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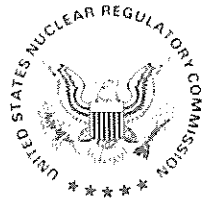
Occupational Radiation Exposure at Commercial Nuclear Power Reactors 1982

Annual Report

U.S. Nuclear Regulatory Commission

Office of Resource Management

B. G. Brooks



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B. G. Brooks

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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.

7. B. G. Brooks, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors, 1979," USNRC Report NUREG-0713, Vol. 1, March 1981.

8. B. G. Brooks, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors, 1980," USNRC Report NUREG-0713, Vol. 2, December 1981.

9. B. G. Brooks, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors, 1981," USNRC Report NUREG-0713, Vol. 3, November 1982.

ABSTRACT

This report presents an updated compilation of occupational radiation exposures at commercial nuclear power reactors for the years 1969 through 1982. This report is one of a series of reports which are 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 year's report contains data received from the 74 light water cooled reactors (LWRs) and one high temperature gas cooled reactor (HTGR) that had been declared to be in commercial operation for at least one full year as of December 31, 1982. This represents an increase of four reactors over the number contained in last year's report. The total number of personnel monitored at LWRs in 1982 was 129,275, a slight increase from that found in 1981 (124,504). The number of workers that received measurable doses during 1982 was 84,322 which is about 2,000 more than that found in 1981. The total collective dose at LWRs for 1982 is estimated to be 52,190 man-rems, which is about 2,000 man-rems less than that reported in 1981. The result was that the average measurable dose per worker decreased to 0.62 rems, and the average collective dose per reactor decreased by about 70 man-rems to a value of 705 man-rems. The collective dose per megawatt-year of generated electricity by each reactor also decreased slightly to an average value of 1.6 man-rems per megawatt-year. A brief prospective on the health implications of these annual occupational doses is also provided. The staff estimates that a worker receiving an annual radiation dose of 0.62 rems over an entire working career may have his/her risk of dying from cancer increased by less than two percent of the normal risk of dying from cancer.

The report also presents a summary and some analyses of the exposure data contained in the "termination reports" that have been submitted by nuclear power licensees to the Commission pursuant to 10 CFR §20.408. As of December 31, 1982, personal identification and exposure information had been collected and computerized for some 250,000 of these terminating reactor personnel. Analysis of these data indicate that in 1981 there were about 2,200 quarterly transient* workers who incurred an average dose of 0.42 rems and some 5,300 yearly transient* workers who incurred an average dose of 0.97 rems. The collective dose (about 5,100 man-rems) incurred by the yearly transients constituted nine percent of the total collective dose calculated for 1981. The termination data reported in 1982 has not yet been completely computerized, and, therefore, such analyses for transient workers in 1982 were not available for presentation in this report.

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*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 1982

1. INTRODUCTION

In 1974, the NRC staff began changing the technical specifications of operating nuclear power reactors to require the submittal of an annual report which indicated the number of individuals exposed and their cumulative annual doses, broken down by type of personnel, work function, and occupation. (The 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.) To obtain 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 nuclear power utilities, 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 1981.

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 their technical specifications, may be found in those documents listed on the front cover of this report. Additional operating data and statistics for each of the years after 1972 through 1979 may be found in a series of reports, "Nuclear Power Plant Operating Experience" (Refs. 3-9). 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-rems) 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-rems) shown for 1969 through 1972 were obtained by special requests 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 collective dose and the number of workers receiving measurable doses were obtained from the annual reports submitted pursuant to 10 CFR §20.407. For the years 1973 through 1980, the annual collective dose was calculated for each facility by summing the products obtained by multiplying the number of individuals reported in each of the dose ranges (shown in Table 7 and Appendix B) by the midpoint of the corresponding range. Past experience has shown that the actual mean dose of individuals reported in each dose range is less than the midpoint of the range, and the collective doses shown in this report for these may be about 10% too high. In 1981, a few facilities began reporting the actual collective dose (as determined from official personnel dosimetry results) on their 20.407 annual reports, and the NRC staff used these doses instead of the above-described calculations. The staff would prefer to use the actual collective dose and hopes that more facilities make it available.

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 the collective dose shown for 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

TABLE 1

SUMMARY OF ANNUAL INFORMATION REPORTED BY COMMERCIAL BOILING WATER REACTORS

1969 - 1982

Year	Number Of Reactors Included	Annual Collective Doses (Man-rems)	No. of Workers With Measurable Doses	Gross MW-Yrs Electricity 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 Net (MWe)
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
1980	26	29,530	34,094	10,868	0.87	1.136	1,311	2.7	418	664
1981	26	25,471	34,832	10,899	0.73	980	1,340	2.3	419	674
1982	26	24,437	32,235	10,655	0.76	940	1,240	2.3	410	674

*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 - 1982

Year	Number Of Reactors Included	Annual Collective Doses (Man-rems)	No. of Workers With Measurable Doses	Gross MW-Yrs Electricity 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 Net (MWe)
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	21,659	38,877	18,249	0.56	516	924	1.2	434	729
1980	42	24,266	46,237	18,287	0.52	578	1,101	1.3	435	721
1981	44	28,671	47,351	20,552	0.61	652	1,076	1.4	467	745
1982	48	27,753	52,147	22,141	0.53	578	1,086	1.3	578	773

*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 3

SUMMARY OF ANNUAL INFORMATION REPORTED BY COMMERCIAL LIGHT WATER COOLED REACTORS

1969 - 1982

Year	Number Of Reactors Included	Annual Collective Doses (Man-rems)	No. of Workers With Measurable Doses	Gross MW-Yrs Electricity 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 Net (MWe)
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	39,981	64,122	29,920	0.62	597	956	1.3	447	705
1980	68	53,796	80,331	29,155	0.67	791	1,181	1.8	429	699
1981	70	54,142	82,183	31,451	0.66	773	1,174	1.7	449	719
1982	74	52,190	84,382	32,795	0.62	705	1,139	1.6	443	738

*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.

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 report. This product is the number of man-rems shown in the column headed "Operations" 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 reports 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-Yr) 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 the 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-Yr) 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 dose 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 A.

2.2 Average Annual Occupational Doses

Some of the data presented in Tables 1 and 2 is graphically displayed in Figure 1, where it can be seen that the average collective dose and average number of workers per BWR has been higher than that for PWRs for the last eight years and that the values of both parameters have, in general, continued to rise at both types of facilities. In 1982, however, the values of both parameters decreased at both PWRs and BWRs for the first time in several years. From Table 1, it can be seen that the average collective dose, dose per worker, and collective dose per megawatt-year at BWRs decreased slightly or remained about the same as those found for 1981. At PWRs (Table 2), the values of these three parameters decreased to 578 man-rems per reactor, 0.53 rems per worker, and 1.3 man-rems per megawatt-year, while the average number of workers per reactor (1,086) remained nearly the same as the 1981 value.

Figures 2 and 3 are plots of much of the information that is given in Table 3 for all light water reactors. One can see that of all of the parameters plotted, only the number of reactors, total number of workers and total megawatt years showed increases over last year's values.

To further assist in the identification of any trends that might exist, Figure 4 displays the average and the median* values of the collective dose per reactor for BWRs and for PWRs for the years 1973 through 1982. The ranges of the values reported each year are shown by the vertical lines with a small bar at each end marking the two extreme values. The rectangles indicate the range of values of the collective dose exhibited by those plants ranked in the twenty-fifth through the seventy-fifth percentiles. Since the median values are not as greatly affected by the extreme values of the collective doses, one can see that they do not fluctuate as much from year to year as do the average values. The median collective dose for PWRs appears to have increased to about 500 man-rems, while for BWRs, it appears to have levelled off at about 940 man-rems. Nearly every year the median collective dose is less than the average, which indicates that the collective dose for most plants is less than the average collective dose per reactor (the value that is widely quoted).

2.3 Plant Rankings By Collective Dose Per Reactor

The number of reactors from which data have been collected is still rather small, and the information reported by a few reactors where unusual conditions or problems may have occurred could have a large impact on some of the statistics presented in this report. In an effort to identify those plants, Tables 4 and 5 list the BWRs and PWRs in ascending order of

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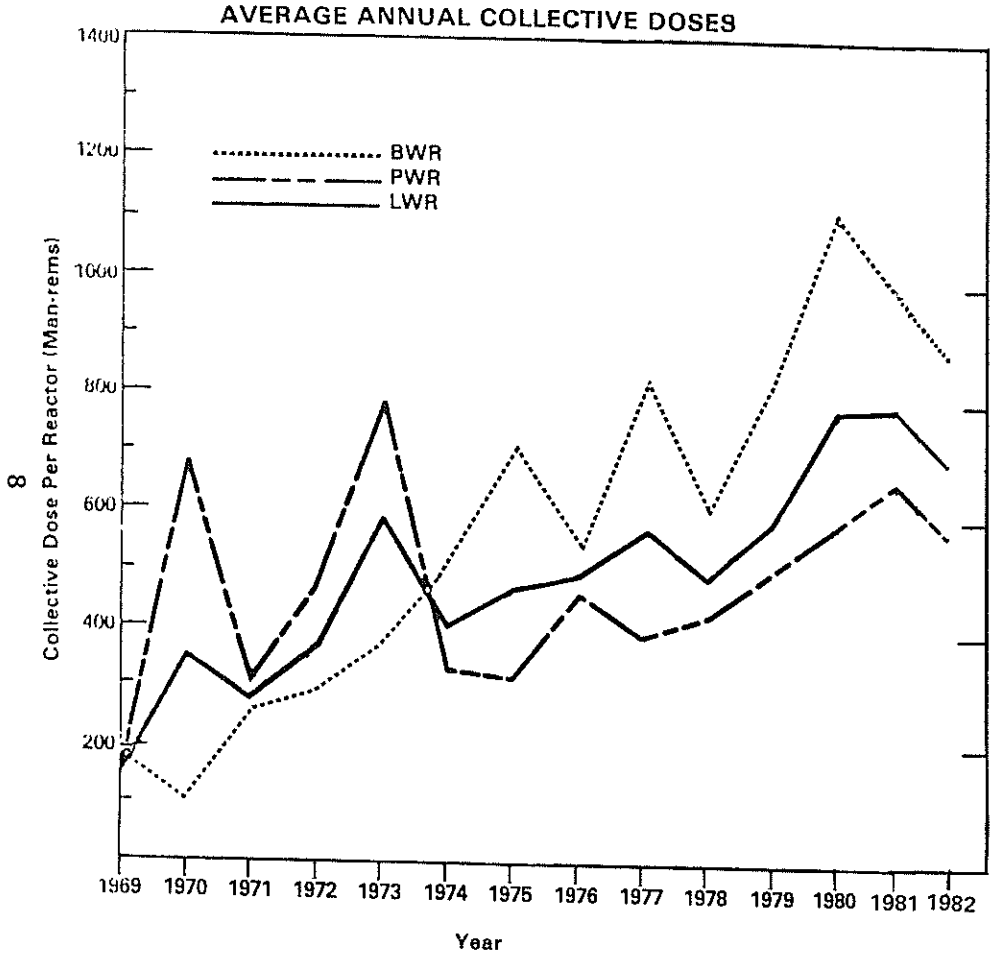
*The value at which 50% of the reactors reported greater collective doses and the other 50% reported smaller collective doses.

FIGURE 1

COMMERCIAL LIGHT WATER COOLED REACTORS

1969 - 1982



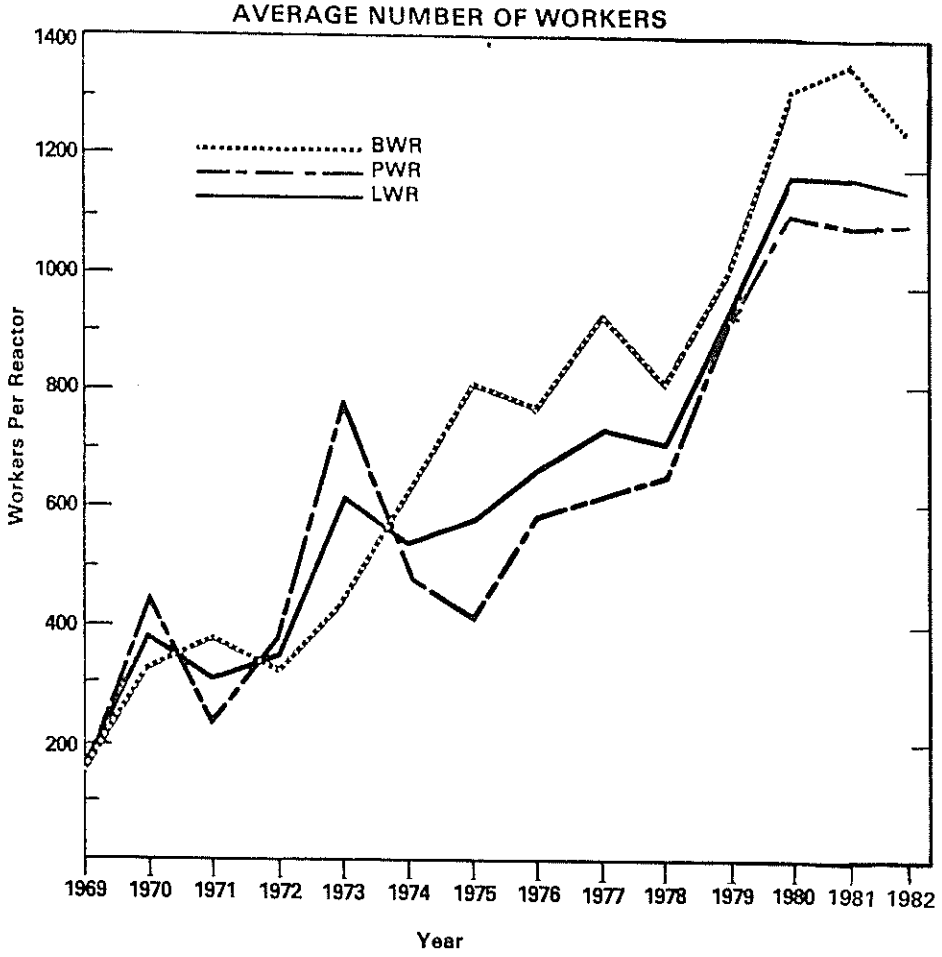


FIGURE 2

TOTAL ANNUAL VALUES
AT LIGHT WATER COOLED REACTORS

1969 - 1982

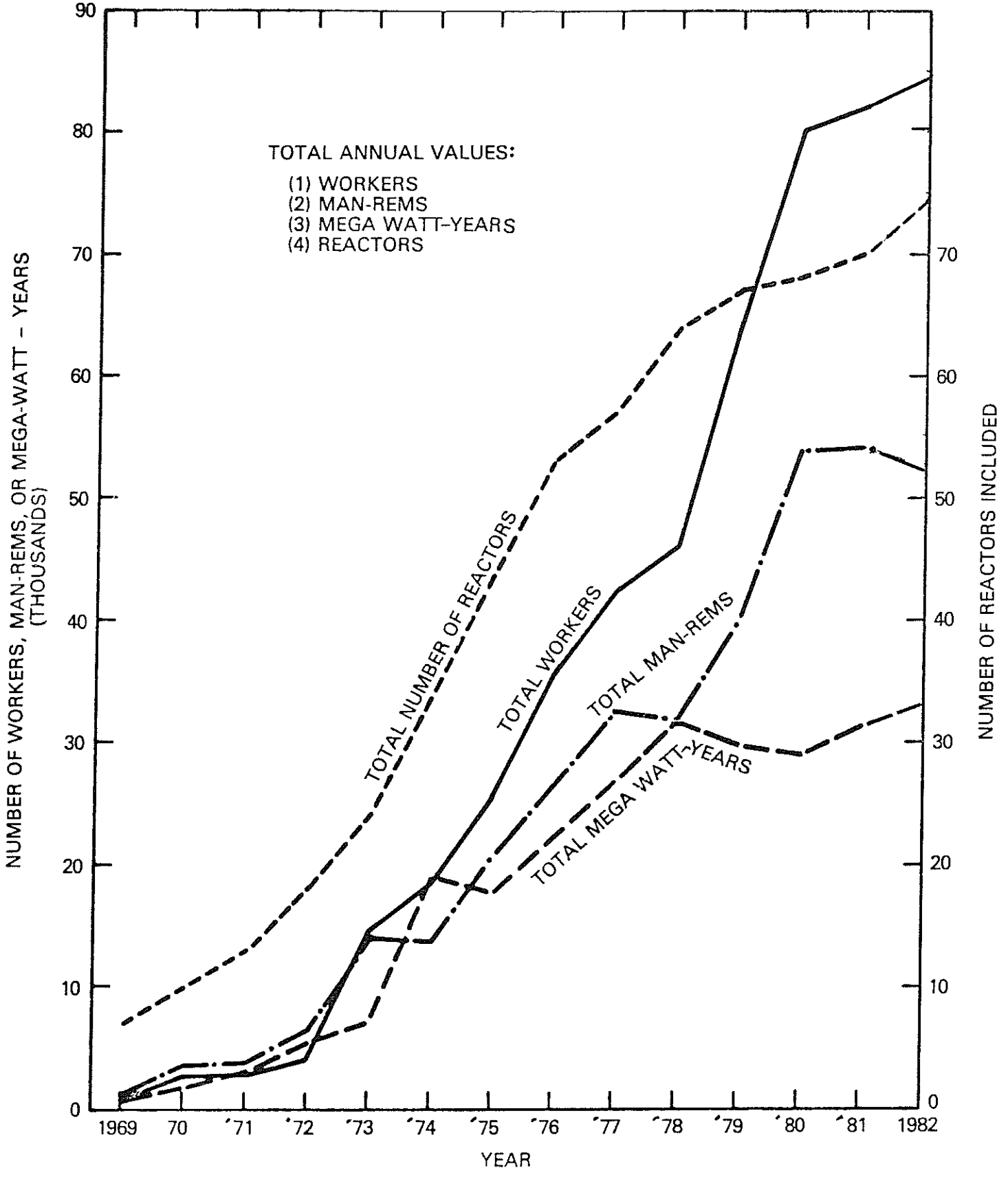


FIGURE 3
AVERAGE ANNUAL VALUES
AT LIGHT WATER COOLED REACTORS
1969-1982

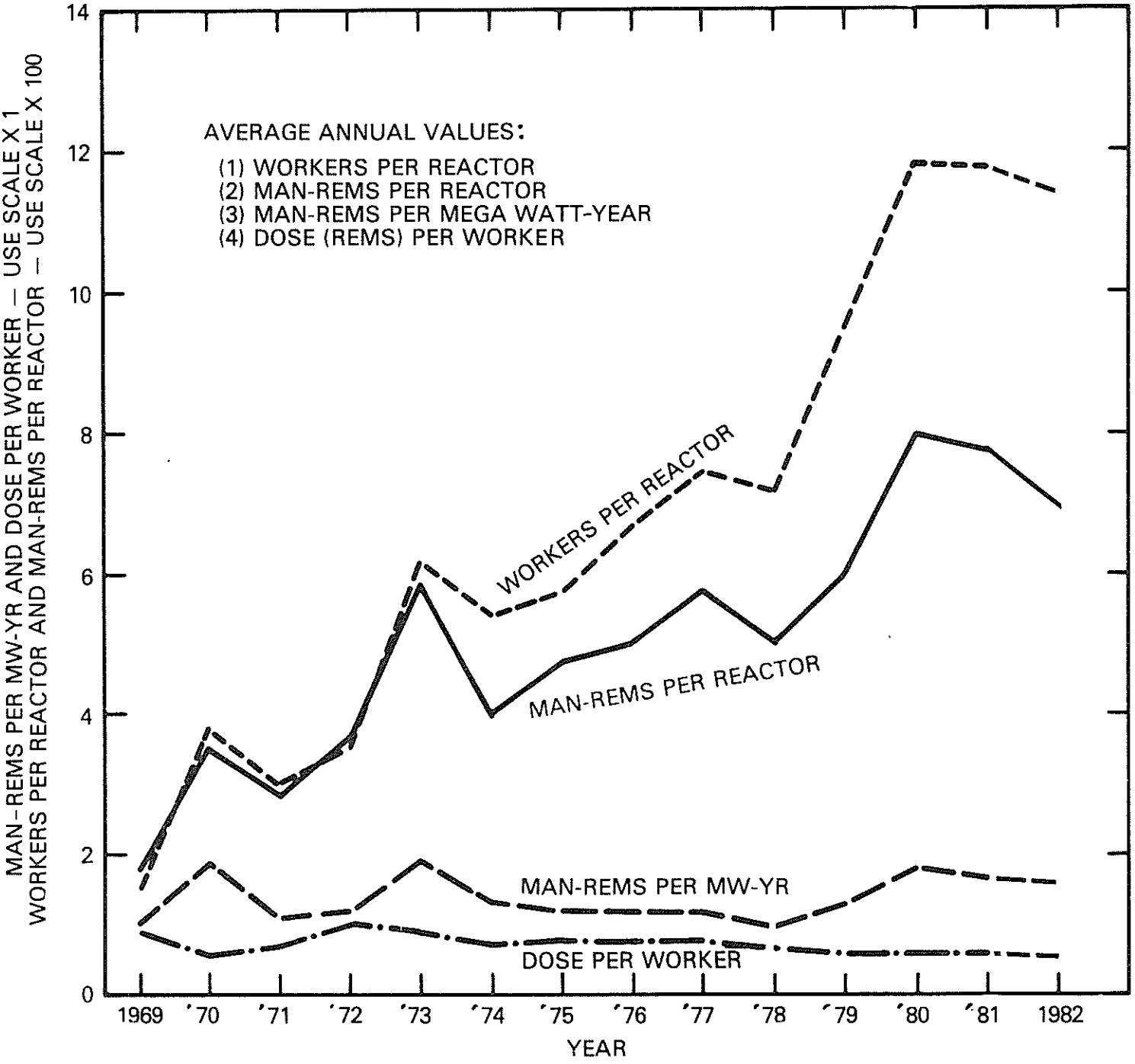


FIGURE 4
AVERAGE, MEDIAN AND EXTREME VALUES OF
THE COLLECTIVE DOSE PER REACTOR
1973 - 1982

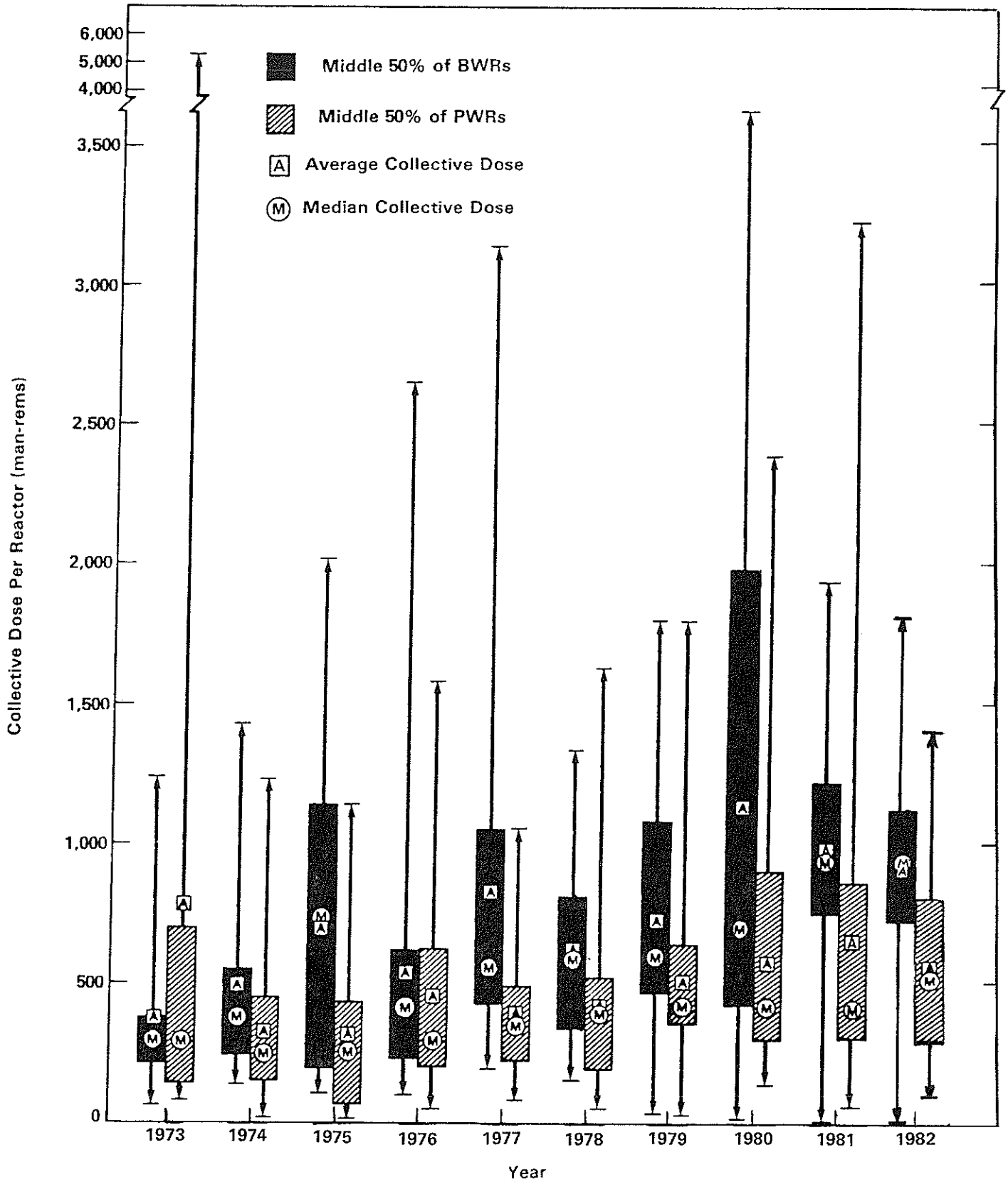


TABLE 4

BOILING WATER REACTORS

LISTED IN ASCENDING ORDER OF MAN-REMS PER REACTOR

1978 - 1982

1978				1979				1980				1981					1982				
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.	[2]CR	Site Name	[1]Man-Rems per Site	Dose per Worker (Rems)	Man-Rems per MW-Yr.	[2]CR
Cooper Station	158	0.53	0.27	Humboldt Bay	31	0.23	PRODUCED NO POWER	Humboldt Bay	22	0.15	PRODUCED NO POWER	Humboldt Bay	9	0.12	PRODUCED NO POWER	0.00	Humboldt Bay	19	0.27	PRODUCED NO POWER	0.08
La Crosse	164	0.90	7.60	Monticello	157	0.42	0.30	La Crosse	218	1.76	8.26	La Crosse	123	0.66	4.2	0.68	La Crosse	205	1.39	11.9	0.81
Big Rock Point	175	0.61	3.60	La Crosse	186	1.22	7.75	Hatch 1,2	449	0.23	0.45	Big Rock Point	160	0.33	2.8	0.47	Vermont Yankee	205	0.43	0.4	0.24
Hatch 1	248	0.19	0.48	Cooper	221	0.52	0.37	Big Rock Point	354	0.59	7.24	Cooper Station	579	0.62	1.3	0.45	Duane Arnold	227	0.44	0.8	0.48
Nine Mile Point	314	0.56	0.56	Duane Arnold	275	0.36	0.78	Monticello	531	0.48	1.29	Hatch 1,2	1,337	0.46	1.5	0.35	Big Rock Point	328	0.63	7.5	0.58
Humboldt Bay	335	1.05	–	Big Rock Point	455	0.73	35.00	Nine Mile Point	591	0.50	1.11	Vermont Yankee	731	0.58	1.7	0.45	Cooper Station	542	0.73	0.9	0.52
Vermont Yankee	339	0.36	0.87	Oyster Creek	467	0.55	0.86	Browns Ferry 1,2,3	1,825	0.67	0.84	Duane Arnold	790	0.61	2.8	0.50	Hatch 1,2	1,460	0.43	1.9	0.33
Monticello	375	0.55	0.82	Browns Ferry 1,2,3	1,667	0.62	0.70	Duane Arnold	671	0.61	1.98	Browns Ferry 1,2,3	2,380	0.70	1.1	0.49	Browns Ferry 1,2,3	2,220	0.68	1.1	0.51
Brunswick 1&2	1004	0.69	0.86	Hatch	582	0.27	1.45	Dresden 1,2,3	2,105	0.77	1.96	Oyster Creek	917	0.54	2.9	0.40	Oyster Creek	865	0.68	3.6	0.51
Dresden 1, 2&3	1529	0.79	1.23	Dresden 1,2,3	1,800	0.75	1.78	Cooper Station	859	1.09	1.92	Dresden 1,2,3	2,820	1.16	2.7	0.76	Millstone Point 1	929	0.68	1.9	0.48
Browns Ferry 1,2,&3	1792	0.75	0.90	Peach Bottom 2,3	1,388	0.61	0.80	Peach Bottom 2,3	2,302	0.83	1.68	Monticello	1,004	0.69	2.6	0.52	Dresden 1,2,3	2,923	1.14	2.7	0.73
Peach Bottom 2&3	1317	0.59	0.80	Fitzpatrick	859	1.01	2.40	Vermont Yankee	1,338	0.93	3.74	Peach Bottom 2,3	2,506	0.88	2.2	0.56	Peach Bottom 2,3	1,977	0.72	1.2	0.48
Quad Cities 1&2	1618	1.34	1.44	Pilgrim	1,015	0.41	1.77	Oyster Creek	1,733	0.88	7.44	Brunswick 1,2	2,638	0.68	2.9	0.66	Monticello	993	0.76	3.4	0.57
Fitzpatrick	909	1.00	1.83	Quad Cities 1,2	2,158	1.28	2.01	Brunswick 1,2	3,870	1.02	5.63	Fitzpatrick	1,425	0.57	2.5	0.44	Fitzpatrick	1,190	0.51	2.0	0.37
Duane Arnold	974	0.86	6.53	Vermont Yankee	1,170	0.96	2.85	Fitzpatrick	2,040	0.99	4.00	Millstone 1	1,496	0.60	4.9	0.44	Nine Mile Point	1,264	0.93	9.5	0.66
Millstone 1	1239	0.89	2.23	Brunswick 1,2	2,603	0.90	3.21	Millstone Point 1	2,158	0.71	5.32	Quad Cities 1,2	3,146	1.40	2.7	0.81	Pilgrim	1,539	0.54	3.9	0.42
Oyster Creek	1279	0.91	2.96	Nine Mile Point	1,497	1.13	4.23	Quad Cities 1,2	4,838	1.57	5.58	Nine Mile Point	1,592	0.78	4.1	0.59	Quad Cities 1,2	3,757	1.62	3.7	0.79
Pilgrim	1327	0.80	2.55	Millstone Point 1	1,793	1.01	3.55	Pilgrim	3,626	1.02	10.06	Pilgrim	1,836	0.66	4.5	0.44	Brunswick 1,2	3,792	0.76	6.5	0.70
Averages per Reactor	604	0.74	1.35	Averages per Reactor	733	0.73	1.57	Averages per Reactor	1,136	0.87	2.72	Averages per Reactor	980	0.73	2.3	0.57	Averages per Reactor	940	0.76	2.3	0.59

[1] For sites with more than one operating reactor, the number of man-rems per reactor is obtained by dividing the number of man-rems for the site by the number of reactors.

[2] CR is the ratio of the annual collective dose delivered at individual doses exceeding 1.5 rems to the total collective dose.

TABLE 5

PRESSURIZED WATER REACTORS

LISTED IN ASCENDING ORDER OF MAN-REMS PER REACTOR

1978 - 1982

1978				1979				1980				1981					1982				
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.	[2]CR	Site Name	[1]Man-Rems per Site	Dose per Worker (Rems)	Man-Rems per MW-Yr	[2]CR
Davis Besse	48	0.11	0.15	Davis Besse	30	0.10	0.08	Davis Besse	154	0.12	0.60	Davis Besse	58	0.10	0.1	0.04	Kewaunee	101	0.29	0.2	0.11
Farley 1	108	0.20	0.15	Prairie Island 1,2	180	0.30	0.21	Kewaunee	165	0.41	0.38	Kewaunee	141	0.37	0.3	0.18	Prairie Island 1,2	229	0.36	0.2	0.16
Prairie Island 1&2	221	0.40	0.24	Fort Calhoun	126	0.28	0.29	Prairie Island 1,2	353	0.36	0.44	Prairie Island 1,2	329	0.39	0.4	0.30	Haddam Neck	126	0.23	0.2	0.27
Haddam Neck	117	0.54	0.21	Rancho Seco	126	0.44	0.18	Three Mila Island 1,2	394	0.17	-	Three Mile Island 1,2	376	0.18	PRODUCED NO POWER	0.06	Davis Besse	164	0.12	0.4	0.06
Salem 1	122	0.21	0.22	Kewaunee	127	0.37	0.31	Yankee Rowe	213	0.42	5.98	Beaver Valley	229	0.19	0.4	0.13	McGuire	169	0.11	0.3	0.03
Kewaunee	154	0.46	0.33	Yankee Rowe	127	0.29	0.85	North Anna 1	218	0.10	0.32	Salem 1	254	0.15	0.3	0.09	Crystal River	177	0.23	0.3	0.13
Point Beach 1&2	320	0.95	0.33	Beaver Valley	132	0.19	0.60	Cook 1,2	493	0.37	0.32	Point Beach 1,2	596	0.77	0.8	0.46	Fort Calhoun	217	0.36	0.5	0.42
Arkansas 1	189	0.26	0.30	San Onofre	139	0.27	0.35	Point Beach 1,2	598	1.07	0.82	Yankee Rowe	302	0.59	2.8	0.43	Farley 1,2	484	0.33	0.4	0.18
Beaver Valley	190	0.29	0.63	Maine Yankee	154	0.39	0.29	Indian Point 3	308	0.32	0.84	Calvert Cliffs 1,2	607	0.39	0.4	0.19	St. Lucie	272	0.26	0.3	0.18
Calvert Cliffs 1 & 2	500	0.36	0.42	Trojan	257	0.35	0.41	Calvert Cliffs 1,2	677	0.45	0.52	Cook 1,2	655	0.49	0.4	0.29	Point Beach 1,2	609	0.79	0.8	0.50
Yankee Rowe	282	0.50	1.94	Point Beach 1,2	644	1.06	0.80	Arkansas 1	342	0.28	0.76	North Anna 1,2	680	0.28	0.5	0.37	Palisades	330	0.21	0.8	0.20
Trojan	312	0.45	1.55	Oconee 1,2,3	1,001	0.48	0.59	Oconee 1,2,3	1,055	0.50	0.62	Indian Point 3	364	0.54	1.0	0.36	Rancho Seco	337	0.44	0.8	0.36
Crystal River	321	0.50	1.03	Cook 1,2	718	0.50	0.52	Rancho Seco	412	0.46	0.78	Rancho Seco	402	0.52	1.3	0.28	Cook 1,2	699	0.46	0.5	0.27
Rancho Seco	323	0.64	0.53	Arkansas	369	0.28	0.93	Trojan	421	0.36	0.58	Oconee 1,2,3	1,211	0.50	0.7	0.45	Arkansas 1,2	803	0.50	0.9	0.43
Cook 1	336	0.43	0.45	Calvert Cliffs 1,2	805	0.56	0.69	Palisades	424	0.32	1.47	Crystal River 3	408	0.36	0.8	0.23	Trojan	419	0.42	0.7	0.35
St. Lucie	337	0.42	0.56	St. Lucie	438	0.48	0.74	Farley	435	0.33	0.78	Maine Yankee	424	0.49	0.7	0.29	Yankee Rowe	474	0.58	4.4	0.54
San Onofre	401	0.52	1.24	North Anna	449	0.22	0.89	Salem 1	449	0.26	0.66	Fort Calhoun	458	0.56	1.8	0.50	Three Mile Island 1,2	1,004	0.47	PRODUCED NO POWER	0.44
Fort Calhoun	410	0.69	1.20	Millstone Point 2	472	0.62	0.91	Zion 1,2	920	0.68	0.65	Farley	511	0.38	1.6	0.28	Calvert Cliffs 1,2	1,057	0.59	0.8	0.40
Maine Yankee	420	0.66	0.65	Crystal River	495	0.43	1.09	Maine Yankee	462	0.63	0.88	Millstone Point 2	531	0.60	0.7	0.44	Sequoyah	570	0.29	1.0	0.18
Ginna	450	0.68	1.17	Salem	584	0.39	2.34	Indian Point 1,2	971	0.62	1.90	Arkansas 1,2	1,102	0.50	1.0	0.39	Oconee 1,2,3	1,792	0.73	1.4	0.58
Oconee 1, 2&3	1393	0.85	0.73	Three Mile Island 1,2	1,170	0.29	4.40	St. Lucie	532	0.50	0.85	Trojan	609	0.46	0.8	0.33	Salem 1,2	1,203	0.37	0.8	0.29
Three Mile Island 1	504	0.26	0.73	Ginna	592	0.67	1.67	Beaver Valley	553	0.30	13.89	Ginna	655	0.71	1.6	0.45	Maine Yankee	619	0.48	1.1	0.32
Zion 1 & 2	1017	0.92	0.63	Indian Point 3	636	0.79	1.12	Crystal River	625	0.59	1.55	Robinson 2	733	0.50	1.7	0.51	Beaver Valley	599	0.34	1.8	0.26
Turkey Point 3&4	1032	0.77	1.03	Zion 1,2	1,274	0.87	1.03	Millstone point 2	636	0.71	1.10	Zion 1,2	1,720	0.98	1.3	0.69	Surry 1,2	1,490	0.79	1.1	0.73
Indian Point 1*,2 & 3	2006	1.05	1.71	Indian Point 1*,2	1,279	0.95	2.23	Ft. Calhoun	668	0.75	2.76	Palisades	902	0.42	2.2	0.41	Indian Point 1*,2	1,635	0.76	3.1	0.52
Palisades	764	0.90	1.45	Farley	643	0.52	3.05	Ginna	708	0.66	1.91	St. Lucie	929	0.63	1.6	0.43	San Onofre	832	0.27	13.5	0.35
Surry 1&2	1837	0.83	1.52	Turkey Point 3,4	1,680	0.84	2.07	Turkey Point 3,4	1,651	0.92	1.67	Haddam Neck	1,036	0.67	2.1	0.52	North Anna 1,2	1,915	0.67	2.5	0.67
Robinson 2	963	1.02	2.01	Palisades	854	0.53	2.06	Haddam Neck	1,353	0.73	3.17	Turkey Point 3,4	2,251	0.77	3,4	0.51	Zion 1,2	2,103	1.34	1.8	0.76
Millstone 2	1621	1.14	3.02	Haddam Neck	1,161	0.95	2.35	Robinson 2	1,852	0.92	4.78	Indian Point 1,2*	2,731	1.05	7.4	o.65	Turkey Point 3,4	2,119	0.72	2.3	0.48
Average per Reactor	428	0.65	0.84	Robinson 2	1,188	0.82	2.46	Surry 1,2	3,836	0.72	6.75	Surry 1,2	4,244	1.13	4.7	0.77	Ginna	1,140	1.02	3.9	0.65
				Surry 1,2	3,584	0.71	10.45	San Onofre 1	2,387	0.78	24.53	San Onofre	3,223	1.11	33.6	0.72	Indian Point 3	1,226	0.83	7.1	0.59
				Averages per Reactor	510	0.55	1.17	Averages per Reactor	578	0.52	1.33	Averages per Reactor	652	0.61	1.4	0.52	Millstone Point 2	1,413	0.68	2.4	0.48
																	Robinson 2	1,426	0.71	5.1	0.65
																	Averages per Reactor	578	0.53	1.3	0.49

*Indian Point 1 was defueled in 1974.

