942	142.989	220.095	203.860	566.944
Operating Personnel	85	5	0	90	29.164	1.651	0.461	31.276
Health Physics Personnel	31	34	65	130	13.358	12.500	33.360	59.218
Supervisory Personnel	34	23	22	79	18.583	10.963	9.099	38.645
Engineering Personnel	23	15	222	260	11.613	7.623	93.917	113.153
GRAND TOTAL	395	359	747	1,501	215.707	252.832	340.697	809.236

Appendix C (Continued)

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

Plant: Peach Bottom 2, 3 (BWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	3	72	43		0.68	28.63	11.93	
Operating Personnel	53	10	12		34.72	5.14	1.95	
Health Physics Personnel	43	1	68		41.69	0.15	51.64	
Supervisory Personnel	0	1	0		0.0	0.31	0.0	
Engineering Personnel	30	8	10		31.49	2.28	10.74	
TOTAL	129	92	133	354	108.58	36.51	76.26	221.35
* Routine Maintenance								
Maintenance Personnel	9	517	662		4.71	391.63	420.86	
Operating Personnel	12	4	3		1.97	2.09	2.78	
Health Physics Personnel	28	1	26		22.37	0.53	20.71	
Supervisory Personnel	0	6	0		0.0	2.01	0.0	
Engineering Personnel	10	23	5		2.89	9.32	1.38	
TOTAL	59	551	696	1,306	31.94	405.58	445.73	883.25
* In-Service Inspection								
Maintenance Personnel		4	47			1.51	50.09	
Operating Personnel		0	0			0.0	0.0	
Health Physics Personnel		0	0			0.0	0.0	
Supervisory Personnel		0	0			0.0	0.0	
Engineering Personnel		3	0			2.14	0.0	
TOTAL	0	7	47	54	0.0	3.65	50.09	53.74
* Special Maintenance								
Maintenance Personnel		0	73			0.0	60.50	
Operating Personnel		0	1			0.0	0.21	
Health Physics Personnel		0	1			0.0	0.14	
Supervisory Personnel		0	0			0.0	0.0	
Engineering Personnel		3	0			1.47	0.0	
TOTAL	0	3	75	78	0.0	1.47	60.85	62.32
* Waste Processing								
Maintenance Personnel	0	13	16		0.0	2.21	3.11	
Operating Personnel	9	0	0		7.52	0.0	0.0	
Health Physics Personnel	2	0	4		0.23	0.0	3.54	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	0	0	0		0.0	0.0	0.0	
TOTAL	11	13	20	44	7.75	2.21	6.65	16.61
* Refueling								
Maintenance Personnel	0	16	25		0.0	5.57	5.54	
Operating Personnel	2	0	0		0.32	0.0	0.0	
Health Physics Personnel	5	0	5		1.41	0.0	2.63	
Supervisory Personnel	0	1	0		0.0	0.23	0.0	
Engineering Personnel	0	1	0		0.0	0.38	0.0	
TOTAL	7	18	30	55	1.73	6.18	8.17	16.08
* Total By Job Function								
Maintenance Personnel	12 (10)	622 (548)	866 (763)	1,500 (1,321)	5.39	429.55	552.03	986.97
Operating Personnel	76 (55)	14 (13)	16 (20)	106 (88)	44.53	7.23	4.94	56.70
Health Physics Personnel	78 (43)	2 (1)	104 (76)	184 (120)	65.70	0.68	78.66	145.04
Supervisory Personnel	0 (0)	8 (8)	0 (0)	8 (8)	0.0	2.55	0.0	2.55
Engineering Personnel	40 (30)	38 (33)	15 (13)	93 (76)	34.38	15.59	12.12	62.09
* GRAND TOTAL	206 (138)	684 (603)	1,001 (872)	1,891 (1,613)	150.00	455.60	647.75	1,253.35

*Workers may be counted more than once. Numbers in parentheses is the total number of individuals.

Appendix C (Continued)

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

Plant: Pilgrim (BWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	10	3	12		4.510	0.400	6.680	
Operating Personnel	26	0	0		51.155	0.0	0.0	
Health Physics Personnel	17	0	22		15.113	0.0	14.200	
Supervisory Personnel	2	1	0		0.300	0.130	0.0	
Engineering Personnel	3	0	0		0.575	0.0	0.0	
TOTAL	58	4	34	96	71.653	0.530	20.880	93.063
Routine Maintenance								
Maintenance Personnel	38	40	104		54.832	38.705	102.491	
Operating Personnel	12	0	0		8.643	0.0	0.0	
Health Physics Personnel	16	0	2		10.280	0.0	1.185	
Supervisory Personnel	6	0	4		5.285	0.0	0.845	
Engineering Personnel	10	4	3		1.433	0.460	0.270	
TOTAL	82	44	113	239	80.473	39.165	104.791	224.429
In-Service Inspection								
Maintenance Personnel	8	0	5		0.300	0.0	1.380	
Operating Personnel	2	0	0		0.210	0.0	0.0	
Health Physics Personnel	3	0	1		0.435	0.0	0.140	
Supervisory Personnel	1	0	0		0.160	0.0	0.0	
Engineering Personnel	1	2	1		0.210	3.670	0.040	
TOTAL	15	2	7	24	1.315	3.670	1.560	6.545
Special Maintenance								
Maintenance Personnel	43	49	173		52.015	36.725	212.669	
Operating Personnel	16	0	0		5.515	0.0	0.0	
Health Physics Personnel	12	0	16		9.663	0.0	8.710	
Supervisory Personnel	16	6	10		8.205	2.610	3.350	
Engineering Personnel	5	18	22		2.165	3.620	4.470	
TOTAL	92	73	221	386	77.563	42.955	229.199	349.717
Waste Processing								
Maintenance Personnel	26	0	27		8.806	0.0	10.605	
Operating Personnel	12	0	0		23.830	0.0	0.0	
Health Physics Personnel	12	0	2		4.840	0.0	0.120	
Supervisory Personnel	5	1	3		0.895	0.335	0.490	
Engineering Personnel	2	1	1		0.140	0.115	0.100	
TOTAL	57	2	33	92	38.511	0.450	11.315	50.276
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
Total By Job Function								
Maintenance Personnel	125 (57)	92 (54)	321 (568)	538 (679)	120.463	75.830	333.825	530.118
Operating Personnel	68 (30)	0 (0)	0 (0)	68 (30)	89.353	0.0	0.0	89.353
Health Physics Personnel	60 (17)	0 (0)	43 (28)	103 (45)	40.331	0.0	24.355	64.686
Supervisory Personnel	30 (21)	8 (6)	17 (12)	55 (39)	14.845	3.075	4.685	22.605
Engineering Personnel	21 (14)	25 (20)	27 (40)	73 (74)	4.523	7.865	4.880	17.268
GRAND TOTAL	304 (139)	125 (80)	408 (648)	837 (867)	269.515	86.770	367.745	724.030

