
Occupational Radiation Exposure at Commercial Nuclear Power Reactors 1978

B. G. Brooks

Office of
Management and Program Analysis

U.S. Nuclear Regulatory
Commission



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SUMMARY

This report presents an updated compilation of occupational radiation exposures at commercial nuclear power reactors for the years 1969 through 1978. This report is published annually and is available at all NRC Public Document Rooms, or may be purchased from the National Technical Information Service in Springfield, Virginia. 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 Part 20.407 of Title 10, Chapter 1, Code of Federal Regulations (10 CFR Part 20.407).

This report now contains data received from the 64 light water cooled reactors (LWRs) that had completed at least one year of commercial operation as of December 31, 1978. This represents an increase of seven reactors over the number contained in last year's report. The total number of personnel monitored at LWRs during 1978 increased by approximately 12% to 76,121. The number of workers that received measurable doses, however, increased only 8% to 45,978. The total collective dose for 1978 is estimated to be 31,806 man-rem, a small decrease from last year's value of 32,511, which results in the average dose per worker decreasing slightly to 0.69 rem. The average collective dose per reactor also decreased, by approximately 15%, to a value of 497 man-rem.

. For the first time, this report also presents exposure data that has been submitted by the Fort St. Vrain high temperature gas cooled reactor. Although the plant has not been in commercial operation for a year and was not counted in the statistics, it has been included as an item of interest.

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OCCUPATIONAL RADIATION EXPOSURE AT
COMMERCIAL NUCLEAR POWER REACTORS

1978

Introduction

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

On February 4, 1974, 10 CFR 20.407 was amended to require licensed power reactors, among other licensees, to submit an annual statistical report indicating the distribution of the whole body doses of all individuals monitored at each facility. The format of these reports (see Appendix B) allows an estimation to be made of the total collective dose, and of the number of workers receiving measurable doses. It is these values that were used throughout this report (except for Tables 8, 9, 10 and Appendix C) for the years 1973 through 1978.

The plant operating data, such as the capacity of the plant and the megawatt years of electricity generated, was obtained or derived from data included in NUREG-0020, "Operating Units Status Report," and from ERDA-77-125, "U. S. Central Station Nuclear Power Plants, 1976." These reports may be purchased from the National Technical Information Service, Springfield, Virginia.

This report, and each of its predecessors, summarizes information reported during previous years. However, more plant specific details, such as the annual reports submitted by each plant pursuant to 10 CFR 20.407 and Regulatory Guide 1.16, may be found in WASH-1311,¹ NUREG-75/032,² NUREG-0109,³ NUREG-0323,⁴ and NUREG-0463⁵ for each of the years 1973 through 1977, respectively. Operating statistics and data for each year after 1972 may be found in a series of reports, "Nuclear Power Plant Operating Experience"^{6,7,8,9}. The report containing data for 1978, NUREG-0618 should be published shortly. These reports may be purchased from the National Technical Information Service, and they are available at all NRC public document rooms.

I. SUMMARY OF OCCUPATIONAL DOSES AND POWER GENERATION

Definitions of Terms and Sources of Data

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

The number of man-rem shown for the four years 1969 through 1972 was obtained via 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 total number of man-rem and the number of workers receiving measurable doses was obtained from the annual reports submitted pursuant to 10 CFR 20.407. From these reports, the annual

TABLE 1
SUMMARY OF ANNUAL INFORMATION REPORTED
BY COMMERCIAL LIGHT WATER COOLED REACTORS

1969-1978

Year	Number Of Reactors Included	Annual Collective Doses (Man-rem)	No. of Workers With Measurable Doses	Gross MW-Yrs Electric Generated	Average Dose Per Worker (Rems)	Average Collective Dose Per Reactor (Man-rem)	Average No. Personnel With Measurable Doses Per Reactor	Average Man-rem Per MW-Yr	Average MW-Yrs Generated Per Reactor	Average Rated Capacity (MWe) Net
1969	7 (5)	1,247 (663)	744*	1,289	0.89*	178	149*	1.0	184	247
1970	10 (7)	3,502 (1,609)	2,661*	1,892	0.60*	350	380*	1.8	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	319	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	699	1.2	413	663
1977	57	32,511	42,266	26,444	0.77	570	742	1.2	464	677
1978	64	31,804	45,978	31,614	0.69	497	718	1.0	494	702

*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 BOILING WATER REACTORS
1969-1978

Year	Number Of Reactors Included	Annual Collective Doses (Man-rem)	No. of Workers With Measurable Doses	Gross MW-Yrs Electric Generated	Average Dose Per Worker (Rems)	Average Collective Dose Per Reactor (Man-rem)	Average No. Personnel With Measurable Doses Per Reactor	Average Man-rem Per MW-Yr	Average MW-Yrs Generated Per Reactor	Average Rated Capacity (MWe) Net
1969	3 (2)	586 (300)	290*	192	1.03*	195	145*	3.0	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

*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 PRESSURIZED WATER REACTORS
1969-1978