[1]For sites with more than one operating reactor, the number of man-rems per reactor is obtained by dividing the number of man-rems for the site by the number of reactors.

[2]CR is the ratio of the annual collective dose delivered at individual doses exceeding 1.5 rems to the total collective dose.

man-rems per reactor for each of the years 1977 through 1982. Two other parameters, dose per worker and collective dose per megawatt-year, are also given for each plant and could have been used in listing the plants as well. Also shown is a parameter "CR" which is defined to be the ratio of the annual collective dose delivered at individual doses exceeding 1.5 rems to the total annual collective dose. This indicates the proportion of the total collective dose at the plant that was received by individuals who incurred annual doses of 1.5 rems or greater. CR is one of the parameters that the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) recommended be used in the analysis and comparison of exposure data. The latest UNSCEAR report (Ref. 10) states that the normal values of CR lie between 0.05 and 0.50, and one can see that CR for most of the plants fell within this range in 1982.

Table 6 lists the plants that had been in commercial operation for at least five years as of December 31, 1982. At both BWRs and PWRs, the number of workers per reactor-year increased by less that 10%, while the values of the average collective dose per reactor-year and collective dose per megawatt-year remained about the same as those found for the five years ending in 1981. Also, the average dose per worker decreased slightly at both BWRs and PWRs during this period. Figures 5, 6 and 7 are plots of some of the data that were used in Table 6. The dark bars indicate the collective dose per site for each of the last five years (unless the reactor was in commercial operation for a shorter time), and the circles indicate the five-year average of the collective dose per megawatt-year for each site. They are in order by age of the facility, and one can quickly see that the newer PWRs (Figure 6) have values of these two parameters that are smaller than those of the newer BWRs (Figure 5). This is also true when comparing the plots of the newer PWRs with that of the older PWRs (Figure 7), but not when comparing the newer and older BWRs (Figure 5).

In general, one can see from the listings in Tables 4 through 6 and Figures 5 through 7 that the plants having the lower values of the three parameters shown for 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. For example, the PWR facilities reporting high values for these two parameters during the last few years generally have been involved in extensive tube-sleeving jobs related to the repair of steam generators. At both types of plants, in-service inspections and other plant modifications (such as pipe hangers, snubbers, and safe-end replacements) were also major contributors. It should be noted that the differences in nuclear plant designs and the ages of plants (Ref. 11) even between plants of a given type affect the nature of these parameters as well, and one should be careful when attempting to draw conclusions from this data.

TABLE 6

FIVE-YEAR TOTALS AND AVERAGES

Light Water Reactors Listed in Ascending Order of Man-rems per Reactor

1978 - 1982

Boiling Water Reactors

[2]Site Name	[1]Total Man-rems per Site	Workers with Measurable Doses	Average Dose per Worker (rems)	Total Mega-Watt Years	Average Man-rems per MW-Yr
Humboldt Bay	416	743	0.56	0.0	-
La Crosse	896	794	1.13	118.8	7.5
Big Rock	1172	2507	0.47	210.9	5.6
Cooper	2359	3186	0.74	2694.7	0.9
Duane Arnold	2939	4787	0.61	1396.5	2.1
Monticello	3060	4918	0.62	2073.6	1.5
Browns Ferry 1,2,3	9884	14433	0.68	10725.5	0.9
Dresden 1,2,3	11159	12050	0.93	5450.6	2.0
Vermont Yankee	3783	5342	0.71	2089.4	1.8
Peach Bottom 2,3	9490	12885	0.74	7495.6	1.3
Nine Mile Pt.	5258	6442	0.82	1934.3	2.7
Oyster Creek	5261	7178	0.73	1763.2	2.9
Fitzpatrick	6423	8622	0.74	2502.0	2.6
Brunswick 1,2	13906	16948	0.82	4175.8	3.3
Quad Cities 1,2	14517	10544	1.38	5242.0	2.8
Millstone Point 1	7615	10060	0.76	2261.9	3.4
Pilgrim	9343	13331	0.70	2252.6	4.1
Grand Totals and Averages per Reactor-Year	107,481	134,770	0.80	52,387.4	2.1
	896	1123		437.0	

Pressurized Water Reactors

[2]Site Name	[1]Total Man-rems per Site	Workers with Measurable Doses	Average Dose per Worker (rems)	Total Mega-Watt Years	Average Man-rems per MW-Yr
Davis Besse	454	3936	0.12	1886.0	0.2
Prairie Island 1,2	1312	3604	0.36	4396.6	0.3
Kewaunee	688	1815	0.38	2222.6	0.3
Point Beach 1,2	2765	3047	0.91	3967.2	0.7
Yankee Rowe	1398	2837	0.49	547.2	2.6
Cook 1,2	2901	6436	0.45	6689.1	0.4
Rancho Seco	1600	3223	0.50	2556.3	0.6
Beaver Valley	1703	6159	0.28	1465.1	1.2
Calvert Cliffs	3646	7675	0.48	6277.4	0.6
Fort Calhoun	1879	3364	0.56	1703.5	1.1
Trojan	2025	4894	0.41	2919.1	0.7
Crystal River	2026	4746	0.43	2246.8	0.9
Maine Yankee	2079	3929	0.53	2873.4	0.7
Oconee 1,2,3	6452	10750	0.60	8275.3	0.8
St. Lucie	2508	5296	0.47	3242.2	0.8
Palisades	3274	7460	0.57	1846.0	1.8
Zion 1,2	7034	7268	0.97	6816.0	1.0
Ginna	3545	4650	0.76	1800.0	2.0
Haddam Neck	3793	5415	0.70	2514.6	1.5
Turkey Point 3,4	8733	11029	0.79	4371.5	2.0
Millstone Point 2	4673	6042	0.77	2954.2	1.6
Robinson 2	6162	7879	0.78	2053.9	3.0
San Onofre	6982	10305	0.68	979.0	7.1
Surry 1,2	14991	18207	0.82	4352.7	3.4
Grand Totals and Averages per Reactor-Year	92,623	149,966	0.62	78,955.7	1.2
	561	909		479.0	

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

2. Multiple unit sites where not all reactors had completed five full yearsof commercial operation as of 12-31-82 are not included.

Figure 5

COLLECTIVE DOSE PER YEAR at BWRS 1978 - 1982

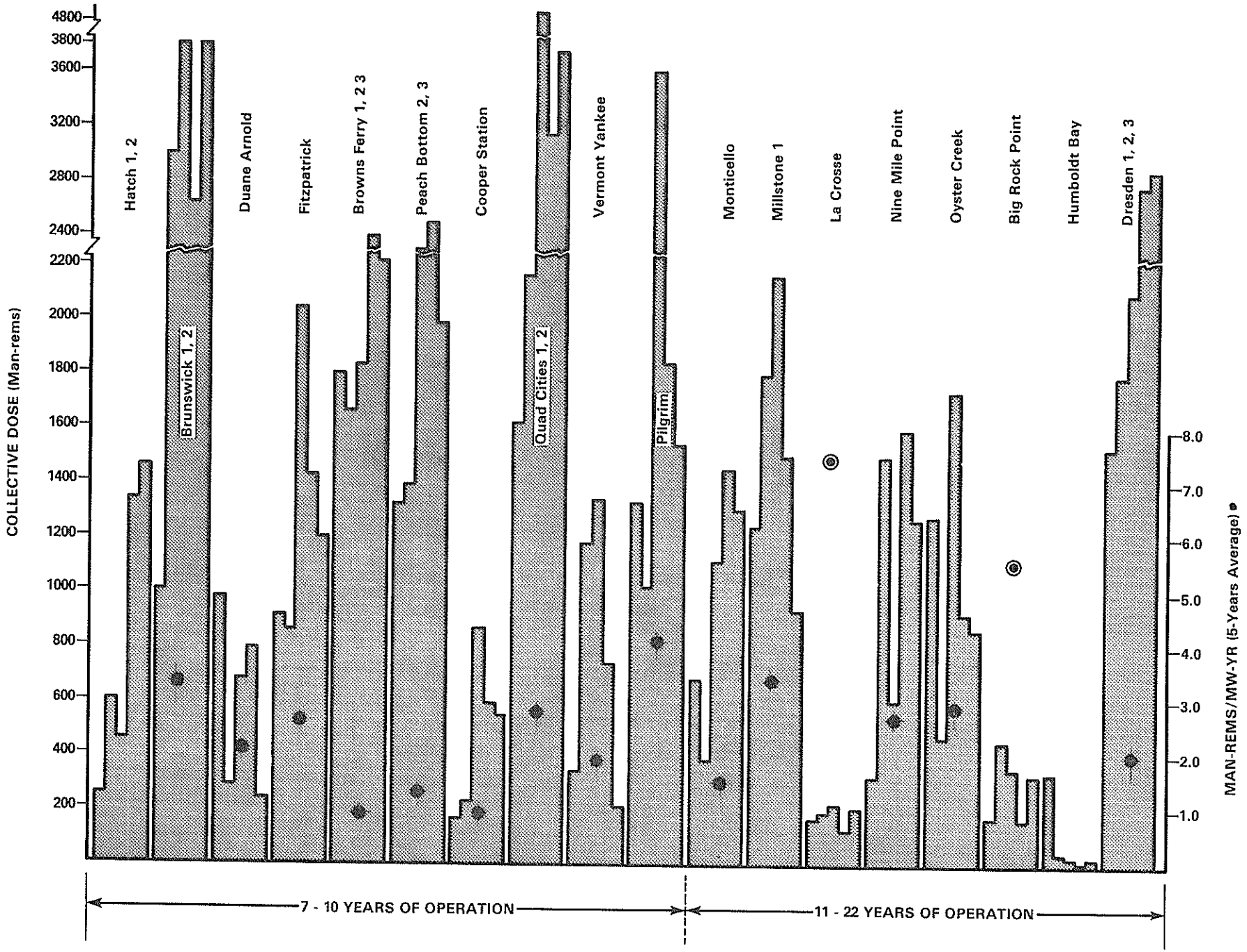


Figure 6

COLLECTIVE DOSE PER YEAR at PWRS 1978 - 1982

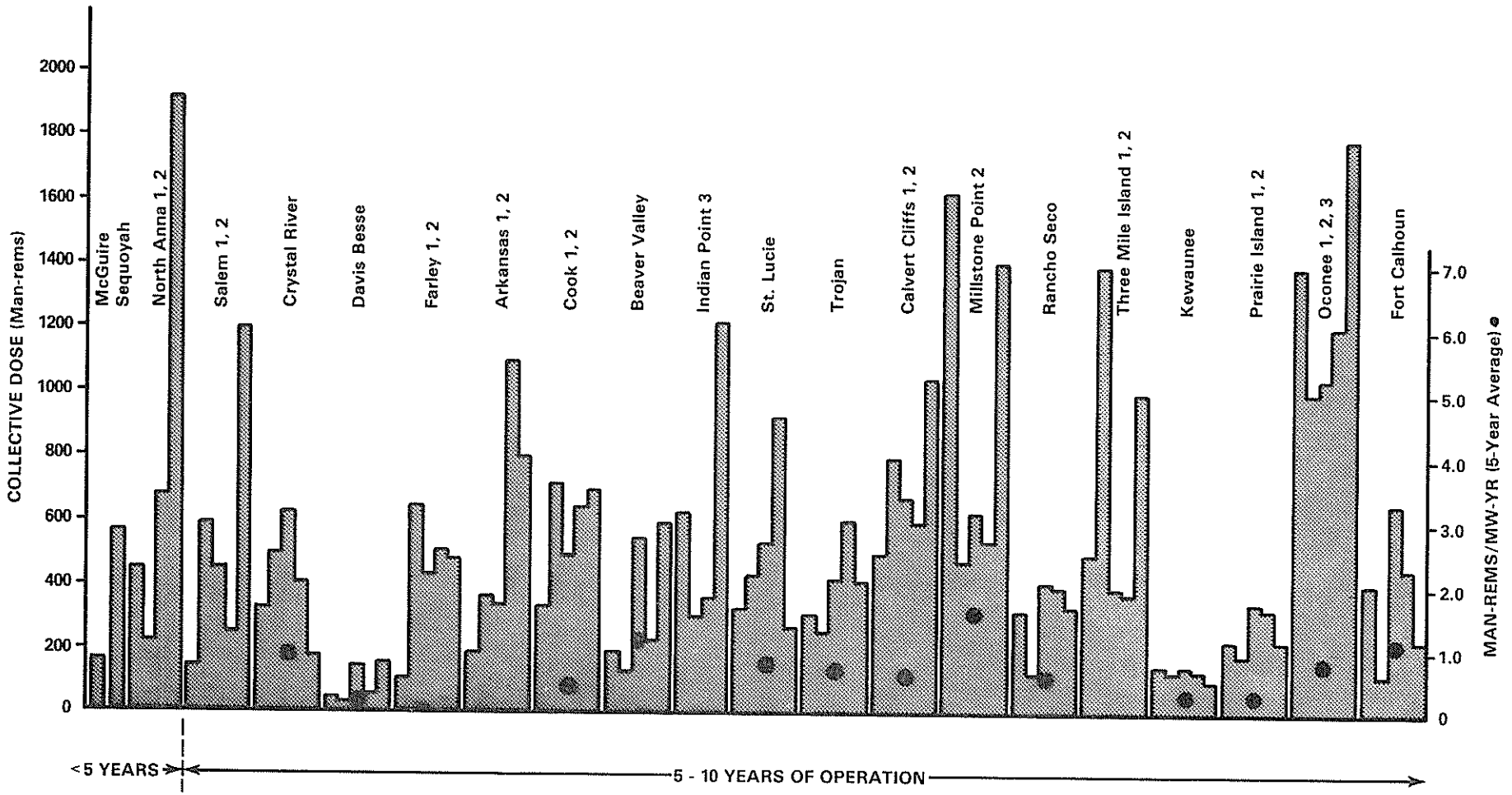
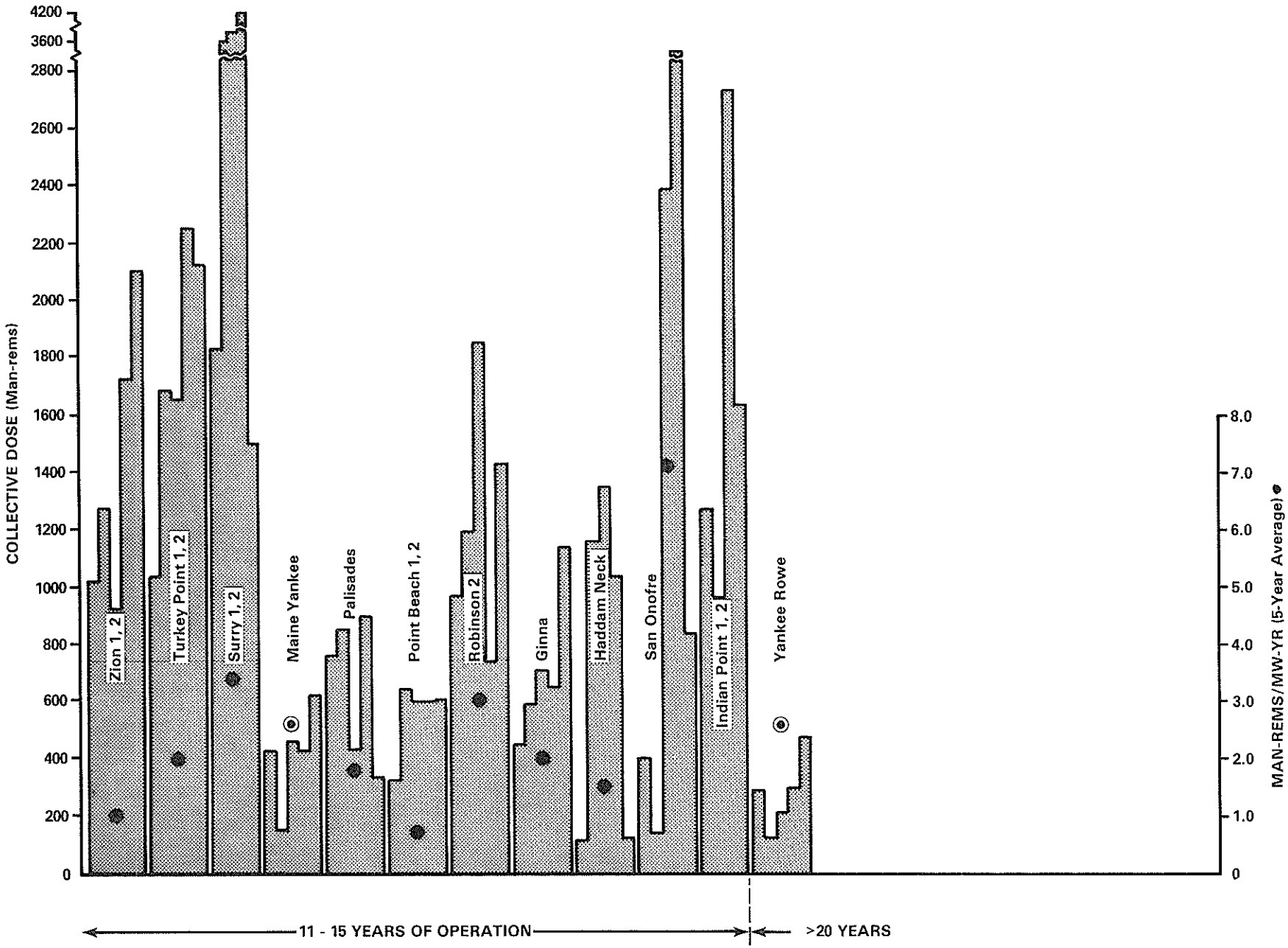


Figure 7

COLLECTIVE DOSE PER YEAR at PWRS (continued) 1978 - 1982



3. ANNUAL DOSE DISTRIBUTIONS

3.1 Annual Whole Body Dose Distributions

Table 7 summarizes the distribution of the annual whole body doses received by workers at commercial LWRs during each of the years 1969 through 1982. This distribution is the sum of the annual dose distributions reported by each licensed nuclear facility each year. The distribution reported by each facility for 1982 is shown in Appendix B. From Table 7, one can see that prior to 1973 the reports had a different format such that for doses less than two rems there were only two dose ranges, 0.0 to 1.25 rems and 1.25 to 2.0 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, the table indicates that the annual collective dose increased nearly every year, as did the number of monitored individuals. However, the values of CR show that the portion of the collective dose due to individual doses greater than 1.5 rems has decreased from a high of 0.72 in 1973 and has leveled off at about 0.55 for the last few years.

Since personnel monitoring data has frequently been found to have lognormal distributions (Ref 12), trends in the data may be observed from log-probability plots of the data. If the data are lognormally distributed, the data points will form a straight line when plotted on log-probability paper on which cumulative probabilities are laid off on the vertical axis at distances proportional to the corresponding number of standard deviations above or below the median, and the dose is plotted on the horizontal axis which has a logarithmic scale. Figure 8 displays such plots of the dose distributions of workers at BWRs and PWRs in 1982. The position of the plot for the PWRs above that of the BWRs indicates that a larger portion of workers at PWRs received lower doses which resulted in a lower median dose (point at which the 50 percentile line crosses the plots) and a smaller value of CR.

Further examination of the plots reveals that they form fairly straight lines only to about 1.5 rems where they start to curve upward. This curve is typical of distributions when there are several workers in the higher dose ranges, (Ref. 10) and indicates that not the entire distribution is a lognormal one. A new theoretical analysis of occupational dose distributions (Ref. 13) has found that these data are far better fitted by a hybrid lognormal distribution. At low doses, this distribution is lognormal, but at higher doses, where radiation control programs require that each worker's total dose be closely monitored so that the frequency of doses approaching the dose limits is reduced, the distribution is normal. This method of analyzing occupational doses may prove to have several valuable applications (Ref. 14) for individuals involved in radiation protection programs.

The compilation of the distribution data 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

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

1969 - 1982

Year	Number of Individuals with Whole Body Exposures in the Indicated Ranges (Rems)															Total Number Monitored	**Annual Collective Doses (Man-rems)	***CR
	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	0.72
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	0.63
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	0.65
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	61,151	26,433	0.62
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	0.61
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	0.50
1979	41,191	24,512	9,881	8,090	5,147	3,426	7,898	3,306	1,255	477	86	28	13	2		(11-12) 1	105,313	39,981	0.54
1980	47,377	29,638	11,750	9,820	6,082	4,518	11,474	4,515	1,537	686	192	98	18	3			127,708	53,796	0.56
1981	42,323	29,332	12,217	10,326	6,625	4,903	11,766	4,546	1,793	486	93	81	11	2	1	(>12) 1	124,506	54,142	0.55
1982	44,893	31,480	12,693	10,814	6,739	4,795	10,855	4,686	1,814	432	56	13	4	0	1		129,275	52,190	0.54

*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.

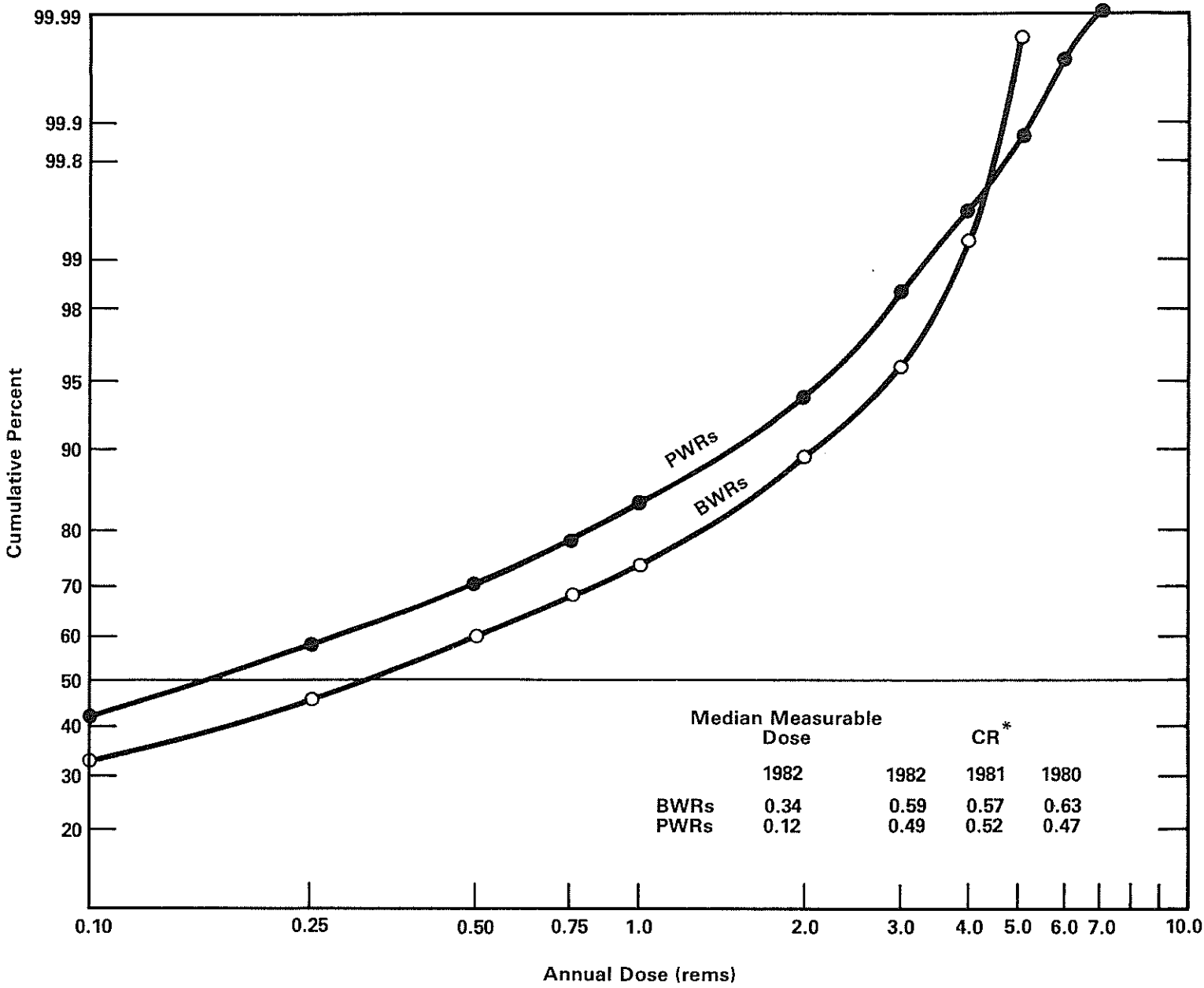
**The collective dose and CR were not reported by the facilities but were calculated by the NRC staff using methods described in this document.

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

Figure 8

CUMULATIVE PERCENT OF ANNUAL INDIVIDUAL DOSES

1982



NOTE: Each point on the curves represent the cumulative percentage of workers with measurable dose who received doses less then the indicated annual dose. The median measurable dose is the dose at the which the curve crosses the fiftith percentile.

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

by all facilities, this person would have been counted as five individuals rather than as one. This affects the distribution of doses as well as the number of individuals and their average dose, because the individual could 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 4.4.

3.2 Dose Distribution by Work and Job Function

Tables 8, 9 and 10 summarize the annual data submitted in accordance with plant technical specifications in a format similar to that shown in Appendix C. 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 1982 is contained in Appendix C. One may note that in some cases, the licensee data had to be modified slightly in order to fit into 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 portion of the collective dose. Table 9 presents a more general summary of this data for the last eight years, and one can see that workers involved in routine and special maintenance activities continue to incur most of the total cumulative dose. At BWRs (Table 8) workers involved in these activities received 77.7% of the cumulative dose for BWRs, and at PWRs these workers received 72.1% of the cumulative dose, about the same as last year's value. The portions of the collective dose received by workers during inservice inspection and refueling at BWRs are 4.3% and 2.7%, respectively; at PWRs such workers received 8.3% and 5.9%, respectively, of the collective dose. Overall, contractor personnel received 61.9% of the collective dose (five percent less than last year), and the station and utility employees received the remaining 38.1% at LWRs.

Table 10 presents the distribution of the collective dose at all LWRs among five occupations. As expected, maintenance personnel incurred the majority (74.2%) of the collective dose with contractor-maintenance personnel receiving about twice as much as the station and utility maintenance employees, combined. Supervisory personnel received only 2.7% of the dose, while workers in the remaining three occupations - operations, health physics, and engineering - received 7.1%, 8.9%, and 7.1%, respectively, of the collective dose. 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 obtained or calculated from the §20.407-type annual reports.

TABLE 8*
ANNUAL COLLECTIVE DOSES
BY WORK FUNCTION AND PERSONNEL TYPE

1982

WORK FUNCTION	STATION EMPLOYEES MAN-REMS	% OF TOTAL	UTILITY EMPLOYEES MAN-REMS	% OF TOTAL	CONTRACT WORKERS & OTHERS MAN-REMS	% OF TOTAL	TOTAL PER FUNCTION MAN-REMS	% OF TOTAL
BOILING WATER REACTORS								
REACTOR OPERATIONS & SURVEILLANCE	1462	6.4 %	144	0.6 %	475	2.1 %	2082	9.1 %
ROUTINE MAINTENANCE	2001	8.7 %	1414	6.2 %	4310	18.8 %	7725	33.7 %
INSERVICE INSPECTION	130	0.6 %	146	0.6 %	709	3.1 %	985	4.3 %
SPECIAL MAINTENANCE	1093	4.8 %	897	3.9 %	8106	35.4 %	10096	44.0 %
WASTE PROCESSING	649	2.8 %	11	0.1 %	765	3.3 %	1427	6.2 %
REFUELING	292	1.3 %	29	0.1 %	288	1.3 %	61[illegible]	2.7 %
TOTALS	5629	24.6 %	2643	11.5 %	14656	63.9 %	22929	100.0 %
PRESSURIZED WATER REACTORS								
REACTOR OPERATIONS & SURVEILLANCE	1592	5.9 %	182	0.7 %	829	3.1 %	2604	9.6 %
ROUTINE MAINTENANCE	2600	9.6 %	457	1.7 %	3200	11.8 %	6258	23.1 %
INSERVICE INSPECTION	438	1.6 %	327	1.2 %	1494	5.5 %	2260	8.3 %
SPECIAL MAINTENANCE	2228	8.2 %	1602	5.9 %	9477	34.9 %	13308	49.1 %
WASTE PROCESSING	431	1.6 %	42	0.2 %	615	2.3 %	1089	4.0 %
REFUELING	726	2.7 %	178	0.7 %	699	2.6 %	1604	5.9 %
TOTALS	8018	29.6 %	2790	10.3 %	16316	60.2 %	27125	100.0 %
ALL LIGHT WATER REACTORS								
REACTOR OPERATIONS & SURVEILLANCE	3054	6.1 %	326	0.7 %	1305	2.6 %	4687	9.4 %
ROUTINE MAINTENANCE	4602	9.2 %	1871	3.7 %	7510	15.0 %	13984	27.9 %
INSERVICE INSPECTION	568	1.1 %	473	0.9 %	2204	4.4 %	3246	6.5 %
SPECIAL MAINTENANCE	3322	6.6 %	2499	5.0 %	17583	35.1 %	23405	46.8 %
WASTE PROCESSING	1081	2.2 %	54	0.1 %	1380	2.8 %	2517	5.0 %
REFUELING	1018	2.0 %	208	0.4 %	987	2.0 %	2214	4.4 %
TOTALS	13648	27.3 %	5434	10.9 %	30972	61.9 %	50055	100.0 %

* Table does not include results from Point Beach 1, 2 (586 man-rems) because of formatting problems.

TABLE 9

PERCENTAGES OF ANNUAL COLLECTIVE DOSE
AT LWRS BY WORK FUNCTION

Work Function	Percent of Dose							
	1975	1976	1977	1978	1979	1980	1981	1982
Reactor Operations and Surveillance	10.8%	10.2%	10.5%	13.3%	12.2%	9.5%	8.9%	9.4%
Routine Maintenance	52.6%	31.0%	28.1%	31.5%	29.2%	35.5%	36.1%	27.9%
Inservice Inspection	3.0%	6.0%	6.4%	7.7%	9.0%	5.5%	5.3%	6.5%
Special Maintenance	19.0%	40.0%	42.5%	35.9%	39.4%	40.6%	40.5%	46.8%
Waste Processing	6.9%	5.0%	5.8%	5.0%	3.6%	3.0%	4.2%	5.0%
Refueling	7.7%	7.9%	6.7%	6.6%	6.6%	6.1%	5.0%	4.4%

TABLE 10*
ANNUAL COLLECTIVE DOSES
BY OCCUPATION AND PERSONNEL TYPE

1982

OCCUPATION	STATION EMPLOYEES MAN-REMS	% OF TOTAL	UTILITY EMPLOYEES MAN-REMS	% OF TOTAL	CONTRACT WORKERS & OTHERS MAN-REMS	% OF TOTAL	TOTAL PER FUNCTION MAN-REMS	% OF TOTAL
BOILING WATER REACTORS								
MAINTENANCE	2802	12.3 %	2365	10.3 %	12805	55.8 %	17972	78.4 %
OPERATIONS	1452	6.3 %	32	0.1 %	211	0.9 %	1696	7.3 %
HEALTH PHYSICS	670	2.9 %	10	0.0 %	711	3.1 %	1391	6.0 %
SUPERVISORY	347	1.5 %	17	0.1 %	81	0.4 %	445	2.0 %
ENGINEERING	358	1.6 %	219	1.0 %	848	3.7 %	1425	6.2 %
TOTALS	5629	24.6 %	2643	11.5 %	14656	63.9 %	22929	100.0 %
PRESSURIZED WATER REACTORS								
MAINTENANCE	4318	15.9 %	2307	8.5 %	12530	46.2 %	19155	70.6 %
OPERATIONS	1576	5.8 %	100	0.4 %	192	0.7 %	1868	6.9 %
HEALTH PHYSICS	989	3.6 %	98	0.4 %	1964	7.2 %	3051	11.2 %
SUPERVISORY	476	1.8 %	92	0.3 %	323	1.2 %	892	3.3 %
ENGINEERING	660	2.4 %	193	0.7 %	1307	4.8 %	2160	8.0 %
TOTALS	8019	29.5 %	2791	10.3 %	16317	60.2 %	27126	100.0 %
ALL LIGHT WATER REACTORS								
MAINTENANCE	7120	14.2 %	4672	9.4 %	25335	50.6 %	37127	74.2 %
OPERATIONS	3028	6.0 %	132	0.3 %	403	0.8 %	3564	7.1 %
HEALTH PHYSICS	1659	3.3 %	108	0.2 %	2675	5.4 %	4441	8.9 %
SUPERVISORY	823	1.7 %	110	0.2 %	404	0.8 %	1337	2.7 %
ENGINEERING	1018	2.0 %	412	0.8 %	2155	4.3 %	3586	7.1 %
TOTALS	13648	27.2 %	5434	10.9 %	30972	61.9 %	50055	100.0 %

* Table does not include results from Point Beach 1,2 (586 man-rems) because of formatting problems.

3.3 Health Implications of Average Annual Doses

If any biological effects are caused by exposure to radiation in the work place, the effects are likely to occur only after many years. The most important radiation-induced health effects are excess cancers, which can be manifested only years after exposure, and generic damage, which can be expressed only in subsequent generations. A vast amount of scientific information is available from which estimates of these risks can be made. Much of this information, however, has been obtained from epidemiologic studies of human populations at levels of exposure considerably higher than those normally experienced in the work place. Complementary to this, information obtained from many animal and cell biology studies have greatly enhanced our knowledge and understanding of the biological effects of ionizing radiation. Although using this information to estimate risks in the work place introduces uncertainties, these uncertainties can be dealt with in such a manner that the risk is not likely to be underestimated. Thus, the discussion below is likely to overstate the health implications rather than understate them.

Cancer induction as a result of radiation exposure has been examined by many organizations having scientific and medical expertise in the subject. One of these, the National Academy of Sciences (NAS), published a comprehensive review of the biological effects of ionizing radiation in 1980 (Ref. 15). Based on this report, a large working population receiving one million man-rems might suffer an estimated 100 to 200 additional cancer deaths over the remaining years of their lives. This risk estimate can be applied to the 52,190 man-rems (Table 3) and the 84,382 workers who received measurable exposures. The result is that for the total work force exposed at commercial LWRs in 1982, the expected number of additional cancer deaths that might result from radiation dose received that year would be less than ten. These deaths would occur many years following the exposure and would be in addition to the approximately 12,000 cancer deaths that occur normally in a population of 80,000 workers without exposure to this amount of radiation. Perhaps more meaningful to the individual workers are the health implications to the workers receiving the average dose of 0.62 rems or the maximum dose of 10 rems or so during 1982. The estimated increased cancer death risk is less than one chance in 10,000 for the average dose and about one chance in 1,000 for the ten-rem dose. Should a worker receive 0.62 rems per year continuously during his entire working career (working until age 65) his risk of dying from cancer could increase by about 2% of the normal risk of dying of cancer. These risks can be compared to the American Cancer Society's estimates of one chance in four of developing cancer and one chance in seven of dying of cancer.

The potential genetic effects from a workers population receiving about 50,000 man-rems is very small compared to genetic damages that occur spontaneously in this population. Based again on the 1980 NAS report, from zero to four serious genetic diseases could be induced in first generation children of the 80,000 exposed* workers and from three to 60

*Assuming that, on the average, each exposed person will have one child in the future, i.e., 80,000 children born to this worker population.

in all future generations. This number can be compared to the approximately 100,000 serious genetic defects that occur normally in one million live births, i.e., an average of about one serious defect in every ten live births. Thus, the total genetic damage in the first generation children of 80,000 workers would be an increase of less than four cases (less than 0.05%) to the expected 8,000 cases that occur normally.

3.4 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 did not declare commercial operability until July 1, 1979 and for most of 1982 it was still restricted to a 70% power level, except for testing.

As shown in Table 11, annual whole body doses incurred by workers at the plant have, in general, been minimal. In 1982, everyone monitored received a whole body dose that was less than 0.10 rems, and no one has ever exceeded an annual dose of 0.25 rems. The average dose per worker remains at about 0.05 rems or less. For the nine years ending on December 31, 1982, the total collective dose for workers at the site was about 22.0 man-rems, and a total of 373 megawatt-years of electricity had been generated. This yields a nine-year average of about 0.1 man-rems per megawatt-year. The average value of this parameter for LWRs is seventeen times as much (Table 3).

TABLE 11
ANNUAL WHOLE BODY DOSES AT FORT ST. VRAIN
1974 - 1982

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	52.1	0.01
1980	902	57	1	960	3.0	83.2	0.05
1981	1096	31	0	1,127	1.0	93.6	0.03
1982	978	22	0	1,000	0.4	72.6	0.02

4. TERMINATION DATA SUBMITTED PURSUANT TO 10 CFR §20.408

4.1 Termination Reports, 1969-1981

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 (REIRS) at Oak Ridge, Tennessee. The data are retrievable by several criteria - social security number, name, facility, etc. - which allows statistical analyses of the data, as well as the tracing of individual dose histories. During the years that this information has been collected, some 880,000 termination records have been received for approximately 250,000 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 for individuals terminating during each of the fourteen years and shows that the number of such records continues to increase each year; however, the number of terminating individuals appears to have leveled off at about 66,000.

4.2 Limitations of the Termination Data

When examining or using the statistics shown in the report that are based on the termination data, one should keep in mind that these data have various limitations, such as the following: (1) Some licensees submit a termination report for each monitored non-utility employee at the end of each monitoring period rather than waiting until the individual actually leaves the facility. (2) The period(s) of exposure that are reported for terminating individuals may indicate the monitoring period during which he may have been exposed to radiation rather than the actual dates of exposure. (3) Some licensees report cumulative periods of exposure and doses rather than the actual periods and dose incurred during each period. (4) Licensees having more than one licensed facility sometimes file a termination report when the individual leaves the second facility that includes the dose which he incurred at the first facility that had already been reported. Although attempts have been made to correct for some of these problems, they are still an additional source of error in any statistics developed from the termination data.