Appendix C (Continued)

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

Plant: †Point Beach 1, 2 (PWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION ^{1/} EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel					3.695			
Operating Personnel					35.090			
Health Physics Personnel					21.464			
Supervisory Personnel					0.0			
Engineering Personnel					2.102			
TOTAL					62.351		0.0	62.351
Routine Maintenance								
Maintenance Personnel					41.081			
Operating Personnel					0.260			
Health Physics Personnel					0.0			
Supervisory Personnel					0.0			
Engineering Personnel					0.0			
TOTAL					41.341		0.0	41.341
In-Service Inspection								
Maintenance Personnel					26.691			
Operating Personnel					7.429			
Health Physics Personnel					0.017			
Supervisory Personnel					4.271			
Engineering Personnel					3.555			
TOTAL					41.963		200.493	242.456
Special Maintenance								
Maintenance Personnel					24.887			
Operating Personnel					0.943			
Health Physics Personnel					0.0			
Supervisory Personnel					0.0			
Engineering Personnel					0.0			
TOTAL					25.830		227.281	253.111
Waste Processing								
Maintenance Personnel					0.538			
Operating Personnel					9.641			
Health Physics Personnel					1.425			
Supervisory Personnel					0.0			
Engineering Personnel					0.0			
TOTAL					11.604		0.0	11.604
Refueling								
Maintenance Personnel					0.183			
Operating Personnel					2.740			
Health Physics Personnel					0.0			
Supervisory Personnel					0.0			
Engineering Personnel					0.521			
TOTAL					3.444		0.0	3.444
Total By Job Function								
Maintenance Personnel	85				97.075			
Operating Personnel	43				56.103			
Health Physics Personnel	23				22.906			
Supervisory Personnel	3				4.271			
Engineering Personnel	4				6.178			
GRAND TOTAL	158		356	514	186.533		427.774	614.307

^{1/} Includes utility employees. No further breakdown provided.

Appendix C (Continued)

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

Plant: †Prairie Island 1, 2 (PWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	14	2	0		5.460	1.025	0.0	
Operating Personnel	35	0	0		8.825	0.0	0.0	
Health Physics Personnel	15	0	1		7.879	0.0	0.260	
Supervisory Personnel	2	0	0		1.193	0.0	0.0	
Engineering Personnel	1	0	0		0.303	0.0	0.0	
TOTAL	67	2	1	70	23.660	1.025	0.260	24.945
Routine Maintenance								
Maintenance Personnel	10		0		2.271		0.0	
Operating Personnel	0		0		0.0		0.0	
Health Physics Personnel	0		0		0.0		0.0	
Supervisory Personnel	0		0		0.0		0.0	
Engineering Personnel	0		1		0.0		0.201	
TOTAL	10	0	1	11	2.271	0.0	0.201	2.472
In-Service Inspection								
Maintenance Personnel		0	24			0.0	7.834	
Operating Personnel		0	0			0.0	0.0	
Health Physics Personnel		0	0			0.0	0.0	
Supervisory Personnel		0	0			0.0	0.0	
Engineering Personnel		1	3			0.269	0.461	
TOTAL	0	1	27	28	0.0	0.269	8.295	8.564
Special Maintenance								
Maintenance Personnel	51	44	28		24.927	24.487	14.693	
Operating Personnel	20	0	0		4.573	0.0	0.0	
Health Physics Personnel	12	0	11		4.325	0.0	3.703	
Supervisory Personnel	1	0	0		0.499	0.0	0.0	
Engineering Personnel	5	2	43		2.034	0.492	14.488	
TOTAL	89	46	82	217	36.358	24.979	32.884	94.221
Waste Processing								
Maintenance Personnel	9	3			3.044	0.916		
Operating Personnel	1	0			0.579	0.0		
Health Physics Personnel	2	0			0.761	0.0		
Supervisory Personnel	0	0			0.0	0.0		
Engineering Personnel	0	0			0.0	0.0		
TOTAL	12	3	0	15	4.384	0.916	0.0	5.300
Refueling								
Maintenance Personnel	26	26	0		9.396	6.646	0.0	
Operating Personnel	2	0	0		0.972	0.0	0.0	
Health Physics Personnel	0	0	0		0.0	0.0	0.0	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	1	1	2		0.218	0.236	0.219	
TOTAL	29	27	2	58	10.586	6.882	0.219	17.687
Total By Job Function								
Maintenance Personnel	110	75	52	237	45.098	33.074	22.527	100.699
Operating Personnel	58	0	0	58	14.949	0.0	0.0	14.949
Health Physics Personnel	29	0	12	41	12.965	0.0	3.963	16.928
Supervisory Personnel	3	0	0	3	1.692	0.0	0.0	1.692
Engineering Personnel	7	4	49	60	2.555	0.997	15.369	18.921
GRAND TOTAL	207	79	113	399	77.259	34.071	41.859	153.189

Appendix C (Continued)