Year	Number Of Reactors Included	Annual Collective Doses (Man-rem)	No. of Workers With Measurable Doses	Gross MW-Yrs Electric Generated	Average Dose Per Worker (Rems)	Average Collective Dose Per Reactor (Man-rem)	Average No. Personnel With Measurable Doses Per Reactor	Average Man-rem Per MW-Yr	Average MW-Yrs Generated Per Reactor	Average Rated Capacity (MWe) Net
1969	4 (3)	661 (363)	454*	1,097	0.80*	165	151*	0.6	274	349
1970	4 (3)	2,738 (1,099)	1,340*	979	0.82*	684	447*	2.8	245	349
1971	6 (4)	1,844 (912)	905*	1,912	1.01*	307	226*	1.0	320	399
1972	8 (5)	3,708 (2,083)	1,885*	2,544	1.10*	463	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	16,708	25,700	19,840	0.65	428	659	0.8	509	723

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

collective dose was estimated by summing the products obtained by multiplying the number of individuals shown in each of the dose ranges (shown in Table 7 and Appendix B) by the midpoint of each range. In Appendix A, this dose is broken down by work function (operations and maintenance) and by personnel type (contractor, and station and utility) for each plant site. The proportion of man-remS in each type is the same as that reported in the plant's annual report required by its technical specifications (see Appendix C). This was done in the following way:

- (1) The collective dose (in man-remS) incurred by workers in the work function "Reactor Operation and Surveillance" on each plant's annual report submitted pursuant to their technical specifications (the first number in the last columns in Appendix C) was determined.
- (2) The ratio of this dose to the total collective dose (the last number in the last column in Appendix C) was calculated and multiplied by the total collective dose that had been estimated using the 20.407 annual reports. 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" 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 annual report to yield the number of man-remS shown in this column of Appendix A.
- (4) The same sort of procedure was followed in

determining the number of man-remS in the type of personnel columns "Contractor" and "Station & Utility" in Appendix A.

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), that may have received exposures too small to be detected by personnel monitoring devices.

The number of gross megawatt-years (MW-Yrs) of electric energy generated each year by each facility is shown in Appendix A. This number was obtained by dividing the gross megawatt-hours of electric energy produced by each facility during the year by 8,760, the number of hours per year. The gross megawatt-years of electricity produced that are presented in Tables 1 through 3 are the sums of that produced by all of the reactors included each year. This sum is divided by the number of those reactors included each year to yield the average amount of electric energy generated (MW-Yrs) per reactor which is also shown in Tables 1 through 3. The total number of megawatt-years was also used to determine average values of annual collective dose per megawatt-year generated. This was calculated by dividing the total number of man-remS by the total gross megawatt-years generated to yield a quotient, having the units man-remS per MW-Yr, that is used as a measure of the doses

incurred by workers at power reactors in relation to the gross electric energy produced. This value was also calculated for each reactor site and is presented in Tables 4 through 6 in Appendix A.

The average rated capacity, shown in Tables 1 through 3, was found by dividing the sum of the net maximum dependable capacities (Net MWe) of the reactors by the number of reactors included each year. The net maximum dependable capacity is defined to be the gross electrical output as measured at the output terminals of the turbine generator during the most restrictive seasonal conditions, less the normal station service loads. This is the "capacity" shown for each plant in Appendix C.

Average Annual Doses at Light Water Cooled Reactors

Some of the data presented in Tables 1 through 3 is graphically displayed in Figures 1 and 2. Figure 1 indicates that for all LWRs the average annual values of all four of the parameters plotted for 1978 decreased somewhat from the 1977 values. For example, the average dose per worker for the 45,978 workers receiving measurable doses fell to about 0.7 rems; the number of man-rems per reactor decreased by about 13% to 497 man-rems; and the number of man-rems per megawatt-year decreased by 17% to a value of 1.0. As can be seen from Figure 2, these decreases were due to a decline in the average values of all of these parameters calculated for BWRs. The average dose per worker decreased from about 0.9 to 0.7 rems; the number of man-rems per reactor decreased by 27% to a value of 604; and the number of man-rems per megawatt-year decreased by 38% to a value of 1.3, the lowest in the last five years. For PWRs, the average number of workers per