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

TABLE 12
TERMINATION REPORTS SUBMITTED
FOR REACTOR PERSONNEL
1969 - 1981

Year	Number of Termination Records	Number of Terminating Individuals
1969	790	730
1970	2,130	1,910
1971	2,350	2,200
1972	4,500	3,890
1973	11,530	9,070
1974	16,950	11,600
1975	38,380	22,630
1976	63,590	35,290
1977	81,704	36,864
1978	85,308	37,359
1979*	118,218*	48,305*
1980*	162,515*	65,092*
1981*	174,546**	65,747*
1982**	83,247**	31,587*

*Data for these years were updated based on more recent compilations.

**Not all of the termination data for individuals terminating during 1982 have been entered into the REIR System.

4.3 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, a "transient" worker is defined here as an individual who began and terminated employment at two or more different licensed facilities within one calendar quarter. This allows one to examine the doses of those workers most likely to approach the quarterly limits without their 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 be increasing at a much smaller rate. The top part of Table 13 shows that the average individual dose (which is close to being a quarterly dose for most of these workers) showed a decreasing trend in the earlier years and has leveled off at about 0.42 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 the smaller number of those terminated by three or more licensees generally received higher average doses. Examinations of these records have revealed that some individuals have worked for as many as six different NRC licensees during one calendar quarter. However, only a few instances have been found in which a worker exceeded his quarterly limit of three rems as a result of his working at two different licensed facilities within one calendar quarter. Two of them occurred in 1980 when the doses that the workers had received while employed by the first utility were revised upward later in the year. This resulted in their receiving a quarterly dose that slightly exceeded three rems. 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 four categories of NRC licensees are not submitted to the NRC.

4.4 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 number and average dose for these "annual transients." Table 14 presents the number and doses of these transients that was found among the individuals terminating during each of the five years 1977 through 1981. This has not been done for the 1982 data because not all of it has yet been computerized. One can see that the number of these workers has nearly doubled since 1977. The average dose, however, has declined somewhat since then and remains at about one rem. The lower portion of the table shows the number and doses of workers that were terminated by two, three and four or more different reactor licensees during each year. One can see that the average dose of workers employed by two licensees increased to 0.91 rems in 1980, while in 1981 it fell back to a value (0.78 rems) more in line with that found for previous years. The average dose of workers employed by four or more licensees has continued to decline, and in 1981 it was calculated to be 1.56 rems.

In order to determine the impact that the inclusion of these individuals in each of two or more licensee's annual reports had on the annual summary (Table 7) for all nuclear power facilities (one of the problems mentioned

TABLE 13

TRANSIENT WORKERS PER CALENDAR QUARTER
AT NUCLEAR POWER FACILITIES

1972 - 1981

Year	No. of Commercial Reactors	No. of Workers Terminated by Two or More Licensees	Collective Dose (Man-rems)	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	1,754	802	0.46
1980*	69	2,218	1,033	0.47
1981	73	2,249	938	0.42

Year	No. of Workers Terminated by Two Licensees	Collective Dose (Man-rems)	Average Dose (Rems)	No. of Workers Terminated by Three Licensees	Collective Dose (Man-rems)	Average Dose (Rems)	No. of Workers Terminated by >Three Licensees	Collective Dose (Man-rems)	Average Dose (Rems)
1972	54	52	0.96	2	3	1.50	1	2	2.00
1973	133	108	0.81	11	13	1.18	2	2	1.00
1974	255	132	0.52	28	24	0.86	2	1	0.50
1975	609	427	0.70	70	62	0.89	5	4	0.80
1976	1,095	720	0.66	145	146	1.01	17	23	1.35
1977	1,271	718	0.56	147	115	0.78	17	18	1.06
1978	1,303	590	0.45	165	75	0.45	32	15	0.47
1979	1,527	647	0.43	178	130	0.73	49	25	0.51
1980*	1,896	856	0.45	259	140	0.54	63	36	0.57
1981	1,897	767	0.40	297	148	0.50	55	24	0.44

*Revised according to latest compilations.

TABLE 14

TRANSIENT WORKERS PER CALENDAR YEAR
AT NUCLEAR POWER FACILITIES

1977 - 1981

Year	No. of Commercial Reactors	No. of Workers Terminated by Two or More Licensees	Collective Dose (Man-rems)	Average Dose (Rems)
1977	57	3,161	3,776	1.19
1978	64	3,202	3,231	1.01
1979	67	3,938	3,891	0.99
1980	69	5,463	6,028	1.10
1981	73	5,264	5,109	0.97

Year	No. of Workers Terminated by Two Licensees	Collective Dose (Man-rems)	Average Dose (Rems)	No. of Workers Terminated by Three Licensees	Collective Dose (Man-rems)	Average Dose (Rems)	No. of Workers Terminated by Four or More Licensees	Collective Dose (Man-rems)	Average Dose (Rems)
1977	2,166	1,987	0.92	572	842	1.47	423	947	2.24
1978	2,119	1,490	0.70	621	792	1.28	462	949	2.05
1979	2,761	2,097	0.76	688	805	1.17	489	989	2.02
1980	3,772	3,444	0.91	959	1,245	1.30	732	1,339	1.83
1981	3,633	2,845	0.78	902	1,126	1.25	729	1,138	1.56

in Section 3.1) Tables 15a and 15b are presented. Table 15a shows 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. During each of the years shown, there was an increasing number of transient workers who were counted more than once. Some individuals were reported by as many as nine different facilities. In 1977 the 2,873 transients that received a measurable dose were counted as 6,341 workers. By 1980 the number had grown to 4,930 transients who were probably counted as 10,749 workers since they were employed at several facilities. The latter incurred a collective dose of 6,028 man-rems, an average dose of 1.10 rems, and an average measurable dose of 1.22 rems. In 1981 these figures decreased somewhat, and there were 4,737 annual transients who received measurable doses that totaled to be 5,109 man-rems. This yielded an average measurable dose of 1.08 rems.

Table 15b illustrates the impact that the multiple reporting of these transient workers had on the staff's compilations of the annual statistical reports for the years 1977 through 1981. Since each nuclear power facility reports the distribution of the doses received by workers while monitored by the particular facility during the year, one would expect that a summation of these reports would result in individuals being counted several times in dose ranges lower than the range in which their total accumulated dose (the sum of the personnel monitoring results incurred at each facility during the year) would actually place them. Thus, while the total collective dose would remain about the same, the number of workers, their dose distribution, and their average dose would be affected by this multiple reporting. This was found to be true because too few workers were reported in the higher dose ranges. For example, in 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 351 such workers. This resulted in an average measurable dose of 0.80 rems rather than the 0.74 rems obtained from the compiled reports. Although the number of these transient workers increased from 3,161 in 1977 to 5,264 in 1981, the number of them with doses exceeding five rems has remained at about 50 except for 1980 when the number increased to 92. In general, however, since the number of transient workers receiving measurable doses is only about five percent of the total number receiving measurable doses during the year, their impact on most of the statistics derived from compilations of the annual summary reports is not very great.

4.5 Temporary Workers Per Calendar Year

In order to complete the examination of the doses received by the short-term workers employed at nuclear power facilities, Table 16 summarizes the data compiled on "temporary workers". Temporary workers were defined to be those individuals who began and ended their employment at only one nuclear power facility during the calendar year. One can see from Table 16 that the number of these individuals has grown during the last few years, but appears to have levelled off to about 28,000 workers with measurable doses in 1980 and 1981. Comparison of these figures with those in Table 15b reveals that these workers comprised 36% of the total number of

TABLE 15a

ACTUAL AND COMPILED DOSE DISTRIBUTIONS OF
TRANSIENT WORKERS PER CALENDAR YEAR AT POWER REACTORS

Type of Distribution and Year	Number of Individuasl with Whole Body Doses in the Ranges (Rems)																Total Individuals	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				
Actual Distribution of Transients - 1977	288	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	362	55	8	5						7,935	[b]3,776	0.48	0.60
Actual Distribution of Transients - 1978	308	885	317	282	177	131	463	307	168	107	42	13	1		1		3,202	[b]3,231	1.01	1.12
Compiled Distribution of Transients - 1978	2,079	2,423	918	788	488	382	873	262	51	11	0	2					8,277	[b]3,231	0.39	0.52
Actual Distribution of Transients - 1979	373	883	398	358	281	240	678	410	195	71	32	14	4	1			3,938	[b]3,888	0.99	1.09
Compiled Distribution of Transients - 1979	2,130	2,676	1,259	1,048	673	460	1,040	313	46	3	1						9,649	[b]3,888	0.40	0.52
Actual Distribution of Transients - 1980	533	1,175	565	482	388	277	829	595	353	174	47	25	15	4	1		5,463	[b]6,028	1.10	1.22
Compiled Distribution of Transients - 1980	3,207	3,910	1,639	1,398	900	661	1,632	503	74	29	4	4	4				13,956	[b]6,028	0.43	0.56
Actual Distribution of Transients - 1981	527	1,238	482	409	373	303	935	589	260	102	30	15	0	1			5,264	5,109	0.97	1.08
Compiled Distribution of Transients - 1981	3,487	3,660	1,450	1,392	943	707	1,481	325	68	8	0	1					13,522	5,109	0.38	0.51

TABLE 15b

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	31,039	16,673	6,943	5,504	3,399	2,498	6,405	2,989	1,080	418	67	26	8			2	77,051	31,806	0.41	0.69
[c]Adjusted Statistical Distribution - 1978	29,268	15,135	6,342	4,998	3,088	2,247	5,995	3,034	1,197	514	109	37	9		1	2	71,976	31,668	0.45	0.74
[a]Compiled Statistical Distribution - 1979	42,340	24,632	9,883	8,090	5,147	3,426	7,898	3,306	1,255	477	86	28	13	2		1	106,584	39,987	0.38	0.62
[c]Adjusted Statistical Distribution - 1979	40,583	22,831	9,022	7,400	4,755	3,206	7,536	3,403	1,404	545	117	42	17	3		1	100,873	39,525	0.39	0.66
[a]Compiled Statistical Distribution - 1980	47,377	29,695	11,751	9,820	6,082	4,518	11,474	4,615	1,537	686	192	98	18	3			128,668	53,799	0.42	0.67
[c]Adjusted Statistical Distribution - 1980	44,703	26,960	10,677	8,904	5,570	4,134	10,671	4,607	1,816	831	235	119	29	7	1		120,166	53,626	0.45	0.72
[a]Compiled Statistical Distribution - 1981	42,323	29,332	12,217	10,326	6,625	4,903	11,766	4,546	1,763	486	93	81	11	2	1	1	124,506	54,142	0.43	0.66
[c]Adjusted Statistical Distribution - 1981	39,363	26,910	11,249	9,343	6,055	4,499	11,221	4,810	1,955	580	123	95	11	3			116,219	54,249	0.47	0.71

[a]Based on data submitted by all reactors, although all of them may not have been in commercial operation for a full year.
[b]Collective dose found by summing the actual doses reported for those workers on their termination reports.
[c]Distribution found by subtracting the actual from the compiled distribution shown in Table 15a and then subtracting this difference from the compiled statistical distribution shown in Table 15b.

workers (76,856) receiving a measurable dose in 1981, while their collective dose was only 30% of the total collective dose. Their average measurable dose of 0.59 rems was also considerably less than the overall average of 0.71 rems.

TABLE 16

TEMPORARY WORKERS PER CALENDAR YEAR
(Individuals terminated by only one employer)

YEAR	No. of Reactors	Total No. Monitored	No. with Meas'ble Dose	Collective Dose	Avg. Dose (Rems)	Avg. Meas'ble Dose (Rems)
1977	57	29,090	19,094	11,373	0.39	0.60
1978	64	28,864	17,110	9,821	0.34	0.57
1979	67	38,347	21,491	9,488	0.25	0.44
1980	69	48,383	28,305	16,168	0.33	0.57
1981	73	47,348	27,984	16,393	0.35	0.59

4.6 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 workers that terminated during the year. Table 17 indicates the results of such examinations for the years 1975, 1978, 1980 and 1981 for power reactor personnel. One can see that the age and dose distributions for personnel terminating during these four years has remained about the same with more than 50% of the individuals being less than 35 years of age at termination each year. From 1975 to 1981 there was an increase of 8% in the collective dose incurred by these younger workers (less than 35 years old) the largest increase being in the collective dose received by 25 to 29 year-olds which went from 20% to 24%. Most of the other age groups incurred collective doses more comparable to their fraction of the total number of personnel. Figure 9 graphically displays the age and dose distributions of those workers terminating during 1981 for whom a birth date was reported.

4.7 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 worker's cumulative years of exposure and occupational dose that he received during his "career." The termination data for some 207,000 individuals terminating from nuclear power facilities between 1977 and 1982 were examined in this manner. The cumulative periods of employment and whole body doses were then broken down into ten ranges for the length of employment and fifteen ranges for the cumulative doses. Table 18 contains these detailed dose distributions, and Table 19 summarizes the

TABLE 17

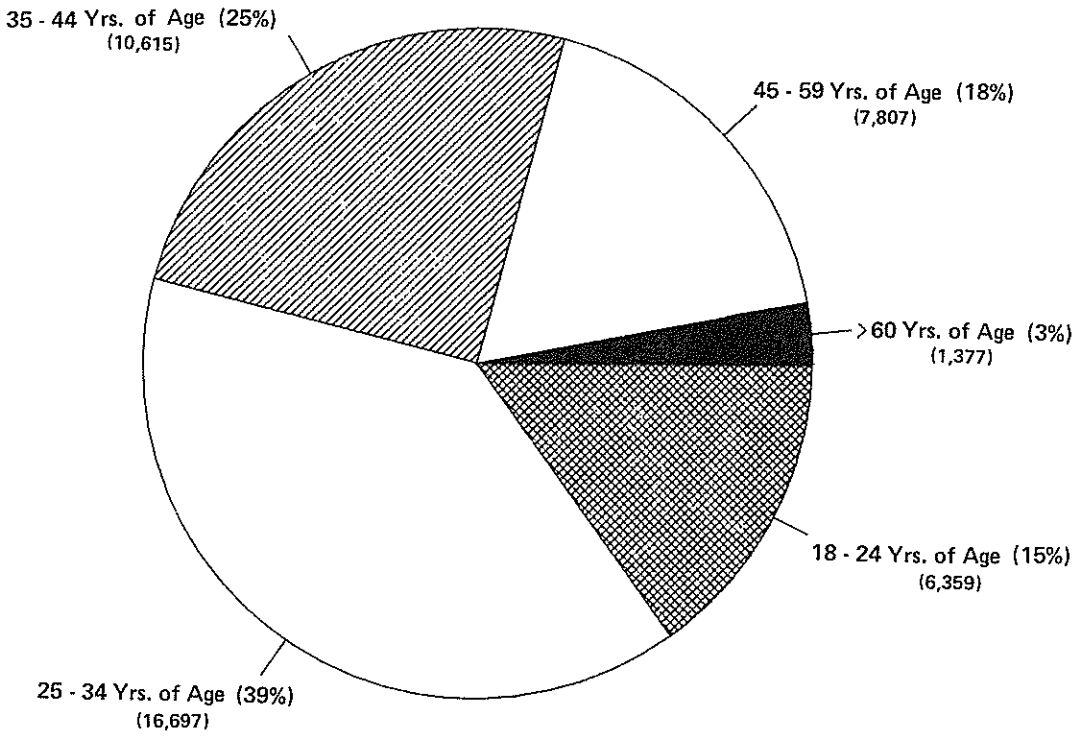
AGE AND DOSE DISTRIBUTION OF TERMINATING REACTOR PERSONNEL

Age Range (Years)	1975 Term'd Personnel Number (%)	1975 Collective Dose Man-rems (%)	1978 Term'd Personnel Number (%)	1978 Collective Dose Man-rems (%)	1980 Term'd Personnel Number (%)	1980 Collective Dose Man-rems (%)	1981 Term'd Personnel Number (%)	1981 Collective Dose Man-rems (%)
18-24	1,982 (14%)	829 (17%)	3,372 (14%)	1,792 (14%)	5,685 (14%)	3,354 (14%)	6,359 (15%)	3,843 (17%)
25-29	2,488 (19%)	991 (20%)	4,641 (19%)	3,022 (23%)	7,590 (19%)	5,041 (22%)	8,444 (20%)	5,434 (24%)
30-34	2,232 (17%)	825 (16%)	4,569 (19%)	2,775 (21%)	7,773 (20%)	4,964 (21%)	8,253 (19%)	4,595 (20%)
35-39	1,679 (12%)	619 (12%)	3,296 (13%)	1,784 (13%)	5,515 (14%)	3,244 (14%)	6,235 (14%)	3,223 (14%)
40-44	1,428 (11%)	535 (10%)	2,458 (10%)	1,304 (10%)	4,021 (10%)	2,327 (10%)	4,380 (10%)	2,124 (10%)
45-49	1,297 (10%)	418 (8%)	1,910 (8%)	894 (7%)	3,130 (8%)	1,664 (7%)	3,231 (8%)	1,397 (6%)
50-55	1,077 (8%)	342 (7%)	1,721 (7%)	782 (6%)	2,613 (7%)	1,268 (5%)	2,580 (6%)	908 (4%)
56-59	700 (5%)	241 (5%)	1,344 (6%)	499 (4%)	2,024 (5%)	990 (4%)	1,996 (5%)	584 (3%)
> 60	493 (4%)	233 (5%)	923 (4%)	324 (2%)	1,403 (3%)	612 (3%)	1,377 (3%)	354 (2%)
Totals	13,376 (100%)	5,033 (100%)	24,234 (100%)	13,176 (100%)	39,754 (100%)	23,464 (100%)	42,855 (100%)	22,466 (100%)

FIGURE 9

AGE AND DOSE DISTRIBUTIONS OF PERSONNEL TERMINATING IN 1981

Age Distribution



Dose Distribution

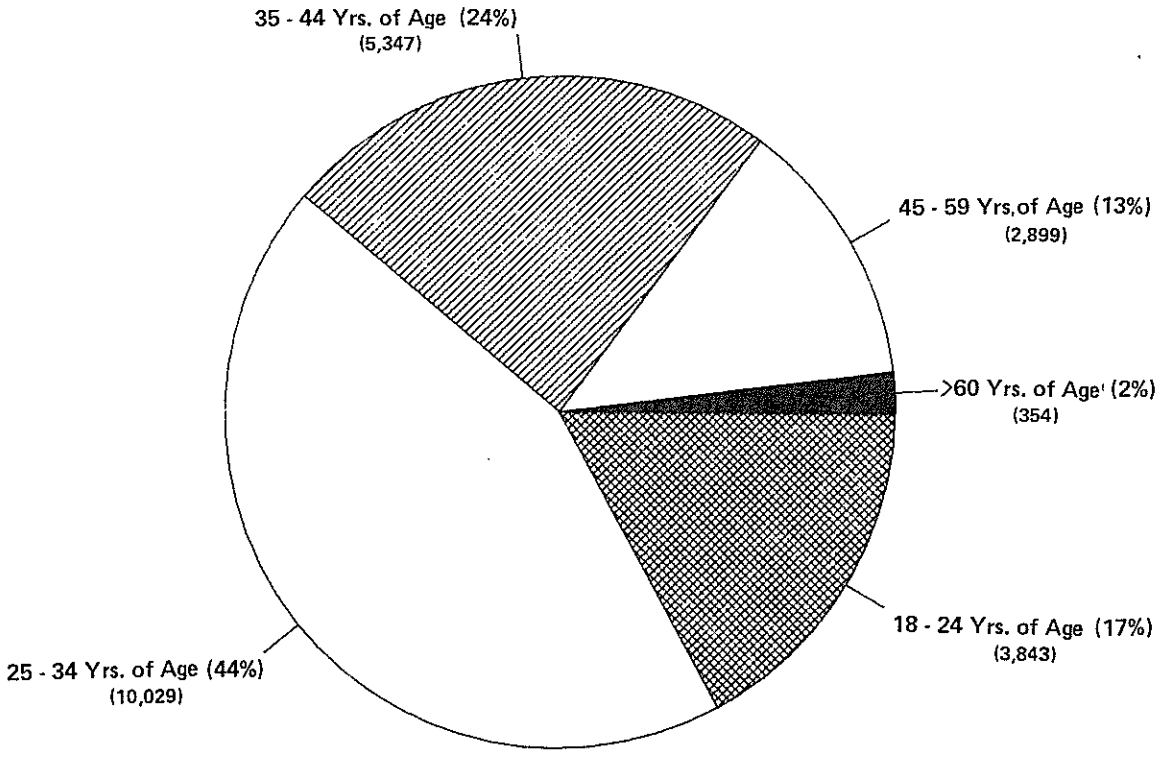


TABLE 18

CAREER DOSE DISTRIBUTIONS FOR TERMINATING PERSONNEL

1977 - 1982

Total Length of Employment	Number of Individuals with Whole Body Doses in the Following Ranges (Rems)															Total Number Monitored	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	5.0-10.0	10.0-15.0	15.0-20.0	20.0-25.0	>25		
<90 days	58,774	31,304	7,370	5,453	3,442	2,428	7,473	3,030	1,078	346	178	2	0	1	0	120,879	32,853
90 D. - 1 Yr.	9,140	13,324	6,453	4,880	3,173	2,467	6,375	3,811	2,043	1,209	1,406	90	9	2	0	54,382	48,735
1 - 2 Yrs.	2,184	3,173	1,733	1,449	960	709	1,962	1,275	977	671	1,490	238	46	15	3	16,885	28,750
2 - 3 Yrs.	857	1,301	692	584	324	274	696	538	337	276	791	219	51	12	10	6,962	15,197
3 - 4 Yrs.	335	534	346	294	175	148	355	224	177	156	395	138	47	15	3	3,342	8,524
4 - 5 Yrs.	149	274	203	192	116	73	181	110	81	63	222	102	37	8	3	1,814	5,140
5 - 10 Yrs.	167	326	201	219	167	110	309	223	188	124	350	148	94	47	31	2,704	10,466
10 - 15 Yrs.	16	28	27	23	12	12	32	16	23	6	56	24	20	13	27	335	2,459
15 - 20 Yrs.	2	3	3	1	3	1	3	5	3	5	5	4	8	3	13	62	834
>20 Yrs.	21	7	6	1	7	0	8	2	4	0	5	0	0	1	1	63	185
Totals	71,645	50,274	17,034	13,096	8,379	6,222	17,394	9,234	4,911	2,856	4,898	965	312	117	91	207,428	153,143

TABLE 19

SUMMARY OF CAREER DOSES FOR TERMINATING REACTOR PERSONNEL

1977 - 1982

Total Length of Employment	Number of Monitored Individuals	No. of Workers with Meas'ble Doses	Total Collective Dose (Man-rems)	Avg. Meas'ble Dose for Period (Rems	Highest Dose (Rems	Years over Which Highest Dose Accumul
<90 days	120,879	62,105	32,853	0.53	22*	*OE-3/81
90D - 1 Yr.	54,382	45,242	48,735	1.08	21	'77 - '78
1 - 2 Yrs.	16,885	14,701	28,750	1.96	29	'77 - '82
2 - 3 Yrs.	6,962	6,105	15,197	2.49	33	'77 - '81
3 - 4 Yrs.	3,342	3,007	8,524	2.83	28	'76 - '81
4 - 5 Yrs.	1,814	1,665	5,140	3.09	28	'77 - '82
5 - 10 Yrs.	2,704	2,537	10,466	4.13	53	'74 - '81
10 - 15 Yrs.	335	319	2,459	7.71	60	'62 - '76
15 - 20 Yrs.	62	60	834	13.90	54	'62 - '77
> 20 Yrs.	63	42	185	4.40	51	'59 - '81
Totals	207,428	135,783	153,143			

*Personnel overexposure.

data and presents the average measurable doses, the highest cumulative doses, and the years during which the highest doses were accumulated. One can quickly see that more than half of the terminated individuals (120,879) has been exposed for less than 90 days and that nearly half of this number (58,774) did not receive a measurable dose. A good fraction of these were probably visitors, such as reporters, company representatives, consultants, etc. that were monitored for identification and convenience. It is primarily for the reason that the average measurable dose is shown rather than the average dose per monitored individual.

Table 19 shows that the average measurable dose ranges from 0.53 rems for periods less than 90 days to a high of 13.90 rems for the 15 to 20 year period. In general, the data shows that the average annual dose (estimated by dividing the average dose for the period by the average number of years in the period) tends to decline with increasing length of employment. However, since there is such a small number of workers have longer periods of employment, these average doses may change appreciably as more data is collected and analyzed. It should also be pointed out that these statistics do not give a clear indication of the actual time period over which doses were accumulated. For example, a worker could be employed by a nuclear power facility for one month each year for ten years, and he would be placed in the employment range of 90 days to one year. Therefore care should be taken when making conclusions based on these data.

5. PERSONNEL OVEREXPOSURES

Table 19 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. In 1982 there were only two individuals reported as being overexposed. One overexposure occurred at the Indian Point 2 plant on June 1, 1982, when a contractor diver received a whole body dose of 8.67 rems (to bring his dose for the quarter to 9.4 rems). While attempting to relocate a fuel assembly, the diver's survey equipment malfunctioned, and he entered the high radiation field produced by the assembly without immediately realizing it. The other overexposure occurred at the Zion 1 plant on March 25, 1982, when a shift engineer received a whole body dose of five rems. The engineer was participating in a planned entry into the cavity beneath the reactor vessel in an attempt to locate water leaks which were causing problems with the head removal operations.

TABLE 20

PERSONNEL OVEREXPOSURES AT POWER REACTORS
1971 - 1982

Year	Number of Workers Overexposed to External Radiation	Sum of Whole Body Doses (Man-rems)	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 rems (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 rems (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	--
1980	73	266.2	4.9	0	--
1981	7	35.4	21	0	--
1982	2	14.4	9.4	0	--

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APPENDIX A*

Personnel, Dose and Power Generation Summary

1969 - 1982

*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 Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
ARKANSAS 1, 2	1975	588.0	76.5	147	21					0.14	0.0
Docket 50-313; DPR-51, NPF-6	1976	464.6	56.6	476	289	27	262	100	189	0.61	0.6
1st commercial operation 12/74,-	1977	610.3	76.8	601	256	28	228	111	145	0.43	0.4
Type - PWR 3/80	1978	627.2	77.5	722	189	32	157	109	80	0.26	0.3
Capacity - 836, 858 MWe	1979	397.0	55.3	1321	369	54	315	252	117	0.28	0.9
	1980	452.8	63.7	1233	342	81	261	213	129	0.28	0.8
	1981	1104.7	68.3	2225	1102	130	972	843	259	0.50	1.0
	1982	905.4	58.6	1608	803	97	706	505	298	0.50	0.9
BEAVER VALLEY 1	1977	355.6	57.0	331	87	8	79	58	29	0.26	0.2
Docket 50-334; DPR-66	1978	304.2	40.8	646	190	11	179	152	38	0.29	0.6
1st commercial operation 10/76	1979	221.0	40.0	704	132	22	110	67	65	0.19	0.6
Type - PWR	1980	39.8	6.8	1817	553	76	477	477	76	0.30	13.9
Capacity - 810 MWe	1981	573.4	73.6	1237	229	38	191	142	87	0.19	.4
	1982	326.7	41.6	1755	599	126	473	481	118	0.34	1.8
BIG ROCK POINT	1969	48.1		165	136					0.82	2.8
Docket 50-155, DPR-6	1970	43.5		290	194					0.67	4.5
1st commercial operation 3/63	1971	44.4		260	184					0.71	4.1
Type - BWR	1972	43.5		195	181					0.93	4.2
Capacity - 64 MWe	1973	50.9		241	285			119	166	1.18	5.6
	1974	40.7	70.3	281	276	54	222	42	234	0.98	6.8
	1975	35.1	59.8	300	180	58	122	20	160	0.60	5.1
	1976	29.5	50.1	488	289	82	207	105	184	0.59	9.8
	1977	43.6	73.4	465	334	94	240	60	274	0.72	7.7
	1978	48.5	77.9	285	175	93	82	9	166	0.61	3.6
	1979	13.0	23.5	623	455	89	366	102	353	0.73	35.0

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
BIG ROCK POINT (Continued)											
	1980	48.9	79.0	599	354	16	338	91	263	0.59	7.2
	1981	56.9	90.6	479	160	58	102	38	122	0.33	2.8
	1982	43.6	70.8	521	328	129	199	68	260	0.63	7.5
BROWNS FERRY 1, 2, 3	1975	161.7	17.8	2380	325					0.14	2.0
Docket 50-259, 50-260, 50-296;	1976	337.6	26.9	2207	234					0.11	0.7
DPR-33, -52, -68	1977	1327.5	73.0	1858	863	60	803	249	614	0.46	0.6
1st commercial operation 8/74,	1978	1992.1	73.5	2376	1792	4	1788	259	1533	0.75	0.9
3/75, 3/77	1979	2393.0	79.1	2689	1667	0	1667	289	1378	0.62	0.7
Type - BWR	1980	2182.1	73.6	2712	1825	4	1821	49	1776	0.67	0.8
Capacity - 1065, 1065, 1065 MWe	1981	2132.9	69.5	3379	2380	100	2280	404	1976	0.70	1.1
	1982	2025.4	67.6	3277	2220	181	2039	317	1903	0.68	1.1
BRUNSWICK 2, 1	1976	297.2	56.0	1265	326	15	311	222	104	0.26	1.1
Docket 50-324, 50-325; DPR-62, -71	1977	291.1	55.7	1512	1119	48	1071	782	337	0.74	3.8
1st commercial operation 11/75,	1978	1173.1	83.7	1458	1004	99	905	695	309	0.69	0.8
3/77	1979	810.0	60.1	2891	2602	97	2505	2074	528	0.90	3.2
Type - BWR	1980	687.2	52.2	3788	3870	111	3759	3098	772	1.02	5.6
Capacity - 790, 790 MWe	1981	925.2	56.9	3854	2638	159	2479	1890	748	0.68	2.9
	1982	540.3	50.3	4957	3792	162	3630	2841	951	0.76	6.5
CALVERT CLIFFS 1, 2	1976	753.4	95.2	507	74	28	46	8	66	0.15	0.1
Docket 50-317, 50-318; DPR-53,	1977	583.0	72.1	2265	547	36	511	224	323	0.24	0.9
-69	1978	1188.5	75.8	1391	500	13	487	143	357	0.36	0.4

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
CALVERT CLIFFS 1, 2 (Continued)											
1st commercial operation 5/75, 4/77	1979	1161.0	74.0	1428	805	33	772	423	382	0.56	0.7
Type - PWR	1980	1309.9	84.1	1496	677	15	662	402	275	0.45	0.5
Capacity 825, 825 MWe	1981	1379.7	83.1	1555	607	29	578	378	229	0.39	0.4
	1982	1238.3	73.7	1805	1057	84	973	402	655	0.59	0.8
COOK 1, 2	1976	807.4	83.1	395	116	13	103	71	45	0.29	0.1
Docket 50-315; DPR-58, -74	1977	573.0	76.1	802	299	21	278	138	161	0.37	0.5
1st commercial operation 8/75, 7/78	1978	744.8	73.6	778	336	49	287	139	197	0.43	0.4
Type - PWR	1979	1373.0	65.3	1445	718	45	673	454	264	0.50	0.5
Capacity - 1044 MWe, 1082 MWe	1980	1552.4	74.1	1345	493	46	447	323	170	0.37	0.3
	1981	1557.3	73.4	1341	655	48	607	442	213	0.49	0.4
	1982	1461.6	69.8	1527	699	67	632	472	227	0.46	0.5
COOPER STATION	1975	456.4	83.6	579	117	30	87	19	98	0.20	0.2
Docket 50-298; DPR-46	1976	433.3	75.5	763	350	39	311	210	140	0.46	0.8
1st commercial operation 7/74	1977	538.2	86.2	315	197	50	147	66	131	0.63	0.4
Type - BWR	1978	576.0	91.0	297	158	40	118	58	100	0.53	0.3
Capacity - 764 MWe	1979	591.0	87.6	426	221	50	171	89	132	0.52	0.4
	1980	448.3	71.2	785	859	70	789	644	215	1.09	1.9
	1981	457.1	71.2	935	579	63	516	382	197	0.62	1.3
	1982	622.3	84.6	743	542	66	476	361	181	0.73	0.9

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
CRYSTAL RIVER 3	1978	311.5	41.4	643	321	8	313	244	77	0.50	1.0
Docket 50-302; DPR-72	1979	453.0	58.9	1150	495	29	466	346	149	0.43	1.1
1st commercial operation 3/77	1980	402.1	53.2	1053	625	24	601	382	243	0.59	1.6
Type - PWR	1981	490.4	62.2	1120	408	18	340	236	172	0.36	0.8
Capacity - 806 MWe	1982	589.8	76.0	780	177	9	168	116	61	0.23	0.3
DAVIS-BESSE 1	1978	326.4	48.7	421	48	13	35	14	34	0.11	0.1
Docket 50-346; NPF-3	1979	381.0	67.0	304	30	8	22	5	25	0.10	0.1
1st commercial operation 11/77	1980	256.4	36.2	1283	154	4	150	121	33	0.12	0.6
Type - PWR	1981	531.4	67.4	578	58	1	57	32	26	0.10	0.1
Capacity - 874 MWe	1982	390.8	51.5	1350	164	12	152	139	25	0.12	0.4
DRESDEN 1,* 2, 3	1969	99.7			286						2.9
Docket 50-010, 50-237, 50-249;	1970	163.1			143						0.9
DPR-2, -19, -25	1971	394.5			715						1.8
1st commercial operation 7/60,	1972	1243.7			728						0.6
7/70, 11/71	1973	1112.2		1341	939	143	796	344	595	0.70	0.8
Type - BWR	1974	842.5	54.9	1594	1662			57	1605	1.04	2.0
Capacity - 197, 772, 773 MWe	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
	1980	1074.4	55.0	2717	2105	236	1869	1093	1012	0.77	2.0
	1981	1035.7	51.5	2408	2802	120	2682	1850	952	1.16	2.7
	1982	1085.3	77.9	2572	2923	136	2787	1731	1192	1.14	2.7

*Dresden 1 is shutdown, but it is still included in the count of commercial reactors shown elsewhere in the report.

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
DUANE ARNOLD	1976	305.2	78.0	350	105	14	91	62	43	0.30	0.3
Docket 50-331; DPR-49	1977	353.6	78.9	538	299	36	263	220	79	0.56	0.8
1st commercial operation 2/75	1978	149.2	33.2	1112	974	59	915	932	42	0.88	6.5
Type - BWR	1979	352.0	78.0	757	275	35	240	219	56	0.36	0.8
Capacity - 515 MWe	1980	339.1	73.3	1108	671	32	639	570	101	0.61	2.0
	1981	277.7	69.8	1286	790	56	734	598	192	0.61	2.8
	1982	278.5	74.7	524	229	18	211	175	54	0.44	0.8
FARLEY 1, 2[a]	1978	713.8	86.5	527	108	39	69	34	74	0.20	0.1
Docket 50-348, 50-364; NPF-2, -8	1979	211.0	28.6	1227	643	108	535	460	183	0.52	3.0
1st commercial operation 12/77, 7/81	1980	557.3	69.3	1330	435	106	329	185	250	0.33	0.8
Type - PWR	1981	310.2	41.4	1331	511	96	415	270	241	0.38	1.6
Capacity - 804, 814 MWe	1982	1271.5	79.2	1453	484	155	329	196	288	0.33	0.4
FITZPATRICK	1976	489.0	71.6	600	202					0.34	0.4
Docket 50-333; DPR-59	1977	460.5	68.4	1380	1080	14	1066	937	143	0.78	2.3
1st commercial operation 7/75	1978	497.0	72.1	904	909	166	743	597	312	1.00	1.8
Type - BWR	1979	349.0	50.8	850	859	169	690	538	321	1.01	2.5
Capacity - 810 MWe	1980	509.5	70.3	2056	2040	118	1922	1808	232	0.99	4.0
	1981	562.9	74.7	2490	1425	187	1238	1072	353	0.57	2.5
	1982	583.6	75.0	2322	1190	136	1054	862	328	0.51	2.0

[a]Farley 2 was counted for the first time in 1982.

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
FORT CALHOUN	1974	294.0	83.5	327	71			24	47	0.22	0.2
Docket 50-285; DPR-40	1975	252.3	67.4	469	294			92	202	0.63	1.2
1st commercial operation 9/73	1976	265.9	69.5	516	313	28	285	38	275	0.61	1.2
Type - PWR	1977	351.8	79.4	535	297	33	264	72	225	0.56	0.8
Capacity - 478 MWe	1978	342.3	75.1	596	410	59	351	151	259	0.69	1.2
	1979	440.0	95.7	451	126	19	107	47	79	0.28	0.3
	1980	242.3	60.4	891	668	38	630	426	242	0.75	2.8
	1981	260.9	72.3	822	458	61	397	254	204	0.56	1.8
	1982	418.0	89.7	604	217	44	173	99	118	0.36	0.5
GINNA	1971	327.8		340	430	69	361	108	322	1.26	1.3
Docket 50-244; DPR-18	1972	293.6		677	1032	71	961	278	754	1.52	3.5
1st commercial operation 7/70	1973	409.5		319	224	55	169	84	140	0.70	0.5
Type - PWR	1974	253.7	62.4	884	1225					1.39	4.8
Capacity - 470 MWe	1975	365.2	76.7	685	538					0.78	1.5
	1976	248.8	58.2	758	636	29	607	210	426	0.84	2.5
	1977	365.6	85.5	530	401	15	386	120	281	0.76	1.1
	1978	386.5	80.6	657	450	20	430	98	352	0.68	1.2
	1979	355.0	72.8	878	592	68	524	207	385	0.67	1.7
	1980	370.5	76.0	1073	708	64	644	302	406	0.66	1.9
	1981	399.0	82.1	925	655	49	606	251	404	0.71	1.6
	1982	289.0	58.8	1117	1140	80	1060	546	594	1.02	3.9

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
HADDAM NECK (CONN. YANKEE)	1969	438.5		138	106			27	79	0.77	0.2
Docket 50-213; DPR-61	1970	424.7		734	689			463	226	0.94	1.6
1st commercial operation 1/68	1971	502.2		289	342			166	176	1.18	0.7
Type - PWR	1972	515.6		355	325			181	144	0.91	0.6
Capacity - 555 MWe	1973	293.1		951	697			544	153	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	196	0.70	0.9
	1977	480.7	83.9	894	641	59	582	440	201	0.72	1.3
	1978	563.4	98.6	216	117	25	92	18	99	0.54	0.2
	1979	493.0	87.5	1226	1161	73	1088	783	378	0.95	2.4
	1980	426.8	75.0	1860	1353	175	1178	1076	277	0.73	3.2
	1981	487.5	84.3	1554	1036	174	862	809	227	0.67	2.1
	1982	543.9	93.4	559	126	46	80	22	104	0.23	0.2
HATCH 1, 2	1976	496.3	83.8	630	134	79	55	4	130	0.21	0.3
Docket 50-321, 50-366; DPR-57;	1977	446.8	66.3	1303	465	96	369	220	245	0.36	1.0
NPF-05	1978	513.0	72.8	1304	248	88	160	52	196	0.19	0.5
1st commercial operation 12/75,	1979	401.0	54.6	2131	582	85	497	382	200	0.27	1.5
9/79	1980	1008.7	70.9	1930	449	143	306	163	286	0.23	0.4
Type - BWR	1981	870.9	64.3	2899	1337	200	1137	792	545	0.46	1.5
Capacity - 757, 771 MWe	1982	768.0	56.6	3418	1460	218	1242	1064	396	0.43	1.9
HUMBOLDT BAY[a]	1969	44.6		125	164	69	95	12	152	1.31	3.7
Docket 50-133; DPR-7	1970	49.3		115	209	130	79	37	172	1.82	4.2

[a]Humboldt Bay is shutdown indefinitely. It is still included in the count of commercial reactors.