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

Plant: †Quad Cities 1, 2 (BWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	9	0			21.2	0.0		
Operating Personnel	73	0			59.0	0.0		
Health Physics Personnel	9	0			18.2	0.0		
Supervisory Personnel	43	0			11.3	0.0		
Engineering Personnel	88	154			86.8	7.9		
TOTAL	222	154	0	376	196.5	7.9	0.0	204.4
Routine Maintenance								
Maintenance Personnel	98		1,966		341.5		1,008.7	
Operating Personnel	10		0		24.7		0.0	
Health Physics Personnel	5		0		9.1		0.0	
Supervisory Personnel	46		0		50.6		0.0	
Engineering Personnel	3		0		1.0		0.0	
TOTAL	162	0	1,966	2,128	426.9	0.0	1,008.7	1,435.6
In-Service Inspection								
Maintenance Personnel	0		347		0.0		178.0	
Operating Personnel	4		0		9.9		0.0	
Health Physics Personnel	6		0		12.1		0.0	
Supervisory Personnel	0		0		0.0		0.0	
Engineering Personnel	8		0		3.3		0.0	
TOTAL	18	0	347	365	25.3	0.0	178.0	203.3
Special Maintenance								
Maintenance Personnel		95				38.0		
Operating Personnel		0				0.0		
Health Physics Personnel		0				0.0		
Supervisory Personnel		0				0.0		
Engineering Personnel		0				0.0		
TOTAL	0	95	0	95	0.0	38.0	0.0	38.0
Waste Processing								
Maintenance Personnel	1				2.0			
Operating Personnel	37				90.7			
Health Physics Personnel	12				24.3			
Supervisory Personnel	0				0.0			
Engineering Personnel	7				2.6			
TOTAL	57	0	0	57	119.6	0.0	0.0	119.6
Refueling								
Maintenance Personnel	3				7.8			
Operating Personnel	6				14.8			
Health Physics Personnel	6				12.1			
Supervisory Personnel	3				3.2			
Engineering Personnel	25				9.9			
TOTAL	43	0	0	43	47.8	0.0	0.0	47.8
Total By Job Function								
Maintenance Personnel	111	95	2,313	2,519	372.5	38.0	1,186.7	1,597.2
Operating Personnel	130	0	0	130	199.1	0.0	0.0	199.1
Health Physics Personnel	38	0	0	38	75.8	0.0	0.0	75.8
Supervisory Personnel	92	0	0	92	65.1	0.0	0.0	65.1
Engineering Personnel	131	154	0	285	103.6	7.9	0.0	111.5
GRAND TOTAL	502	249	2,313	3,064	816.1	45.9	1,186.7	2,048.7

Appendix C (Continued)

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

Plant: Rancho Seco (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	53	3	41		3.41	0.31	1.35	
Operating Personnel	46	1	24		12.91	0.01	0.43	
Health Physics Personnel	16	1	21		3.04	0.01	10.35	
Supervisory Personnel	7	0	4		0.29	0.0	0.17	
Engineering Personnel	20	0	23		1.95	0.0	0.73	
TOTAL	142	5	113	260	21.60	0.33	13.03	34.96
Routine Maintenance								
Maintenance Personnel	47	2	27		6.73	0.05	2.43	
Operating Personnel	38	0	2		4.17	0.0	0.04	
Health Physics Personnel	13	0	17		1.88	0.0	1.83	
Supervisory Personnel	6	0	2		0.82	0.0	0.43	
Engineering Personnel	14	0	9		1.09	0.0	0.09	
TOTAL	118	2	57	177	14.69	0.05	4.82	19.56
* In-Service Inspection								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL								
Special Maintenance								
Maintenance Personnel	58	4	167		19.41	2.31	49.84	
Operating Personnel	21	0	5		1.72	0.0	0.16	
Health Physics Personnel	16	0	22		2.17	0.0	5.07	
Supervisory Personnel	7	1	2		1.49	0.01	1.98	
Engineering Personnel	15	1	37		5.14	0.09	2.04	
TOTAL	117	6	233	356	29.93	2.41	59.09	91.43
Waste Processing								
Maintenance Personnel	24		23		5.35		4.96	
Operating Personnel	28		0		2.97		0.0	
Health Physics Personnel	8		13		1.50		1.03	
Supervisory Personnel	3		0		0.29		0.0	
Engineering Personnel	1		0		0.01		0.0	
TOTAL	64	0	36	100	10.12	0.0	5.99	16.11
Refueling								
Maintenance Personnel	1	1	0		0.01		0.0	
Operating Personnel	13	0	0		0.17		0.0	
Health Physics Personnel	2	0	2		0.02		0.02	
Supervisory Personnel	1	0	0		0.05		0.0	
Engineering Personnel	5	0	0		0.06		0.0	
TOTAL	22	1	2	25	0.31	0.0	0.02	0.33
Total By Job Function								
Maintenance Personnel	183	10	258	451	34.91	2.67	58.58	96.16
Operating Personnel	146	1	31	178	21.94	0.01	0.63	22.58
Health Physics Personnel	55	1	75	131	8.61	0.01	18.30	26.92
Supervisory Personnel	24	1	8	33	2.94	0.01	2.58	5.53
Engineering Personnel	55	1	69	125	8.25	0.09	2.86	11.20
GRAND TOTAL	463	14	441	918	76.65	2.79	82.95	162.39

*Inservice Inspection included with Routine Maintenance.

Appendix C (Continued)