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

1969 - 1978

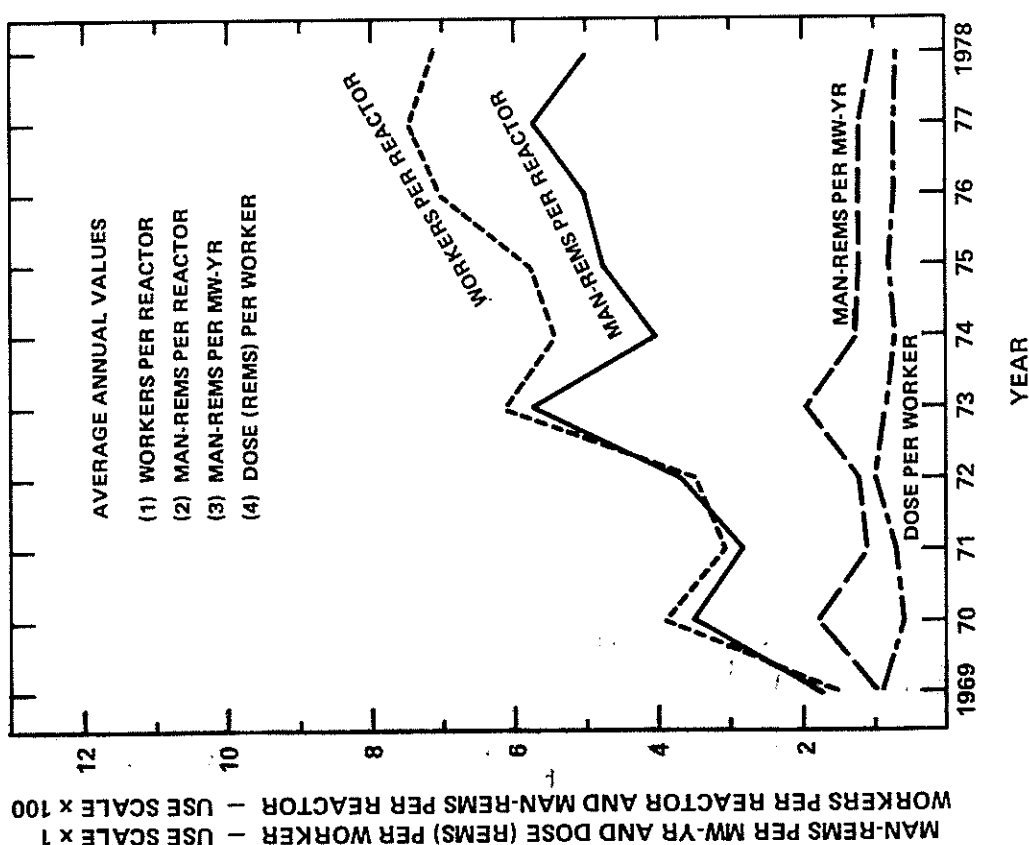