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
HUMBOLDT BAY (Continued)											
1st commercial operation 8/63	1971	39.6		140	292	114	178	65	227	2.09	7.4
Type - BWR	1972	43.1		127	253	81	172	57	196	1.99	5.9
Capacity - 63 MWe	1973	50.1		210	266	60	206			1.27	5.3
	1974	43.4	83.8	296	318	103	215			1.07	7.3
	1975	45.3	83.9	265	339	131	208	112	227	1.28	7.5
	1976	23.5	46.4	523	683	37	646	50	633	1.31	29.1
	1977	0	0	1063	1904	24	1880	973	931	1.79	-
	1978	0	0	320	335	13	322	145	190	1.05	-
	1979	0	0	135	31	11	20	2	29	0.23	-
	1980	0	0	142	22	10	12	3	19	0.15	-
	1981	0	0	75	9					0.12	-
	1982	0	0	71	19	5	14	0	19	0.27	-
INDIAN POINT 1,* 2, 3**	1969	206.2			298						1.4
Docket 50-3, 50-247, 50-286;	1970	43.3			1639						37.8
DPR-5, -26, -64	1971	154.0			768						5.0
1st commercial operation 10/62,	1972	142.3			967						6.8
8/73, 8/76	1973	0		2998	5262	709	4553	2847	2415	1.75	-
Type - PWR	1974	556.1	59.4	1019	910					0.89	1.6
	1975	584.4	74.8	891	705	166	539	47	658	0.79	1.2
	1976	273.9	34.8	1590	1950	154	1796	172	1778	1.23	7.1
	1977	1278.3	75.3	1391	1070	189	881	383	687	0.77	0.8
	1978	1172.3	67.8	1909	2006	260	1746	759	1247	1.05	1.7

*Indian Point 1 was defueled in 1975. It had a capacity of 265 MWe. It is still included in the count of commercial reactors.

**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 Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
INDIAN POINT 1,* 2	1979	574.0	71.4	1349	1279	209	1070	612	667	0.95	2.2
Docket 50-3, 50-247,	1980	510.8	64.8	1577	971	181	790	398	573	0.62	1.9
DPR-5, -26	1981	367.5	46.0	2595	2731	237	2494	1595	1137	1.05	7.4
1st commercial operation 10/62, 8/73	1982	532.4	65.4	2144	1635	343	1292	883	752	0.76	3.1
Type - PWR											
Capacity - 0,864 MWe											
INDIAN POINT 3**	1979	568.0	66.5	808	636	63	573	482	154	0.79	1.1
Docket 50-286; DPR-64	1980	367.3	53.2	977	308	47	261	210	98	0.32	0.8
1st commercial operation 8/76	1981	365.8	59.8	677	364	46	318	255	109	0.54	1.0
Type - PWR	1982	171.5	22.5	1477	1226	42	1184	1094	132	0.83	7.1
Capacity - 891 MWe											
KEWAUNEE	1975	401.9	88.2	104	28	1	27	12	16	0.27	0.1
Docket 50-305; DPR-43	1976	405.9	78.9	381	270	16	254	193	77	0.71	0.7
1st commercial operation 6/74	1977	425.0	79.9	312	139	8	131	76	63	0.44	0.3
Type - PWR	1978	466.6	89.5	335	154	11	143	89	65	0.46	0.3
Capacity - 511 MWe	1979	412.0	79.0	343	127	6	121	79	48	0.37	0.3
	1980	433.8	82.1	401	165	7	158	103	62	0.41	0.4
	1981	451.8	86.7	383	141	7	134	94	47	0.37	0.3
	1982	458.4	87.6	353	101	5	96	51	50	0.29	0.2

*INDIAN POINT 1 was defueled in 1975. It had a capacity of 265 MWe. It is still included in the count of commercial reactors.

**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 Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
LACROSSE	1970	15.3			111			40	71		7.2
Docket 50-409; DPR-45	1971	33.1		218	158					0.72	4.8
1st commercial operation 11/69	1972	29.2		151	172					1.14	5.9
Type - BWR	1973	24.4		157	221					1.41	9.1
Capacity - 48 MWe	1974	37.9	81.0	115	139	89	50	6	133	1.21	3.7
	1975	32.0	69.6	165	234					1.42	7.3
	1976	21.2	47.6	118	111	40	71	6	105	0.94	5.2
	1977	11.3	33.7	141	224	60	164	8	216	1.59	19.8
	1978	21.6	62.0	182	164	69	95	6	158	0.90	7.6
	1979	24.0	71.8	153	186	65	121	21	165	1.22	7.7
	1980	26.4	68.5	124	218	63	155	11	207	1.76	8.3
	1981	29.6	76.0	187	123	62	61	3	120	0.66	4.2
	1982	17.2	44.6	148	205	65	140	16	189	1.39	11.9
MAINE YANKEE	1973	408.7		782	117			59	58	0.15	0.3
Docket 50-309; DPR-36	1974	432.6	68.7	619	420	64	356	188	232	0.68	1.0
1st commercial operation 12/72	1975	542.9	79.9	440	319	15	304	181	138	0.72	0.6
Type - PWR	1976	712.2	95.0	244	85	27	58	26	59	0.35	0.1
Capacity - 810 MWe	1977	617.6	82.2	508	245	46	199	112	133	0.48	0.4
	1978	642.7	84.1	638	420	54	366	262	158	0.66	0.6
	1979	537.0	68.4	393	154	70	84	26	128	0.39	0.3
	1980	527.0	72.2	735	462	117	345	277	185	0.63	0.9
	1981	624.2	78.2	868	424	11	413	308	116	0.49	0.7
	1982	542.5	69.1	1295	619	33	586	462	157	0.48	1.1

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
MCGUIRE 1*	1982	524.9	80.4	1560	169	26	143	29	140	0.11	0.3
Docket 50-369; NPF-9											
1st commercial operation 12/81											
Type - PWR											
Capacity - 1180 MWe											
MILLSTONE POINT 1	1972	377.6		612	596	50	546	340	256	0.97	1.6
Docket 50-245; DPR-21	1973	225.1		1184	663	125	538	422	241	0.56	2.9
1st commercial operation 3/71	1974	430.3	79.1	2477	1430					0.58	3.3
Type - BWR	1975	465.4	75.6	2587	2022					0.78	4.3
Capacity - 654 MWe	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
	1980	405.8	69.0	3024	2158	100	2058	1864	294	0.71	5.3
	1981	304.3	51.6	2506	1496	96	1400	1201	295	0.60	4.9
	1982	490.2	79.9	1370	929	78	851	587	342	0.68	1.9
MILLSTONE POINT 2	1976	545.7	78.7	620	168	26	142	73	95	0.27	0.3
Docket 50-336; DPR-65	1977	518.7	65.7	667	242	38	204	153	89	0.36	0.5
1st commercial operation 12/75	1978	536.6	67.3	1420	1621	72	1549	1534	87	1.14	3.0
Type-PWR	1979	520.0	62.8	757	472	81	391	305	167	0.62	0.9
Capacity - 864 MWe	1980	579.3	69.2	892	636	76	560	514	122	0.71	1.1
	1981	722.4	82.6	890	531	44	487	393	138	0.60	0.7
	1982	595.9	70.6	2083	1413	27	1386	1219	194	0.68	2.4

*MCGUIRE was counted for the first time in 1982.

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
MONTICELLO	1972	424.4		99	61	40	21	1	60	0.62	0.1
Docket 50-263; DPR-22	1973	389.5		401	176	48	128	67	109	0.44	0.4
1st commercial operation 6/71	1974	349.3	74.9	842	349			91	258	0.41	1.0
Type - BWR	1975	344.8	72.2	1353	1353					1.00	3.9
Capacity - 525 MWe	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
	1980	411.8	78.2	1114	531	82	449	248	283	0.48	1.3
	1981	389.3	72.6	1446	1004	101	903	756	248	0.69	2.6
	1982	291.1	63.3	1307	993	130	863	760	233	0.76	3.4
NINE MILE POINT 1	1970	227.0		821	44	12	32	17	27	0.05	0.2
Docket 50-220; DPR-63	1971	346.5		1006	195	43	152	63	132	0.19	0.6
1st commercial operation 12/69	1972	381.8		735	285	59	226	28	257	0.39	0.7
Type - BWR	1973	411.0		550	567	139	428	118	449	1.03	1.4
Capacity - 610 MWe	1974	385.9	70.5	740	824	42	782	279	545	1.11	2.1
	1975	359.0	72.1	649	681	68	613	203	478	1.05	1.9
	1976	484.6	88.2	392	428	52	376	229	199	1.09	0.9
	1977	347.4	59.2	1093	1383	41	1342	883	500	1.26	4.0
	1978	527.7	95.1	561	314	59	255	26	288	0.56	0.6
	1979	354.0	66.1	1326	1497	106	1391	940	557	1.13	4.2
	1980	533.9	92.3	1174	591	75	516	251	340	0.50	1.1
	1981	385.2	66.0	2029	1592	144	1448	1064	528	0.78	4.1
	1982	133.5	21.4	1352	1264	63	1201	944	320	0.93	9.5

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
NORTH ANNA 1, 2	1979	507.0	61.7	2025	449	78	371	190	259	0.22	0.9
Docket 50-338; NPF-04, - 09	1980	681.8	86.5	2086	218	128	90	85	133	0.10	0.3
1st commercial operation 6/78,	1981	1241.9	71.5	2416	680	188	492	343	337	0.28	0.5
12/80	1982	777.7	45.8	2872	1915	78	1837	1207	708	0.67	2.5
Type - PWR											
Capacity - 865, 890 MWe											
OCONEE 1, 2, 3	1974	650.6	60.1	844	517	18	499	144	373	0.61	0.8
Docket 50-269, 50-270, 50-287;	1975	1838.3	75.5	829	497	72	425	90	407	0.60	0.3
DPR-38, -47, -55	1976	1561.4	63.0	1215	1026	65	961	219	807	0.84	0.6
1st commercial operation 7/73	1977	1566.4	65.9	1595	1328	244	1084	294	1034	0.83	0.8
9/74, 12/74	1978	1909.0	75.8	1636	1393	179	1214	340	1053	0.85	0.7
Type - PWR	1979	1708.0	67.7	2100	1001	123	878	181	820	0.48	0.6
Capacity - 860, 860, 860 MWe	1980	1703.7	70.1	2124	1055	117	938	162	893	0.50	0.6
	1981	1661.5	66.8	2445	1211	113	1098	275	936	0.50	0.7
	1982	1293.1	52.5	2445	1792	97	1695	364	1428	0.73	1.4
OYSTER CREEK	1970	413.6		95	63	21	42	11	52	0.66	0.1
Docket 50-219; DPR-16	1971	448.9		249	240	50	190	92	148	0.96	0.5
1st commercial operation 12/69	1972	515.0		339	582	150	432	167	415	1.72	1.1
Type - BWR	1973	424.6		782	1236	195	1041	683	553	1.58	2.9
Capacity - 620 MWe	1974	434.5	70.4	935	984	166	818	162	822	1.05	2.3
	1975	373.6	73.3	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
	1980	232.9	41.4	1966	1733	97	1636	1182	551	0.88	7.4

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
OYSTER CREEK (Continued)											
	1981	314.8	59.8	1689	917	48	869	479	438	0.54	2.9
	1982	242.7	62.5	1270	865	33	832	491	374	0.68	3.6
PALISADES	1972	216.8			78						0.4
Docket 50-255; DPR-20	1973	286.8		975	1133	16	1117	661	472	1.16	3.9
1st commercial operation 12/71	1974	10.7	5.5	774	627					0.81	58.6
Type - PWR	1975	302.0	64.5	495	306					0.62	1.0
Capacity - 635 MWe	1976	346.9	55.2	742	696	23	673	109	587	0.94	2.0
	1977	616.6	91.4	332	100	13	87	23	77	0.30	0.2
	1978	320.2	49.7	849	764	52	712	173	591	0.90	2.4
	1979	415.0	59.9	1599	854	99	755	360	494	0.53	2.1
	1980	288.3	42.9	1307	424	191	233	312	112	0.32	1.5
	1981	418.2	57.2	2151	902	167	735	737	165	0.42	2.2
	1982	404.3	54.7	1554	330	73	257	203	127	0.21	0.8
PEACH BOTTOM 2, 3	1975	1234.3	80.9	971	228					0.23	0.2
Docket 50-277, 50-278; DPR-44, -56	1976	1379.2	73.0	2136	840	180	660	434	406	0.39	0.6
1st commercial operation 7/74, 12/74	1977	1052.4	58.7	2827	2036	223	1813	1374	662	0.72	1.9
Type - BWR	1978	1636.3	84.0	2244	1317	162	1155	709	608	0.59	0.8
Capacity - 1051, 1035 MWe	1979	1740.0	84.5	2276	1388	245	1143	717	671	0.61	0.8
	1980	1374.2	66.3	2774	2302	311	1991	1596	706	0.83	1.7
	1981	1161.8	58.0	2857	2506	273	2233	1880	626	0.88	2.2
	1982	1583.3	76.9	2734	1977	313	1664	1347	630	0.72	1.2

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
PILGRIM 1	1973	484.0		230	126	49	77			0.55	0.3
Docket 50-293; DPR-35	1974	234.1	39.2	454	415					0.91	1.8
1st commercial operation 12/72	1975	308.1	71.3	473	798	142	656	412	386	1.69	2.6
Type - BWR	1976	287.8	60.7	1317	2648	66	2582	2270	378	2.01	9.2
Capacity - 670 MWe	1977	316.6	61.4	1875	3142	146	2996	2176	966	1.68	9.9
	1978	519.5	83.1	1667	1327	157	1170	895	432	0.80	2.5
	1979	574.0	89.4	2458	1015	131	884	516	499	0.41	1.8
	1980	360.3	56.2	3549	3626	207	3419	3076	550	1.02	10.1
	1981	408.9	65.9	2803	1836	70	1766	1418	418	0.66	4.5
	1982	389.9	63.9	2854	1539	314	1225	1094	445	0.54	3.9
POINT BEACH 1, 2	1971	393.4			164						0.4
Docket 50-266, 50-301; DPR-24, -27	1972	378.3			580						1.5
1st commercial operation 12/70, 10/72	1973	693.7		501	588	72	516			1.17	0.8
	1974	760.2	81.3	400	295	70	225	81	214	0.74	0.4
Type - PWR	1975	801.2	82.9	339	459					1.35	0.6
Capacity - 495, 495 MWe	1976	857.3	86.7	313	370	58	312	107	263	1.18	0.4
	1977	873.9	87.3	417	429	63	366	212	217	1.03	0.5
	1978	914.4	90.9	336	320	71	249	111	209	0.95	0.3
	1979	808.0	80.8	610	644	65	579	449	195	1.06	0.8
	1980	727.2	82.5	561	598	60	538	420	178	1.07	0.8
	1981	760.4	83.6	773	596	83	513	364	232	0.77	0.8
	1982	757.2	84.3	767	609	72	537	375	234	0.79	0.8

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
PRAIRIE ISLAND 1, 2	1974	181.9	43.9	150	18			5	13	0.12	0.1
Docket 50-282, 50-306; DPR-42, -60	1975	836.0	83.3	477	123					0.26	0.1
1st commercial operation 12/73, 12/74	1976	725.2	76.6	818	447	68	379	235	212	0.55	0.6
Type - PWR	1977	922.9	87.2	718	300	73	227	60	240	0.42	0.3
Capacity - 503, 500 MWe	1978	941.1	92.2	546	221	43	178	48	173	0.40	0.2
	1979	865.0	86.0	594	180	29	151	49	131	0.30	0.2
	1980	800.7	79.9	983	353	40	313	141	212	0.36	0.4
	1981	844.9	80.5	836	329	153	176	128	201	0.39	0.4
	1982	944.9	90.4	645	229	30	199	68	161	0.36	0.2
QUAD CITIES 1, 2	1974	958.1	72.3	678	482			36	446	0.71	0.5
Docket 50-254, 50-265; DPR-29, -30	1975	833.6	68.4	1083	1618	114	1504	692	926	1.49	1.9
1st commercial operation 2/73, 3/73	1976	951.2	73.1	1225	1651	269	1382	648	1003	1.35	1.7
Type - BWR	1977	970.1	84.0	907	1031	108	923	373	658	1.14	1.1
Capacity - 769, 769 MWe	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
	1980	866.9	64.4	3089	4838	291	4547	3657	1181	1.57	5.6
	1981	1156.9	81.1	2246	3146	100	3046	2623	523	1.40	2.7
	1982	1018.7	76.0	2314	3757	177	3580	2653	1104	1.62	3.7
RANCHO SECO	1976	268.1	30.4	297	58	6	52	17	41	0.19	0.2
Docket 50-312; DPR-54	1977	706.4	77.1	515	390	61	329	248	142	0.76	0.5
1st commercial operation 4/75	1978	607.7	80.5	508	323	76	247	176	147	0.64	0.5
Type - PWR	1979	687.0	91.1	287	126	27	99	64	62	0.44	0.2
Capacity - 873 MWe	1980	530.9	60.4	890	412	110	302	281	131	0.46	0.8
	1981	321.2	40.2	772	402	83	319	266	137	0.52	1.3
	1982	409.5	53.3	766	337	49	288	217	120	0.44	0.8

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
ROBINSON 2	1972	580.0		245	215	42	173	137	78	0.88	0.4
Docket 50-261; DPR-23	1973	455.1		831	695					0.84	1.5
1st commercial operation 3/71	1974	578.1	83.3	853	672	185	487			0.79	1.2
Type - PWR	1975	501.8	72.7	849	1142					1.34	2.3
Capacity - 665 MWe	1976	585.5	84.7	597	715	30	685	457	758	1.20	1.2
	1977	511.5	85.2	634	455	52	403	223	232	0.72	0.9
	1978	480.5	72.0	943	963	63	900	529	434	1.02	2.0
	1979	482.0	70.8	1454	1188	60	1128	794	394	0.82	2.5
	1980	387.3	62.2	2009	1852	79	1773	1379	473	0.92	4.8
	1981	426.6	73.0	1462	733	45	688	513	220	0.50	1.7
	1982	277.5	48.9	2011	1426	128	1298	945	481	0.71	5.1
SALEM 1, 2*	1978	546.4	55.6	574	122	28	94	32	90	0.21	0.2
Docket 50-272,-311; DPR-70,-75	1979	250.0	25.5	1488	584	100	484	359	225	0.39	2.3
1st commercial operation 6/77, 10/81	1980	680.6	69.2	1704	449	55	394	281	168	0.26	0.7
	1981	743.0	78.1	1652	254	4	250	152	102	0.15	0.3
Type - PWR	1982	1440.4	72.6	3228	1203	66	1137	846	357	0.37	0.8
Capacity - 1079, 1106, MWe											
SAN ONOFRE 1	1969	314.1		123	42	10	32	5	37	0.34	0.1
Docket 50-206; DPR-13	1970	365.9		251	155	13	142	59	96	0.62	0.4
1st commercial operation 1/68	1971	362.1		121	50	12	38	3	47	0.41	0.1
Type - PWR	1972	338.5		326	256	29	227	117	139	0.78	0.8
Capacity - 436 MWe	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

*SALEM 2 and SEQUOYAH 1 were counted for the first time in 1982.

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
SAN ONOFRE 1 (Continued)											
	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
	1980	97.3	22.3	3063	2387	219	2168	2018	369	0.78	24.5
	1981	95.9	26.7	2902	3223	100	3123	3104	119	1.11	33.6
	1982	61.6	15.7	3055	832	81	751	729	102	0.27	13.5
SEQUOYAH 1* Docket 50-327; DPR-77 1st commercial operation 7/81 Type - PWR Capacity - 1128 MWe	1982	583.5	52.8	1965	570	67	503	57	513	0.29	1.0
ST. LUCIE 1	1977	649.1	84.7	445	152	26	126	92	60	0.34	0.2
Docket 50-335; DPR-67	1978	606.4	76.5	797	337	15	322	140	197	0.42	0.6
1st commercial operation 12/76	1979	592.0	74.0	907	438	25	413	209	229	0.48	0.7
Type - PWR	1980	627.9	77.5	1074	532	82	450	195	337	0.50	0.8
Capacity - 817 MWe	1982	816.8	94.0	1045	272	17	255	105	167	0.26	0.3

*SALEM 2 and SEQUOYAH 1 were counted for the first time in 1982.

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
SURRY 1, 2	1973	420.6		936	152					0.16	0.4
Docket 50-280, 50-281; DPR-32, -37	1974	717.4	49.8	1715	884	72	812			0.51	1.2
1st commercial operation 12/72, 5/73	1975	1079.0	70.8	1948	1649	27	1622	1065	584	0.85	1.5
Type - PWR	1976	930.7	60.4	2753	3165	444	2721	1873	1292	1.15	3.4
Capacity - 775, 775 MWe	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
	1980	568.2	40.3	5317	3836	353	3483	3117	719	0.72	6.6
	1981	907.6	59.3	3753	4244	428	3816	3040	1204	1.13	4.7
	1982	1323.3	88.5	1878	1490	399	1091	506	984	0.79	1.1
*THREE MILE ISLAND 1, 2	1975	675.9	82.2	131	73			18	55	0.56	0.1
Docket 50-289; DPR-50, -73	1976	530.0	65.4	819	286	23	263	69	217	0.35	0.5
1st commercial operation-9/74,	1977	664.5	80.9	1122	359	15	344	128	231	0.32	0.5
Type - PWR 12/78	1978	690.0	85.1	1929	504	23	481	235	269	0.26	0.7
Capacity - 776, 880 MWe	1979	266.0	21.9	4024	1392	197	1195	907	485	0.35	5.2
	1980	0.0	0.0	2328	394	29	365	234	160	0.17	-
	1981	0.0	0.0	2103	376	50	326	190	186	0.18	-
	1982	0.0	0.0	2123	1004	62	942	433	571	0.47	-
TROJAN	1977	792.0	92.6	591	174	30	144	105	69	0.29	0.2
Docket 50-344; NPF-1	1978	205.5	20.6	711	319	81	238	124	195	0.45	1.5
1st commercial operation 5/76	1979	631.0	58.1	736	257	74	183	113	144	0.35	0.4
Type - PWR	1980	727.5	72.5	1159	421	77	344	305	116	0.36	0.6
Capacity - 1080 MWe	1981	775.6	74.1	1311	609	113	496	363	246	0.46	0.8
	1982	579.5	60.8	977	419	76	343	168	251	0.42	0.7

*Three Mile Island 1 and 2 are shutdown. They are still included in the count of commercial reactors.

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
TURKEY POINT 3, 4	1973	401.9		444	78					0.18	0.2
Docket 50-250, 50-251; DPR-31, -41	1974	953.6		794	454	88	366	202	252	0.57	0.5
1st commercial operation 12/72, 9/73	1975	1003.7	74.9	1176	876	270	606	559	317	0.74	0.9
Type - PWR	1976	974.2	71.2	1647	1184	89	1095	868	316	0.72	1.2
Capacity - 646, 646 MWe	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
	1980	990.6	73.6	1803	1651	232	1419	1218	433	0.92	1.7
	1981	654.0	46.8	2932	2251	274	1977	1854	397	0.77	3.4
	1982	915.7	65.2	2956	2119	197	1922	1656	463	0.72	2.3
VERMONT YANKEE	1973	222.1		244	85					0.35	0.4
Docket 50-271; DPR-28	1974	303.5		357	216	24	192	103	113	0.60	0.7
1st commercial operation 11/72	1975	429.0	87.8	282	153	70	83	63	90	0.54	0.4
Type - BWR	1976	389.6	77.1	815	411	36	375	246	165	0.50	1.0
Capacity - 504 MWe	1977	423.5	85.1	641	258	83	175	90	168	0.40	0.6
	1978	387.5	75.9	934	339	78	261	158	181	0.36	0.9
	1979	414.0	82.1	1220	1170	546	624	642	528	0.96	2.8
	1980	357.8	71.5	1443	1338	141	1197	926	412	0.93	3.7
	1981	429.1	84.6	1264	731	121	610	408	323	0.58	1.7
	1982	501.0	96.0	781	205	60	145	80	125	0.43	0.4
YANKEE ROWE	1969	138.3		193	215	83	132	78	133	1.11	1.5
Docket 50-29; DPR-3	1970	146.1		355	255	90	165	158	97	0.72	1.7
1st commercial operation 7/61	1971	173.5		155	90	46	44	19	71	0.58	0.5
Type - PWR	1972	78.7		282	255	63	192	146	109	0.90	3.2
Capacity - 175 MWe	1973	127.1		133	99			47	52	0.74	0.8

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availa-bility Factor	Total Personnel With Measur-able Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type		Average Dose per Worker (Rems)	Man-rems per MW-Yr
						Opera-tions	Maint. & Others	Contrac-tor	Station & Utility		
YANKEE ROWE (Continued)											
	1974	111.3		243	205			99	106	0.84	1.8
	1975	145.1	82.4	249	116	52	64	66	50	0.47	0.8
	1976	152.2	89.8	152	59	17	42	4	55	0.39	0.4
	1977	124.6	73.9	725	356	28	328	174	182	0.49	2.9
	1978	145.0	81.0	565	282	26	256	95	187	0.50	1.9
	1979	149.0	81.6	441	127	16	111	52	75	0.29	0.9
	1980	35.6	22.0	502	213	6	207	90	123	0.42	6.0
	1981	109.0	74.4	515	302	8	294	136	166	0.59	2.8
	1982	108.6	73.4	814	474	6	468	215	259	0.54	4.4
ZION 1, 2	1974	425.3	71.1	306	56			13	43	0.18	0.1
Docket 50-295, 50-304; DPR-39, -48	1975	1181.5	74.9	436	127	17	110	49	78	0.29	0.1
1st commercial operation 12/73, 9/74	1976	1134.9	61.9	774	571	64	507	257	314	0.74	0.5
	1977	1358.6	75.0	784	1003	43	960	561	442	1.28	0.7
Type - PWR	1978	1613.5	80.2	1104	1017	150	867	418	599	0.92	0.6
Capacity - 1040, 1040 MWe	1979	1238.0	67.6	1472	1274	168	1106	747	527	0.87	1.0
	1980	1411.2	74.1	1363	920	97	823	560	360	0.67	0.7
	1981	1366.9	72.3	1754	1720	50	1670	1155	564	0.98	1.3
	1982	1186.4	64.3	1575	2103	42	2061	1688	415	1.34	1.8

APPENDIX B

Annual Whole Body Doses at Licensed Nuclear Power Facilities
1982

APPENDIX B

ANNUAL WHOLE BODY DOSES AT LICENSED NUCLEAR POWER FACILITIES

1982

PLANT NAME and TYPE		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	>12.0			
Arkansas 1, 2	PWRs	682	637	268	225	130	93	178	62	12	3							2,290	1,608	803
Beaver Valley	PWR	825	738	317	288	155	91	141	25									2,580	1,755	599**
Big Rock Point	BWR	129	246	58	36	30	26	82	27	12	4							650	521	328
Browns Ferry 1, 2, 3	BWRs	3,075	789	565	541	332	258	498	214	80								6,352	3,277	2,220**
Brunswick 1, 2	BWRs	1,372	2,181	480	396	273	206	639	472	310								6,329	4,957	3,792 **
Calvert Cliffs 1, 2	PWRs	929	508	350	290	146	153	283	52	22	1							2,734	1,805	1,057
Cook 1, 2	PWRs	722	503	282	250	191	110	164	25	2								2,249	1,527	699
Cooper Station	BWR	1,631	262	63	74	72	65	144	48	15								2,374	743	542
Crystal River 3	PWR	1,415	409	173	101	60	10	25	2									2,195	780	177
Davis-Besse	PWR	1,298	932	269	83	36	15	15										2,648	1,350	164**
Dresden 1, 2, 3	BWRs	672	587	294	259	223	147	444	399	174	43	2						3,244	2,572	2,923
Duane Arnold	BWR	767	274	74	48	33	24	44	18	9								1,291	524	229
Farley 1, 2*	PWRs	124	632	285	205	133	94	100	4									1,577	1,453	484
Fitzpatrick	BWR	688	789	372	318	252	204	307	50	29	1							3,010	2,322	1,190**
Fort Calhoun	PWR	228	335	83	74	39	13	40	10	8	2							832	604	217
Ginna	PWR	436	248	130	131	125	76	219	109	45	34							1,553	1,117	1,140

* Plants counted for the first time in 1982.

** These plants provided their actual collective dose in their 20.407 reports. The collective dose shown for the other plants is calculated by NRC staff.

APPENDIX B

ANNUAL WHOLE BODY DOSES AT LICENSED NUCLEAR POWER FACILITIES
1982

PLANT NAME and TYPE		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	>12.0			
Haddam Neck	PWR	530	323	111	65	17	10	26	7									1,089	559	126**
Hatch 1, 2	BWRs	1,287	1,197	719	628	347	149	274	85	17	2							4,705	3,418	1,460
Humboldt Bay	BWR	86	31	16	13	5	4	2										157	71	19
Indian Point 1, 2	PWRs	694	575	309	272	233	155	408	133	46	12	0	0	0	0	1		2,838	2,144	1,635
Indian Point 3	PWR	676	348	246	188	124	93	277	185	14	2							2,153	1,477	1,226
Kewaunee	PWR	300	161	65	61	29	25	11	1									653	353	101
LaCrosse	BWR	35	42	12	8	9	6	28	18	13	12							183	148	205
Maine Yankee	PWR	285	533	178	159	101	113	189	21	1								1,580	1,295	619
McGuire 1*	PWR	2,004	1,067	275	156	42	12	8										3,564	1,560	169**
Millstone 1	BWR	375	379	178	185	154	126	236	103	9								1,745	1,370	929**
Millstone 2	PWR	571	574	269	290	232	188	358	157	14	1							2,654	2,083	1,413**
Monticello	BWR	1,203	349	212	222	102	72	210	87	43	10							2,510	1,307	993
Nine Mile Point	BWR	721	354	190	153	121	86	228	132	65	21	2						2,073	1,352	1,264
North Anna 1, 2	PWRs	489	1,453	310	225	150	103	317	158	84	44	25	3					3,361	2,872	1,915
Oconee 1, 2, 3	PWRs	1,024	729	353	278	206	151	453	216	55	4							3,469	2,445	1,792**
Oyster Creek	BWR	480	417	163	160	138	94	195	71	28	3	1						1,750	1,270	865

* Plants counted for the first time in 1982.
** These plants provided their actual collective dose in their 20.407 reports. The collective dose shown for the other plants is calculated by NRC staff.

APPENDIX B

ANNUAL WHOLE BODY DOSES AT LICENSED NUCLEAR POWER FACILITIES

1982

NAME and TYPE		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	>12.0			
Palisades	PWR	154	1,006	227	149	74	34	54	8	2								1,708	1,554	330
Peach Bottom 2, 3	BWRs	1,566	731	277	492	304	241	475	168	35	9	2						4,300	2,734	1,977
Pilgrim 1	BWR	0	881	473	644	244	153	323	83	46	7							2,854	2,854	1,539
Point Beach 1, 2	PWRs	224	169	106	120	74	60	175	48	12	3							991	767	609
Prairie Island 1, 2	PWRs	410	216	153	131	61	36	47	1									1,055	645	229
Quad Cities 1, 2	BWRs	817	274	190	151	152	152	596	383	298	118							3,131	2,314	3,757
Rancho Seco	PWR	300	285	139	151	64	33	70	17	6	1							1,066	766	337
Robinson 2	PWR	1,144	929	193	161	114	80	287	158	82	7							3,155	2,011	1,426
Salem 1, 2*	PWRs	1,195	1,388	647	490	189	170	296	42	6								4,423	3,228	1,203
San Onofre	PWR	5,357	1,902	338	287	167	103	191	60	7								8,412	3,055	832**
Sequoyah 1*	PWR	2,219	869	395	318	160	94	121	8									4,184	1,965	570**
St. Lucie	PWR	569	568	191	126	64	38	55	3									1,614	1,045	272
Surry 1, 2	PWR	400	751	394	125	87	86	167	116	72	43	23	10	4				2,278	1,878	1,490
Three Mile Isl. 1, 2	PWRs	607	1,033	288	197	124	122	269	77	11	2							2,730	2,123	1,004
Trojan	PWR	103	335	258	139	79	47	89	25	4	1							1,080	977	419
Turkey Point 3, 4	PWRs	1,286	711	459	477	323	215	550	165	55	1							4,242	2,956	2,119

* Plants counted for the first time in 1982.

** These plants provided their actual collective dose in their 20.407 reports. The collective dose shown for the other plants is calculated by NRC staff.

APPENDIX B

ANNUAL WHOLE BODY DOSES AT LICENSED NUCLEAR POWER FACILITIES
1982

PLANT NAME and TYPE	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	>12.0			
Vermont Yankee BWR	757	161	95	75	48	33	69										1,238	481	205
Yankee-Rowe PWR	1,275	383	60	79	59	45	121	57	9	1							2,089	814	474**
Zion 1, 2 PWR	757	285	141	120	112	81	357	376	62	40	1						2,332	1,575	2,103
BWR Totals	15,661	9,944	4,431	4,403	2,839	2,046	4,794	2,358	1,183	230	7						47,896	32,235	24,437
PWR Totals	29,232	21,536	8,262	6,411	3,900	2,749	6,061	2,328	631	202	49	13	4	0	1		81,378	52,146	27,753
Fort St. Vrain HTGR	978	22															1,000	22	0**

** These plants provided their actual collective dose in their 20.407 reports. The collective dose shown for the other plants is calculated by NRC staff.