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

Plant: Robinson 2 (PHR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	0.1	1.0	1.0		0.101	0.118	0.649	
Operating Personnel	22.3	0.0	18.0		32.787	0.0	2.986	
Health Physics Personnel	8.3	3.2	0.0		7.746	3.785	0.0	
Supervisory Personnel	1.4	2.0	0.3		0.398	0.361	1.156	
Engineering Personnel	3.6	5.6	0.0		4.447	2.561	0.0	
TOTAL	35.7	11.8	19.3	66.8	45.479	6.825	4.791	57.095
Routine Maintenance								
Maintenance Personnel	14.3	1.8	64.2		26.773	1.984	72.277	
Operating Personnel	0.7	0.0	0.0		0.993	0.0	0.0	
Health Physics Personnel	4.8	1.2	0.6		4.802	1.438	0.384	
Supervisory Personnel	0.0	0.0	0.0		0.0	0.0	0.0	
Engineering Personnel	0.5	0.1	1.7		0.601	0.015	0.481	
TOTAL	20.3	3.1	66.5	89.9	33.169	3.437	73.142	109.748
In-Service Inspection								
Maintenance Personnel	0.0	0.0	0.0		0.0	0.0	0.0	
Operating Personnel	0.0	0.0	0.0		0.0	0.0	0.0	
Health Physics Personnel	0.2	0.0	0.0		0.218	0.019	0.0	
Supervisory Personnel	0.0	0.0	0.0		0.0	0.0	0.0	
Engineering Personnel	7.4	2.5	25.7		11.646	1.370	31.032	
TOTAL	7.6	2.5	25.7	35.8	11.864	1.389	31.032	44.285
Special Maintenance								
Maintenance Personnel	24.0	16.0	351.3		45.675	17.887	360.516	
Operating Personnel	2.7	0.0	0.0		3.930	0.0	0.0	
Health Physics Personnel	6.3	4.4	32.7		7.150	5.314	33.205	
Supervisory Personnel	4.6	0.0	3.6		1.238	0.0	3.461	
Engineering Personnel	15.2	11.2	90.2		19.336	4.546	77.397	
TOTAL	52.8	31.6	477.8	562.2	77.329	27.747	474.579	579.655
Waste Processing								
Maintenance Personnel	5.4	0.9	39.9		10.177	0.881	46.716	
Operating Personnel	19.7	0.0	0.0		28.989	0.0	0.0	
Health Physics Personnel	3.8	1.0	0.0		3.799	1.190	0.0	
Supervisory Personnel	0.0	0.0	0.0		0.0	0.0	0.0	
Engineering Personnel	0.5	0.1	3.1		0.699	0.018	3.073	
TOTAL	29.4	2.0	43.0	74.4	43.664	2.089	49.789	95.542
Refueling								
Maintenance Personnel	30.0	22.3	97.8		72.855	27.581	110.311	
Operating Personnel	10.4	0.0	0.0		15.290	0.0	0.0	
Health Physics Personnel	1.6	1.1	11.7		2.171	1.411	12.744	
Supervisory Personnel	0.0	0.0	1.0		0.0	0.0	0.977	
Engineering Personnel	1.7	2.5	0.1		2.159	1.370	0.019	
TOTAL	43.7	25.9	110.6	180.2	92.475	30.362	124.051	246.888
Total By Job Function								
Maintenance Personnel	73.8	42.0	554.2	670.0	155.581	48.451	590.469	794.501
Operating Personnel	55.8	0.0	18.0	73.8	81.989	0.0	2.986	84.975
Health Physics Personnel	25.0	10.9	45.0	80.9	25.886	13.157	46.333	85.376
Supervisory Personnel	6.0	2.0	4.9	12.9	1.636	0.361	5.594	7.591
Engineering Personnel	28.9	22.0	120.8	171.7	38.888	9.880	112.002	160.770
GRAND TOTAL	189.5	76.9	742.9	1,009.3	303.980	71.849	757.384	1,133.213

Appendix C (Continued)

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

Plant: † Salem (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	3	0	5		2.168	0.046	3.290	
Operating Personnel	112	2	8		35.693	0.050	6.463	
Health Physics Personnel	10	0	84		5.893	0.0	45.226	
Supervisory Personnel	7	0	6		3.195	0.390	3.225	
Engineering Personnel	0	0	1		0.071	0.385	0.430	
TOTAL	132	2	104	238	47.020	0.871	58.634	106.525
Routine Maintenance								
Maintenance Personnel	17		15		10.310	0.095	7.957	
Operating Personnel	0		0		0.725	0.010	0.115	
Health Physics Personnel	0		3		0.035	0.0	1.859	
Supervisory Personnel	24		12		8.843	0.215	5.855	
Engineering Personnel	0		1		0.040	0.290	0.825	
TOTAL	41	0	31	72	19.953	0.610	16.611	37.174
In-Service Inspection								
Maintenance Personnel	16	0	152		7.542	0.170	57.530	
Operating Personnel	0	0	0		0.190	0.0	0.080	
Health Physics Personnel	1	0	0		0.180	0.0	0.035	
Supervisory Personnel	2	0	3		1.344	0.200	1.975	
Engineering Personnel	0	5	5		0.370	2.515	2.840	
TOTAL	19	5	160	184	9.626	2.885	62.460	74.971
Special Maintenance								
Maintenance Personnel	161	0	416		78.085	0.340	202.595	
Operating Personnel	3	0	1		0.875	0.0	0.875	
Health Physics Personnel	3	0	9		1.100	0.0	3.695	
Supervisory Personnel	14	0	25		7.040	0.420	11.242	
Engineering Personnel	0	4	2		0.085	1.151	2.500	
TOTAL	181	4	453	638	87.185	1.911	220.907	310.003
Waste Processing								
Maintenance Personnel	16		5		8.525	0.0	2.923	
Operating Personnel	0		11		0.070	0.0	5.865	
Health Physics Personnel	0		1		0.070	0.195	0.100	
Supervisory Personnel	3		0		0.390	0.0	0.025	
Engineering Personnel	0		0		0.005	0.040	0.005	
TOTAL	19	0	17	36	9.060	0.235	8.918	18.213
Refueling								
Maintenance Personnel	97	0	27		36.100	0.035	10.081	
Operating Personnel	63	0	0		16.500	0.0	0.450	
Health Physics Personnel	2	0	1		0.360	0.0	1.170	
Supervisory Personnel	18	1	3		6.430	0.050	1.170	
Engineering Personnel	1	2	4		0.130	0.165	1.665	
TOTAL	181	3	35	219	59.520	0.250	14.536	74.306
Total By Job Function								
Maintenance Personnel	310	0	620	930	142.730	0.686	284.376	427.792
Operating Personnel	178	2	20	200	54.053	0.060	13.848	67.961
Health Physics Personnel	16	0	98	114	7.638	0.195	52.085	59.918
Supervisory Personnel	68	1	49	118	27.242	1.275	23.492	52.009
Engineering Personnel	1	11	13	25	0.701	4.546	8.265	13.512
GRAND TOTAL	573	14	800	1,387	232.364	6.762	382.066	621.192

Appendix C (Continued)