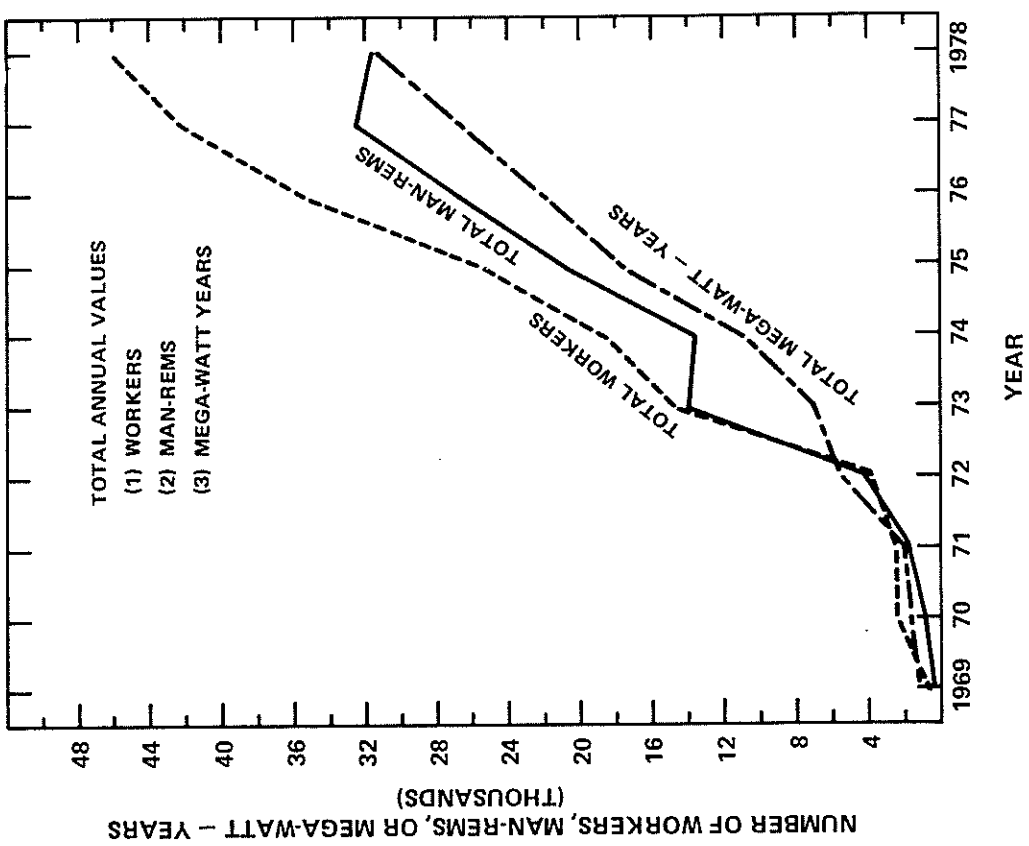
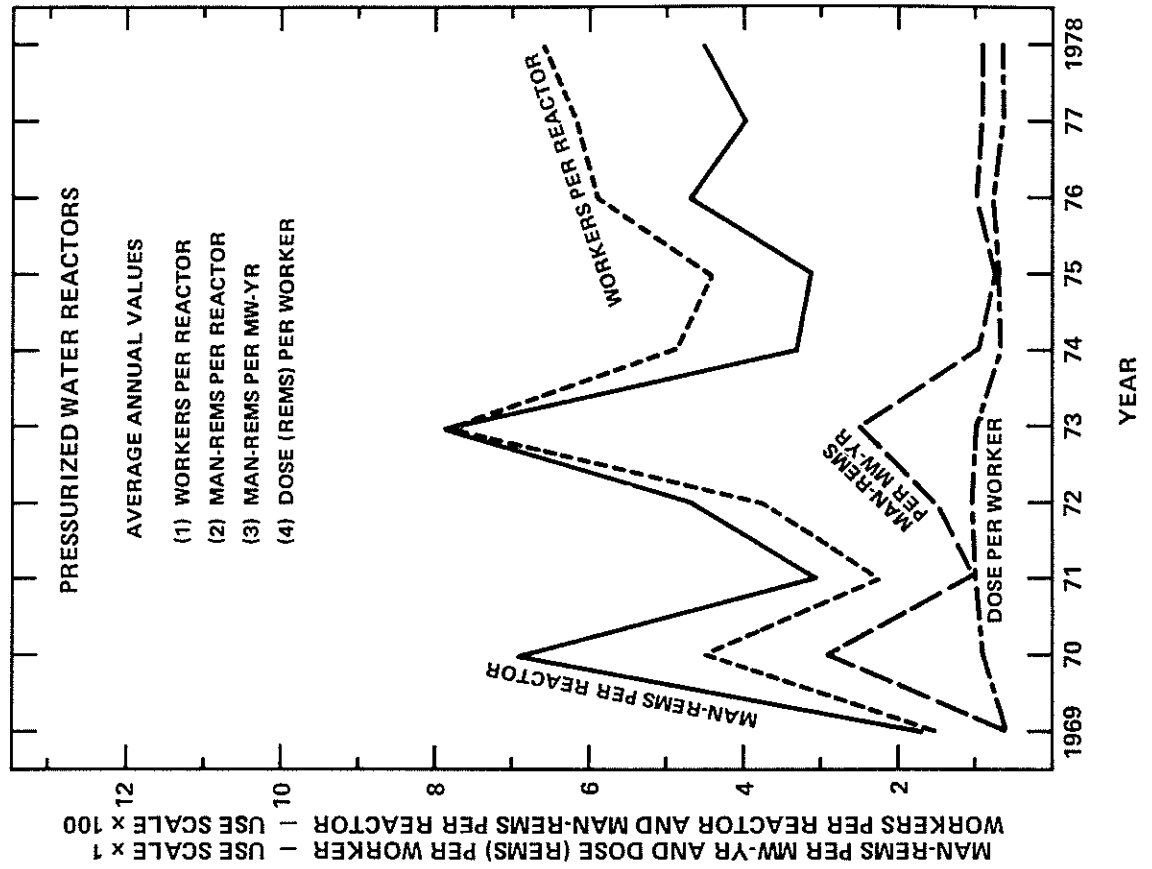
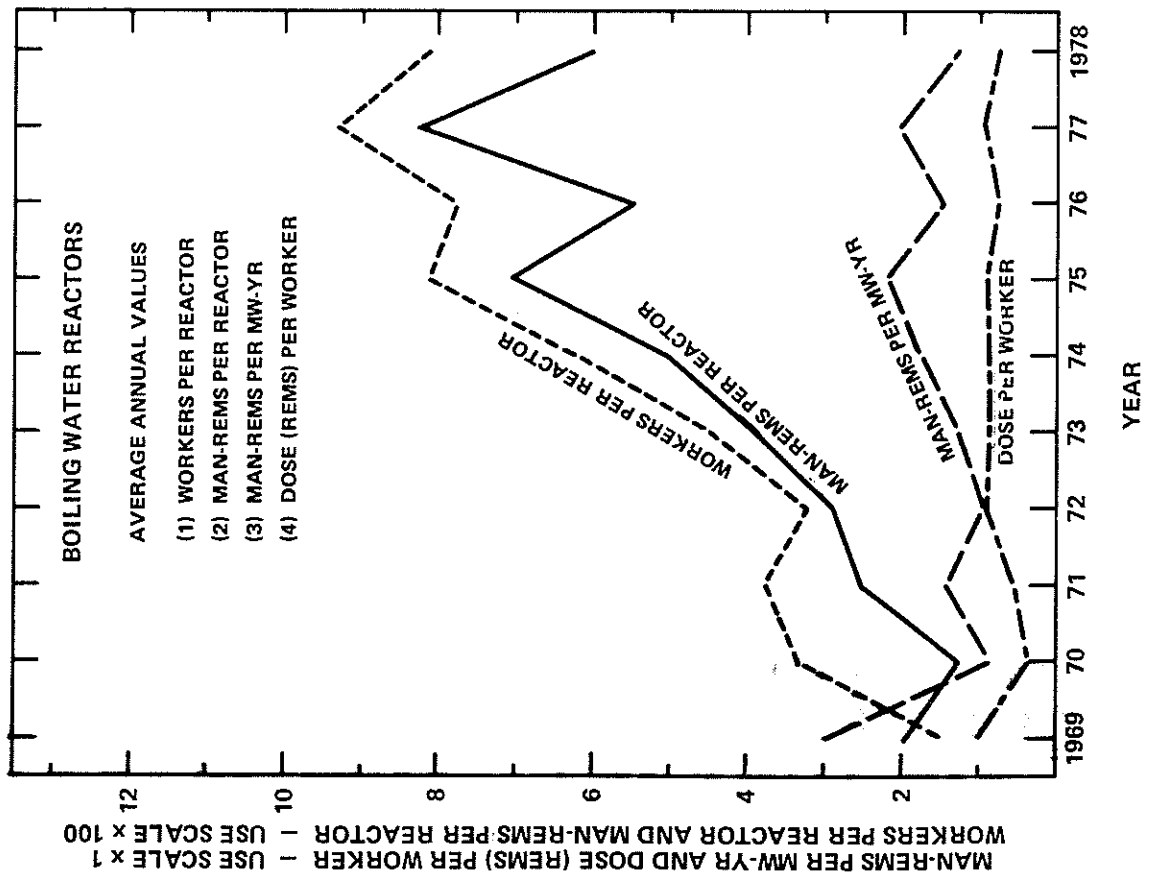