APPENDIX C

Number of Personnel and Man-rems by Work and Job Function
1982

Note: A '†' 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 1,2 (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	32	1	15		12.058	0.102	3.041	
OPERATING PERSONNEL	59	0	0		28.165	0.0	0.0	
HEALTH PHYSICS PERSONNEL	33	0	53		17.527	0.0	19.057	
SUPERVISORY PERSONNEL	2	0	0		0.275	0.0	0.0	
ENGINEERING PERSONNEL	0	2	1		0.0	0.268	0.179	
TOTAL	126	3	69	198	58.025	0.370	22.277	80.672
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	106	2	114		46.390	0.507	49.148	
OPERATING PERSONNEL	1	0	0		0.237	0.0	0.0	
HEALTH PHYSICS PERSONNEL	27	0	12		8.170	0.0	3.140	
SUPERVISORY PERSONNEL	1	0	1		0.120	0.0	0.158	
ENGINEERING PERSONNEL	0	0	8		0.0	0.0	4.321	
TOTAL	135	2	135	272	54.917	0.507	56.767	112.191
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	10	1	38		3.453	0.277	10.336	
OPERATING PERSONNEL	1	0	0		0.338	0.0	0.0	
HEALTH PHYSICS PERSONNEL	4	0	3		2.526	0.0	0.472	
SUPERVISORY PERSONNEL	1	0	0		1.057	0.0	0.0	
ENGINEERING PERSONNEL	1	3	7		0.216	0.458	2.528	
TOTAL	17	4	48	69	7.590	0.735	13.336	21.661
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	89	4	340		61.219	1.147	229.049	
OPERATING PERSONNEL	11	0	0		3.373	0.0	0.0	
HEALTH PHYSICS PERSONNEL	34	0	41		20.288	0.0	16.485	
SUPERVISORY PERSONNEL	4	0	2		1.096	0.0	1.194	
ENGINEERING PERSONNEL	4	1	21		1.065	0.105	8.958	
TOTAL	142	5	404	551	87.041	1.252	255.686	343.979
WASTE PROCESSING								
MAINTENANCE PERSONNEL	23	0	39		5.167	0.0	29.208	
OPERATING PERSONNEL	4	0	0		0.784	0.0	0.0	
HEALTH PHYSICS PERSONNEL	12	0	4		7.457	0.0	1.304	
SUPERVISORY PERSONNEL	1	0	0		0.148	0.0	0.0	
ENGINEERING PERSONNEL	0	0	2		0.0	0.0	1.110	
TOTAL	40	0	45	85	13.556	0.0	31.622	45.178
REFUELING								
MAINTENANCE PERSONNEL	54	1	96		17.948	0.172	29.888	
OPERATING PERSONNEL	22	0	0		4.491	0.0	0.0	
HEALTH PHYSICS PERSONNEL	7	0	14		1.485	0.0	3.238	
SUPERVISORY PERSONNEL	2	0	1		0.529	0.0	0.367	
ENGINEERING PERSONNEL	3	0	23		0.456	0.0	8.201	
TOTAL	88	1	134	223	24.909	0.172	41.694	66.775
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	314	9	642	965	146.235	2.205	350.670	499.110
OPERATING PERSONNEL	98	0	0	98	37.388	0.0	0.0	37.388
HEALTH PHYSICS PERSONNEL	117	0	127	244	57.453	0.0	43.696	101.149
SUPERVISORY PERSONNEL	11	0	4	15	3.225	0.0	1.719	4.944
ENGINEERING PERSONNEL	8	6	62	76	1.737	0.831	25.297	27.865
GRAND TOTAL	548	15	835	1398	246.038	3.036	421.382	670.456

APPENDIX C

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

PLANT: BEAVER VALLEY (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	7	0	36		1.375	0.0	12.665	
OPERATING PERSONNEL	39	0	0		10.850	0.0	0.0	
HEALTH PHYSICS PERSONNEL	31	1	111		8.600	0.150	73.165	
SUPERVISORY PERSONNEL	12	0	9		3.530	0.0	1.800	
ENGINEERING PERSONNEL	5	2	25		1.555	0.215	5.260	
TOTAL	94	3	181	278	25.910	0.365	92.890	119.165
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	75	3	271		54.410	1.375	127.275	
OPERATING PERSONNEL	2	0	0		0.305	0.0	0.0	
HEALTH PHYSICS PERSONNEL	2	0	6		0.355	0.0	1.255	
SUPERVISORY PERSONNEL	11	0	1		4.455	0.0	0.145	
ENGINEERING PERSONNEL	6	0	26		0.815	0.0	17.030	
TOTAL	96	3	304	403	60.340	1.375	145.705	207.420
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	8		0.0	0.0	9.005	
OPERATING PERSONNEL	1	0	0		0.145	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	1		0.0	0.0	0.450	
SUPERVISORY PERSONNEL	1	0	0		0.165	0.0	0.0	
ENGINEERING PERSONNEL	4	0	7		1.260	0.0	4.755	
TOTAL	6	0	16	22	1.570	0.0	14.210	15.780
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	21	0	312		7.680	0.0	166.680	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	2	0	12		0.485	0.0	2.430	
SUPERVISORY PERSONNEL	2	0	5		0.230	0.0	2.010	
ENGINEERING PERSONNEL	2	0	16		1.030	0.0	4.350	
TOTAL	27	0	345	372	9.425	0.0	175.470	184.895
WASTE PROCESSING								
MAINTENANCE PERSONNEL	5	0	7		1.045	0.0	1.645	
OPERATING PERSONNEL	2	0	0		1.330	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	2		0.0	0.0	0.295	
SUPERVISORY PERSONNEL	3	0	0		1.580	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.0	
TOTAL	10	0	9	19	3.955	0.0	1.940	5.895
REFUELING								
MAINTENANCE PERSONNEL	14	0	20		5.060	0.0	19.445	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	2		0.0	0.0	2.550	
SUPERVISORY PERSONNEL	3	0	0		0.545	0.0	0.0	
ENGINEERING PERSONNEL	3	0	3		2.685	0.0	2.020	
TOTAL	20	0	25	45	8.290	0.0	24.015	32.305
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	122	3	654	779	69.570	1.375	336.715	407.660
OPERATING PERSONNEL	44	0	0	44	12.630	0.0	0.0	12.630
HEALTH PHYSICS PERSONNEL	35	1	134	170	9.440	0.150	80.145	89.735
SUPERVISORY PERSONNEL	32	0	15	47	10.505	0.0	3.955	14.460
ENGINEERING PERSONNEL	20	2	77	99	7.345	0.215	33.415	40.975
GRAND TOTAL	253	6	880	1139	109.490	1.740	454.230	**565.460

**Majority of collective dose due to TMI-type modifications.

APPENDIX C

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

PLANT: †BIG ROCK POINT* (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	27	73	79		10.035	3.953	3.069	
OPERATING PERSONNEL	49	8	17		40.288	0.538	1.743	
HEALTH PHYSICS PERSONNEL	15	28	7		24.804	3.579	4.554	
SUPERVISORY PERSONNEL	30	59	14		11.767	2.730	1.055	
ENGINEERING PERSONNEL	24	45	49		5.714	1.304	3.416	
TOTAL	145	213	166	524	92.608	12.104	13.837	118.549
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	31	58	49		47.949	12.453	5.164	
OPERATING PERSONNEL	25	0	1		1.886	0.0	0.137	
HEALTH PHYSICS PERSONNEL	10	0	4		0.674	0.0	0.100	
SUPERVISORY PERSONNEL	7	8	4		1.080	0.279	0.274	
ENGINEERING PERSONNEL	5	9	5		0.353	1.144	0.986	
TOTAL	78	75	63	216	51.942	13.876	6.661	72.479
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	7	48	25		1.227	30.913	23.081	
OPERATING PERSONNEL	10	1	3		1.919	0.029	0.166	
HEALTH PHYSICS PERSONNEL	10	5	7		1.616	1.058	3.038	
SUPERVISORY PERSONNEL	4	10	1		0.910	2.919	0.043	
ENGINEERING PERSONNEL	6	2	5		0.861	1.254	0.995	
TOTAL	37	66	41	144	6.533	36.173	27.323	70.029
**SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	17	23	8		7.289	5.170	3.912	
OPERATING PERSONNEL	13	2	0		0.414	0.204	0.0	
HEALTH PHYSICS PERSONNEL	9	2	0		1.502	0.099	0.0	
SUPERVISORY PERSONNEL	6	0	0		0.925	0.0	0.0	
ENGINEERING PERSONNEL	0	0	2		0.0	0.0	0.563	
TOTAL	45	27	10	82	10.130	5.473	4.475	20.078
WASTE PROCESSING								
MAINTENANCE PERSONNEL	13	3	4		1.984	0.281	3.994	
OPERATING PERSONNEL	24	0	0		1.503	0.0	0.0	
HEALTH PHYSICS PERSONNEL	12	9	1		0.872	0.135	0.211	
SUPERVISORY PERSONNEL	1	0	1		0.011	0.0	0.043	
ENGINEERING PERSONNEL	1	0	2		0.010	0.0	0.354	
TOTAL	51	12	8	71	4.380	0.416	4.602	9.398
REFUELING								
MAINTENANCE PERSONNEL	6	0	0		1.038	0.0	0.0	
OPERATING PERSONNEL	32	0	1		3.788	0.0	0.058	
HEALTH PHYSICS PERSONNEL	8	0	1		0.105	0.0	0.015	
SUPERVISORY PERSONNEL	5	0	2		0.484	0.0	0.341	
ENGINEERING PERSONNEL	6	2	10		0.204	0.006	4.540	
TOTAL	57	2	14	73	5.619	0.006	4.954	10.579
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	101	205	165	471	69.522	52.770	39.220	161.512
OPERATING PERSONNEL	153	11	22	186	49.798	0.771	2.104	52.673
HEALTH PHYSICS PERSONNEL	64	44	20	128	29.573	4.871	7.918	42.362
SUPERVISORY PERSONNEL	53	77	22	152	15.177	5.928	1.756	22.861
ENGINEERING PERSONNEL	42	58	73	173	7.142	3.708	10.854	21.704
GRAND TOTAL	413	395*	302	1110	171.212	68.048	61.852	301.112

*Workers may be counted in more than one category.

**Includes valve and pump repair, steam line repairs, chemical tank piping replacement, recirculating pump temperature sensor and sump repair.

APPENDIX C

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

PLANT: †BROWNS FERRY 1,2,3 (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	48	112	23		16.600	29.600	16.500	
OPERATING PERSONNEL	90	0	0		22.000	0.0	0.0	
HEALTH PHYSICS PERSONNEL	25	0	58		7.700	0.0	26.900	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	43	0		0.0	21.600	0.0	
TOTAL	163	155	81	399	46.300	51.200	43.400	140.900
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	324	936	195		184.800	696.100	125.600	
OPERATING PERSONNEL	161	0	0		75.200	0.0	0.0	
HEALTH PHYSICS PERSONNEL	30	0	68		13.000	0.0	41.400	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	93	0		0.0	45.000	0.0	
TOTAL	515	1029	263	1807	273.000	741.100	167.000	1181.100
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0		0.0	0.700	0.500	
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	0	0	0	0	0.0	0.700	0.500	1.200
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	32	623	95		8.800	317.000	31.000	
OPERATING PERSONNEL	8	0	0		1.300	0.0	0.0	
HEALTH PHYSICS PERSONNEL	3	0	11		0.400	0.0	3.200	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	36	0		0.0	13.100	0.0	
TOTAL	43	659	106	808	10.500	330.100	34.200	374.800
WASTE PROCESSING								
MAINTENANCE PERSONNEL	26	3	0		9.300	1.000	0.0	
OPERATING PERSONNEL	15	0	0		7.400	0.0	0.0	
HEALTH PHYSICS PERSONNEL	5	0	2		1.700	0.0	0.900	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.300	0.0	0.0	
TOTAL	46	3	2	51	18.700	1.000	0.900	20.600
REFUELING								
MAINTENANCE PERSONNEL	0	20	4		0.0	3.600	1.000	
OPERATING PERSONNEL	19	0	0		6.300	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	19	20	4	43	6.300	3.600	1.000	10.900
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	430	1694	317	2441	219.500	1048.000	174.600	1442.100
OPERATING PERSONNEL	293	0	0	293	112.200	0.0	0.0	112.200
HEALTH PHYSICS PERSONNEL	63	0	139	202	22.800	0.0	72.400	95.200
SUPERVISORY PERSONNEL	0	0	0	0	0.0	0.0	0.0	0.0
ENGINEERING PERSONNEL	0	172	0	172	0.300	79.700	0.0	80.000
GRAND TOTAL	786	1866	456	3108	354.800	1127.700	247.000	1729.500

APPENDIX C

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

PLANT: BRUNSWICK 1,2 (BWR)

1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	16	0	2		26.081	0.040	4.225	
OPERATING PERSONNEL	59	2	35		78.365	1.717	6.788	
HEALTH PHYSICS PERSONNEL	16	1	11		18.905	0.717	11.943	
SUPERVISORY PERSONNEL	1	0	0		0.137	0.0	0.0	
ENGINEERING PERSONNEL	7	10	2		4.431	4.515	0.792	
TOTAL	99	13	50	162	127.919	6.989	23.748	158.656
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	68	13	193		109.458	9.211	310.300	
OPERATING PERSONNEL	6	0	0		8.704	0.0	0.0	
HEALTH PHYSICS PERSONNEL	8	0	6		9.460	0.422	5.975	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	8	1	24		5.728	0.401	17.755	
TOTAL	90	14	223	327	133.350	10.034	334.030	477.414
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	16		0.0	0.0	22.629	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	3	0	5		3.101	0.082	5.741	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	6	2	22		4.175	2.271	19.685	
TOTAL	9	2	43	54	7.276	2.353	48.055	57.684
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	164	86	961		256.772	59.603	1454.597	
OPERATING PERSONNEL	6	4	0		8.704	2.917	0.0	
HEALTH PHYSICS PERSONNEL	43	1	63		43.697	1.516	69.159	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	33	31	140		23.243	14.930	112.027	
TOTAL	246	122	1164	1532	332.416	78.966	1635.783	2047.165
WASTE PROCESSING								
MAINTENANCE PERSONNEL	49	6	290		76.690	3.700	460.705	
OPERATING PERSONNEL	48	0	0		65.583	0.0	0.0	
HEALTH PHYSICS PERSONNEL	11	0	11		12.557	0.500	11.706	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	11	3	45		7.845	1.413	36.337	
TOTAL	119	9	346	474	162.675	5.613	508.748	677.036
REFUELING								
MAINTENANCE PERSONNEL	21	10	140		31.529	7.244	218.690	
OPERATING PERSONNEL	9	0	0		13.258	0.0	0.0	
HEALTH PHYSICS PERSONNEL	6	0	10		6.198	0.210	11.469	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	6	0	0		4.175	0.363	0.0	
TOTAL	42	10	150	202	55.160	7.817	230.159	293.136
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	318	115	1602	2035	500.530	79.798	2471.146	3051.474
OPERATING PERSONNEL	128	6	35	169	174.614	4.634	6.788	186.036
HEALTH PHYSICS PERSONNEL	87	2	106	195	93.918	3.447	115.993	213.358
SUPERVISORY PERSONNEL	1	0	0	1	0.137	0.0	0.0	0.137
ENGINEERING PERSONNEL	71	47	233	351	49.597	23.893	186.596	260.086
GRAND TOTAL	605	170	1976	2751	818.796	111.772	2780.523	3711.091

APPENDIX C

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

PLANT: CALVERT CLIFFS 1,2* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	0	4	0		0.0	1.277	0.0	
OPERATING PERSONNEL	80	0	28		35.334	0.0	5.558	
HEALTH PHYSICS PERSONNEL	19	17	43		6.951	4.719	20.919	
SUPERVISORY PERSONNEL	3	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.0	
TOTAL	102	21	71	194	42.285	5.996	26.477	74.758
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	104	33	62		27.401	6.435	14.472	
OPERATING PERSONNEL	21	3	14		5.308	0.356	3.052	
HEALTH PHYSICS PERSONNEL	18	2	19		5.534	0.321	5.937	
SUPERVISORY PERSONNEL	3	0	5		0.442	0.0	0.706	
ENGINEERING PERSONNEL	8	1	10		1.317	0.198	1.778	
TOTAL	154	39	110	303	40.002	7.310	25.945	73.257
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	8	95	69		8.403	75.497	72.425	
OPERATING PERSONNEL	4	8	13		1.314	2.880	5.551	
HEALTH PHYSICS PERSONNEL	0	0	24		0.0	0.0	5.553	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	1	1	15		0.866	1.111	4.318	
TOTAL	13	104	121	238	10.583	79.488	87.847	177.918
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	180	155	286		108.348	83.571	121.404	
OPERATING PERSONNEL	35	35	30		14.197	16.013	9.171	
HEALTH PHYSICS PERSONNEL	30	59	72		15.436	20.601	30.548	
SUPERVISORY PERSONNEL	6	0	8		1.897	0.0	2.366	
ENGINEERING PERSONNEL	13	1	53		4.432	0.837	18.462	
TOTAL	264	250	449	963	144.310	121.022	181.951	447.283
WASTE PROCESSING								
MAINTENANCE PERSONNEL	5	7	23		2.713	1.819	5.865	
OPERATING PERSONNEL	24	0	1		10.584	0.0	0.204	
HEALTH PHYSICS PERSONNEL	17	57	40		13.491	15.076	20.279	
SUPERVISORY PERSONNEL	2	0	1		1.102	0.0	0.124	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.0	
TOTAL	48	64	65	177	27.890	16.895	26.472	71.257
REFUELING								
MAINTENANCE PERSONNEL	69	58	4		45.208	27.588	0.731	
OPERATING PERSONNEL	20	14	3		4.945	5.963	1.155	
HEALTH PHYSICS PERSONNEL	1	7	12		0.105	1.351	4.919	
SUPERVISORY PERSONNEL	9	0	1		2.014	0.0	0.199	
ENGINEERING PERSONNEL	1	0	10		0.133	0.0	1.982	
TOTAL	100	79	30	209	52.405	34.902	8.986	96.293
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	366 (204)	352 (252)	444 (383)	1162 (839)	192.073	196.187	214.897	603.157
OPERATING PERSONNEL	184 (150)	60 (38)	89 (73)	333 (261)	71.682	25.212	24.691	121.585
HEALTH PHYSICS PERSONNEL	85 (46)	142 (100)	210 (133)	437 (279)	41.517	42.068	88.155	171.740
SUPERVISORY PERSONNEL	23 (19)	0	15 (11)	38 (30)	5.455	0.0	3.395	8.850
ENGINEERING PERSONNEL	23 (24)	3 (3)	88 (80)	114 (107)	6.748	2.146	26.540	35.434
GRAND TOTAL	681 (443)	557 (393)	846 (680)	2084 (1516)	317.475	265.613	357.678	940.766

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

APPENDIX C

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

PLANT: COOK 1,2* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	2	0	1		0.904	0.0	0.205	
OPERATING PERSONNEL	71	0	0		32.329	0.0	0.0	
HEALTH PHYSICS PERSONNEL	19	0	72		5.537	0.0	21.745	
SUPERVISORY PERSONNEL	4	0	1		0.722	0.0	0.122	
ENGINEERING PERSONNEL	2	0	0		0.245	0.0	0.0	
TOTAL	98	0	74	172	39.737	0.0	22.072	61.809
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	101	7	221		104.408	2.061	80.367	
OPERATING PERSONNEL	23	0	5		10.145	0.0	1.304	
HEALTH PHYSICS PERSONNEL	5	0	26		1.082	0.0	7.892	
SUPERVISORY PERSONNEL	7	1	3		2.598	0.205	1.231	
ENGINEERING PERSONNEL	6	2	2		1.139	0.244	0.560	
TOTAL	142	10	257	409	119.372	2.510	91.354	213.236
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	30	3	180		9.446	1.758	90.323	
OPERATING PERSONNEL	3	0	3		0.412	0.0	0.637	
HEALTH PHYSICS PERSONNEL	7	0	24		1.027	0.0	5.700	
SUPERVISORY PERSONNEL	4	0	2		0.786	0.0	0.340	
ENGINEERING PERSONNEL	9	0	0		1.585	0.0	0.0	
TOTAL	53	3	209	265	13.256	1.758	97.000	112.014
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	25	5	288		7.111	2.974	140.066	
OPERATING PERSONNEL	0	0	10		0.0	0.0	2.032	
HEALTH PHYSICS PERSONNEL	0	0	14		0.0	0.0	3.176	
SUPERVISORY PERSONNEL	0	1	6		0.0	0.331	3.273	
ENGINEERING PERSONNEL	3	6	5		0.516	1.081	1.192	
TOTAL	28	12	323	363	7.627	4.386	149.739	161.752
WASTE PROCESSING								
MAINTENANCE PERSONNEL	26	5	68		5.664	0.699	35.769	
OPERATING PERSONNEL	1	0	[illegible]		0.219	0.0	2.380	
HEALTH PHYSICS PERSONNEL	4	0	8		0.888	0.0	2.295	
SUPERVISORY PERSONNEL	2	0	0		2.538	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.0	
TOTAL	33	5	78	116	9.309	0.699	40.444	50.452
REFUELING								
MAINTENANCE PERSONNEL	8	3	55		2.985	2.579	32.884	
OPERATING PERSONNEL	6	0	0		1.796	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	6		0.0	0.0	1.057	
SUPERVISORY PERSONNEL	3	0	0		0.749	0.0	0.0	
ENGINEERING PERSONNEL	8	0	0		1.827	0.0	0.0	
TOTAL	25	3	61	89	7.357	2.579	33.941	43.877
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	192(108)	23(12)	813(596)	1028(716)	130.518	10.071	379.614	520.203
OPERATING PERSONNEL	104 (96)	0	20 (17)	124(113)	44.901	0.0	6.353	51.254
HEALTH PHYSICS PERSONNEL	35 (20)	0	150 (82)	185(102)	8.534	0.0	41.865	50.399
SUPERVISORY PERSONNEL	20 (16)	2 (1)	12 (8)	34 (25)	7.393	0.536	4.966	12.895
ENGINEERING PERSONNEL	28 (20)	8 (6)	7 (5)	43 (31)	5.312	1.325	1.752	8.389
GRAND TOTAL	379(260)	33(19)	1002(708)	1414(987)	196.658	11.932	434.550	643.140

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

APPENDIX C

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

PLANT: COOPER (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	4	0	1		0.947	0.0	0.005	
OPERATING PERSONNEL	46	0	0		29.941	0.0	0.0	
HEALTH PHYSICS PERSONNEL	14	0	0		9.594	0.0	0.0	
SUPERVISORY PERSONNEL	10	2	1		4.933	0.022	0.206	
ENGINEERING PERSONNEL	17	10	3		14.133	1.093	0.350	
TOTAL	91	12	5	108	59.548	1.115	0.561	61.224
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	50	1	94		74.374	0.111	76.411	
OPERATING PERSONNEL	4	0	0		1.240	0.0	0.0	
HEALTH PHYSICS PERSONNEL	12	0	0		6.066	0.0	0.0	
SUPERVISORY PERSONNEL	5	2	1		1.530	0.904	0.286	
ENGINEERING PERSONNEL	10	11	3		4.583	1.985	0.176	
TOTAL	81	14	98	193	87.793	3.000	76.873	167.666
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	14		0.0	0.0	5.706	
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	1		0.144	0.0	0.711	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.0	
TOTAL	1	0	15	16	0.144	0.0	6.417	6.561
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	4	0	210		0.909	0.0	243.360	
OPERATING PERSONNEL	1	0	0		0.444	0.0	0.0	
HEALTH PHYSICS PERSONNEL	4	0	0		1.429	0.0	0.0	
SUPERVISORY PERSONNEL	0	4	7		0.0	1.111	2.600	
ENGINEERING PERSONNEL	1	15	11		0.676	4.957	6.758	
TOTAL	10	19	228	257	3.458	6.068	252.718	262.244
WASTE PROCESSING								
MAINTENANCE PERSONNEL	3	0	0		0.087	0.0	0.0	
OPERATING PERSONNEL	20	0	0		4.067	0.0	0.0	
HEALTH PHYSICS PERSONNEL	13	0	0		2.030	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	36	0	0	36	6.184	0.0	0.0	6.184
REFUELING								
MAINTENANCE PERSONNEL	0	0	0		0.0	0.0	0.0	
OPERATING PERSONNEL	18	0	0		1.085	0.0	0.0	
HEALTH PHYSICS PERSONNEL	5	0	0		0.129	0.0	0.0	
SUPERVISORY PERSONNEL	2	0	0		0.095	0.0	0.0	
ENGINEERING PERSONNEL	2	0	0		0.554	0.0	0.0	
TOTAL	27	0	0	27	1.863	0.0	0.0	1.863
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	61	1	319	381	76.317	0.111	325.482	401.910
OPERATING PERSONNEL	89	0	0	89	36.777	0.0	0.0	36.777
HEALTH PHYSICS PERSONNEL	48	0	0	48	19.248	0.0	0.0	19.248
SUPERVISORY PERSONNEL	18	8	10	36	6.702	2.037	3.803	12.542
ENGINEERING PERSONNEL	30	36	17	83	19.946	8.035	7.284	35.265
GRAND TOTAL	246	45	346	637	158.990	10.183	336.569	505.742

APPENDIX C

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

PLANT: CRYSTAL RIVER (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	0	0	0		0.0	0.0	0.0	
OPERATING PERSONNEL	3	0	0		1.700	0.100	0.0	
HEALTH PHYSICS PERSONNEL	1	0	0		4.840	0.0	0.020	
SUPERVISORY PERSONNEL	0	0	0		0.380	0.030	0.070	
ENGINEERING PERSONNEL	0	0	0		0.050	0.0	0.0	
TOTAL	4	0	0	4	6.970	0.130	0.090	7.190
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	38	77	129		15.900	6.960	69.260	
OPERATING PERSONNEL	8	0	0		6.290	0.340	1.710	
HEALTH PHYSICS PERSONNEL	9	0	27		3.330	0.130	8.280	
SUPERVISORY PERSONNEL	8	0	17		5.410	0.110	7.060	
ENGINEERING PERSONNEL	1	0	9		0.680	0.290	2.920	
TOTAL	64	77	182	323	31.610	7.830	89.230	128.670
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0		0.090	0.0	0.080	
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		0.670	0.0	0.0	
TOTAL	0	0	0	0	0.760	0.0	0.080	0.840
SPECIAL MAINTENANCE								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
WASTE PROCESSING								
MAINTENANCE PERSONNEL	2	0	0		0.510	0.550	1.780	
OPERATING PERSONNEL	0	0	8		0.340	0.0	1.590	
HEALTH PHYSICS PERSONNEL	0	0	0		0.500	0.010	0.110	
SUPERVISORY PERSONNEL	0	0	0		0.130	0.0	0.240	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.010	
TOTAL	2	0	8	10	1.480	0.560	3.730	5.770
REFUELING								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	40	77	129	246	16.500	7.510	71.120	95.130
OPERATING PERSONNEL	11	0	8	19	8.330	0.440	3.300	12.070
HEALTH PHYSICS PERSONNEL	10	0	27	37	8.670	0.140	8.410	17.220
SUPERVISORY PERSONNEL	8	0	17	25	5.920	0.140	7.370	13.430
ENGINEERING PERSONNEL	1	0	9	10	1.400	0.290	2.930	4.620
GRAND TOTAL	70	77	190	337	40.820	8.520	93.130	142.470

APPENDIX C

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

PLANT: DAVIS BESSE* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	58	11	408		1.395	0.140	10.760	
OPERATING PERSONNEL	74	2	15		2.935	0.010	0.295	
HEALTH PHYSICS PERSONNEL	16	0	40		1.275	0.0	1.470	
SUPERVISORY PERSONNEL	17	0	4		0.430	0.0	0.105	
ENGINEERING PERSONNEL	2	0	6		0.005	0.0	0.185	
TOTAL	167	13	473	653	6.040	0.150	12.815	19.005
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	108	43	1055		14.330	3.520	136.715	
OPERATING PERSONNEL	95	6	20		5.580	0.435	0.955	
HEALTH PHYSICS PERSONNEL	20	0	83		4.115	0.0	24.500	
SUPERVISORY PERSONNEL	30	0	11		1.810	0.0	0.435	
ENGINEERING PERSONNEL	3	0	33		0.195	0.0	3.245	
TOTAL	256	49	1202	1507	26.030	3.955	165.850	195.835
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	4		0.0	0.0	0.060	
OPERATING PERSONNEL	6	0	1		0.065	0.0	0.005	
HEALTH PHYSICS PERSONNEL	0	0	1		0.0	0.0	0.020	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	1		0.0	0.0	0.010	
TOTAL	6	0	7	13	0.065	0.0	0.095	0.160
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	39	5	293		1.515	0.410	33.545	
OPERATING PERSONNEL	10	1	1		0.885	0.020	0.080	
HEALTH PHYSICS PERSONNEL	3	0	35		0.075	0.0	5.370	
SUPERVISORY PERSONNEL	8	0	3		0.350	0.0	0.040	
ENGINEERING PERSONNEL	0	0	16		0.0	0.0	1.395	
TOTAL	60	6	348	414	2.825	0.430	40.430	43.685
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	3		0.0	0.0	0.180	
OPERATING PERSONNEL	2	0	4		0.015	0.0	1.295	
HEALTH PHYSICS PERSONNEL	3	0	3		0.025	0.0	0.030	
SUPERVISORY PERSONNEL	1	0	2		0.165	0.0	0.455	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.0	
TOTAL	6	0	12	18	0.205	0.0	1.960	2.165
REFUELING								
MAINTENANCE PERSONNEL	0	0	15		0.0	0.0	2.325	
OPERATING PERSONNEL	0	0	1		0.0	0.0	0.010	
HEALTH PHYSICS PERSONNEL	0	0	0		0.0	0.0	0.0	
SUPERVISORY PERSONNEL	0	0	1		0.0	0.0	0.015	
ENGINEERING PERSONNEL	0	0	2		0.0	0.0	0.125	
TOTAL	0	0	19	19	0.0	0.0	2.475	2.475
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	205	59	1778	2042	17.240	4.070	183.585	204.895
OPERATING PERSONNEL	187	9	42	238	9.480	0.465	2.640	12.585
HEALTH PHYSICS PERSONNEL	42	0	162	204	5.490	0.0	31.390	36.880
SUPERVISORY PERSONNEL	56	0	21	77	2.755	0.0	1.050	3.805
ENGINEERING PERSONNEL	5	0	58	63	0.200	0.0	4.960	5.160
GRAND TOTAL	495	68	2061	2624	35.165	4.535	223.625	263.325

*Workers may be counted in more than one category.

APPENDIX C

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

PLANT: DRESDEN 1,2,3 (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	26	4	0		39.100	1.800	0.0	
OPERATING PERSONNEL	71	1	0		74.600	0.300	0.0	
HEALTH PHYSICS PERSONNEL	2	0	0		3.900	0.0	0.0	
SUPERVISORY PERSONNEL	9	0	0		11.500	0.0	0.0	
ENGINEERING PERSONNEL	2	0	0		1.200	0.0	0.0	
TOTAL	110	5	0	115	130.300	2.100	0.0	132.40(
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	170	193	772		255.900	185.700	1520.000	
OPERATING PERSONNEL	32	68	0		33.100	15.300	0.0	
HEALTH PHYSICS PERSONNEL	27	0	0		62.400	0.0	0.0	
SUPERVISORY PERSONNEL	82	0	0		80.900	0.0	0.0	
ENGINEERING PERSONNEL	43	0	0		22.200	0.0	0.0	
TOTAL	354	261	772	1387	454.500	201.000	1520.000	2175.50(
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	20	60	69		30.400	89.200	135.100	
OPERATING PERSONNEL	6	0	0		6.600	0.0	0.0	
HEALTH PHYSICS PERSONNEL	3	0	0		6.000	0.0	0.0	
SUPERVISORY PERSONNEL	8	0	0		6.200	0.0	0.0	
ENGINEERING PERSONNEL	5	0	0		2.700	0.0	0.0	
TOTAL	42	60	69	171	51.900	89.200	135.100	276.20(
SPECIAL MAINTENANCE								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
WASTE PROCESSING								
MAINTENANCE PERSONNEL	29	6	17		43.300	3.100	33.800	
OPERATING PERSONNEL	36	2	0		38.100	0.500	0.0	
HEALTH PHYSICS PERSONNEL	9	0	0		21.800	0.0	0.0	
SUPERVISORY PERSONNEL	28	0	0		27.800	0.0	0.0	
ENGINEERING PERSONNEL	4	0	0		1.800	0.0	0.0	
TOTAL	106	8	17	131	132.800	3.600	33.800	170.20(
REFUELING								
MAINTENANCE PERSONNEL	43	0	0		65.100	0.0	0.0	
OPERATING PERSONNEL	13	2	0		13.200	0.300	0.0	
HEALTH PHYSICS PERSONNEL	2	0	0		5.000	0.0	0.0	
SUPERVISORY PERSONNEL	9	0	0		12.200	0.0	0.0	
ENGINEERING PERSONNEL	4	0	0		2.100	0.0	0.0	
TOTAL	71	2	0	73	97.600	0.300	0.0	97.90(
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	288	263	858	1409	433.800	279.800	1688.900	2402.50(
OPERATING PERSONNEL	158	73	0	231	165.600	16.400	0.0	182.00(
HEALTH PHYSICS PERSONNEL	43	0	0	43	99.100	0.0	0.0	99.10(
SUPERVISORY PERSONNEL	136	0	0	136	138.600	0.0	0.0	138.60(
ENGINEERING PERSONNEL	58	0	0	58	30.000	0.0	0.0	30.00(
GRAND TOTAL	683	336	858	1877	867.100	296.200	1688.900	2852.20(

APPENDIX C

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

PLANT: DUANE ARNOLD* (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	10	1	3		0.588	0.050	0.190	
OPERATING PERSONNEL	38	1	2		19.301	0.002	0.251	
HEALTH PHYSICS PERSONNEL	8	0	9		0.750	0.0	0.498	
SUPERVISORY PERSONNEL	8	3	4		0.230	0.026	0.098	
ENGINEERING PERSONNEL	1	3	9		0.020	0.022	0.985	
TOTAL	65	8	27	100	20.889	0.100	2.022	23.011
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	33	7	207		14.699	0.290	115.195	
OPERATING PERSONNEL	10	0	4		0.677	0.0	0.453	
HEALTH PHYSICS PERSONNEL	10	0	16		0.989	0.0	1.359	
SUPERVISORY PERSONNEL	4	1	21		0.518	0.050	8.234	
ENGINEERING PERSONNEL	2	3	50		0.215	0.057	3.898	
TOTAL	59	11	298	368	17.098	0.397	129.139	146.634
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	10	0	68		0.356	0.0	21.971	
OPERATING PERSONNEL	4	0	4		0.195	0.0	0.075	
HEALTH PHYSICS PERSONNEL	10	0	34		9.013	0.0	19.742	
SUPERVISORY PERSONNEL	13	2	43		0.619	0.011	2.086	
ENGINEERING PERSONNEL	8	18	100		2.647	2.312	22.987	
TOTAL	45	20	249	314	12.830	2.323	66.861	82.014
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	24	2	98		4.345	0.847	17.336	
OPERATING PERSONNEL	2	0	0		0.010	0.0	0.0	
HEALTH PHYSICS PERSONNEL	6	0	12		0.428	0.0	1.002	
SUPERVISORY PERSONNEL	3	1	6		0.095	0.065	0.267	
ENGINEERING PERSONNEL	2	2	16		0.050	0.008	0.993	
TOTAL	37	5	132	174	4.928	0.920	19.598	25.446
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	0	16		0.010	0.0	0.594	
OPERATING PERSONNEL	7	0	8		10.280	0.0	8.500	
HEALTH PHYSICS PERSONNEL	1	0	1		0.010	0.0	0.010	
SUPERVISORY PERSONNEL	1	1	9		0.321	0.004	1.138	
ENGINEERING PERSONNEL	0	0	10		0.0	0.0	0.165	
TOTAL	10	1	44	55	10.621	0.004	10.407	21.032
REFUELING								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	78	10	392	480	19.998	1.187	155.286	176.471
OPERATING PERSONNEL	61	1	18	80	30.463	0.002	9.279	39.744
HEALTH PHYSICS PERSONNEL	35	0	72	107	11.190	0.0	22.611	33.801
SUPERVISORY PERSONNEL	29	8	83	120	1.783	0.156	11.823	13.762
ENGINEERING PERSONNEL	13	26	185	224	2.932	2.399	29.028	34.359
GRAND TOTAL	216	45	750	1011	66.366	3.744	228.027	298.137

*Workers may be counted in more than one category.

APPENDIX C

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

PLANT: FARLEY 1,2* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	88	1	7		4.050	0.030	0.304	
OPERATING PERSONNEL	137	1	0		39.316	0.020	0.0	
HEALTH PHYSICS PERSONNEL	80	2	49		36.129	0.320	23.794	
SUPERVISORY PERSONNEL	166	9	25		20.473	0.561	1.257	
ENGINEERING PERSONNEL	43	19	187		4.009	0.689	11.599	
TOTAL	514	32	268	814	103.977	1.620	36.954	142.551
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	148	1	11		34.925	0.293	1.210	
OPERATING PERSONNEL	94	1	0		30.411	0.100	0.0	
HEALTH PHYSICS PERSONNEL	34	1	12		7.410	0.020	0.657	
SUPERVISORY PERSONNEL	63	4	5		6.098	0.209	0.927	
ENGINEERING PERSONNEL	11	12	277		0.348	0.589	24.169	
TOTAL	350	19	305	674	79.192	1.211	26.963	107.366
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	4	0	5		0.103	0.0	0.411	
OPERATING PERSONNEL	3	0	0		0.097	0.0	0.0	
HEALTH PHYSICS PERSONNEL	1	0	1		0.011	0.0	0.012	
SUPERVISORY PERSONNEL	2	3	0		0.067	0.060	0.0	
ENGINEERING PERSONNEL	4	3	71		0.354	0.087	10.082	
TOTAL	14	6	77	97	0.632	0.147	10.505	11.284
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	141	1	11		58.768	0.277	2.487	
OPERATING PERSONNEL	49	0	0		5.931	0.0	0.0	
HEALTH PHYSICS PERSONNEL	26	1	11		3.657	0.020	1.019	
SUPERVISORY PERSONNEL	49	1	4		4.496	0.020	0.579	
ENGINEERING PERSONNEL	13	11	404		0.519	0.355	97.956	
TOTAL	278	14	430	722	73.371	0.672	102.041	176.084
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0		0.0	0.0	0.0	
OPERATING PERSONNEL	16	0	0		1.168	0.0	0.0	
HEALTH PHYSICS PERSONNEL	8	0	3		1.306	0.0	1.082	
SUPERVISORY PERSONNEL	6	0	1		0.312	0.0	0.040	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.0	
TOTAL	30	0	4	34	2.786	0.0	1.122	3.908
REFUELING								
MAINTENANCE PERSONNEL	21	0	3		0.819	0.0	0.058	
OPERATING PERSONNEL	6	0	0		0.401	0.0	0.0	
HEALTH PHYSICS PERSONNEL	1	0	3		0.041	0.0	0.103	
SUPERVISORY PERSONNEL	16	0	2		0.332	0.0	0.057	
ENGINEERING PERSONNEL	6	2	20		0.271	0.030	2.430	
TOTAL	50	2	28	80	1.864	0.030	2.648	4.542
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	402	3	37	442	98.665	0.600	4.470	103.735
OPERATING PERSONNEL	305	2	0	307	77.324	0.120	0.0	77.444
HEALTH PHYSICS PERSONNEL	150	4	79	233	48.554	0.360	26.667	75.581
SUPERVISORY PERSONNEL	302	17	37	356	31.778	0.850	2.860	35.488
ENGINEERING PERSONNEL	77	47	959	1083	5.501	1.750	146.236	153.487
GRAND TOTAL	1236	73	1112	2421	261.822	3.680	180.233	445.735

*Workers may be counted in more than one category.

APPENDIX C

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

PLANT: †FITZPATRICK* (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	74	0	62		11.016	0.0	14.650	
OPERATING PERSONNEL	178	0	1		54.890	0.0	1.480	
HEALTH PHYSICS PERSONNEL	31	0	56		20.260	0.0	28.510	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	3	0	20		3.860	0.0	1.480	
TOTAL	286	0	139	425	90.026	0.0	46.120	136.146
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	124	0	575		129.500	0.0	207.630	
OPERATING PERSONNEL	65	0	4		7.510	0.0	0.190	
HEALTH PHYSICS PERSONNEL	11	0	0		1.340	0.0	0.0	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	30	0	90		5.030	0.0	11.000	
TOTAL	230	0	669	899	143.380	0.0	218.820	362.200
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	48	0	124		2.660	0.0	7.230	
OPERATING PERSONNEL	86	0	7		6.920	0.0	5.130	
HEALTH PHYSICS PERSONNEL	14	0	4		0.360	0.0	0.060	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	39	0	55		4.130	0.0	4.530	
TOTAL	187	0	190	377	14.070	0.0	16.950	31.020
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	65	0	927		4.800	0.0	477.780	
OPERATING PERSONNEL	32	0	2		4.370	0.0	0.370	
HEALTH PHYSICS PERSONNEL	5	0	4		0.130	0.0	2.630	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	28	0	108		3.520	0.0	45.970	
TOTAL	130	0	1041	1171	12.820	0.0	526.750	539.570
WASTE PROCESSING								
MAINTENANCE PERSONNEL	123	0	127		27.950	0.0	17.030	
OPERATING PERSONNEL	52	0	5		38.250	0.0	7.740	
HEALTH PHYSICS PERSONNEL	11	0	9		0.360	0.0	0.380	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	11	0	55		0.290	0.0	28.340	
TOTAL	197	0	196	393	66.850	0.0	53.490	120.340
REFUELING								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	434	0	1815	2249	175.926	0.0	724.320	900.246
OPERATING PERSONNEL	413	0	19	432	111.940	0.0	14.910	126.850
HEALTH PHYSICS PERSONNEL	72	0	73	145	22.450	0.0	31.580	54.030
SUPERVISORY PERSONNEL	0	0	0	0	0.0	0.0	0.0	0.0
ENGINEERING PERSONNEL	111	0	328	353	16.830	0.0	91.320	108.150
GRAND TOTAL	1030	0	2235	3265	327.146	0.0	862.130	1189.276

*Workers may be counted in more than one category.