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

Plant: San Onofre (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 man)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	7	1	5		1.000	0.110	1.000	
Operating Personnel	13	0	0		8.030	0.0	0.0	
Health Physics Personnel	2	0	0		0.380	0.0	0.0	
Supervisory Personnel	4	0	2		1.110	0.0	0.360	
Engineering Personnel	10	2	12		3.930	0.490	2.270	
TOTAL	36	3	19	58	14.450	0.600	3.630	18.680
* Routine Maintenance								
Maintenance Personnel	38	3	68		30.810	0.480	39.160	
Operating Personnel	5	0	0		0.810	0.0	0.0	
Health Physics Personnel	12	2	1		8.170	0.460	0.130	
Supervisory Personnel	3	2	2		2.120	0.270	0.360	
Engineering Personnel	6	2	15		1.150	0.240	4.850	
TOTAL	64	9	86	159	43.060	1.450	44.500	89.010
* In-Service Inspection								
Maintenance Personnel	1		11		0.150		3.850	
Operating Personnel	0		0		0.0		0.0	
Health Physics Personnel	0		2		0.0		0.210	
Supervisory Personnel	0		0		0.0		0.0	
Engineering Personnel	1		2		0.140		0.740	
TOTAL	2	0	15	17	0.290	0.0	4.800	5.090
* Special Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
* Waste Processing								
Maintenance Personnel	2		1		0.280		0.150	
Operating Personnel	2		0		0.320		0.0	
Health Physics Personnel	1		0		0.230		0.0	
Supervisory Personnel	0		2		0.0		0.730	
Engineering Personnel	0		0		0.0		0.0	
TOTAL	5	0	3	8	0.830	0.0	0.880	1.710
* Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
* Total By Job Function								
Maintenance Personnel	48 (41)	4 (4)	85 (75)	137 (120)	32.240	0.590	44.160	76.990
Operating Personnel	20 (15)	0 (0)	0 (0)	20 (15)	9.160	0.0	0.0	9.160
Health Physics Personnel	15 (12)	2 (2)	3 (3)	20 (17)	8.780	0.460	0.340	9.580
Supervisory Personnel	7 (6)	2 (2)	6 (6)	15 (14)	3.230	0.270	1.450	4.950
Engineering Personnel	17 (13)	4 (5)	29 (28)	50 (46)	5.220	0.730	7.860	13.810
* GRAND TOTAL	107 (87)	12 (13)	123 (112)	242 (212)	58.630	2.050	53.810	114.490

*Workers may be counted in more than one category. Number in parentheses is total number of individuals.

Appendix C (Continued)

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

Plant: St. Lucie (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN REM
* Reactor Operations & Surv.								
Maintenance Personnel	0		0		0.0		0.0	
Operating Personnel	32		0		17.03		0.0	
Health Physics Personnel	6		2		1.35		0.30	
Supervisory Personnel	0		0		0.0		0.0	
Engineering Personnel	0		0		0.0		0.0	
TOTAL	38	0	2	40	18.38	0.0	0.30	18.68
* Routine Maintenance								
Maintenance Personnel	83	3	0		28.87	1.11	0.0	
Operating Personnel	0	0	0		0.0	0.0	0.0	
Health Physics Personnel	8	0	2		2.90	0.0	1.92	
Supervisory Personnel	3	0	0		1.20	0.0	0.0	
Engineering Personnel	0	0	0		0.0	0.0	0.0	
TOTAL	94	3	2	99	32.97	1.11	1.92	36.00
* In-Service Inspection								
Maintenance Personnel	0		33		0.0		24.93	
Operating Personnel	0		0		0.0		0.0	
Health Physics Personnel	4		6		0.80		1.33	
Supervisory Personnel	0		3		0.0		1.34	
Engineering Personnel	0		0		0.0		0.0	
TOTAL	4	0	42	46	0.80	0.0	27.60	28.40
* Special Maintenance								
Maintenance Personnel	0		36		0.0		13.21	
Operating Personnel	0		0		0.0		0.0	
Health Physics Personnel	4		4		2.15		0.67	
Supervisory Personnel	0		2		0.0		1.32	
Engineering Personnel	0		2		0.0		2.90	
TOTAL	4	0	44	48	2.15	0.0	18.10	20.25
* Waste Processing								
Maintenance Personnel	12		0		6.75		0.0	
Operating Personnel	8		0		3.75		0.0	
Health Physics Personnel	7		2		1.87		1.42	
Supervisory Personnel	0		0		0.0		0.0	
Engineering Personnel	0		0		0.0		0.0	
TOTAL	27	0	2	29	12.37	0.0	1.42	13.79
* Refueling								
Maintenance Personnel	51	24	134		65.36	15.37	84.54	
Operating Personnel	24	0	0		9.51	0.0	0.0	
Health Physics Personnel	10	0	42		6.02	0.0	23.36	
Supervisory Personnel	8	3	0		6.87	0.66	0.0	
Engineering Personnel	3	1	0		0.85	0.14	0.0	
TOTAL	96	28	176	300	88.61	16.17	107.90	212.68
* Total By Job Function								
Maintenance Personnel	146 (102)	27 (24)	203 (203)	376 (329)	100.98	16.48	122.68	240.14
Operating Personnel	64 (51)	0 (0)	0 (0)	64 (51)	30.29	0.0	0.0	30.29
Health Physics Personnel	39 (10)	0 (0)	58 (55)	97 (65)	15.09	0.0	29.00	44.09
Supervisory Personnel	11 (11)	3 (3)	5 (5)	19 (19)	8.07	0.66	2.66	11.39
Engineering Personnel	3 (3)	1 (1)	2 (2)	6 (6)	0.85	0.14	2.90	3.89
* GRAND TOTAL	263 (177)	31 (28)	268 (265)	562 (470)	155.28	17.28	157.24	329.80

*Workers may be counted in more than one category. Number in parentheses is total number of individuals.