FIGURE 2
PLOTS OF AVERAGE ANNUAL VALUES
AT BOILING AND PRESSURIZED WATER REACTORS

1969 - 1978



reactor and the average number of man-rems per reactor increased by about 7% and 8% to values of 659 and 428, respectively. The values of the other two parameters remained constant at about 0.7 rems per worker and 0.8 man-rems per megawatt-year. However, one can see that the average values of all four of the parameters plotted in Figure 2 for PWRs remain smaller than those for BWRs, as they have for four out of the last five years.

Analysis of the data for the ten years 1969 through 1979, during which there has been a total of 324 light water cooled reactor years of operation, again indicate that the cost, in terms of the collective doses incurred by workers and the number of man-rems per megawatt-year of generated electricity, is greater for the operation of BWRs than for PWRs. Summing the annual collective doses for the ten years shown in Table 2 and dividing this sum (97,076) by the total number of reactor years of operation by BWRs (141), one finds that the average collective dose for each BWR per year is 546 MAN-REMS/REACTOR/YEAR. Similarly, the annual average collective dose for PWRs was found to be with 422 MAN/REMS/REACTOR/YEAR, with 475 MAN-REMS/REACTOR/YEAR the average for all LWRs. Dividing the ten-year sum of the annual collective doses by the ten-year sum of the megawatt-years of electricity generated, one finds that the average collective dose per megawatt-year at BWRs is 1.6 MAN-REMS/MW-YR/YEAR. The average for PWRs is 1.0 MAN-REMS/MW-YR/YEAR, and 1.2 MAN-REMS/MW-YR/YEAR is the average for all LWRs.

The number of reactors from which data has been collected is still rather small, and the information reported by a few reactors where unusual conditions or problems may have occurred could have a large impact on the statistics presented in this report. In an effort to identify those plants, Tables 4, 5 and 6 list the BWRs and PWRs in ascending order of man-rem per reactor for each of the years 1973 through 1978. Two other parameters, dose per worker and collective dose per megawatt-year, are also given for each plant and could have been used in ranking the plants as well. Also included in Table 6 is a ranking of the plants that had been in commercial operation for at least five years as of December 31, 1978. It should be noted that there are significant differences in nuclear plant designs, even between plants of a given type. Therefore, one should be careful when attempting to draw definitive conclusions from the data.

In general, one can see from the listings in Tables 4 through 6 that the plants having lower values of these three parameters each year are usually the newer plants. Some of the older, smaller plants also appear near the top of the listings since they report small collective doses; however, the ratio of their man-rem 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-rem to megawatt-year ratio as well, it indicates that extensive maintenance or modifications had been undertaken during the year. At PWRs substantial collective doses were associated with the inspection and repair of steam generator tubes again in 1978, as