APPENDIX C

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

PLANT: FT. CALHOUN (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	1	0	3		1.311	0.305	0.784	
OPERATING PERSONNEL	12	0	0		4.345	0.0	0.0	
HEALTH PHYSICS PERSONNEL	21	0	19		8.655	0.237	8.316	
SUPERVISORY PERSONNEL	1	0	0		0.424	0.009	0.0	
ENGINEERING PERSONNEL	7	3	1		1.861	1.931	0.282	
TOTAL	42	3	23	68	16.596	2.482	9.382	28.460
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	31	17	33		8.588	6.505	15.592	
OPERATING PERSONNEL	0	0	0		0.124	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.045	0.019	0.055	
SUPERVISORY PERSONNEL	0	0	0		0.043	0.0	0.0	
ENGINEERING PERSONNEL	1	0	0		0.475	0.292	0.015	
TOTAL	32	17	33	82	9.275	6.816	15.662	31.753
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	3		0.0	0.0	0.527	
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	1	0	0		0.204	0.254	0.025	
TOTAL	1	0	3	4	0.204	0.254	0.552	1.010
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	25	25	62		10.080	8.636	32.790	
OPERATING PERSONNEL	0	0	0		0.347	0.0	0.0	
HEALTH PHYSICS PERSONNEL	4	0	9		1.467	0.008	2.483	
SUPERVISORY PERSONNEL	0	0	0		0.257	0.0	0.0	
ENGINEERING PERSONNEL	5	5	2		2.232	1.872	0.475	
TOTAL	34	30	73	137	14.383	10.516	35.748	60.647
WASTE PROCESSING								
MAINTENANCE PERSONNEL	11	3	2		4.590	1.116	0.548	
OPERATING PERSONNEL	1	0	0		0.559	0.0	0.0	
HEALTH PHYSICS PERSONNEL	3	0	0		4.509	0.0	0.008	
SUPERVISORY PERSONNEL	0	0	0		0.017	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.010	0.0	0.0	
TOTAL	15	3	2	20	9.685	1.116	0.556	11.357
REFUELING								
MAINTENANCE PERSONNEL	5	10	5		1.394	2.686	1.766	
OPERATING PERSONNEL	0	0	0		0.213	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.045	0.0	0.020	
SUPERVISORY PERSONNEL	0	0	0		0.039	0.0	0.0	
ENGINEERING PERSONNEL	1	0	0		0.352	0.128	0.020	
TOTAL	6	10	5	21	2.043	2.814	1.806	6.663
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	73	55	108	236	25.963	19.248	52.007	97.218
OPERATING PERSONNEL	13	0	0	13	5.588	0.0	0.0	5.588
HEALTH PHYSICS PERSONNEL	28	0	28	56	14.721	0.264	10.882	25.867
SUPERVISORY PERSONNEL	1	0	0	1	0.780	0.009	0.0	0.789
ENGINEERING PERSONNEL	15	8	3	26	5.134	4.477	0.817	10.428
GRAND TOTAL	130	63	139	332	52.186	23.998	63.706	139.890

APPENDIX C

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

PLANT: GINNA* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	217	40	245		28.777	4.584	7.089	
OPERATING PERSONNEL	0	31	2		0.0	16.623	0.796	
HEALTH PHYSICS PERSONNEL	30	14	3		5.385	3.831	0.285	
SUPERVISORY PERSONNEL	28	14	11		2.102	3.573	0.819	
ENGINEERING PERSONNEL	50	2	8		3.075	0.250	0.230	
TOTAL	325	101	269	695	39.339	28.861	9.219	77.419
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	256	41	241		57.663	14.791	74.411	
OPERATING PERSONNEL	0	27	2		0.0	0.672	0.022	
HEALTH PHYSICS PERSONNEL	30	14	2		6.506	2.766	0.010	
SUPERVISORY PERSONNEL	29	13	9		3.856	1.136	0.279	
ENGINEERING PERSONNEL	47	1	6		2.998	0.212	0.681	
TOTAL	362	96	260	718	71.023	19.577	75.403	166.003
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	18	18	21		0.422	0.206	0.226	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	9	8	1		0.280	0.135	0.0	
SUPERVISORY PERSONNEL	11	10	6		0.913	0.421	0.438	
ENGINEERING PERSONNEL	1	1	1		0.055	0.0	0.178	
TOTAL	39	37	29	105	1.670	0.762	0.842	3.274
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	292	41	260		224.849	26.147	419.138	
OPERATING PERSONNEL	0	30	2		0.0	3.017	0.405	
HEALTH PHYSICS PERSONNEL	30	13	3		16.613	21.020	0.322	
SUPERVISORY PERSONNEL	39	14	12		27.354	8.919	9.635	
ENGINEERING PERSONNEL	70	2	7		49.737	0.235	8.100	
TOTAL	431	100	284	815	318.553	59.338	437.600	815.491
WASTE PROCESSING								
MAINTENANCE PERSONNEL	16	25	44		1.974	2.189	1.233	
OPERATING PERSONNEL	0	18	1		0.0	1.317	0.015	
HEALTH PHYSICS PERSONNEL	20	12	1		1.700	0.857	0.001	
SUPERVISORY PERSONNEL	5	2	0		0.368	0.160	0.0	
ENGINEERING PERSONNEL	8	0	0		1.525	0.0	0.0	
TOTAL	49	57	46	152	5.567	4.523	1.249	11.339
REFUELING								
MAINTENANCE PERSONNEL	14	28	29		4.095	2.105	6.944	
OPERATING PERSONNEL	0	3	0		0.0	3.290	0.0	
HEALTH PHYSICS PERSONNEL	13	8	0		1.818	0.478	0.0	
SUPERVISORY PERSONNEL	1	3	0		0.340	0.546	0.0	
ENGINEERING PERSONNEL	17	0	0		15.205	0.0	0.0	
TOTAL	45	42	29	116	21.458	6.419	6.944	34.821
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	813 (324)	193 (41)	840 (266)	1846 (631)	317.780	50.022	509.041	876.843
OPERATING PERSONNEL	0	109 (31)	7 (2)	116 (33)	0.0	24.919	1.238	26.157
HEALTH PHYSICS PERSONNEL	132 (30)	69 (14)	10 (3)	211 (47)	32.302	29.087	0.618	62.007
SUPERVISORY PERSONNEL	113 (39)	56 (14)	38 (12)	207 (65)	34.933	14.755	11.171	60.859
ENGINEERING PERSONNEL	193 (88)	6 (2)	22 (8)	221 (98)	72.595	0.697	9.189	82.481
GRAND TOTAL	1251 (481)	433 (102)	917 (291)	2601 (874)	457.610	119.480	531.257	1108.347

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

APPENDIX C

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

PLANT: HADDAM NECK (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	0	0	0		0.450	0.020	0.030	
OPERATING PERSONNEL	44	0	30		22.370	0.180	8.270	
HEALTH PHYSICS PERSONNEL	23	0	7		9.180	0.070	2.410	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.020	0.0	
ENGINEERING PERSONNEL	2	0	0		0.880	0.420	0.200	
TOTAL	69	0	37	106	32.880	0.710	10.910	44.500
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	49	0	7		22.590	0.040	2.680	
OPERATING PERSONNEL	3	1	0		2.100	0.200	0.140	
HEALTH PHYSICS PERSONNEL	26	1	6		15.270	0.210	1.950	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	1	0	0		0.460	0.280	0.080	
TOTAL	79	2	13	94	40.420	0.730	4.850	46.000
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0		0.120	0.0	0.020	
OPERATING PERSONNEL	0	0	0		0.520	0.0	0.010	
HEALTH PHYSICS PERSONNEL	0	0	0		0.220	0.0	0.060	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	2	0	0		1.150	0.050	0.030	
TOTAL	2	0	0	2	2.010	0.050	0.120	2.180
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	1	18	14		0.210	4.150	4.210	
OPERATING PERSONNEL	0	2	0		0.100	0.670	0.050	
HEALTH PHYSICS PERSONNEL	1	0	4		0.980	0.0	0.820	
SUPERVISORY PERSONNEL	0	1	1		0.0	0.150	0.160	
ENGINEERING PERSONNEL	0	1	0		0.120	0.550	0.0	
TOTAL	2	22	19	43	1.410	5.520	5.240	12.170
WASTE PROCESSING								
MAINTENANCE PERSONNEL	2	0	0		0.310	0.0	0.0	
OPERATING PERSONNEL	0	0	0		0.200	0.0	0.030	
HEALTH PHYSICS PERSONNEL	18	0	1		15.900	0.0	0.150	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.0	
TOTAL	20	0	1	21	16.410	0.0	0.180	16.590
REFUELING								
MAINTENANCE PERSONNEL	0	0	0		0.010	0.0	0.0	
OPERATING PERSONNEL	0	0	0		0.260	0.0	0.010	
HEALTH PHYSICS PERSONNEL	0	0	0		0.110	0.0	0.010	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.060	0.0	0.0	
TOTAL	0	0	0	0	0.440	0.0	0.020	0.460
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	52	18	21	91	23.690	4.210	6.940	34.840
OPERATING PERSONNEL	47	3	30	80	25.550	1.050	8.510	35.110
HEALTH PHYSICS PERSONNEL	68	1	18	87	41.660	0.280	5.400	47.340
SUPERVISORY PERSONNEL	0	1	1	2	0.0	0.170	0.160	0.330
ENGINEERING PERSONNEL	5	1	0	6	2.670	1.300	0.310	4.280
GRAND TOTAL	172	24	70	266	93.570	7.010	21.320	121.900

APPENDIX C

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

PLANT: HATCH 1,2 (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	24	1	14		6.000	0.0	5.000	
OPERATING PERSONNEL	120	8	4		48.000	4.000	2.000	
HEALTH PHYSICS PERSONNEL	39	0	154		26.000	0.0	89.000	
SUPERVISORY PERSONNEL	44	4	1		8.000	1.000	0.0	
ENGINEERING PERSONNEL	8	3	1		1.000	1.000	0.0	
TOTAL	235	16	174	425	89.000	6.000	96.000	191.000
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	173	14	381		74.000	3.000	143.000	
OPERATING PERSONNEL	68	5	2		16.000	2.000	0.0	
HEALTH PHYSICS PERSONNEL	13	0	46		3.000	0.0	17.000	
SUPERVISORY PERSONNEL	16	1	9		3.000	0.0	5.000	
ENGINEERING PERSONNEL	12	3	11		2.000	0.0	4.000	
TOTAL	282	23	449	754	98.000	5.000	169.000	272.000
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	2	0	11		0.0	0.0	6.000	
OPERATING PERSONNEL	1	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	2		0.0	0.0	0.0	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	1	4		0.0	0.0	1.000	
TOTAL	3	1	17	21	0.0	0.0	7.000	7.000
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	187	13	1274		106.000	5.000	570.000	
OPERATING PERSONNEL	24	0	9		4.000	0.0	4.000	
HEALTH PHYSICS PERSONNEL	10	0	54		3.000	0.0	19.000	
SUPERVISORY PERSONNEL	13	1	22		5.000	0.0	12.000	
ENGINEERING PERSONNEL	27	10	55		7.000	3.000	20.000	
TOTAL	261	24	1414	1699	125.000	8.000	625.000	758.000
WASTE PROCESSING								
MAINTENANCE PERSONNEL	6	2	35		1.000	0.0	9.000	
OPERATING PERSONNEL	7	0	1		1.000	0.0	1.000	
HEALTH PHYSICS PERSONNEL	0	0	13		0.0	0.0	7.000	
SUPERVISORY PERSONNEL	2	0	1		1.000	0.0	0.0	
ENGINEERING PERSONNEL	2	0	1		0.0	0.0	0.0	
TOTAL	17	2	51	70	3.000	0.0	17.000	20.000
REFUELING								
MAINTENANCE PERSONNEL	50	3	52		11.000	1.000	15.000	
OPERATING PERSONNEL	6	0	0		1.000	0.0	0.0	
HEALTH PHYSICS PERSONNEL	2	0	13		0.0	0.0	3.000	
SUPERVISORY PERSONNEL	1	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	3	0	7		1.000	0.0	2.000	
TOTAL	62	3	72	137	13.000	1.000	20.000	34.000
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	442	33	1767	2242	198.000	9.000	748.000	955.000
OPERATING PERSONNEL	226	13	16	255	70.000	6.000	7.000	83.000
HEALTH PHYSICS PERSONNEL	64	0	282	346	32.000	0.0	135.000	167.000
SUPERVISORY PERSONNEL	76	6	33	115	17.000	1.000	17.000	35.000
ENGINEERING PERSONNEL	52	17	79	148	11.000	4.000	27.000	42.000
GRAND TOTAL	860	69	2177	3106	328.000	20.000	934.000	1282.000

APPENDIX C

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

PLANT: HUMBOLDT BAY (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	0	0	0		0.0	0.0	0.0	
OPERATING PERSONNEL	12	0	0		2.500	0.0	0.0	
HEALTH PHYSICS PERSONNEL	1	0	0		1.100	0.0	0.0	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.500	0.0	0.0	
TOTAL	14	0	0	14	4.100	0.0	0.0	4.100
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	16	0	0		6.000	0.0	0.0	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	1	0	0		0.800	0.0	0.0	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.400	0.0	0.0	
TOTAL	17	0	0	17	7.200	0.0	0.0	7.200
IN-SERVICE INSPECTION								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
SPECIAL MAINTENANCE								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
WASTE PROCESSING								
MAINTENANCE PERSONNEL	3	0	0		1.700	0.0	0.0	
OPERATING PERSONNEL	4	0	0		1.300	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.300	0.0	0.0	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	1	0	0		0.500	0.0	0.0	
TOTAL	8	0	0	8	3.800	0.0	0.0	3.800
REFUELING								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	19	0	0	19	7.700	0.0	0.0	7.700
OPERATING PERSONNEL	16	0	0	16	3.800	0.0	0.0	3.800
HEALTH PHYSICS PERSONNEL	3	0	0	3	2.200	0.0	0.0	2.200
SUPERVISORY PERSONNEL	0	0	0	0	0.0	0.0	0.0	0.0
ENGINEERING PERSONNEL	2	0	0	2	1.400	0.0	0.0	1.400
GRAND TOTAL	40	0	0	40	15.100	0.0	0.0	15.100

APPENDIX C

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

PLANT: INDIAN POINT 1,2* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	71	162	283		17.336	37.388	28.289	
OPERATING PERSONNEL	87	1	0		68.081	0.005	0.0	
HEALTH PHYSICS PERSONNEL	15	0	88		9.132	0.0	120.618	
SUPERVISORY PERSONNEL	67	26	92		31.171	4.609	14.030	
ENGINEERING PERSONNEL	49	25	12		25.759	9.388	2.628	
TOTAL	289	214	475	978	151.479	51.390	165.565	368.434
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	66	187	415		58.437	17.480	52.994	
OPERATING PERSONNEL	87	1	0		85.499	0.010	0.0	
HEALTH PHYSICS PERSONNEL	13	0	67		3.758	0.0	31.876	
SUPERVISORY PERSONNEL	65	39	147		30.126	18.434	26.708	
ENGINEERING PERSONNEL	44	29	17		5.326	4.811	4.131	
TOTAL	275	256	646	1177	183.146	40.735	115.709	339.590
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	31		0.0	0.0	17.041	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	1		0.0	0.0	0.025	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	9	0	13		2.911	0.0	8.480	
TOTAL	9	0	45	54	2.911	0.0	25.546	28.457
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	57	265	605		6.886	260.954	391.805	
OPERATING PERSONNEL	32	1	0		2.812	0.830	0.0	
HEALTH PHYSICS PERSONNEL	1	0	14		0.015	0.0	1.588	
SUPERVISORY PERSONNEL	29	45	142		2.320	29.371	27.246	
ENGINEERING PERSONNEL	33	35	31		2.534	11.404	12.370	
TOTAL	152	346	792	1290	14.567	302.559	433.009	750.135
WASTE PROCESSING								
MAINTENANCE PERSONNEL	22	35	201		11.126	3.333	188.124	
OPERATING PERSONNEL	33	0	0		1.889	0.0	0.0	
HEALTH PHYSICS PERSONNEL	4	0	17		0.505	0.0	4.934	
SUPERVISORY PERSONNEL	11	6	8		4.517	0.285	4.278	
ENGINEERING PERSONNEL	6	0	5		0.130	0.0	1.796	
TOTAL	76	41	231	348	18.167	3.618	199.132	220.917
REFUELING								
MAINTENANCE PERSONNEL	10	71	42		0.985	20.416	7.612	
OPERATING PERSONNEL	55	0	0		10.094	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.0	0.0	0.0	
SUPERVISORY PERSONNEL	10	13	3		2.699	3.361	0.130	
ENGINEERING PERSONNEL	0	3	1		0.0	1.105	0.015	
TOTAL	75	87	46	208	13.778	24.882	7.757	46.417
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	226 (77)	720 (269)	1577 (704)	2523 (1050)	94.770	339.571	685.865	1120.206
OPERATING PERSONNEL	294 (88)	3 (1)	0	297 (89)	168.375	0.845	0.0	169.220
HEALTH PHYSICS PERSONNEL	33 (16)	0	187 (91)	220 (107)	13.410	0.0	159.041	172.451
SUPERVISORY PERSONNEL	182 (69)	129 (46)	392 (160)	703 (275)	70.833	56.060	72.392	199.285
ENGINEERING PERSONNEL	141 (49)	92 (39)	79 (36)	312 (124)	36.660	26.708	29.420	92.788
GRAND TOTAL	876 (299)	944 (355)	2235 (991)	4055 (1645)	384.048	423.184	946.718	1753.950

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

APPENDIX C

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

PLANT: INDIAN POINT 3 (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	4	0	3		2.060	0.0	1.790	
OPERATING PERSONNEL	32	0	1		14.320	0.0	0.160	
HEALTH PHYSICS PERSONNEL	16	0	32		7.860	0.060	12.610	
SUPERVISORY PERSONNEL	7	0	0		3.020	0.030	0.160	
ENGINEERING PERSONNEL	9	1	11		2.680	0.430	3.470	
TOTAL	68	1	47	116	29.940	0.520	18.190	48.650
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	12	0	38		5.250	0.0	16.940	
OPERATING PERSONNEL	10	0	0		3.400	0.0	0.250	
HEALTH PHYSICS PERSONNEL	14	0	73		18.230	0.010	53.350	
SUPERVISORY PERSONNEL	1	0	1		0.570	0.0	0.360	
ENGINEERING PERSONNEL	0	0	0		0.310	0.180	0.270	
TOTAL	37	0	112	149	27.760	0.190	71.170	99.120
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	38		0.100	0.0	20.230	
OPERATING PERSONNEL	0	0	4		0.280	0.0	1.450	
HEALTH PHYSICS PERSONNEL	0	0	2		0.060	0.0	0.880	
SUPERVISORY PERSONNEL	2	0	1		0.830	0.0	0.350	
ENGINEERING PERSONNEL	4	2	5		0.980	1.380	2.350	
TOTAL	6	2	50	58	2.250	1.380	25.260	28.890
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	71	0	844		54.570	0.0	1085.190	
OPERATING PERSONNEL	26	0	11		12.690	0.0	9.650	
HEALTH PHYSICS PERSONNEL	19	0	46		4.370	0.0	31.150	
SUPERVISORY PERSONNEL	5	0	6		2.850	0.030	4.350	
ENGINEERING PERSONNEL	17	1	5		11.400	1.290	3.280	
TOTAL	138	1	912	1051	85.880	1.320	1133.620	1220.820
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	2		0.200	0.0	4.220	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.050	
HEALTH PHYSICS PERSONNEL	0	0	0		0.170	0.0	0.0	
SUPERVISORY PERSONNEL	0	0	0		0.020	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.030	0.0	0.010	
TOTAL	0	0	2	2	0.420	0.0	4.280	4.700
REFUELING								
MAINTENANCE PERSONNEL	0	0	33		0.670	0.010	20.070	
OPERATING PERSONNEL	5	0	0		4.050	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	1		0.0	0.0	0.130	
SUPERVISORY PERSONNEL	0	0	4		0.050	0.0	2.950	
ENGINEERING PERSONNEL	1	0	0		0.320	0.010	0.0	
TOTAL	6	0	38	44	5.090	0.020	23.150	28.260
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	87	0	958	1045	62.850	0.010	1148.440	1211.300
OPERATING PERSONNEL	73	0	16	89	34.740	0.0	11.560	46.300
HEALTH PHYSICS PERSONNEL	49	0	154	203	30.690	0.070	98.120	128.880
SUPERVISORY PERSONNEL	15	0	12	27	7.340	0.060	8.170	15.570
ENGINEERING PERSONNEL	31	4	21	56	15.720	3.290	9.380	28.390
GRAND TOTAL	255	4	1161	1420	151.340	3.430	1275.670	1430.440

APPENDIX C

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

PLANT: KEWAUNEE* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	5	1	0		0.455	0.0	0.0	
OPERATING PERSONNEL	16	0	0		2.838	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	1		0.0	0.0	0.0	
SUPERVISORY PERSONNEL	6	0	0		0.729	0.0	0.0	
ENGINEERING PERSONNEL	4	1	2		0.402	0.142	0.164	
TOTAL	31	2	3	36	4.424	0.142	0.164	4.730
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	34	16	41		5.469	4.637	9.016	
OPERATING PERSONNEL	11	0	11		1.188	0.0	2.286	
HEALTH PHYSICS PERSONNEL	16	1	8		11.326	0.669	2.475	
SUPERVISORY PERSONNEL	3	0	9		0.201	0.0	1.504	
ENGINEERING PERSONNEL	3	0	2		0.034	0.0	0.237	
TOTAL	67	17	71	155	18.218	5.306	15.518	39.042
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	5	1	9		0.260	0.0	0.982	
OPERATING PERSONNEL	0	0	1		0.0	0.0	0.117	
HEALTH PHYSICS PERSONNEL	0	0	0		0.0	0.0	0.0	
SUPERVISORY PERSONNEL	1	0	0		0.028	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.0	
TOTAL	6	1	10	17	0.288	0.0	1.099	1.387
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	32	11	52		4.458	1.636	19.785	
OPERATING PERSONNEL	14	0	0		0.724	0.0	0.0	
HEALTH PHYSICS PERSONNEL	4	1	0		0.233	0.072	0.0	
SUPERVISORY PERSONNEL	1	0	0		0.008	0.0	0.0	
ENGINEERING PERSONNEL	3	1	6		0.013	0.0	1.869	
TOTAL	54	13	58	125	5.436	1.708	21.654	28.798
WASTE PROCESSING								
MAINTENANCE PERSONNEL	15	8	2		0.619	0.108	0.542	
OPERATING PERSONNEL	7	0	0		2.534	0.0	0.0	
HEALTH PHYSICS PERSONNEL	6	0	0		1.123	0.0	0.0	
SUPERVISORY PERSONNEL	2	0	0		0.282	0.0	0.0	
ENGINEERING PERSONNEL	3	0	0		0.0	0.0	0.0	
TOTAL	33	8	2	43	4.558	0.108	0.542	5.208
REFUELING								
MAINTENANCE PERSONNEL	16	8	10		1.833	1.918	1.010	
OPERATING PERSONNEL	5	0	12		0.004	0.0	5.292	
HEALTH PHYSICS PERSONNEL	0	0	0		0.0	0.0	0.0	
SUPERVISORY PERSONNEL	2	0	0		0.019	0.0	0.0	
ENGINEERING PERSONNEL	3	0	0		0.126	0.0	0.0	
TOTAL	26	8	22	56	1.982	1.918	6.302	10.202
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	107	45	114	266	13.094	8.299	31.335	52.728
OPERATING PERSONNEL	53	0	24	77	7.288	0.0	7.695	14.983
HEALTH PHYSICS PERSONNEL	26	2	9	37	12.682	0.741	2.475	15.898
SUPERVISORY PERSONNEL	15	0	9	24	1.267	0.0	1.504	2.771
ENGINEERING PERSONNEL	16	2	10	28	0.575	0.142	2.270	2.987
GRAND TOTAL	217	49	166	432	34.906	9.182	45.279	89.367

*Workers may be counted in more than one category.

APPENDIX C

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

PLANT: LACROSSE* (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	0	0	0		0.0	0.0	0.238	
OPERATING PERSONNEL	22	0	0		38.696	0.0	0.0	
HEALTH PHYSICS PERSONNEL	9	0	0		11.221	0.0	0.0	
SUPERVISORY PERSONNEL	19	0	1		10.987	0.100	0.534	
ENGINEERING PERSONNEL	3	0	0		1.904	0.0	0.0	
TOTAL	53	0	1	54	62.808	0.100	0.772	63.680
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	21	0	2		33.314	0.0	0.397	
OPERATING PERSONNEL	20	0	0		10.218	0.0	0.0	
HEALTH PHYSICS PERSONNEL	6	0	0		2.953	0.0	0.0	
SUPERVISORY PERSONNEL	14	0	0		4.737	0.0	0.005	
ENGINEERING PERSONNEL	3	0	0		0.964	0.0	0.0	
TOTAL	64	0	2	66	52.186	0.0	0.402	52.588
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	17		0.559	0.0	12.629	
OPERATING PERSONNEL	0	0	0		0.196	0.0	0.0	
HEALTH PHYSICS PERSONNEL	2	0	0		0.417	0.0	0.0	
SUPERVISORY PERSONNEL	5	0	0		4.200	0.0	0.005	
ENGINEERING PERSONNEL	2	0	0		0.458	0.0	0.0	
TOTAL	10	0	17	27	5.830	0.0	12.634	18.464
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	17	0	6		14.628	0.0	2.093	
OPERATING PERSONNEL	12	0	0		3.548	0.0	0.0	
HEALTH PHYSICS PERSONNEL	6	0	0		2.346	0.0	0.0	
SUPERVISORY PERSONNEL	9	0	0		4.527	0.0	0.078	
ENGINEERING PERSONNEL	3	0	0		2.256	0.0	0.0	
TOTAL	47	0	6	53	27.305	0.0	2.171	29.476
WASTE PROCESSING								
MAINTENANCE PERSONNEL	7	0	0		2.466	0.0	0.0	
OPERATING PERSONNEL	3	0	0		2.015	0.0	0.0	
HEALTH PHYSICS PERSONNEL	6	0	0		5.090	0.0	0.0	
SUPERVISORY PERSONNEL	7	0	0		4.626	0.0	0.0	
ENGINEERING PERSONNEL	1	0	0		1.297	0.0	0.0	
TOTAL	24	0	0	24	15.494	0.0	0.0	15.494
REFUELING								
MAINTENANCE PERSONNEL	12	0	0		7.417	0.0	0.0	
OPERATING PERSONNEL	17	0	0		6.929	0.0	0.0	
HEALTH PHYSICS PERSONNEL	6	0	0		2.243	0.0	0.0	
SUPERVISORY PERSONNEL	13	0	1		4.663	0.0	0.143	
ENGINEERING PERSONNEL	2	0	0		0.509	0.0	0.0	
TOTAL	50	0	1	51	21.761	0.0	0.143	21.904
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	58	0	25	83	58.384	0.0	15.357	73.741
OPERATING PERSONNEL	74	0	0	74	61.602	0.0	0.0	61.602
HEALTH PHYSICS PERSONNEL	35	0	0	35	24.270	0.0	0.0	24.270
SUPERVISORY PERSONNEL	67	0	2	69	33.740	0.100	0.765	34.605
ENGINEERING PERSONNEL	14	0	0	14	7.388	0.0	0.0	7.388
GRAND TOTAL	248 (74)	0	27 (18)	275 (92)	185.384	0.100	16.122	201.606

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

APPENDIX C

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

PLANT: MAINE YANKEE (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	5	0	1		0.965	0.0	0.533	
OPERATING PERSONNEL	33	0	0		12.055	0.0	0.0	
HEALTH PHYSICS PERSONNEL	8	0	5		3.375	0.0	3.130	
SUPERVISORY PERSONNEL	9	0	11		3.405	0.020	3.345	
ENGINEERING PERSONNEL	12	0	3		4.655	0.0	1.500	
TOTAL	67	0	20	87	24.455	0.020	8.508	32.983
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	24	0	57		21.360	0.0	31.048	
OPERATING PERSONNEL	1	0	0		0.770	0.0	0.0	
HEALTH PHYSICS PERSONNEL	1	0	0		0.675	0.0	0.050	
SUPERVISORY PERSONNEL	22	0	45		11.980	0.0	33.175	
ENGINEERING PERSONNEL	2	0	4		0.825	0.0	1.300	
TOTAL	50	0	106	156	35.610	0.0	65.573	101.183
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	18	0	111		8.820	0.0	54.468	
OPERATING PERSONNEL	1	0	1		0.465	0.0	0.880	
HEALTH PHYSICS PERSONNEL	0	0	0		0.0	0.0	0.0	
SUPERVISORY PERSONNEL	6	0	10		2.140	0.035	4.175	
ENGINEERING PERSONNEL	13	0	70		3.660	0.0	54.590	
TOTAL	38	0	192	230	15.085	0.035	114.113	129.233
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	1	0	56		0.310	0.0	34.018	
OPERATING PERSONNEL	0	0	0		0.030	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.0	0.0	0.0	
SUPERVISORY PERSONNEL	1	0	3		0.430	0.005	2.095	
ENGINEERING PERSONNEL	2	0	4		0.480	0.0	2.362	
TOTAL	4	0	63	67	1.250	0.005	38.475	39.730
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	0	6		0.350	0.0	1.530	
OPERATING PERSONNEL	13	0	0		3.180	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.110	0.0	0.050	
SUPERVISORY PERSONNEL	8	0	1		3.205	0.0	0.200	
ENGINEERING PERSONNEL	0	0	0		0.020	0.0	0.020	
TOTAL	22	0	7	29	6.865	0.0	1.800	8.665
REFUELING								
MAINTENANCE PERSONNEL	24	0	306		18.505	0.0	165.077	
OPERATING PERSONNEL	53	0	0		25.671	0.0	0.010	
HEALTH PHYSICS PERSONNEL	12	0	55		3.450	0.0	39.757	
SUPERVISORY PERSONNEL	28	0	23		20.458	0.0	10.360	
ENGINEERING PERSONNEL	16	0	32		5.195	0.005	15.310	
TOTAL	133	0	416	549	73.279	0.005	230.514	303.798
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	73	0	537	610	50.310	0.0	286.674	336.984
OPERATING PERSONNEL	101	0	1	102	42.171	0.0	0.890	43.061
HEALTH PHYSICS PERSONNEL	21	0	60	81	7.610	0.0	42.987	50.597
SUPERVISORY PERSONNEL	74	0	93	167	41.618	0.060	53.350	95.028
ENGINEERING PERSONNEL	45	0	113	158	14.835	0.005	75.082	89.922
GRAND TOTAL	314	0	804	1118	156.544	0.065	458.983	615.592

APPENDIX C

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

PLANT: MCGUIRE* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	100	203	47		5.270	7.395	3.345	
OPERATING PERSONNEL	51	1	0		10.124	0.370	0.0	
HEALTH PHYSICS PERSONNEL	57	14	55		9.275	1.080	7.532	
SUPERVISORY PERSONNEL	2	0	0		0.170	0.0	0.0	
ENGINEERING PERSONNEL	29	41	16		2.735	3.165	0.730	
TOTAL	239	259	118	616	27.574	12.010	11.607	51.191
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	112	209	41		16.280	40.065	5.380	
OPERATING PERSONNEL	18	1	0		0.390	0.065	0.0	
HEALTH PHYSICS PERSONNEL	44	9	44		4.575	0.385	8.125	
SUPERVISORY PERSONNEL	1	0	0		0.010	0.0	0.0	
ENGINEERING PERSONNEL	23	39	10		2.745	5.095	0.825	
TOTAL	198	258	95	551	24.000	45.610	14.330	83.940
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	27	74	6		6.085	32.405	0.230	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	25	1	28		3.805	0.010	7.340	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	6	16	11		1.095	5.795	13.955	
TOTAL	58	91	45	194	10.985	38.210	21.525	70.720
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	66	189	14		13.340	83.590	0.425	
OPERATING PERSONNEL	6	1	0		0.125	0.120	0.0	
HEALTH PHYSICS PERSONNEL	28	6	31		1.720	0.255	3.335	
SUPERVISORY PERSONNEL	1	0	0		0.105	0.0	0.0	
ENGINEERING PERSONNEL	17	33	8		5.200	10.310	2.005	
TOTAL	118	229	53	400	20.490	94.275	5.765	120.530
WASTE PROCESSING								
MAINTENANCE PERSONNEL	42	29	29		1.055	0.820	2.000	
OPERATING PERSONNEL	20	0	0		0.355	0.0	0.0	
HEALTH PHYSICS PERSONNEL	32	2	26		2.350	0.015	1.045	
SUPERVISORY PERSONNEL	1	0	0		0.020	0.0	0.0	
ENGINEERING PERSONNEL	7	7	0		0.160	0.075	0.0	
TOTAL	102	38	55	195	3.940	0.910	3.045	7.895
REFUELING								
MAINTENANCE PERSONNEL	2	8	0		0.080	0.730	0.0	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	7		0.0	0.0	0.845	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	1		0.0	0.0	0.010	
TOTAL	2	8	8	18	0.080	0.730	0.855	1.665
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	349(137)	712(248)	137 (49)	1198(424)	42.110	165.005	11.380	218.495
OPERATING PERSONNEL	95 (51)	3 (1)	0	98 (52)	10.994	0.555	0.0	11.549
HEALTH PHYSICS PERSONNEL	186 (58)	32 (14)	191 (55)	409(127)	21.725	1.745	28.222	51.692
SUPERVISORY PERSONNEL	5 (2)	0	0	5 (2)	0.305	0.0	0.0	0.305
ENGINEERING PERSONNEL	82 (46)	136 (46)	46 (20)	264(112)	11.935	24.440	17.525	53.900
GRAND TOTAL	717(294)	883 (309)	374(124)	1974(717)	87.069	191.745	57.127	**335.941

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

**30 man-rems due to NRC mandated work.

APPENDIX C

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

PLANT: MILLSTONE I* (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	19	0	1		7.830	0.0	0.860	
OPERATING PERSONNEL	56	0	0		47.260	0.0	0.290	
HEALTH PHYSICS PERSONNEL	24	2	18		9.720	0.760	5.170	
SUPERVISORY PERSONNEL	0	0	0		0.040	0.0	0.0	
ENGINEERING PERSONNEL	6	0	3		5.180	0.100	1.260	
TOTAL	105	2	22	129	70.030	0.860	7.580	78.470
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	5	0	0		1.320	0.050	0.030	
OPERATING PERSONNEL	0	0	0		0.020	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.100	0.0	0.210	
SUPERVISORY PERSONNEL	0	0	1		0.0	0.0	0.200	
ENGINEERING PERSONNEL	0	1	0		0.0	0.180	0.0	
TOTAL	5	1	1	7	1.440	0.230	0.440	2.110
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	100		1.150	0.070	57.050	
OPERATING PERSONNEL	1	0	9		0.450	0.0	1.720	
HEALTH PHYSICS PERSONNEL	2	0	10		0.360	0.0	3.350	
SUPERVISORY PERSONNEL	0	0	0		0.030	0.0	0.130	
ENGINEERING PERSONNEL	6	4	21		2.270	2.720	14.770	
TOTAL	10	4	140	154	4.260	2.790	77.020	84.070
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	67	113	680		81.660	46.110	367.470	
OPERATING PERSONNEL	42	0	23		12.930	0.0	13.020	
HEALTH PHYSICS PERSONNEL	16	2	101		12.790	0.660	48.990	
SUPERVISORY PERSONNEL	3	1	15		0.700	0.130	10.260	
ENGINEERING PERSONNEL	25	35	60		15.240	18.800	36.650	
TOTAL	153	151	879	1183	123.320	65.700	476.390	665.410
WASTE PROCESSING								
MAINTENANCE PERSONNEL	9	0	23		2.560	0.0	13.210	
OPERATING PERSONNEL	12	0	0		4.990	0.0	0.0	
HEALTH PHYSICS PERSONNEL	8	0	10		9.020	0.0	4.300	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	2	1	2		0.480	0.110	0.760	
TOTAL	31	1	35	67	17.050	0.110	18.270	35.430
REFUELING								
MAINTENANCE PERSONNEL	40	21	3		23.500	7.270	0.830	
OPERATING PERSONNEL	36	0	0		17.420	0.0	0.050	
HEALTH PHYSICS PERSONNEL	4	0	16		1.630	0.0	6.960	
SUPERVISORY PERSONNEL	0	0	1		0.210	0.0	0.430	
ENGINEERING PERSONNEL	16	4	7		7.000	1.860	2.910	
TOTAL	96	25	27	148	49.760	9.130	11.180	70.070
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	141	134	807	1082	118.020	53.500	439.450	610.970
OPERATING PERSONNEL	147	0	32	179	83.070	0.0	15.080	98.150
HEALTH PHYSICS PERSONNEL	54	4	155	213	33.620	1.420	68.980	104.020
SUPERVISORY PERSONNEL	3	1	17	21	0.980	0.130	11.020	12.130
ENGINEERING PERSONNEL	55	45	93	193	30.170	23.770	56.350	110.290
GRAND TOTAL	400	184	1104	1688	265.860	78.820	590.880	935.560

*Workers may be counted in more than one category.