Appendix C (Continued)

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

Plant: †Surry 1, 2 (PWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	193	0	0	193	162.618	0.0	0.0	162.618
Routine Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	142	30	233	405	265.086	27.840	256.923	549.849
In-Service Inspection								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	20	0	0	20	30.737	0.0	0.0	30.737
Special Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	18	47	2,259	2,324	26.882	44.487	2,489.629	2,560.998
Waste Processing								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	8	0	44	52	8.631	0.0	42.298	50.929
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	5	4	0	9	3.677	0.665	0.0	4.342
Total By Job Function								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
GRAND TOTAL	386	81	2,536	3,003	497.631	72.992	2,788.850	3,359.473

Appendix C (Continued)

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

Plant: † Three Mile Island 1 & 2 (PWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	171	125	492		7.253	5.944	20.685	
Operating Personnel	209	158	238		63.814	4.511	18.595	
Health Physics Personnel	50	40	298		13.469	1.896	61.221	
Supervisory Personnel	56	22	47		7.048	0.387	1.710	
Engineering Personnel	34	66	98		1.601	1.915	3.203	
TOTAL	520	411	1,173	2,104	93.185	14.653	105.414	213.252
* Routine Maintenance								
Maintenance Personnel	133	97	307		30.575	5.487	16.032	
Operating Personnel	122	57	121		17.655	1.658	4.436	
Health Physics Personnel	27	30	150		5.681	0.626	7.915	
Supervisory Personnel	42	13	27		2.064	0.281	0.914	
Engineering Personnel	16	27	44		0.323	0.597	0.698	
TOTAL	340	224	649	1,213	56.298	8.649	29.995	94.942
* In-Service Inspection								
Maintenance Personnel	129	56	300		6.872	1.591	14.129	
Operating Personnel	164	115	218		17.070	5.621	5.632	
Health Physics Personnel	27	18	146		8.675	2.274	8.692	
Supervisory Personnel	48	22	44		2.469	0.662	0.840	
Engineering Personnel	32	57	96		3.094	1.150	3.263	
TOTAL	400	268	804	1,472	38.180	11.298	32.556	82.034
* Special Maintenance								
Maintenance Personnel	152	205	1,116		58.179	60.717	504.505	
Operating Personnel	153	159	312		29.656	24.470	58.412	
Health Physics Personnel	28	48	314		19.974	17.427	121.704	
Supervisory Personnel	57	31	104		11.447	3.776	38.275	
Engineering Personnel	35	100	194		2.982	9.843	35.598	
TOTAL	425	543	2,040	3,008	122.238	116.233	758.494	996.965
* Waste Processing								
Maintenance Personnel	87	100	368		8.175	4.340	20.452	
Operating Personnel	103	45	102		15.331	1.167	4.878	
Health Physics Personnel	24	33	169		1.518	1.388	13.667	
Supervisory Personnel	20	6	33		3.473	0.069	1.549	
Engineering Personnel	15	27	54		2.128	0.722	2.728	
TOTAL	249	211	726	1,186	30.625	7.686	43.274	81.585
* Refueling								
Maintenance Personnel	43	11	64		3.140	0.219	3.678	
Operating Personnel	82	16	3		13.466	0.232	0.0	
Health Physics Personnel	17	1	13		1.990	0.490	4.689	
Supervisory Personnel	19	1	12		3.570	0.163	1.092	
Engineering Personnel	14	18	14		0.675	1.112	1.709	
TOTAL	175	47	106	328	22.841	2.216	11.168	36.225
* Total By Job Function								
Maintenance Personnel	715 (156)	594 (220)	2,647 (1,155)	3,956 (1,532)	114.194	78.298	579.481	771.973
Operating Personnel	833 (191)	550 (278)	994 (447)	2,377 (916)	156.992	37.659	91.953	286.604
Health Physics Personnel	173 (29)	170 (53)	1,090 (366)	1,433 (448)	51.307	24.101	217.888	293.296
Supervisory Personnel	242 (61)	95 (48)	267 (118)	604 (227)	30.071	5.338	44.380	79.789
Engineering Personnel	146 (38)	295 (137)	500 (273)	941 (448)	10.803	15.339	47.199	73.341
* GRAND TOTAL	2,109 (475)	1,704 (736)	5,498 (2,360)	9,311 (3,511)	363.367	160.735	980.901	1,505.003

*Workers may be counted in more than one category. Number in parentheses is total number of individuals.

Appendix C (Continued)

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

Plant: Trojan (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	0	0	0		0.041	0.0	0.005	
Operating Personnel	17	0	0		5.147	0.010	0.0	
Health Physics Personnel	22	1	32		20.562	0.386	16.257	
Supervisory Personnel	6	25	3		1.587	1.133	3.653	
Engineering Personnel	6	3	17		2.647	8.756	6.912	
TOTAL	51	29	52	132	29.984	10.285	26.827	67.096
* Routine Maintenance								
Maintenance Personnel	24	8	1		6.776	2.325	1.163	
Operating Personnel	0	0	0		0.0	0.0	0.100	
Health Physics Personnel	0	0	14		0.001	0.0	3.596	
Supervisory Personnel	1	0	0		0.315	0.001	0.0	
Engineering Personnel	1	4	2		0.451	1.530	0.973	
TOTAL	26	12	17	55	7.543	3.856	5.832	17.231
* In-Service Inspection								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL								
Special Maintenance								
Maintenance Personnel	53	78	140		22.322	55.757	68.225	
Operating Personnel	1	0	0		0.278	0.0	0.055	
Health Physics Personnel	0	0	1		0.002	0.0	1.015	
Supervisory Personnel	0	1	6		0.042	0.306	0.284	
Engineering Personnel	1	1	2		0.488	0.264	0.444	
TOTAL	55	80	149	284	23.132	56.327	70.023	149.482
Waste Processing								
Maintenance Personnel					0.089	0.0	0.0	
Operating Personnel					0.0	0.0	0.0	
Health Physics Personnel					0.020	0.0	0.042	
Supervisory Personnel					0.0	0.0	0.0	
Engineering Personnel					0.0	0.048	0.0	
TOTAL	0	0	0	0	0.109	0.048	0.042	0.199
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
Total By Job Function								
Maintenance Personnel	77	86	141	304	29.228	58.082	69.393	156.703
Operating Personnel	18	0	0	18	5.425	0.010	0.155	5.590
Health Physics Personnel	22	1	47	70	20.585	0.386	20.910	41.881
Supervisory Personnel	7	26	9	42	1.944	1.440	3.937	7.321
Engineering Personnel	8	8	21	37	3.586	10.598	8.329	22.513
GRAND TOTAL	132	121	218	471	60.768	70.516	102.724	234.008

*Inservice Inspection included with Routine Maintenance.