TABLE 4
PRESSURIZED WATER REACTORS
LISTED IN ASCENDING ORDER OF MAN-REMS PER REACTOR
1973 THROUGH 1977

1973			1974			1975			1976			1977		
Site Name	¹ Man-Rems per Site	Dose per Worker (Rems) MW-Yr.	Site Name	¹ Man-Rems per Site	Dose per Worker (Rems) MW-Yr.	Site Name	¹ Man-Rems per Site	Dose per Worker (Rems) MW-Yr.	Site Name	¹ Man-Rems per Site	Dose per Worker (Rems) MW-Yr.	Site Name	¹ Man-Rems per Site	Dose per Worker (Rems) MW-Yr.
Turkey Point 3	78	0.17	Prairie Island 1	18	0.12	Arkansas 1	21	0.14	Rancho Seco	58	0.19	Beaver Valley	87	0.26
Yankee Rowe	99	0.74	Zion 1	56	0.18	Kewaunee	28	0.27	Yankee Rowe	59	0.39	Palisades	100	0.30
Maine Yankee	117	0.14	Fort Calhoun	71	0.22	Prairie Island 1&2	123	0.26	Calvert Cliffs 1	74	0.15	Kewaunee	140	0.45
Surry 1	152	0.16	San Onofre	71	0.33	Zion 1&2	127	0.29	Maine Yankee	85	0.35	Prairie Island 1&2	300	0.42
GINNA	224	0.70	Point Beach 1&2	295	0.74	Three Mile Island 1	73	0.56	Cook 1	116	0.29	St. Lucie	152	0.34
Point Beach 1&2	588	1.17	Haddam Neck	201	0.37	Yankee Rowe	116	0.47	Millstone Point 2	168	0.27	Trojan	174	0.29
San Onofre	354	0.62	Yankee Rowe	205	0.84	Oconee 1,2&3	497	0.60	Point Beach 1&2	370	1.18	Point Beach 1&2	430	1.03
Robinson 2	695	0.83	Turkey Point 3&4	454	0.57	Point Beach 1&2	459	1.35	Prairie Island 1&2	447	0.55	Millstone Point 2	243	0.36
Haddam Neck	697	0.73	Oconee 1&2	517	0.61	San Onofre	292	0.69	Kewaunee	270	0.71	Maine Yankee	245	0.48
Palisades	1133	1.16	Maine Yankee	420	0.68	Fort Calhoun	294	0.63	Zion 1&2	571	0.74	Arkansas 1	256	0.43
Indian Point 1	5262	1.75	Surry 1&2	884	0.52	Palisades	306	0.62	Three Mile Island 1	286	0.35	Fort Calhoun	297	0.56
Averages per Reactor	783	1.00	Indian Point 1&2	911	0.89	Maine Yankee	319	0.73	Arkansas 1	289	0.61	Cook 1	300	0.37
			Palisades	627	0.81	Indian Point 1&2	705	0.79	Fort Calhoun	313	0.61	Yankee Rowe	356	0.49
			Robinson 2	672	0.79	Turkey Point 3&4	876	0.74	Oconee 1,2&3	1026	0.84	Indian Point 1,2&3	1071	0.77
			GINNA	1225	1.39	GINNA	538	0.78	Haddam Neck	449	0.70	Three Mile Island 1	360	0.32
			Averages per Reactor	331	0.68	Haddam Neck	703	0.88	Turkey Point 3&4	1184	0.72	Rancho Seco	391	0.76
						Surry 1&2	1649	0.85	GINNA	636	0.84	GINNA	401	0.76
						Robinson 2	1142	1.34	Palisades	696	0.93	Oconee 1,2&3	1329	0.83
						Averages per Reactor	318	0.76	Robinson 2	715	1.20	Robinson 2	455	0.72
								San Onofre	880	0.66	Zion 1&2	1004	1.28	
								Indian Point 1&2	1950	1.23	Turkey Point 3&4	1036	0.79	
								Surry 1&2	3165	1.15	Calvert Cliffs 1	547	0.24	
								Averages per Reactor	460	0.79	Haddam Neck	642	0.72	
											San Onofre	847	0.86	
											Surry 1&2	2307	1.24	
											Averages per Reactor	396	0.65	
														0.78

*Indian Point 1 was defueled in 1975.