APPENDIX C

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

PLANT: MILLSTONE 2 (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	3	0	0		1.850	0.0	0.020	
OPERATING PERSONNEL	32	0	1		16.720	0.0	0.410	
HEALTH PHYSICS PERSONNEL	14	0	0		6.350	0.0	0.300	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.060	
ENGINEERING PERSONNEL	5	1	0		1.170	0.220	0.080	
TOTAL	54	1	1	56	26.090	0.220	0.870	27.180
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	3	1	0		1.330	0.370	0.070	
OPERATING PERSONNEL	0	0	0		0.060	0.0	0.020	
HEALTH PHYSICS PERSONNEL	0	0	0		0.050	0.0	0.0	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.060	0.150	0.0	
TOTAL	3	1	0	4	1.500	0.520	0.090	2.110
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	11	0	71		4.250	0.0	61.160	
OPERATING PERSONNEL	2	0	15		0.860	0.0	19.580	
HEALTH PHYSICS PERSONNEL	0	0	13		0.040	0.0	4.790	
SUPERVISORY PERSONNEL	0	0	1		0.080	0.0	0.240	
ENGINEERING PERSONNEL	1	2	29		0.430	0.370	35.520	
TOTAL	14	2	129	145	5.660	0.370	121.290	127.320
**								
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	65	38	818		67.940	18.340	882.860	
OPERATING PERSONNEL	40	0	38		20.840	0.010	19.430	
HEALTH PHYSICS PERSONNEL	22	3	88		9.410	1.400	60.490	
SUPERVISORY PERSONNEL	1	0	10		0.950	0.0	7.940	
ENGINEERING PERSONNEL	19	26	119		9.250	9.590	102.100	
TOTAL	147	67	1073	1287	108.390	29.340	1072.820	1210.550
WASTE PROCESSING								
MAINTENANCE PERSONNEL	4	0	7		1.720	0.0	2.090	
OPERATING PERSONNEL	8	0	0		2.140	0.0	0.0	
HEALTH PHYSICS PERSONNEL	4	0	1		1.710	0.0	0.760	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	1	0	0		0.180	0.090	0.0	
TOTAL	17	0	8	25	5.750	0.090	2.850	8.690
REFUELING								
MAINTENANCE PERSONNEL	25	0	27		11.740	0.180	14.570	
OPERATING PERSONNEL	12	0	6		3.040	0.0	2.130	
HEALTH PHYSICS PERSONNEL	1	1	9		0.350	0.340	2.760	
SUPERVISORY PERSONNEL	0	0	1		0.010	0.0	0.260	
ENGINEERING PERSONNEL	2	1	22		0.700	0.700	9.200	
TOTAL	40	2	65	107	15.840	1.220	28.920	45.980
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	111	39	923	1073	88.830	18.890	960.770	1068.490
OPERATING PERSONNEL	94	0	60	154	43.660	0.010	41.570	85.240
HEALTH PHYSICS PERSONNEL	41	4	111	156	17.910	1.740	69.100	88.750
SUPERVISORY PERSONNEL	1	0	12	13	1.040	0.0	8.500	9.540
ENGINEERING PERSONNEL	28	30	170	228	11.790	11.120	146.900	169.810
GRAND TOTAL	275	73	1276	1624	163.230	31.760	1226.840	1421.830

** Includes sparger repairs, flow restrictor replacement, steam generator modifications, decontamination, etc.

APPENDIX C

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

PLANT: †MONTICELLO* (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	47	54	226		12.199	1.992	34.806	
OPERATING PERSONNEL	52	0	2		37.598	0.0	0.530	
HEALTH PHYSICS PERSONNEL	19	0	30		7.677	0.0	7.892	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	30	27	50		7.738	3.651	9.340	
TOTAL	148	81	308	537	65.212	5.643	52.568	123.423
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	58	97	334		25.664	9.842	34.224	
OPERATING PERSONNEL	36	0	0		2.531	0.0	0.0	
HEALTH PHYSICS PERSONNEL	5	0	10		0.470	0.0	1.195	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	21	11	29		0.956	0.364	2.255	
TOTAL	120	108	373	601	29.621	10.206	37.674	77.501
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	3	11	32		0.037	1.160	22.623	
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	1	14	31		0.279	8.068	33.381	
TOTAL	4	25	63	92	0.316	9.228	56.004	65.548
** SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	45	82	590		16.768	19.423	501.542	
OPERATING PERSONNEL	49	0	0		16.271	0.0	0.0	
HEALTH PHYSICS PERSONNEL	14	0	29		3.328	0.0	25.477	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	25	32	80		6.845	22.471	38.314	
TOTAL	133	114	699	946	43.212	41.894	565.333	650.439
WASTE PROCESSING								
MAINTENANCE PERSONNEL	13	7	11		0.671	0.133	0.227	
OPERATING PERSONNEL	25	0	1		1.468	0.0	0.366	
HEALTH PHYSICS PERSONNEL	2	0	4		0.242	0.0	0.315	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	2	0	3		0.059	0.0	2.914	
TOTAL	42	7	19	68	2.440	0.133	3.822	6.395
REFUELING								
MAINTENANCE PERSONNEL	22	50	20		2.630	4.009	1.181	
OPERATING PERSONNEL	48	0	0		4.268	0.0	0.0	
HEALTH PHYSICS PERSONNEL	1	0	4		0.016	0.0	0.726	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	7	2	15		1.326	0.135	2.940	
TOTAL	78	52	39	169	8.240	4.144	4.847	17.231
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	188	301	1213	1702	57.969	36.559	594.603	689.131
OPERATING PERSONNEL	210	0	3	213	62.136	0.0	0.896	63.032
HEALTH PHYSICS PERSONNEL	41	0	77	118	11.733	0.0	35.605	47.338
SUPERVISORY PERSONNEL	0	0	0	0	0.0	0.0	0.0	0.0
ENGINEERING PERSONNEL	86	86	208	380	17.203	34.689	89.144	141.036
GRAND TOTAL	525	387	1501	2413	149.041	71.248	720.248	940.537

*Workers may be counted in more than one category.

**Includes torus modifications, recirc. pipe repair, jet pump beam modifications, scram discharge pipe modifications.

APPENDIX C

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

PLANT: †NINE MILE POINT* (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	135	19	87		18.471	1.665	2.686	
OPERATING PERSONNEL	154	21	121		12.401	0.280	6.437	
HEALTH PHYSICS PERSONNEL	72	2	39		15.968	0.084	9.916	
SUPERVISORY PERSONNEL	48	2	5		4.575	0.004	0.184	
ENGINEERING PERSONNEL	12	12	37		0.528	0.155	0.770	
TOTAL	421	56	289	766	51.943	2.188	19.993	74.124
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	87	8	33		8.971	0.108	1.396	
OPERATING PERSONNEL	42	2	32		1.830	0.039	2.726	
HEALTH PHYSICS PERSONNEL	21	1	13		2.085	0.005	0.602	
SUPERVISORY PERSONNEL	14	0	2		0.389	0.0	0.160	
ENGINEERING PERSONNEL	6	0	10		0.555	0.0	0.586	
TOTAL	170	11	90	271	13.830	0.152	5.470	19.452
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	29	3	40		0.829	0.077	4.537	
OPERATING PERSONNEL	10	4	39		0.304	0.050	7.639	
HEALTH PHYSICS PERSONNEL	11	0	6		0.612	0.0	0.201	
SUPERVISORY PERSONNEL	12	0	5		0.507	0.0	0.645	
ENGINEERING PERSONNEL	5	5	21		0.651	0.045	2.357	
TOTAL	67	12	111	190	2.903	0.172	15.379	18.454
** SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	622	98	713		112.354	18.732	789.948	
OPERATING PERSONNEL	436	18	339		52.661	0.293	111.627	
HEALTH PHYSICS PERSONNEL	164	3	92		35.932	0.037	28.367	
SUPERVISORY PERSONNEL	108	0	31		19.157	0.0	18.666	
ENGINEERING PERSONNEL	62	25	156		11.030	2.323	88.398	
TOTAL	1392	144	1331	2867	231.134	21.385	1037.006	1289.525
WASTE PROCESSING								
MAINTENANCE PERSONNEL	90	5	83		10.481	0.371	12.963	
OPERATING PERSONNEL	65	4	40		26.018	0.039	11.372	
HEALTH PHYSICS PERSONNEL	30	1	29		4.183	0.002	3.494	
SUPERVISORY PERSONNEL	13	1	4		0.775	0.001	1.434	
ENGINEERING PERSONNEL	5	6	21		0.064	0.126	1.304	
TOTAL	203	17	177	397	41.521	0.539	30.567	72.627
REFUELING								
MAINTENANCE PERSONNEL	67	2	1		2.547	0.300	0.040	
OPERATING PERSONNEL	74	5	22		5.671	0.036	1.011	
HEALTH PHYSICS PERSONNEL	21	0	5		1.015	0.0	0.180	
SUPERVISORY PERSONNEL	16	0	1		1.394	0.0	0.010	
ENGINEERING PERSONNEL	8	2	1		0.180	0.007	0.035	
TOTAL	186	9	30	225	10.807	0.343	1.276	12.426
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	1030	135	957	2122	153.653	21.253	811.570	986.476
OPERATING PERSONNEL	781	54	593	1428	98.885	0.737	140.812	240.434
HEALTH PHYSICS PERSONNEL	319	7	184	510	59.795	0.128	42.760	102.683
SUPERVISORY PERSONNEL	211	3	48	262	26.797	0.005	21.099	47.901
ENGINEERING PERSONNEL	98	50	246	394	13.008	2.656	93.450	109.114
GRAND TOTAL	2439	249	2028	4716	352.138	24.779	1109.691	1486.608

*Workers may be counted in more than one category.

**About 1100 man-rems were due to safe end replacement.

APPENDIX C

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

PLANT: NORTH ANNA 1,2* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	157	51	141		11.401	1.044	14.436	
OPERATING PERSONNEL	108	0	4		11.284	0.0	0.024	
HEALTH PHYSICS PERSONNEL	53	1	131		26.538	0.013	15.070	
SUPERVISORY PERSONNEL	22	1	1		1.833	0.010	0.002	
ENGINEERING PERSONNEL	23	11	32		0.605	0.123	0.382	
TOTAL	363	64	309	736	51.661	1.190	29.914	82.765
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	188	77	602		226.743	123.283	179.776	
OPERATING PERSONNEL	176	0	25		56.611	0.0	3.766	
HEALTH PHYSICS PERSONNEL	51	0	127		21.642	0.0	74.291	
SUPERVISORY PERSONNEL	44	3	3		11.597	2.073	0.082	
ENGINEERING PERSONNEL	40	18	115		7.249	2.906	20.017	
TOTAL	499	98	872	1469	323.842	128.262	277.932	730.036
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	140	34	170		27.061	4.522	67.241	
OPERATING PERSONNEL	189	0	9		42.358	0.0	1.806	
HEALTH PHYSICS PERSONNEL	23	0	71		2.416	0.0	9.640	
SUPERVISORY PERSONNEL	41	3	2		1.554	0.059	0.006	
ENGINEERING PERSONNEL	38	14	29		1.648	0.251	1.498	
TOTAL	431	51	281	763	75.037	4.832	80.191	160.060
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	131	52	787		29.227	15.557	642.075	
OPERATING PERSONNEL	104	3	36		19.225	0.655	11.183	
HEALTH PHYSICS PERSONNEL	30	0	114		12.607	0.0	57.199	
SUPERVISORY PERSONNEL	29	5	8		8.691	4.012	3.435	
ENGINEERING PERSONNEL	52	23	193		14.768	5.987	115.827	
TOTAL	346	83	1138	1567	84.518	26.211	829.719	940.448
WASTE PROCESSING								
MAINTENANCE PERSONNEL	53	14	101		1.874	0.516	16.599	
OPERATING PERSONNEL	42	1	12		3.833	0.005	5.632	
HEALTH PHYSICS PERSONNEL	29	0	103		7.798	0.0	23.117	
SUPERVISORY PERSONNEL	1	0	0		1.134	0.0	0.0	
ENGINEERING PERSONNEL	7	0	4		0.049	0.0	0.060	
TOTAL	132	15	220	367	14.688	0.521	45.408	60.617
REFUELING								
MAINTENANCE PERSONNEL	96	52	79		6.657	8.927	2.636	
OPERATING PERSONNEL	102	0	5		15.554	0.0	0.371	
HEALTH PHYSICS PERSONNEL	15	0	71		0.513	0.0	5.116	
SUPERVISORY PERSONNEL	15	4	3		3.013	1.199	0.080	
ENGINEERING PERSONNEL	17	8	27		0.472	0.819	4.225	
TOTAL	245	64	185	494	26.209	10.945	12.428	49.582
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	765	280	1880	2925	302.963	153.849	922.763	1379.575
OPERATING PERSONNEL	721	4	91	816	148.865	0.660	22.782	172.307
HEALTH PHYSICS PERSONNEL	201	1	617	819	71.514	0.013	184.433	255.960
SUPERVISORY PERSONNEL	152	16	17	185	27.822	7.353	3.605	38.780
ENGINEERING PERSONNEL	177	74	400	651	24.791	10.086	142.009	176.886
GRAND TOTAL	2016	375	3005	5396	575.955	171.961	1275.592	2023.508

*Workers may be counted in more than one category.

APPENDIX C

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

PLANT: OCONEE 1,2,3* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	79	238	40		4.990	12.110	1.595	
OPERATING PERSONNEL	103	11	0		42.460	5.150	0.0	
HEALTH PHYSICS PERSONNEL	64	0	97		17.020	0.0	9.656	
SUPERVISORY PERSONNEL	3	2	0		0.050	0.115	0.0	
ENGINEERING PERSONNEL	87	47	33		11.190	4.110	3.565	
TOTAL	336	298	170	804	75.710	21.485	14.816	112.011
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	345	526	147		136.745	76.605	75.995	
OPERATING PERSONNEL	103	16	0		13.895	2.020	0.0	
HEALTH PHYSICS PERSONNEL	83	0	113		13.830	0.0	42.475	
SUPERVISORY PERSONNEL	9	1	0		1.365	0.010	0.0	
ENGINEERING PERSONNEL	86	48	47		12.570	9.250	5.035	
TOTAL	626	591	307	1524	178.405	87.885	123.505	389.795
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	113	259	55		24.110	116.005	18.755	
OPERATING PERSONNEL	11	3	0		0.730	0.105	0.0	
HEALTH PHYSICS PERSONNEL	47	0	93		3.905	0.0	20.605	
SUPERVISORY PERSONNEL	2	0	0		0.375	0.0	0.0	
ENGINEERING PERSONNEL	75	47	88		27.390	12.390	70.265	
TOTAL	248	309	236	793	56.510	128.500	109.625	294.635
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	540	704	134		276.685	611.577	40.415	
OPERATING PERSONNEL	90	12	0		13.207	2.020	0.0	
HEALTH PHYSICS PERSONNEL	73	0	98		12.740	0.0	59.080	
SUPERVISORY PERSONNEL	7	1	0		3.475	0.010	0.0	
ENGINEERING PERSONNEL	129	68	94		48.560	24.180	40.660	
TOTAL	839	785	326	1950	354.667	637.787	140.155	1132.609
WASTE PROCESSING								
MAINTENANCE PERSONNEL	35	56	61		7.585	3.440	12.090	
OPERATING PERSONNEL	13	1	0		1.840	0.090	0.0	
HEALTH PHYSICS PERSONNEL	33	0	54		12.165	0.0	6.400	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	21	9	1		5.505	0.455	0.090	
TOTAL	102	66	116	284	27.095	3.985	18.580	49.660
REFUELING								
MAINTENANCE PERSONNEL	115	93	36		41.555	10.085	2.725	
OPERATING PERSONNEL	83	6	0		14.245	0.415	0.0	
HEALTH PHYSICS PERSONNEL	11	0	72		1.150	0.0	8.440	
SUPERVISORY PERSONNEL	2	2	0		1.170	0.080	0.0	
ENGINEERING PERSONNEL	31	4	29		5.825	0.615	2.670	
TOTAL	242	105	137	484	63.945	11.195	13.835	88.975
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	1227 (699)	1876 (739)	473 (200)	3576 (1638)	491.670	829.822	151.575	1473.067
OPERATING PERSONNEL	403 (120)	49 (18)	0	452 (138)	86.377	9.800	0.0	96.177
HEALTH PHYSICS PERSONNEL	311 (121)	0	527 (120)	838 (241)	60.810	0.0	146.656	207.466
SUPERVISORY PERSONNEL	23 (9)	6 (2)	0	29 (11)	6.435	0.215	0.0	6.650
ENGINEERING PERSONNEL	429 (188)	223 (79)	292 (119)	944 (386)	111.040	51.000	122.285	284.325
GRAND TOTAL	2393 (1137)	2154 (838)	1292 (439)	5839 (2414)	756.332	890.837	420.516	2067.685

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

**406 man-rems were due to NRC mandated work.

APPENDIX C

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

PLANT: OYSTER CREEK* (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	67	12	42		5.990	0.192	11.746	
OPERATING PERSONNEL	37	1	0		2.341	0.0	0.0	
HEALTH PHYSICS PERSONNEL	11	0	24		1.059	0.0	2.096	
SUPERVISORY PERSONNEL	10	0	0		0.735	0.0	0.0	
ENGINEERING PERSONNEL	18	0	1		2.803	0.0	0.315	
TOTAL	143	13	67	223	12.928	0.192	14.157	27.277
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	218	38	297		121.027	9.794	72.097	
OPERATING PERSONNEL	159	1	26		61.883	0.015	1.574	
HEALTH PHYSICS PERSONNEL	58	0	68		24.968	0.0	38.751	
SUPERVISORY PERSONNEL	51	0	1		6.426	0.0	0.109	
ENGINEERING PERSONNEL	68	1	38		6.609	0.013	4.801	
TOTAL	554	40	430	1024	220.913	9.822	117.332	348.067
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	30	4	2		1.640	1.642	0.015	
OPERATING PERSONNEL	7	0	1		1.282	0.0	0.016	
HEALTH PHYSICS PERSONNEL	4	0	9		0.500	0.0	0.255	
SUPERVISORY PERSONNEL	3	0	0		0.217	0.0	0.0	
ENGINEERING PERSONNEL	8	0	2		0.592	0.0	0.260	
TOTAL	52	4	14	70	4.231	1.642	0.546	6.419
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	150	33	317		23.259	18.537	246.577	
OPERATING PERSONNEL	49	1	4		3.517	1.122	1.453	
HEALTH PHYSICS PERSONNEL	28	0	36		2.895	0.0	4.654	
SUPERVISORY PERSONNEL	15	0	1		0.944	0.0	0.005	
ENGINEERING PERSONNEL	17	0	7		2.020	0.0	3.863	
TOTAL	259	34	365	658	32.635	19.659	256.552	308.846
WASTE PROCESSING								
MAINTENANCE PERSONNEL	89	0	33		2.696	0.0	11.794	
OPERATING PERSONNEL	17	0	2		1.324	0.0	0.018	
HEALTH PHYSICS PERSONNEL	15	0	8		1.030	0.0	2.388	
SUPERVISORY PERSONNEL	3	0	0		0.166	0.0	0.0	
ENGINEERING PERSONNEL	1	0	1		0.006	0.0	0.196	
TOTAL	125	0	44	169	5.222	0.0	14.396	19.618
REFUELING								
MAINTENANCE PERSONNEL	1	0	4		0.0	0.0	0.070	
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	1	0	4	5	0.0	0.0	0.070	0.070
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	555(226)	87(39)	695(415)	1337(680)	154.612	30.165	342.299	527.076
OPERATING PERSONNEL	269(161)	3 (1)	33 (28)	305(190)	70.347	1.137	3.061	74.545
HEALTH PHYSICS PERSONNEL	116 (58)	0	145 (69)	261(127)	30.452	0.0	48.144	78.596
SUPERVISORY PERSONNEL	82 (52)	0	2 (1)	84 (53)	8.488	0.0	0.114	8.602
ENGINEERING PERSONNEL	112 (74)	1 (1)	49 (40)	162(115)	12.030	0.013	9.435	21.478
GRAND TOTAL	1134(571)	91(41)	924(553)	2149(1165)	275.929	31.315	403.053	710.297

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

APPENDIX C

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

PLANT: PALISADES (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	1	0	0		0.299	0.0	0.0	
OPERATING PERSONNEL	25	0	0		7.132	0.048	0.013	
HEALTH PHYSICS PERSONNEL	51	2	45		20.262	0.560	20.310	
SUPERVISORY PERSONNEL	5	0	0		1.770	0.060	0.051	
ENGINEERING PERSONNEL	5	2	2		0.986	0.415	0.550	
TOTAL	87	4	47	138	30.449	1.083	20.924	52.456
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	80	3	17		26.442	0.824	3.512	
OPERATING PERSONNEL	0	0	0		0.0	0.007	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.053	0.004	0.060	
SUPERVISORY PERSONNEL	4	0	0		1.063	0.007	0.134	
ENGINEERING PERSONNEL	2	0	1		0.467	0.039	0.162	
TOTAL	86	3	18	107	28.025	0.881	3.868	32.774
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	2		0.0	0.0	0.521	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.014	0.0	0.0	
SUPERVISORY PERSONNEL	0	0	0		0.039	0.0	0.032	
ENGINEERING PERSONNEL	0	0	1		0.053	0.0	0.243	
TOTAL	0	0	3	3	0.106	0.0	0.796	0.902
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	69	34	358		16.845	12.618	112.836	
OPERATING PERSONNEL	0	0	1		0.0	0.0	0.113	
HEALTH PHYSICS PERSONNEL	0	0	0		0.0	0.0	0.0	
SUPERVISORY PERSONNEL	0	1	7		0.123	0.162	1.248	
ENGINEERING PERSONNEL	3	0	20		1.341	0.063	5.151	
TOTAL	72	35	386	493	18.309	12.843	119.348	150.500
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	1	0		0.099	0.099	0.0	
OPERATING PERSONNEL	0	0	2		0.0	0.0	1.543	
HEALTH PHYSICS PERSONNEL	1	0	0		0.099	0.0	0.025	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.011	0.042	0.032	
TOTAL	2	1	2	5	0.209	0.141	1.600	1.950
REFUELING								
MAINTENANCE PERSONNEL	0	0	0		0.0	0.0	0.0	
OPERATING PERSONNEL	0	0	0		0.046	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	0	0	0	0	0.046	0.0	0.0	0.046
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	151	38	377	566	43.685	13.541	116.869	174.095
OPERATING PERSONNEL	25	0	3	28	7.178	0.055	1.669	8.902
HEALTH PHYSICS PERSONNEL	52	2	45	99	20.428	0.564	20.395	41.387
SUPERVISORY PERSONNEL	9	1	7	17	2.995	0.229	1.465	4.689
ENGINEERING PERSONNEL	10	2	24	36	2.858	0.559	6.138	9.555
GRAND TOTAL	247	43	456	746	77.144	14.948	146.536	238.628

APPENDIX C

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

PLANT: PEACH BOTTOM 2,3 (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	3	62	53		0.533	31.747	20.562	
OPERATING PERSONNEL	68	4	30		63.945	1.248	5.059	
HEALTH PHYSICS PERSONNEL	62	1	49		52.618	0.258	52.277	
SUPERVISORY PERSONNEL	0	0	1		0.0	0.0	0.183	
ENGINEERING PERSONNEL	54	7	12		45.436	1.924	12.344	
TOTAL	187	74	145	406	162.532	35.177	90.425	288.134
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	7	524	970		4.822	349.903	990.657	
OPERATING PERSONNEL	5	1	10		1.044	1.255	6.087	
HEALTH PHYSICS PERSONNEL	13	0	19		3.971	0.0	6.580	
SUPERVISORY PERSONNEL	0	1	0		0.0	0.481	0.0	
ENGINEERING PERSONNEL	13	14	12		4.156	5.559	4.037	
TOTAL	38	540	1011	1589	13.993	357.198	1007.361	1378.552
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	3	36		0.0	1.090	48.360	
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	2		0.0	0.0	1.380	
ENGINEERING PERSONNEL	0	2	2		0.0	0.370	1.012	
TOTAL	0	5	40	45	0.0	1.460	50.752	52.212
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	0	2	72		0.0	0.445	79.138	
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	1		0.0	0.0	0.102	
ENGINEERING PERSONNEL	0	0	2		0.0	0.0	0.652	
TOTAL	0	2	75	77	0.0	0.445	79.892	80.337
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	1	13		0.0	0.325	9.046	
OPERATING PERSONNEL	9	0	1		3.638	0.0	0.260	
HEALTH PHYSICS PERSONNEL	4	0	0		1.309	0.0	0.0	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	1		0.0	0.0	0.110	
TOTAL	13	1	15	29	4.947	0.325	9.416	14.688
REFUELING								
MAINTENANCE PERSONNEL	0	8	18		0.0	2.452	3.319	
OPERATING PERSONNEL	2	0	0		0.471	0.0	0.0	
HEALTH PHYSICS PERSONNEL	1	0	0		0.240	0.0	0.0	
SUPERVISORY PERSONNEL	0	1	0		0.0	0.540	0.0	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.0	
TOTAL	3	9	18	30	0.711	2.992	3.319	7.022
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	10 (10)	600 (565)	1162 (1076)	1772 (1651)	5.355	385.962	1151.082	1542.399
OPERATING PERSONNEL	84 (74)	5 (6)	41 (43)	130 (123)	69.098	2.503	11.406	83.007
HEALTH PHYSICS PERSONNEL	80 (63)	1 (1)	68 (58)	149 (122)	58.138	0.258	58.857	117.253
SUPERVISORY PERSONNEL	0	2 (3)	4 (3)	6 (6)	0.0	1.021	1.665	2.686
ENGINEERING PERSONNEL	67 (54)	23 (20)	29 (20)	119 (94)	49.592	7.853	18.155	75.600
GRAND TOTAL	241 (201)	631 (595)	1304 (1200)	2176 (1996)	182.183	397.597	1241.165	1820.945

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

APPENDIX C

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

PLANT: PILGRIM* (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	76	11	324		46.090	1.445	38.045	
OPERATING PERSONNEL	40	0	0		15.040	0.0	0.0	
HEALTH PHYSICS PERSONNEL	35	0	77		17.430	0.0	12.345	
SUPERVISORY PERSONNEL	103	19	18		62.080	0.645	2.880	
ENGINEERING PERSONNEL	21	73	41		10.055	18.525	7.580	
TOTAL	275	103	460	838	150.695	20.615	60.850	232.160
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	115	11	605		50.710	3.900	184.405	
OPERATING PERSONNEL	37	0	0		4.815	0.0	0.0	
HEALTH PHYSICS PERSONNEL	29	0	77		8.185	0.0	13.595	
SUPERVISORY PERSONNEL	38	13	7		8.465	2.020	1.120	
ENGINEERING PERSONNEL	7	0	24		1.540	0.0	6.940	
TOTAL	226	24	713	963	73.715	5.920	206.060	285.695
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	8	0	56		0.320	0.0	9.795	
OPERATING PERSONNEL	4	0	0		0.740	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.0	0.0	0.0	
SUPERVISORY PERSONNEL	8	0	0		0.405	0.0	0.0	
ENGINEERING PERSONNEL	0	0	2		0.0	0.0	0.255	
TOTAL	20	0	58	78	1.465	0.0	10.050	11.515
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	67	11	1002		8.390	3.190	444.160	
OPERATING PERSONNEL	14	0	0		3.370	0.0	0.0	
HEALTH PHYSICS PERSONNEL	24	0	73		3.875	0.0	15.660	
SUPERVISORY PERSONNEL	20	16	18		2.385	3.715	3.825	
ENGINEERING PERSONNEL	10	1	26		0.610	0.030	2.540	
TOTAL	135	28	1119	1282	18.630	6.935	466.185	491.750
WASTE PROCESSING								
MAINTENANCE PERSONNEL	67	2	109		9.855	0.165	27.235	
OPERATING PERSONNEL	15	0	0		28.710	0.0	0.0	
HEALTH PHYSICS PERSONNEL	26	0	60		5.560	0.0	27.695	
SUPERVISORY PERSONNEL	8	2	6		3.240	0.030	4.220	
ENGINEERING PERSONNEL	2	2	0		0.055	0.055	0.0	
TOTAL	118	6	175	299	47.420	0.250	59.150	106.820
REFUELING								
MAINTENANCE PERSONNEL	24	0	75		2.520	0.0	6.960	
OPERATING PERSONNEL	10	0	0		0.140	0.0	0.0	
HEALTH PHYSICS PERSONNEL	6	0	15		0.590	0.0	0.320	
SUPERVISORY PERSONNEL	4	0	1		0.035	0.0	0.035	
ENGINEERING PERSONNEL	2	0	2		0.090	0.0	0.040	
TOTAL	46	0	93	139	3.375	0.0	7.355	10.730
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	357	35	2171	2563	117.885	8.700	710.600	837.185
OPERATING PERSONNEL	120	0	0	120	52.815	0.0	0.0	52.815
HEALTH PHYSICS PERSONNEL	120	0	302	422	35.640	0.0	69.615	105.255
SUPERVISORY PERSONNEL	181	50	50	281	76.610	6.410	12.080	95.100
ENGINEERING PERSONNEL	42	76	95	213	12.350	18.610	17.355	48.315
GRAND TOTAL	820 (298)	161 (118)	2618 (1371)	3599 (1787)	295.300	33.720	809.650	1138.670

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

APPENDIX C

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

Plant: Point Beach 1, 2 (PWR) 1982

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			
Operating Personnel					34.637			
Health Physics Personnel					33.519			
Supervisory Personnel					0.630			
Engineering Personnel					0.020			
TOTAL					68.806		0.220	69.026
Routine Maintenance								
Maintenance-Personnel					29.201			
Operating Personnel					0.0			
Health Physics Personnel					0.0			
Supervisory Personnel					0.0			
Engineering Personnel					0.0			
TOTAL					29.201		0.0	29.201
In-Service Inspection								
Maintenance Personnel					4.216			
Operating Personnel					13.885			
Health Physics Personnel					0.0			
Supervisory Personnel					8.465			
Engineering Personnel					0.110			
TOTAL					26.676		93.737	210.413
Special Maintenance								
Maintenance Personnel					46.428			
Operating Personnel					0.0			
Health Physics Personnel					0.0			
Supervisory Personnel					1.645			
Engineering Personnel					0.0			
TOTAL					48.073		258.523	306.596
Waste Processing								
Maintenance Personnel					0.170			
Operating Personnel					5.282			
Health Physics Personnel					5.116			
Supervisory Personnel					0.0			
Engineering Personnel					0.0			
TOTAL					10.568		6.505	17.073
Refueling								
Maintenance Personnel					35.005			
Operating Personnel					4.536			
Health Physics Personnel					1.065			
Supervisory Personnel					0.020			
Engineering Personnel					0.590			
TOTAL					41.216		0.0	41.276
Total By Job Function								
Maintenance Personnel	99				115.020			
Operating Personnel	65				58.340			
Health Physics Personnel	27				39.700			
Supervisory Personnel	18				10.760			
Engineering Personnel	1				0.720			
GRAND TOTAL	120		388	598	224.540		358.985	583.525

APPENDIX C

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

PLANT: †PRAIRIE ISLAND 1,2 (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	16	5	0		4.907	1.439	0.103	
OPERATING PERSONNEL	46	0	0		12.401	0.010	0.018	
HEALTH PHYSICS PERSONNEL	14	0	1		6.743	0.0	0.700	
SUPERVISORY PERSONNEL	2	0	0		0.869	0.008	0.145	
ENGINEERING PERSONNEL	1	0	0		0.557	0.028	0.176	
TOTAL	79	5	1	85	25.477	1.485	1.142	28.104
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	30	21	6		9.158	10.488	2.032	
OPERATING PERSONNEL	2	0	0		0.734	0.0	0.0	
HEALTH PHYSICS PERSONNEL	3	0	0		1.142	0.0	0.104	
SUPERVISORY PERSONNEL	1	0	0		0.127	0.109	0.036	
ENGINEERING PERSONNEL	4	0	1		1.325	0.005	0.679	
TOTAL	40	21	7	68	12.486	10.602	2.851	25.939
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	11	8	55		3.532	2.577	25.798	
OPERATING PERSONNEL	0	0	0		0.001	0.0	0.0	
HEALTH PHYSICS PERSONNEL	3	0	14		1.151	0.0	3.449	
SUPERVISORY PERSONNEL	0	1	0		0.0	0.562	0.0	
ENGINEERING PERSONNEL	4	1	8		0.930	0.186	2.613	
TOTAL	18	10	77	105	5.614	3.325	31.860	40.799
** SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	33	56	40		12.382	26.727	14.697	
OPERATING PERSONNEL	2	0	0		0.682	0.029	0.061	
HEALTH PHYSICS PERSONNEL	10	0	16		3.141	0.0	3.417	
SUPERVISORY PERSONNEL	0	0	2		0.110	0.083	0.776	
ENGINEERING PERSONNEL	5	1	9		1.479	0.137	3.553	
TOTAL	50	57	67	174	17.794	26.976	22.504	67.274
WASTE PROCESSING								
MAINTENANCE PERSONNEL	28	0	12		9.750	0.0	3.382	
OPERATING PERSONNEL	8	0	0		2.421	0.0	0.0	
HEALTH PHYSICS PERSONNEL	9	0	1		4.360	0.0	0.294	
SUPERVISORY PERSONNEL	1	0	0		0.215	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.048	0.0	0.0	
TOTAL	46	0	13	59	16.794	0.0	3.676	20.470
REFUELING								
MAINTENANCE PERSONNEL	32	45	1		13.238	12.039	0.192	
OPERATING PERSONNEL	7	0	0		2.514	0.0	0.005	
HEALTH PHYSICS PERSONNEL	0	0	1		0.174	0.0	0.267	
SUPERVISORY PERSONNEL	0	0	0		0.028	0.012	0.015	
ENGINEERING PERSONNEL	3	0	0		0.827	0.082	0.069	
TOTAL	42	45	2	89	16.781	12.133	0.548	29.462
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	150	135	114	399	52.967	53.270	46.204	152.441
OPERATING PERSONNEL	65	0	0	65	18.753	0.039	0.084	18.876
HEALTH PHYSICS PERSONNEL	39	0	33	72	16.711	0.0	8.231	24.942
SUPERVISORY PERSONNEL	4	1	2	7	1.349	0.774	0.972	3.095
ENGINEERING PERSONNEL	17	2	18	37	5.166	0.438	7.090	12.694
GRAND TOTAL	275	138	167	580	94.946	54.521	62.581	212.048

** Defined as 'non-routine' maintenance. All corrective maintenance is placed in this category.

APPENDIX C

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

PLANT: QUAD CITIES 1,2 (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	15	0	0		38.586	0.0	0.0	
OPERATING PERSONNEL	88	0	0		109.863	0.0	0.0	
HEALTH PHYSICS PERSONNEL	8	0	0		7.669	0.0	0.0	
SUPERVISORY PERSONNEL	1	0	0		0.985	0.0	0.0	
ENGINEERING PERSONNEL	9	0	0		12.327	0.0	0.0	
TOTAL	121	0	0	121	169.430	0.0	0.0	169.430
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	93	19	109		246.496	27.008	223.499	
OPERATING PERSONNEL	4	0	0		5.782	0.0	0.0	
HEALTH PHYSICS PERSONNEL	18	0	0		17.431	0.0	0.0	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	11	65	62		15.684	10.070	38.397	
TOTAL	126	84	171	381	285.393	37.078	261.896	584.367
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	85		3.859	0.0	153.372	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	12	0	0		11.853	0.0	0.0	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	2	0	41		2.924	0.0	25.460	
TOTAL	15	0	126	141	18.636	0.0	178.832	197.468
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	16	221	1029		41.553	310.596	1955.279	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	22	0	0		20.917	0.0	0.0	
SUPERVISORY PERSONNEL	20	0	0		16.945	0.0	0.0	
ENGINEERING PERSONNEL	27	0	237		36.633	0.0	144.667	
TOTAL	85	221	1266	1572	116.048	310.596	2099.946	2526.590
WASTE PROCESSING								
MAINTENANCE PERSONNEL	15	0	1		38.586	0.0	1.104	
OPERATING PERSONNEL	43	0	0		53.528	0.0	0.0	
HEALTH PHYSICS PERSONNEL	11	0	0		10.458	0.0	0.0	
SUPERVISORY PERSONNEL	1	0	0		1.150	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.0	
TOTAL	70	0	1	71	103.722	0.0	1.104	104.826
REFUELING								
MAINTENANCE PERSONNEL	6	0	1		16.779	0.0	3.218	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	2	0	0		1.394	0.0	0.0	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	4		0.0	0.0	1.348	
TOTAL	8	0	5	13	18.173	0.0	4.566	22.739
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	146	240	1225	1611	385.859	337.604	2336.472	3059.935
OPERATING PERSONNEL	135	0	0	135	169.173	0.0	0.0	169.173
HEALTH PHYSICS PERSONNEL	73	0	0	73	69.722	0.0	0.0	69.722
SUPERVISORY PERSONNEL	22	0	0	22	19.080	0.0	0.0	19.080
ENGINEERING PERSONNEL	49	65	344	458	67.568	10.070	209.872	287.510
GRAND TOTAL	425	305	1569	2299	711.402	347.674	2546.344	3605.420

APPENDIX C

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

PLANT: RANCHO SECO* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	77	0	41		4.160	0.0	0.760	
OPERATING PERSONNEL	47	1	0		22.280	0.080	0.0	
HEALTH PHYSICS PERSONNEL	24	3	31		6.450	0.070	4.700	
SUPERVISORY PERSONNEL	31	0	18		1.550	0.0	1.620	
ENGINEERING PERSONNEL	39	11	49		2.970	0.270	2.600	
TOTAL	218	15	139	372	37.410	0.420	9.680	47.510
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	82	0	164		19.620	0.0	61.310	
OPERATING PERSONNEL	11	0	0		0.480	0.0	0.0	
HEALTH PHYSICS PERSONNEL	23	1	28		3.280	0.010	12.880	
SUPERVISORY PERSONNEL	9	0	10		0.540	0.0	6.150	
ENGINEERING PERSONNEL	26	3	44		3.590	0.040	11.920	
TOTAL	151	4	246	401	27.510	0.050	92.260	119.820
IN-SERVICE INSPECTION								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	79	0	269		18.950	0.0	72.040	
OPERATING PERSONNEL	12	0	0		0.260	0.0	0.0	
HEALTH PHYSICS PERSONNEL	19	1	24		3.320	0.140	5.580	
SUPERVISORY PERSONNEL	11	0	22		1.860	0.0	2.290	
ENGINEERING PERSONNEL	19	14	79		9.430	0.910	8.060	
TOTAL	140	15	394	549	33.820	1.050	87.970	122.840
WASTE PROCESSING								
MAINTENANCE PERSONNEL	48	0	57		10.480	0.0	18.930	
OPERATING PERSONNEL	13	0	0		0.590	0.0	0.0	
HEALTH PHYSICS PERSONNEL	25	0	15		4.180	0.0	2.630	
SUPERVISORY PERSONNEL	4	0	1		0.180	0.0	0.020	
ENGINEERING PERSONNEL	2	0	1		0.020	0.0	0.020	
TOTAL	92	0	74	166	15.450	0.0	21.600	37.050
REFUELING								
MAINTENANCE PERSONNEL	6	0	3		0.080	0.0	0.0	
OPERATING PERSONNEL	19	0	0		0.350	0.0	0.0	
HEALTH PHYSICS PERSONNEL	3	0	0		0.010	0.0	0.0	
SUPERVISORY PERSONNEL	1	1	0		0.020	0.0	0.0	
ENGINEERING PERSONNEL	4	0	0		0.080	0.0	0.0	
TOTAL	33	1	3	37	0.540	0.0	0.0	0.540
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	292	0	534	826	53.290	0.0	153.040	206.330
OPERATING PERSONNEL	102	1	0	103	23.960	0.080	0.0	24.040
HEALTH PHYSICS PERSONNEL	94	5	98	197	17.240	0.220	25.790	43.250
SUPERVISORY PERSONNEL	56	1	51	108	4.150	0.0	10.080	14.230
ENGINEERING PERSONNEL	90	28	173	291	16.090	1.220	22.600	39.910
GRAND TOTAL	634	35	856	1525	114.730	1.520	211.510	327.760

*Workers may be counted in more than one category.