Appendix C (Continued)

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

Plant: Turkey Point 1, 2 (PWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	144	15	18		85.833	3.312	2.794	
Operating Personnel	29	0	1		52.786	0.0	0.310	
Health Physics Personnel	26	0	24		13.849	0.0	14.797	
Supervisory Personnel	20	0	1		23.050	0.0	0.145	
Engineering Personnel	15	1	5		3.455	0.155	0.753	
TOTAL	234	16	49	299	178.973	3.467	18.799	201.239
Routine Maintenance								
Maintenance Personnel	175	28	109		134.420	17.235	57.713	
Operating Personnel	3	0	0		0.595	0.0	0.0	
Health Physics Personnel	16	0	3		5.042	0.0	0.345	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	5	1	2		1.100	0.125	0.280	
TOTAL	199	29	114	342	141.157	17.360	58.338	216.855
In-Service Inspection								
Maintenance Personnel	26	30	279		25.728	9.474	532.786	
Operating Personnel	2	0	0		0.310	0.0	0.0	
Health Physics Personnel	3	0	1		0.400	0.0	0.105	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	5	8	87		1.550	3.100	44.477	
TOTAL	36	38	367	441	27.988	12.574	577.368	617.930
Special Maintenance								
Maintenance Personnel	0		34		0.0		10.634	
Operating Personnel	1		0		0.100		0.0	
Health Physics Personnel	1		0		0.175		0.0	
Supervisory Personnel	0		0		0.0		0.0	
Engineering Personnel	0		0		0.0		0.0	
TOTAL	2	0	34	36	0.275	0.0	10.634	10.909
Waste Processing								
Maintenance Personnel	25		1		6.291		0.692	
Operating Personnel	1		2		0.120		2.335	
Health Physics Personnel	7		1		1.750		0.160	
Supervisory Personnel	0		2		0.0		0.400	
Engineering Personnel	0		0		0.0		0.0	
TOTAL	33	0	6	39	8.161	0.0	3.587	11.748
Refueling								
Maintenance Personnel	57	20	5		51.640	10.975	1.340	
Operating Personnel	16	0	0		5.152	0.0	0.0	
Health Physics Personnel	3	0	1		0.465	0.0	0.110	
Supervisory Personnel	1	0	0		0.140	0.0	0.0	
Engineering Personnel	3	0	0		1.346	0.0	0.0	
TOTAL	80	20	6	106	58.743	10.975	1.450	71.168
Total By Job Function								
Maintenance Personnel	427	93	446	966	303.912	40.996	605.959	950.867
Operating Personnel	52	0	3	55	59.063	0.0	2.645	61.708
Health Physics Personnel	56	0	30	86	21.681	0.0	15.517	37.198
Supervisory Personnel	21	0	3	24	23.190	0.0	0.545	23.735
Engineering Personnel	28	10	94	132	7.451	3.380	45.510	56.341
GRAND TOTAL	584	103	576	1,263	415.297	44.376	670.176	1,129.849

Appendix C (Continued)

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

Plant: ^T Vermont-Yankee (BWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	12	9	326		17.049	4.379	393.581	
Operating Personnel	38	0	2		62.955	0.0	1.118	
Health Physics Personnel	16	0	13		27.647	0.0	9.785	
Supervisory Personnel	2	0	0		0.328	0.0	0.0	
Engineering Personnel	13	0	3		10.836	0.0	1.451	
TOTAL	81	9	344	434	118.815	4.379	405.935	529.129
Routine Maintenance								
Maintenance Personnel	42	77	52		135.151	100.519	50.203	
Operating Personnel	29	0	1		22.450	0.0	0.172	
Health Physics Personnel	7	0	12		4.520	0.0	4.936	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	7	0	1		4.722	0.0	0.846	
TOTAL	85	77	66	228	166.843	100.519	56.157	323.519
In-Service Inspection								
Maintenance Personnel	0	54	30		0.092	67.429	33.087	
Operating Personnel	0	0	0		0.086	0.0	0.0	
Health Physics Personnel	1	0	2		0.185	0.0	0.075	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	1	0	0		0.209	0.0	0.062	
TOTAL	2	54	32	88	0.572	67.429	33.224	101.225
Special Maintenance								
Maintenance Personnel	26	7	152		13.744	3.326	107.736	
Operating Personnel	15	0	0		4.093	0.0	0.0	
Health Physics Personnel	1	0	0		1.039	0.0	0.0	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	5	0	0		1.900	0.0	0.0	
TOTAL	47	7	152	206	20.776	3.326	107.736	131.838
Waste Processing								
Maintenance Personnel	0				0.0			
Operating Personnel	13				3.980			
Health Physics Personnel	0				0.0			
Supervisory Personnel	0				0.0			
Engineering Personnel	0				0.0			
TOTAL	13	0	0	13	3.980	0.0	0.0	3.980
Refueling								
Maintenance Personnel	16	20	41		8.125	11.790	13.549	
Operating Personnel	13	0	0		3.635	0.0	0.0	
Health Physics Personnel	0	0	12		0.314	0.0	4.736	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	5	0	0		0.990	0.0	0.0	
TOTAL	34	20	53	107	13.064	11.790	18.285	43.139
Total By Job Function								
Maintenance Personnel	96	167	601	864	174.161	187.443	598.156	959.760
Operating Personnel	108	0	3	111	97.199	0.0	1.290	98.489
Health Physics Personnel	25	0	39	64	33.705	0.0	19.532	53.237
Supervisory Personnel	2	0	0	2	0.328	0.0	0.0	0.328
Engineering Personnel	31	0	4	35	18.657	0.0	2.359	21.016
GRAND TOTAL	262	167	647	1,076	324.050	187.443	621.337	1,132.830

Appendix C (Continued)