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

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

Five Year Totals & Averages 1974 - 1978

Calendar Year 1978

Boiling Water Reactors				Pressurized Water Reactors				Boiling Water Reactors				Pressurized Water Reactors							
Site Name	1 Man-Rems per Worker Site (Rems)	Dose per Worker (Rems)	Man-Rems per MW-Yr.	Site Name	1 Man-Rems per Worker Site (Rems)	Dose per Worker (Rems)	Man-Rems per MW-Yr.	2 Site Name	1 Total Man-Rems per Site	Total Workers with Measurable Exposures	Average Dose per Worker (Rems)	Total Mega-Watt Years	Average Man-Rems per MW-Yr.	2 Site Name	1 Total Man-Rems per Site	Total Workers with Measurable Exposures	Average Dose per Worker (Rems)	Total Mega-Watt Years	Average Man-Rems per MW-Yr.
Cooper Station	158	0.53	0.27	Davis Besse	48	0.11	0.15	La Crosse	872	721	1.21	124	7.03	Point Beach 1&2	1,874	1,805	1.04	4,204	0.45
La Crosse	164	0.90	7.60	Farley 1	108	0.20	0.15	Big Rock Point	1,254	1,819	0.69	198	6.33	Yankee Rowe	1,018	1,934	0.53	678	1.50
Big Rock Point	175	0.61	3.60	Prairie Island 1&2	221	0.40	0.24	Vermont Yankee	1,377	3,029	0.45	1,933	0.71	Fort Calhoun	1,385	2,443	0.57	1,505	0.92
Hatch 1	248	0.19	0.48	Haddam Neck	117	0.54	0.21	Quad Cities 1&2	6,400	5,100	1.25	4,822	1.33	Maine Yankee	1,489	2,449	0.61	2,947	0.51
Nine Mile Point	314	0.56	0.56	Salem 1	122	0.21	0.22	Dresden 1,2&3	9,988	9,458	1.06	5,048	1.98	Haddam Neck	2,112	3,099	0.68	2,541	0.83
Humboldt Bay	335	1.05	---	Kewaunee	154	0.46	0.33	Monticello	3,340	4,059	0.82	2,054	1.63	Turkey Point 3&4	4,582	6,272	0.73	4,908	0.93
Vermont Yankee	339	0.36	0.87	Point Beach 1&2	320	0.95	0.30	Humboldt Bay	3,580	2,467	1.45	111	32.25	San Onofre	2,491	3,722	0.67	1,668	1.49
Monticello	375	0.55	0.82	Arkansas 1	189	0.26	0.30	Nine Mile Point	3,630	3,435	1.06	2,020	1.80	Palisades	2,493	3,192	0.78	1,584	1.56
Brunswick 1&2	1004	0.69	0.86	Beaver Valley	190	0.29	0.63	Oyster Creek	6,095	6,811	0.89	2,081	2.93	Ginna	3,250	3,514	0.92	1,620	2.01
Dresden 1, 2&3	1529	0.79	1.23	Calvert Cliffs 1 & 2	500	0.36	0.42	Pilgrim	8,330	5,786	1.44	2,060	4.04	Robinson 2	3,947	3,876	1.02	2,655	1.49
Browns Ferry 1,2,&3	1792	0.75	0.90	Yankee Rowe	282	0.50	1.94	Grand Totals & Averages	44,866	42,685	1.05	20,451	2.19	Surry 1 & 2	9,842	10,479	0.94	5,018	1.96
Peach Bottom 2&3	1317	0.59	0.80	Trojan	312	0.45	1.55	Averages	44,866	42,685	1.05	20,451	2.19	Grand Totals & Averages	34,483	42,785	0.81	29,338	1.18
Quad Cities 1&2	1618	1.34	1.44	Crystal River	321	0.50	1.03												
Fitzpatrick	909	1.00	1.83	Rancho Seco	323	0.64	0.53												
Duane Arnold	974	0.86	6.53	Cook 1	336	0.43	0.45												
Millstone 1	1239	0.89	2.23	St. Lucie	337	0.42	0.56												
Oyster Creek	1279	0.91	2.96	San Onofre	401	0.52	1.24												
Pilgrim	1327	0.80	2.55	Fort Calhoun	410	0.69	1.20												
Averages per Reactor	604	0.74	1.35	Maine Yankee	420	0.66	0.65												
				Ginna	450	0.68	1.17												
				Oconee 1, 2&3	1393	0.85	0.73												
				Three Mile Island 1	504	0.26	0.73												
				Zion 1 & 2	1017	0.92	0.63												
				Turkey Point 3&4	1032	0.77	1.03												
				Indian Point 1,2&3	2006	1.05	1.71												
				Palisades	764	0.90	1.45												
				Surry 1&2	1837	0.83	1.52												
				Robinson 2	963	1.02	2.01												
				Millstone 2	1621	1.14	3.02												
				Average per Reactor	428	0.65	0.84												

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

²Multiple unit sites where all reactors had not completed one full year of commercial operation as of 12/31/74 are not included.

had been the case in 1977. Major activities at BWRs that accounted for most of the 1978 collective dose were maintenance and repair of feedwater nozzles/spargers, modifications done within the torus, repair of control rod drive systems, and maintenance of the reactor water cleanup systems.

II. ANNUAL DOSE DISTRIBUTIONS

Dose Ranges

Table 7 indicates the distribution of the annual whole body doses received by workers at commercial LWRs during each of the years 1969 through 1978. One can see that prior to 1973 the reports had a different format such that there were only two dose ranges, 0.0 to 1.25 rems and 1.25 to 2.0 rems, for doses less than two rems. This did not allow an estimate of the collective dose, as previously described, to be made for these years. For the years after 1972, one can see that the annual collective dose increased nearly every year and that the number of workers receiving measurable doses increased every year. However, the percentage of these workers that received annual doses in excess of 5 rems has been decreasing for the last three years, falling to 0.2% in 1978. Appendix B displays the 1978 annual dose distributions reported by each licensed nuclear facility. The distribution shown in Table 7 is the sum of these reports. The reports submitted by each facility during previous years can be found in NUREG-0593,¹⁰ to be published at a later date, and in WASH-1350-R5¹¹ and NUREG-0463,¹² two of its predecessors.

Work and Job Function Dose Distributions

Tables 8, 9 and 10 summarize the annual data submitted in accordance with plant technical specifications in the format described in Regulatory Guide 1.16. The licensees are requested to record the

TABLE 7 *
SUMMARY DISTRIBUTION OF ANNUAL WHOLE BODY DOSES
AT COMMERCIAL LIGHT WATER COOLED REACTORS
1969-1978

Year	Number of Individuals with Whole Body Exposures in the Indicated Ranges (Rems)																Total Number Monitored	Annual Cumulative Doses (Man-rem)
	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		
			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	422	251	71	38	16	7				33,823	13,963
1974	20,472	6,735	2,887	2,056	1,182	906	2,503	471	226	86	30	6					38,938	13,722
1975	18,852	8,841	3,674	2,750	1,685	1,339	3,948	691	423	169	60	24	12	0	1		44,343	20,879
1976	25,704	12,821	5,130	4,135	2,520	2,030	4,880	789	487	188	70	26	11	5	1		61,151	26,433
1977	24,868	13,970	6,534	5,050	3,258	2,486	6,162	1,130	569	141	66	36	21	6			67,134	32,511
1978	30,143	16,639	6,943	5,504	3,399	2,498	6,405	1,080	418	67	26	8			(>12) 2		76,121	31,804

* 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.

collective doses received by station employees, utility employees, and contract workers among various prescribed work functions and occupations, or jobs. The report submitted by each station for 1978 is contained in Appendix C. One will note that in some cases, the licensee data had to be modified slightly in order to fit into one of the prescribed categories.