APPENDIX C

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

PLANT: ROBINSON 2 (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	7	4	12		12.258	4.454	18.797	
OPERATING PERSONNEL	18	12	39		23.933	16.365	6.544	
HEALTH PHYSICS PERSONNEL	13	1	5		10.738	2.627	6.624	
SUPERVISORY PERSONNEL	1	1	0		0.124	1.521	0.0	
ENGINEERING PERSONNEL	8	2	5		9.507	1.641	4.513	
TOTAL	48	22	61	133	56.560	26.608	36.478	119.646
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	21	3	15		44.706	6.091	14.545	
OPERATING PERSONNEL	0	0	0		1.067	0.0	0.0	
HEALTH PHYSICS PERSONNEL	6	0	7		4.201	1.043	9.580	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	1		0.890	0.074	1.497	
TOTAL	29	4	24	58	50.864	7.208	25.622	83.694
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	5	0	2		10.800	0.275	4.727	
OPERATING PERSONNEL	4	0	0		5.323	0.0	0.0	
HEALTH PHYSICS PERSONNEL	1	0	5		2.238	0.560	7.363	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	6	2	50		7.253	1.692	45.177	
TOTAL	17	3	58	79	25.614	2.527	57.267	85.408
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	32	41	312		62.557	54.544	430.485	
OPERATING PERSONNEL	2	0	0		3.134	0.152	0.0	
HEALTH PHYSICS PERSONNEL	19	2	68		19.277	4.602	91.991	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.119	0.0	
ENGINEERING PERSONNEL	32	15	99		37.510	9.692	85.371	
TOTAL	87	60	481	628	122.478	69.109	607.847	799.434
WASTE PROCESSING								
MAINTENANCE PERSONNEL	5	0	27		11.070	0.216	38.002	
OPERATING PERSONNEL	9	0	0		11.439	0.048	0.0	
HEALTH PHYSICS PERSONNEL	4	0	6		3.128	0.845	8.007	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.350	0.003	0.0	
TOTAL	19	0	33	53	25.987	1.112	46.009	73.108
REFUELING								
MAINTENANCE PERSONNEL	13	11	54		25.901	14.615	79.149	
OPERATING PERSONNEL	6	0	0		8.078	0.0	0.0	
HEALTH PHYSICS PERSONNEL	2	0	10		2.569	0.562	13.055	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	5	1	16		6.595	1.214	15.050	
TOTAL	28	13	81	122	43.143	16.391	107.254	166.788
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	86	61	425	573	167.292	80.195	585.705	833.192
OPERATING PERSONNEL	40	12	39	92	52.974	16.565	6.544	76.083
HEALTH PHYSICS PERSONNEL	47	6	103	157	42.151	10.239	136.620	189.010
SUPERVISORY PERSONNEL	1	1	0	2	0.124	1.640	0.0	1.764
ENGINEERING PERSONNEL	53	22	173	250	62.105	14.316	151.608	228.029
GRAND TOTAL	229	104	742	1076	324.646	122.955	880.477	1328.078

APPENDIX C

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

PLANT: †SALEM 1,2 (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	4	0	5		3.117	0.085	2.210	
OPERATING PERSONNEL	10	0	0		9.610	0.0	0.340	
HEALTH PHYSICS PERSONNEL	39	0	91		9.841	0.077	29.913	
SUPERVISORY PERSONNEL	1	0	2		0.200	0.0	0.495	
ENGINEERING PERSONNEL	3	0	1		0.999	0.465	0.535	
TOTAL	57	0	99	156	23.767	0.627	33.493	57.887
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	51	1	98		21.088	0.260	31.988	
OPERATING PERSONNEL	26	0	0		7.547	0.0	0.0	
HEALTH PHYSICS PERSONNEL	1	0	8		3.493	0.0	2.808	
SUPERVISORY PERSONNEL	1	0	3		0.495	0.060	1.030	
ENGINEERING PERSONNEL	0	0	0		0.115	0.080	0.055	
TOTAL	79	1	109	189	32.738	0.400	35.881	69.019
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	1	0	284		2.137	0.035	119.383	
OPERATING PERSONNEL	1	0	0		0.538	0.0	0.0	
HEALTH PHYSICS PERSONNEL	4	0	45		0.782	0.0	17.215	
SUPERVISORY PERSONNEL	0	0	5		0.030	0.030	2.262	
ENGINEERING PERSONNEL	2	2	0		0.445	1.094	0.040	
TOTAL	8	2	334	344	3.932	1.159	138.900	143.991
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	133	10	868		57.713	5.508	345.010	
OPERATING PERSONNEL	30	0	0		12.496	0.0	0.182	
HEALTH PHYSICS PERSONNEL	7	0	84		2.899	0.057	26.253	
SUPERVISORY PERSONNEL	0	0	42		0.070	0.080	15.837	
ENGINEERING PERSONNEL	11	4	4		3.916	0.0	1.505	
TOTAL	181	14	998	1193	77.094	5.645	388.787	471.526
WASTE PROCESSING								
MAINTENANCE PERSONNEL	6	0	0		1.650	0.0	0.470	
OPERATING PERSONNEL	0	0	0		0.260	0.0	0.060	
HEALTH PHYSICS PERSONNEL	2	0	235		1.425	0.265	69.636	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	1	0	0		0.130	0.160	0.0	
TOTAL	9	0	235	244	3.465	0.425	70.166	74.056
REFUELING								
MAINTENANCE PERSONNEL	299	14	87		121.237	5.540	35.018	
OPERATING PERSONNEL	87	0	0		28.830	0.090	0.020	
HEALTH PHYSICS PERSONNEL	13	0	77		4.285	0.0	41.351	
SUPERVISORY PERSONNEL	0	1	1		0.085	1.010	0.855	
ENGINEERING PERSONNEL	4	3	2		2.150	1.446	0.305	
TOTAL	403	18	167	588	156.587	8.086	77.549	242.222
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	494	25	1342	1861	206.942	11.428	534.079	752.449
OPERATING PERSONNEL	154	0	0	154	59.281	0.090	0.602	59.973
HEALTH PHYSICS PERSONNEL	66	0	540	606	22.725	0.399	187.176	210.300
SUPERVISORY PERSONNEL	2	1	53	56	0.880	1.180	20.479	22.539
ENGINEERING PERSONNEL	21	9	7	37	7.755	3.245	2.440	13.440
GRAND TOTAL	737	35	1942	2714	297.583	16.342	744.776	1058.701

APPENDIX C

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

PLANT: SAN ONOFRE 1* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	1	0	42		0.004	0.0	2.035	
OPERATING PERSONNEL	17	0	0		11.245	0.0	0.0	
HEALTH PHYSICS PERSONNEL	29	0	96		16.593	0.0	43.018	
SUPERVISORY PERSONNEL	1	0	0		0.087	0.0	0.0	
ENGINEERING PERSONNEL	11	0	14		2.040	0.0	1.227	
TOTAL	59	0	152	211	29.969	0.0	46.280	76.249
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	43	2	639		24.656	0.246	457.450	
OPERATING PERSONNEL	5	0	0		0.328	0.0	0.0	
HEALTH PHYSICS PERSONNEL	23	0	142		6.793	0.0	76.201	
SUPERVISORY PERSONNEL	2	1	13		0.183	0.110	5.004	
ENGINEERING PERSONNEL	49	9	173		28.406	2.948	91.557	
TOTAL	122	12	967	1101	60.366	3.304	630.212	693.882
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	3	0	13		0.256	0.0	0.505	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	5	0	5		0.838	0.0	1.074	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	4	2	7		0.198	0.034	0.333	
TOTAL	12	2	25	39	1.292	0.034	1.912	3.238
**								
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	2	0	18		0.030	0.0	4.191	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	3		0.0	0.0	0.024	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	5	0	3		1.021	0.0	1.105	
TOTAL	7	0	24	31	1.051	0.0	5.320	6.371
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	6		0.0	0.0	0.546	
OPERATING PERSONNEL	3	0	0		0.034	0.0	0.0	
HEALTH PHYSICS PERSONNEL	1	0	11		0.005	0.0	0.561	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	1	0	3		0.048	0.0	0.237	
TOTAL	5	0	20	25	0.087	0.0	1.344	1.431
REFUELING								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	49 (43)	2	718 (642)	769 (687)	24.946	0.246	464.727	489.919
OPERATING PERSONNEL	25 (18)	0	0	25 (18)	11.607	0.0	0.0	11.607
HEALTH PHYSICS PERSONNEL	58 (34)	0	257 (161)	315 (195)	24.229	0.0	120.878	145.107
SUPERVISORY PERSONNEL	3 (2)	1	13 (13)	17 (16)	0.270	0.110	5.004	5.384
ENGINEERING PERSONNEL	70 (48)	11 (9)	200 (180)	281 (237)	31.713	2.982	94.459	129.154
GRAND TOTAL	205 (145)	14 (12)	1188 (996)	1407 (1153)	92.765	3.338	685.068	781.171

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

**Includes calibration of safety related instruments and controls, installation of insulation on residual heat removal pump, and modifications to charging pump.

APPENDIX C

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

PLANT: †SEQUOYAH 1 (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	29	26	0		10.800	7.900	0.0	
OPERATING PERSONNEL	23	1	27		5.100	0.500	7.400	
HEALTH PHYSICS PERSONNEL	3	1	0		1.800	0.100	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	55	28	27	110	17.700	8.500	7.400	33.600
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	375	40	0		89.400	7.200	0.0	
OPERATING PERSONNEL	89	24	4		14.700	6.000	0.800	
HEALTH PHYSICS PERSONNEL	1	0	0		0.100	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	465	64	4	533	104.200	13.200	0.800	118.200
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	54	76	0		15.100	21.600	0.0	
OPERATING PERSONNEL	13	8	37		2.100	2.600	19.100	
HEALTH PHYSICS PERSONNEL	0	1	0		0.0	0.200	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	67	85	37	189	17.200	24.400	19.100	60.700
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	19	1	0		3.400	0.100	0.0	
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	19	1	0	20	3.400	0.100	0.0	3.500
WASTE PROCESSING								
MAINTENANCE PERSONNEL	6	0	0		1.300	0.0	0.0	
OPERATING PERSONNEL	22	0	0		3.500	0.0	0.0	
HEALTH PHYSICS PERSONNEL	2	0	0		0.400	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	30	0	0	30	5.200	0.0	0.0	5.200
REFUELING								
MAINTENANCE PERSONNEL	107	22	0		43.900	4.600	0.0	
OPERATING PERSONNEL	44	9	6		10.200	2.000	1.000	
HEALTH PHYSICS PERSONNEL	2	2	0		0.500	0.700	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	153	33	6	192	54.600	7.300	1.000	62.900
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	590	165	0	755	163.900	41.400	0.0	205.300
OPERATING PERSONNEL	191	42	74	307	35.600	11.100	28.300	75.000
HEALTH PHYSICS PERSONNEL	8	4	0	12	2.800	1.000	0.0	3.800
SUPERVISORY PERSONNEL	0	0	0	0	0.0	0.0	0.0	0.0
ENGINEERING PERSONNEL	0	0	0	0	0.0	0.0	0.0	0.0
GRAND TOTAL	789	211	74	1074	202.300	53.500	28.300	284.100

APPENDIX C

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

PLANT: ST. LUCIE (PWR)

1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	0	0	0		0.0	0.0	0.0	
OPERATING PERSONNEL	36	0	0		8.590	0.0	0.0	
HEALTH PHYSICS PERSONNEL	28	0	0		5.160	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	64	0	0	64	13.750	0.0	0.0	13.750
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	118	0	0		28.980	0.0	0.0	
OPERATING PERSONNEL	24	0	0		6.910	0.0	0.0	
HEALTH PHYSICS PERSONNEL	25	0	0		5.650	0.0	0.0	
SUPERVISORY PERSONNEL	2	0	0		0.740	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.0	
TOTAL	169	0	0	169	42.280	0.0	0.0	42.280
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	24	2	67		4.610	0.420	41.540	
OPERATING PERSONNEL	13	0	0		4.020	0.0	0.0	
HEALTH PHYSICS PERSONNEL	8	0	8		1.200	0.0	1.410	
SUPERVISORY PERSONNEL	7	0	4		1.920	0.0	2.340	
ENGINEERING PERSONNEL	2	0	5		0.240	0.0	1.100	
TOTAL	54	2	84	140	11.990	0.420	46.390	58.800
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	127	11	166		33.040	8.060	28.740	
OPERATING PERSONNEL	8	0	0		3.630	0.0	0.0	
HEALTH PHYSICS PERSONNEL	13	0	14		2.100	0.0	2.300	
SUPERVISORY PERSONNEL	2	1	4		1.160	0.100	3.020	
ENGINEERING PERSONNEL	2	1	13		0.370	0.170	2.630	
TOTAL	152	13	197	362	40.300	8.330	36.690	85.320
WASTE PROCESSING								
MAINTENANCE PERSONNEL	56	0	0		10.400	0.0	0.0	
OPERATING PERSONNEL	12	0	0		2.590	0.0	0.0	
HEALTH PHYSICS PERSONNEL	19	0	0		1.700	0.0	0.0	
SUPERVISORY PERSONNEL	2	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.0	0.0	0.0	
TOTAL	89	0	0	89	14.690	0.0	0.0	14.690
REFUELING								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	325	13	233	571	77.030	8.480	70.280	155.790
OPERATING PERSONNEL	93	0	0	93	25.740	0.0	0.0	25.740
HEALTH PHYSICS PERSONNEL	93	0	22	115	15.810	0.0	3.710	19.520
SUPERVISORY PERSONNEL	13	1	8	22	3.820	0.100	5.360	9.280
ENGINEERING PERSONNEL	4	1	18	23	0.610	0.170	3.730	4.510
GRAND TOTAL	528	15	281	824	123.010	8.750	83.080	214.840

APPENDIX C

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

PLANT: †SURRY 1,2* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	179	15	79		76.472	0.564	3.493	
OPERATING PERSONNEL	118	9	1		177.043	0.079	0.022	
HEALTH PHYSICS PERSONNEL	50	1	22		35.455	0.216	17.321	
SUPERVISORY PERSONNEL	69	1	7		42.586	0.701	0.074	
ENGINEERING PERSONNEL	40	17	57		3.135	1.212	3.824	
TOTAL	456	43	166	665	334.691	2.772	24.734	362.197
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	181	26	79		341.647	8.584	71.469	
OPERATING PERSONNEL	105	7	1		48.022	0.025	1.038	
HEALTH PHYSICS PERSONNEL	47	1	22		9.912	0.019	7.995	
SUPERVISORY PERSONNEL	69	5	7		34.607	2.639	0.914	
ENGINEERING PERSONNEL	33	24	57		10.436	0.906	6.271	
TOTAL	435	63	166	664	444.624	12.173	87.687	544.484
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	4	0	269		0.043	0.0	1.772	
OPERATING PERSONNEL	6	4	17		0.407	0.146	3.239	
HEALTH PHYSICS PERSONNEL	0	0	23		0.0	0.0	0.0	
SUPERVISORY PERSONNEL	2	0	22		0.395	0.0	0.0	
ENGINEERING PERSONNEL	1	2	56		0.037	0.153	0.411	
TOTAL	13	6	387	406	0.882	0.299	5.422	6.603
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	91	2	7		11.986	0.165	298.370	
OPERATING PERSONNEL	6	1	3		0.213	0.106	0.383	
HEALTH PHYSICS PERSONNEL	6	1	0		0.091	0.699	2.842	
SUPERVISORY PERSONNEL	10	3	0		1.303	0.029	0.805	
ENGINEERING PERSONNEL	9	32	6		1.790	4.396	9.977	
TOTAL	122	39	16	177	15.383	5.395	312.377	333.155
WASTE PROCESSING								
MAINTENANCE PERSONNEL	43	6	286		3.363	1.168	8.101	
OPERATING PERSONNEL	53	0	13		35.652	0.0	1.240	
HEALTH PHYSICS PERSONNEL	27	1	16		28.579	0.001	19.230	
SUPERVISORY PERSONNEL	11	0	18		6.374	0.0	0.023	
ENGINEERING PERSONNEL	6	0	71		0.421	0.0	0.053	
TOTAL	140	7	404	551	74.389	1.169	28.647	104.205
REFUELING								
MAINTENANCE PERSONNEL	2	0	61		0.006	0.0	0.0	
OPERATING PERSONNEL	10	3	6		0.115	0.019	0.0	
HEALTH PHYSICS PERSONNEL	1	0	27		0.002	0.0	0.007	
SUPERVISORY PERSONNEL	2	0	2		0.045	0.0	0.0	
ENGINEERING PERSONNEL	0	1	6		0.0	0.026	0.029	
TOTAL	15	4	102	121	0.168	0.045	0.036	0.249
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	500	49	781	1330	433.517	10.481	383.205	827.203
OPERATING PERSONNEL	298	24	41	363	261.452	0.375	5.922	267.749
HEALTH PHYSICS PERSONNEL	131	4	110	245	74.039	0.935	47.395	122.369
SUPERVISORY PERSONNEL	163	9	56	228	85.310	3.369	1.816	90.495
ENGINEERING PERSONNEL	89	76	253	418	15.819	6.693	20.565	43.077
GRAND TOTAL	1181	162	1241	2584	870.137	21.853	458.903	1350.893

*Workers may be counted in more than one category.

APPENDIX C

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

PLANT: †THREE MILE ISLAND 1* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	141	1	62		1.210	0.0	0.406	
OPERATING PERSONNEL	174	7	28		9.938	0.011	0.170	
HEALTH PHYSICS PERSONNEL	97	2	15		26.015	0.024	0.316	
SUPERVISORY PERSONNEL	79	8	11		1.539	0.027	0.016	
ENGINEERING PERSONNEL	61	27	51		1.340	0.125	0.423	
TOTAL	552	45	167	764	40.042	0.187	1.331	41.560
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	170	2	62		24.147	0.291	0.946	
OPERATING PERSONNEL	166	12	28		0.847	0.026	0.104	
HEALTH PHYSICS PERSONNEL	98	2	10		1.420	0.005	0.049	
SUPERVISORY PERSONNEL	75	8	8		3.081	0.571	0.053	
ENGINEERING PERSONNEL	59	12	45		0.648	0.030	1.382	
TOTAL	568	36	153	757	30.143	0.923	2.534	33.600
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	78	1	31		1.056	0.0	0.912	
OPERATING PERSONNEL	77	7	22		0.581	0.021	0.419	
HEALTH PHYSICS PERSONNEL	56	0	9		1.406	0.0	0.114	
SUPERVISORY PERSONNEL	51	3	5		0.415	0.228	0.030	
ENGINEERING PERSONNEL	42	26	47		0.443	0.150	7.385	
TOTAL	304	37	114	455	3.901	0.399	8.860	13.160
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	204	8	260		146.546	5.801	135.278	
OPERATING PERSONNEL	165	13	50		56.312	0.132	10.015	
HEALTH PHYSICS PERSONNEL	68	0	10		15.209	0.0	0.084	
SUPERVISORY PERSONNEL	79	10	35		20.059	1.058	19.306	
ENGINEERING PERSONNEL	56	32	106		9.306	2.449	57.535	
TOTAL	572	63	461	1096	247.432	9.440	222.218	479.090
WASTE PROCESSING								
MAINTENANCE PERSONNEL	94	4	23		15.459	0.009	0.059	
OPERATING PERSONNEL	59	0	7		5.300	0.0	0.331	
HEALTH PHYSICS PERSONNEL	17	0	5		0.236	0.0	0.180	
SUPERVISORY PERSONNEL	25	2	3		0.878	0.011	0.266	
ENGINEERING PERSONNEL	16	1	8		1.397	0.0	0.011	
TOTAL	211	7	46	264	23.270	0.020	0.847	24.137
REFUELING								
MAINTENANCE PERSONNEL	0	0	0		0.0	0.0	0.0	
OPERATING PERSONNEL	5	0	0		0.020	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.0	0.0	0.0	
SUPERVISORY PERSONNEL	2	0	0		0.002	0.0	0.0	
ENGINEERING PERSONNEL	1	0	0		0.003	0.0	0.0	
TOTAL	8	0	0	8	0.025	0.0	0.0	0.025
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	687(221)	16 (12)	438(276)	1141 (509)	188.418	6.101	137.601	332.120
OPERATING PERSONNEL	646(226)	39 (26)	135 (70)	820 (322)	72.998	0.190	11.039	84.227
HEALTH PHYSICS PERSONNEL	336(122)	4 (4)	49 (30)	389 (156)	44.286	0.029	0.743	45.058
SUPERVISORY PERSONNEL	311(110)	31 (15)	62 (38)	404 (163)	25.974	1.895	19.671	47.540
ENGINEERING PERSONNEL	235 (98)	98 (60)	257(151)	590 (309)	13.137	2.754	66.736	82.627
GRAND TOTAL	2215(777)	188(117)	941(565)	3344(1459)	344.813	10.969	235.790	591.572

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

APPENDIX C

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

PLANT: THREE MILE ISLAND 2* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	118	6	92		1.593	0.070	1.353	
OPERATING PERSONNEL	69	7	13		1.674	0.342	1.199	
HEALTH PHYSICS PERSONNEL	105	3	38		7.382	0.005	2.752	
SUPERVISORY PERSONNEL	54	4	6		0.801	0.005	0.213	
ENGINEERING PERSONNEL	22	4	59		0.081	0.003	1.913	
TOTAL	368	24	208	600	11.531	0.425	7.430	19.386
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	121	6	94		2.721	0.040	1.514	
OPERATING PERSONNEL	68	4	11		1.191	0.016	0.221	
HEALTH PHYSICS PERSONNEL	83	3	28		3.807	0.0	1.723	
SUPERVISORY PERSONNEL	54	1	7		0.765	0.033	0.015	
ENGINEERING PERSONNEL	18	7	27		0.052	0.025	0.095	
TOTAL	344	21	167	532	8.536	0.114	3.568	12.218
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	25	0	17		0.413	0.0	0.087	
OPERATING PERSONNEL	26	1	0		0.181	0.0	0.0	
HEALTH PHYSICS PERSONNEL	46	1	13		0.336	0.0	0.054	
SUPERVISORY PERSONNEL	8	0	1		0.025	0.0	0.0	
ENGINEERING PERSONNEL	3	0	4		0.164	0.0	0.148	
TOTAL	108	2	35	145	1.119	0.0	0.289	1.408
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	142	13	173		59.477	7.845	122.387	
OPERATING PERSONNEL	80	11	25		17.700	4.745	4.247	
HEALTH PHYSICS PERSONNEL	104	10	51		53.541	6.586	14.427	
SUPERVISORY PERSONNEL	60	4	12		9.071	0.410	8.835	
ENGINEERING PERSONNEL	33	9	71		5.828	2.863	27.714	
TOTAL	419	47	332	798	145.617	22.449	177.610	345.676
WASTE PROCESSING								
MAINTENANCE PERSONNEL	132	11	81		5.132	1.751	1.052	
OPERATING PERSONNEL	94	12	37		3.410	0.659	0.573	
HEALTH PHYSICS PERSONNEL	100	5	55		4.591	0.871	1.371	
SUPERVISORY PERSONNEL	69	4	12		1.720	0.021	0.013	
ENGINEERING PERSONNEL	39	9	82		0.592	0.072	0.270	
TOTAL	434	41	267	742	15.445	3.374	3.279	22.098
REFUELING								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	538(163)	36(14)	457(189)	1031 (366)	69.336	9.706	126.393	205.435
OPERATING PERSONNEL	337(115)	35(16)	86 (49)	458 (180)	24.156	5.762	6.240	36.158
HEALTH PHYSICS PERSONNEL	438(125)	22(10)	185 (65)	645 (200)	69.657	7.462	20.327	97.446
SUPERVISORY PERSONNEL	245 (86)	13 (7)	38 (22)	296 (115)	12.382	0.469	9.076	21.927
ENGINEERING PERSONNEL	115 (53)	29(16)	243(135)	387 (204)	6.717	2.963	30.140	39.820
GRAND TOTAL	1673(542)	135(63)	1009(460)	2817(1065)	182.248	26.362	192.176	400.786

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

APPENDIX C

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

PLANT: TROJAN (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	4	2	3		1.420	0.670	1.020	
OPERATING PERSONNEL	33	0	1		15.100	0.070	0.240	
HEALTH PHYSICS PERSONNEL	36	1	36		14.420	0.200	13.560	
SUPERVISORY PERSONNEL	2	0	31		1.080	0.030	9.620	
ENGINEERING PERSONNEL	6	7	3		2.310	2.870	1.100	
TOTAL	81	10	74	165	34.330	3.840	25.540	63.710
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	49	23	23		18.850	8.010	7.810	
OPERATING PERSONNEL	3	0	0		0.710	0.0	0.0	
HEALTH PHYSICS PERSONNEL	3	0	2		1.200	0.0	0.580	
SUPERVISORY PERSONNEL	0	0	0		0.030	0.050	0.280	
ENGINEERING PERSONNEL	1	3	14		0.740	0.830	2.820	
TOTAL	56	26	39	121	21.530	8.890	11.490	41.910
IN-SERVICE INSPECTION								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	41	48	79		20.780	40.520	60.480	
OPERATING PERSONNEL	4	0	0		1.580	0.0	0.020	
HEALTH PHYSICS PERSONNEL	21	0	5		7.350	0.010	1.630	
SUPERVISORY PERSONNEL	5	1	16		2.140	0.350	5.010	
ENGINEERING PERSONNEL	7	9	6		3.500	1.770	3.430	
TOTAL	78	58	106	242	35.350	42.650	70.570	148.570
WASTE PROCESSING								
MAINTENANCE PERSONNEL	1	1	20		0.430	0.630	10.670	
OPERATING PERSONNEL	0	0	0		0.570	0.0	0.0	
HEALTH PHYSICS PERSONNEL	46	0	3		23.940	0.0	1.030	
SUPERVISORY PERSONNEL	0	0	3		0.020	0.0	0.540	
ENGINEERING PERSONNEL	0	0	0		0.070	0.0	0.0	
TOTAL	47	1	26	74	25.030	0.630	12.240	37.900
REFUELING								
MAINTENANCE PERSONNEL	22	0	18		14.520	0.050	12.680	
OPERATING PERSONNEL	15	0	0		12.460	0.020	0.130	
HEALTH PHYSICS PERSONNEL	13	0	7		5.900	0.0	1.780	
SUPERVISORY PERSONNEL	3	0	10		1.750	0.0	3.820	
ENGINEERING PERSONNEL	6	0	8		2.800	0.900	3.380	
TOTAL	59	0	43	102	37.430	0.970	21.790	60.190
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	117	74	143	334	56.000	49.880	92.660	198.540
OPERATING PERSONNEL	55	0	1	56	30.420	0.090	0.390	30.900
HEALTH PHYSICS PERSONNEL	119	1	53	173	52.810	0.210	18.580	71.600
SUPERVISORY PERSONNEL	10	1	60	71	5.020	0.430	19.270	24.720
ENGINEERING PERSONNEL	20	19	31	70	9.420	6.370	10.730	26.520
GRAND TOTAL	321	95	288	704	153.670	56.980	141.630	352.280

APPENDIX C

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

PLANT: TURKEY POINT 1,2* (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	154	14	210		58.492	5.109	72.446	
OPERATING PERSONNEL	26	1	0		31.806	1.290	0.0	
HEALTH PHYSICS PERSONNEL	31	0	85		14.160	0.0	31.146	
SUPERVISORY PERSONNEL	21	1	7		8.002	0.310	3.900	
ENGINEERING PERSONNEL	38	0	43		17.452	1.158	14.735	
TOTAL	270	16	345	631	129.912	7.867	122.227	260.006
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	151	19	113		92.851	6.025	72.955	
OPERATING PERSONNEL	19	1	0		9.008	0.105	0.0	
HEALTH PHYSICS PERSONNEL	11	0	107		3.695	0.0	50.638	
SUPERVISORY PERSONNEL	13	0	0		4.812	0.0	0.175	
ENGINEERING PERSONNEL	25	1	7		10.519	0.150	3.446	
TOTAL	219	21	227	467	120.885	6.280	127.214	254.379
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	120	33	230		91.473	24.946	192.990	
OPERATING PERSONNEL	2	0	0		0.985	0.0	0.0	
HEALTH PHYSICS PERSONNEL	4	0	28		2.800	0.0	11.550	
SUPERVISORY PERSONNEL	4	1	4		1.230	0.505	1.875	
ENGINEERING PERSONNEL	43	3	8		37.070	1.040	4.327	
TOTAL	173	37	270	480	133.558	26.491	210.742	370.791
** SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	112	19	1379		49.643	7.207	1464.956	
OPERATING PERSONNEL	5	0	0		2.490	0.0	0.0	
HEALTH PHYSICS PERSONNEL	19	0	187		9.977	0.015	130.579	
SUPERVISORY PERSONNEL	16	2	51		8.944	1.555	30.839	
ENGINEERING PERSONNEL	25	5	96		13.405	2.141	62.006	
TOTAL	177	26	1713	1916	84.459	10.918	1688.380	1783.757
WASTE PROCESSING								
MAINTENANCE PERSONNEL	16	0	1		8.215	0.135	1.215	
OPERATING PERSONNEL	4	0	0		0.790	0.0	0.0	
HEALTH PHYSICS PERSONNEL	4	0	22		7.920	0.0	17.298	
SUPERVISORY PERSONNEL	2	0	0		0.340	0.0	0.0	
ENGINEERING PERSONNEL	3	0	1		4.045	0.0	0.260	
TOTAL	29	0	24	53	21.310	0.135	18.773	40.218
REFUELING								
MAINTENANCE PERSONNEL	89	17	16		42.140	11.295	3.985	
OPERATING PERSONNEL	25	1	0		5.920	0.365	0.0	
HEALTH PHYSICS PERSONNEL	0	0	18		0.375	0.0	4.634	
SUPERVISORY PERSONNEL	10	0	9		3.365	0.0	4.330	
ENGINEERING PERSONNEL	8	0	4		5.170	0.0	1.355	
TOTAL	132	18	47	197	56.970	11.660	14.304	82.934
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	642 (194)	102 (47)	1949 (1536)	2693 (1777)	342.814	54.717	1808.547	2206.078
OPERATING PERSONNEL	81 (42)	3 (2)	0	84 (44)	50.999	1.760	0.0	52.759
HEALTH PHYSICS PERSONNEL	69 (36)	0	447 (211)	516 (247)	38.927	0.015	245.845	284.787
SUPERVISORY PERSONNEL	66 (40)	4 (3)	71 (53)	141 (96)	26.693	2.370	41.119	70.182
ENGINEERING PERSONNEL	142 (84)	9 (5)	159 (125)	310 (214)	87.661	4.489	86.129	178.279
GRAND TOTAL	1000 (396)	118 (57)	2626 (1925)	3744 (2378)	547.094	63.351	2181.640	2792.085

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

**Steam generator replacement.

APPENDIX C

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

PLANT: †VERMONT YANKEE* (BWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	14	0	4		6.304	0.052	0.979	
OPERATING PERSONNEL	72	0	0		27.063	0.0	0.0	
HEALTH PHYSICS PERSONNEL	24	0	5		13.448	0.0	1.035	
SUPERVISORY PERSONNEL	2	0	0		0.144	0.147	0.0	
ENGINEERING PERSONNEL	29	0	10		8.941	0.0	1.711	
TOTAL	141	0	19	160	55.900	0.199	3.725	59.824
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	50	52	198		42.086	19.213	51.701	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	6	0	1		0.950	0.0	0.160	
SUPERVISORY PERSONNEL	3	0	0		0.813	0.0	0.010	
ENGINEERING PERSONNEL	2	0	0		0.345	0.0	0.023	
TOTAL	61	52	199	312	44.194	19.213	51.894	115.301
IN-SERVICE INSPECTION								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	2	1	76		0.683	0.979	24.273	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.016	0.0	0.0	
SUPERVISORY PERSONNEL	2	1	0		0.580	0.124	0.0	
ENGINEERING PERSONNEL	2	0	0		0.533	0.0	0.0	
TOTAL	6	2	76	84	1.812	1.103	24.273	27.188
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0		0.0	0.0	0.0	
OPERATING PERSONNEL	12	0	0		3.007	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	12	0	0	12	3.007	0.0	0.0	3.007
REFUELING								
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	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	0	0	0	0	0.0	0.0	0.0	0.0
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	66	53	278	397	49.073	20.244	76.953	146.270
OPERATING PERSONNEL	84	0	0	84	30.070	0.0	0.0	30.070
HEALTH PHYSICS PERSONNEL	30	0	6	36	14.414	0.0	1.195	15.609
SUPERVISORY PERSONNEL	7	1	0	8	1.537	0.271	0.010	1.818
ENGINEERING PERSONNEL	33	0	10	43	9.819	0.0	1.734	11.553
GRAND TOTAL	220	54	294	568	104.913	20.515	79.892	205.320

*Workers may be counted in more than one category.

APPENDIX C

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

PLANT: YANKEE-ROWE (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	0	0	0		0.160	0.135	0.062	
OPERATING PERSONNEL	8	0	0		3.852	0.0	0.0	
HEALTH PHYSICS PERSONNEL	2	0	1		0.915	0.0	0.260	
SUPERVISORY PERSONNEL	1	0	0		0.305	0.0	0.090	
ENGINEERING PERSONNEL	1	1	0		0.170	0.400	0.0	
TOTAL	12	1	1	14	5.402	0.535	0.412	6.349
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	19	33	5		6.668	10.420	2.552	
OPERATING PERSONNEL	6	0	0		1.937	0.0	0.0	
HEALTH PHYSICS PERSONNEL	4	0	1		1.140	0.0	0.950	
SUPERVISORY PERSONNEL	0	0	0		0.015	0.0	0.040	
ENGINEERING PERSONNEL	0	0	0		0.130	0.230	0.0	
TOTAL	29	33	6	68	9.890	10.650	3.542	24.082
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	10	5		0.065	11.535	6.870	
OPERATING PERSONNEL	1	0	0		0.915	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.0	0.0	0.105	
SUPERVISORY PERSONNEL	0	0	2		0.005	0.010	3.387	
ENGINEERING PERSONNEL	2	2	5		1.077	0.745	5.355	
TOTAL	3	12	12	27	2.062	12.290	15.717	30.069
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	28	107	116		26.521	87.989	120.262	
OPERATING PERSONNEL	3	0	0		1.720	0.0	0.0	
HEALTH PHYSICS PERSONNEL	9	0	29		3.535	0.0	12.175	
SUPERVISORY PERSONNEL	2	0	2		2.775	0.0	0.690	
ENGINEERING PERSONNEL	8	11	8		12.500	3.000	3.670	
TOTAL	50	118	155	323	47.051	90.989	136.797	274.837
WASTE PROCESSING								
MAINTENANCE PERSONNEL	3	12	0		0.830	2.773	0.020	
OPERATING PERSONNEL	15	0	0		3.897	0.0	0.0	
HEALTH PHYSICS PERSONNEL	8	0	25		3.325	0.0	22.050	
SUPERVISORY PERSONNEL	0	0	0		0.0	0.0	0.0	
ENGINEERING PERSONNEL	0	0	0		0.045	0.0	0.0	
TOTAL	26	12	25	63	8.097	2.773	22.070	32.940
REFUELING								
MAINTENANCE PERSONNEL	28	56	7		17.070	21.556	5.385	
OPERATING PERSONNEL	33	0	0		12.840	0.0	0.0	
HEALTH PHYSICS PERSONNEL	9	0	30		5.796	0.0	24.481	
SUPERVISORY PERSONNEL	0	1	1		0.225	0.175	0.185	
ENGINEERING PERSONNEL	4	5	1		1.093	2.580	0.195	
TOTAL	74	62	39	175	37.024	24.311	30.246	91.581
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	78	218	133	429	51.314	134.408	135.151	320.873
OPERATING PERSONNEL	66	0	0	66	25.161	0.0	0.0	25.161
HEALTH PHYSICS PERSONNEL	32	0	86	118	14.711	0.0	60.021	74.732
SUPERVISORY PERSONNEL	3	1	5	9	3.325	0.185	4.392	7.902
ENGINEERING PERSONNEL	15	19	14	48	15.015	6.955	9.220	31.190
GRAND TOTAL	194	238	238	670	109.526	141.548	208.784	459.858

APPENDIX C

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

PLANT: ZION 1,2 (PWR) 1982

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 M-REM) STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	TOTAL MAN-REMS STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REMS
REACTOR OPERATIONS & SURV.								
MAINTENANCE PERSONNEL	3	0	0		2.440	0.0	0.0	
OPERATING PERSONNEL	34	0	0		15.040	0.0	0.0	
HEALTH PHYSICS PERSONNEL	3	0	0		2.770	0.0	0.0	
SUPERVISORY PERSONNEL	5	0	0		1.120	0.0	0.0	
ENGINEERING PERSONNEL	37	0	0		17.260	0.0	0.0	
TOTAL	82	0	0	82	38.630	0.0	0.0	38.630
ROUTINE MAINTENANCE								
MAINTENANCE PERSONNEL	100	32	530		194.290	22.010	791.680	
OPERATING PERSONNEL	41	0	0		20.830	0.0	0.0	
HEALTH PHYSICS PERSONNEL	23	0	0		20.780	0.0	0.0	
SUPERVISORY PERSONNEL	45	0	0		32.320	0.0	0.0	
ENGINEERING PERSONNEL	41	0	0		13.560	0.0	0.0	
TOTAL	250	32	530	812	281.780	22.010	791.680	1095.470
IN-SERVICE INSPECTION								
MAINTENANCE PERSONNEL	0	0	0		0.0	0.0	234.210	
OPERATING PERSONNEL	0	0	0		0.0	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		1.380	0.0	0.0	
SUPERVISORY PERSONNEL	16	0	0		8.080	0.0	0.0	
ENGINEERING PERSONNEL	35	0	0		14.520	0.0	0.0	
TOTAL	51	0	0	51	23.980	0.0	234.210	258.190
SPECIAL MAINTENANCE								
MAINTENANCE PERSONNEL	5	0	185		5.270	0.0	541.700	
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	5	0	185	190	5.270	0.0	541.700	546.970
WASTE PROCESSING								
MAINTENANCE PERSONNEL	0	0	0		0.0	0.0	0.0	
OPERATING PERSONNEL	6	0	0		2.430	0.0	0.0	
HEALTH PHYSICS PERSONNEL	3	0	0		2.770	0.0	0.0	
SUPERVISORY PERSONNEL	2	0	0		2.140	0.0	0.0	
ENGINEERING PERSONNEL	7	0	0		2.690	0.0	0.0	
TOTAL	18	0	0	18	10.030	0.0	0.0	10.030
REFUELING								
MAINTENANCE PERSONNEL	0	0	0		0.0	0.0	0.0	
OPERATING PERSONNEL	2	0	0		1.600	0.0	0.0	
HEALTH PHYSICS PERSONNEL	0	0	0		0.0	0.0	0.0	
SUPERVISORY PERSONNEL	1	0	0		0.880	0.0	0.0	
ENGINEERING PERSONNEL	3	0	0		1.610	0.0	0.0	
TOTAL	6	0	0	6	4.090	0.0	0.0	4.090
TOTAL BY JOB FUNCTION								
MAINTENANCE PERSONNEL	108	32	715	855	202.000	22.010	1567.590	1791.600
OPERATING PERSONNEL	83	0	0	83	39.900	0.0	0.0	39.900
HEALTH PHYSICS PERSONNEL	29	0	0	29	27.700	0.0	0.0	27.700
SUPERVISORY PERSONNEL	69	0	0	69	44.540	0.0	0.0	44.540
ENGINEERING PERSONNEL	123	0	0	123	49.640	0.0	0.0	49.640
GRAND TOTAL	412	32	715	1159	363.780	22.010	1567.590	1953.380

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16. ABSTRACT *(200 words or less)*

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 1982. 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 license technical specifications. 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 75 nuclear power plants that had completed at least one full year of operation as of December 31, 1982, indicated that the number of personnel monitored during 1982 was 129,275 persons and the annual collective dose incurred by these individuals was 52,190 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 705 man-rems. The termination reports revealed that some 65,700 individuals completed their employment with one or more reactor facilities during 1981.* Approximately 5,300 of these workers could be considered transients and they received an average dose of about one rem.

* The most recent year for which all of the termination data are available for analysis.

17. KEY WORDS AND DOCUMENT ANALYSIS

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