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

Plant: Yankee Rowe (PWR)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	3	1	2		1.167	0.436	0.599	
Operating Personnel	26	0	0		8.770	0.0	0.0	
Health Physics Personnel	4	0	1		0.962	0.0	0.225	
Supervisory Personnel	0	0	0		0.043	0.0	0.158	
Engineering Personnel	1	2	0		0.177	1.267	0.0	
TOTAL	34	3	3	40	11.119	1.703	0.982	13.804
Routine Maintenance								
Maintenance Personnel	14	14	3		4.430	4.631	1.297	
Operating Personnel	2	0	0		0.625	0.0	0.0	
Health Physics Personnel	1	0	0		0.469	0.0	0.090	
Supervisory Personnel	0	0	1		0.0	0.0	0.163	
Engineering Personnel	0	0	0		0.040	0.145	0.0	
TOTAL	17	14	4	35	5.564	4.776	1.550	11.890
In-Service Inspection								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
Special Maintenance								
Maintenance Personnel	22	30	65		10.741	15.744	30.138	
Operating Personnel	24	0	0		6.144	0.0	0.0	
Health Physics Personnel	5	0	20		1.540	0.0	6.919	
Supervisory Personnel	1	0	0		0.352	0.0	0.465	
Engineering Personnel	1	7	0		0.291	2.752	0.0	
TOTAL	53	37	85	175	19.068	18.496	37.522	75.086
Waste Processing								
Maintenance Personnel	2	1	0		0.691	0.345	0.210	
Operating Personnel	12	0	0		3.291	0.0	0.0	
Health Physics Personnel	4	0	8		0.900	0.0	3.555	
Supervisory Personnel	0	0	4		0.005	0.0	1.925	
Engineering Personnel	0	0	0		0.005	0.010	0.0	
TOTAL	18	1	12	31	4.892	0.355	5.690	10.937
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
Total By Job Function								
Maintenance Personnel	41	46	70	157	17.029	21.156	32.244	70.429
Operating Personnel	64	0	0	64	18.830	0.0	0.0	18.830
Health Physics Personnel	14	0	29	43	3.871	0.0	10.789	14.660
Supervisory Personnel	1	0	5	6	0.400	0.0	2.711	3.111
Engineering Personnel	2	9	0	11	0.513	4.174	0.0	4.687
GRAND TOTAL	122	55	104	281	40.643	25.330	45.744	111.717

Appendix C (Continued)

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

Plant: † Zion 1, 2 (PWRs)

1979

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	10	0			7.8	0.0		
Operating Personnel	121	0			62.6	0.0		
Health Physics Personnel	12	0			24.0	0.0		
Supervisory Personnel	38	0			9.6	0.0		
Engineering Personnel	135	193			34.5	21.3		
TOTAL	316	193	0	509	138.5	21.3	0.0	159.8
Routine Maintenance								
Maintenance Personnel	95		1,317		201.1		625.3	
Operating Personnel	36		0		17.5		0.0	
Health Physics Personnel	11		0		22.3		0.0	
Supervisory Personnel	52		0		17.5		0.0	
Engineering Personnel	54		0		8.8		0.0	
TOTAL	248	0	1,317	1,565	267.2	0.0	625.3	892.5
In-Service Inspection								
Maintenance Personnel	0		150		0.0		71.1	
Operating Personnel	0		0		0.0		0.0	
Health Physics Personnel	0		0		0.0		0.0	
Supervisory Personnel	0		0		0.0		0.0	
Engineering Personnel	19		0		3.1		0.0	
TOTAL	19	0	150	169	3.1	0.0	71.1	74.2
Special Maintenance								
Maintenance Personnel		87				31.7		
Operating Personnel		0				0.0		
Health Physics Personnel		0				0.0		
Supervisory Personnel		0				0.0		
Engineering Personnel		0				0.0		
TOTAL	0	87	0	87	0.0	31.7	0.0	31.7
Waste Processing								
Maintenance Personnel	0		30		0.0		14.2	
Operating Personnel	23		0		10.1		0.0	
Health Physics Personnel	4		0		8.2		0.0	
Supervisory Personnel	0		0		0.0		0.0	
Engineering Personnel	4		0		0.6		0.0	
TOTAL	31	0	30	61	18.9	0.0	14.2	33.1
Refueling								
Maintenance Personnel	0				0.0			
Operating Personnel	6				11.1			
Health Physics Personnel	0				0.0			
Supervisory Personnel	3				5.3			
Engineering Personnel	25				4.0			
TOTAL	34	0	0	34	20.4	0.0	0.0	20.4
Total By Job Function								
Maintenance Personnel	105	87	1,497	1,689	208.9	31.7	710.6	951.2
Operating Personnel	186	0	0	186	101.3	0.0	0.0	101.3
Health Physics Personnel	27	0	0	27	54.5	0.0	0.0	54.5
Supervisory Personnel	93	0	0	93	32.4	0.0	0.0	32.4
Engineering Personnel	237	193	0	430	51.0	21.3	0.0	72.3
GRAND TOTAL	648	280	1,497	2,425	448.1	53.0	710.6	1,211.7

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16. ABSTRACT (200 words or less) <p> This report summarizes the occupational radiation exposure information that has been reported to the U.S.N.R.C. by commercial nuclear power reactors during the years 1969 through 1979. The bulk of the data presented in the report was obtained from annual radiation exposure reports submitted in accordance with the requirements of 10 CFR 20.407 and Regulatory Guide 1.16. Data on workers terminating their employment at nuclear power facilities was obtained from reports submitted pursuant to 10 CFR 20.408. The annual reports submitted by the 67 nuclear power plants that had completed at least one full year of operation as of December 31, 1979, indicated that the number of personnel monitored during 1979 was 109,160 persons and the annual collective dose incurred by these individuals was 39,759 man-rems. The average annual dose for each worker that received a measurable dose was 0.6 rems, and the average collective dose per reactor was 593 man-rems. The termination reports revealed that some 43,600 individuals completed their employment with one or more reactor facilities during 1979. Approximately 3,200 of these workers could be considered transients and they received an average dose of about 1 rem. </p>					
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