Table 8 provides a summary of the distribution of collective dose by work function, and personnel types for BWRs, PWRs and all LWRs. As can be seen in Table 9, workers involved in routine and special maintenance activities continue to incur nearly 70% of the total cumulative dose. At BWRs (Table 8) workers involved in these activities received 77.3% of the cumulative dose, while at PWRs these workers received only 59.4% of the cumulative dose. The percentages of the cumulative dose received by workers during inservice inspection and refueling at PWRs, however, are 12.4% and 10.6%, respectively, while at BWRs such workers received 2.6% and 2.0%. Overall, the total collective dose is about equally divided between the contractor personnel (14,761 man-rems) and the station and utility employees (14,830 man-rems). However, one can see that the collective doses received by contractor personnel during inservice inspections and during special maintenance activities are about twice those received by the other employees engaged in these activities.

Table 10 presents the distribution of the collective dose at all LWRs among five occupations or jobs. As expected, maintenance personnel

TABLE 8

COLLECTIVE ANNUAL DOSES
BY WORK FUNCTION AND PERSONNEL TYPE

1978

BOILING WATER REACTORS

Work Function	Station Employees		Utility Employees		Contract Workers & Others		Total per Function	
	Man-rem	% of Total	Man-rem	% of Total	Man-rem	% of Total	Man-rem	% of Total
Reactor Operations & Surveillance	1,354	9.6%	71	0.5%	301	2.1%	1,726	12.3%
Routine Maintenance	1,708	12.1%	1,240	8.8%	3,121	22.2%	6,069	43.2%
Inservce Inspection	29	0.2%	13	0.1%	318	2.3%	360	2.6%
Special Maintenance	722	5.1%	765	5.4%	3,316	23.6%	4,803	34.1%
Waste Processing	531	3.8%	15	0.1%	267	1.9%	813	5.8%
Refueling	187	1.3%	49	0.3%	56	0.4%	292	2.0%
Totals	4,531	32.2%	2,153	15.3%	7,379	52.5%	14,063	100%

PRESSURIZED WATER REACTORS

Reactor Operations & Surveillance	1,777	11.4%	52	0.3%	365	2.4%	2,194	14.1%
Routine Maintenance	1,573	10.1%	509	3.3%	1,174	7.6%	3,256	21.9%
Inservce Inspection	243	1.5%	370	2.4%	1,316	8.5%	1,929	12.4%
Special Maintenance	885	5.7%	1,240	8.0%	3,703	23.8%	5,828	37.5%
Waste Processing	460	3.0%	17	0.1%	200	1.3%	677	4.4%
Refueling	712	4.6%	308	2.0%	624	4.0%	1,644	10.6%
Totals	5,650	36.4%	2,496	16.1%	7,381	47.5%	15,528	100%

ALL LIGHT WATER REACTORS

Reactor Operations & Surveillance	3,131	10.6%	123	0.4%	666	2.2%	3,920	13.2%
Routine Maintenance	3,281	11.1%	1,749	6.0%	4,295	14.5%	9,325	31.6%
Inservce Inspection	272	0.9%	383	1.3%	1,634	5.5%	2,289	7.7%
Special Maintenance	1,607	5.4%	2,005	6.8%	7,019	23.7%	10,631	35.9%
Waste Processing	991	3.3%	32	0.1%	467	1.6%	1,490	5.0%
Refueling	899	3.0%	357	1.2%	680	2.3%	1,936	6.5%
Totals	10,181	34.4%	4,649	15.7%	14,761	49.9%	29,591	100%

TABLE 9
PERCENTAGES OF ANNUAL COLLECTIVE DOSE
BY WORK FUNCTION

WORK FUNCTION	PERCENT OF DOSE				
	1974	1975	1976	1977	1978
REACTOR OPERATIONS AND SURVEILLANCE	14.0%	10.8%	10.2%	10.5%	13.3%
ROUTINE MAINTENANCE	45.4%	52.6%	31.0%	28.1%	31.5%
IN-SERVICE INSPECTION	2.7%	3.0%	6.0%	6.4%	7.7%
SPECIAL MAINTENANCE	20.4%	19.0%	40.0%	42.5%	35.9%
WASTE PROCESSING	3.5%	6.9%	5.0%	5.8%	5.0%
REFUELING	14.0%	7.7%	7.9%	6.7%	6.6%

TABLE 10
COLLECTIVE ANNUAL DOSES
BY OCCUPATION AND PERSONNEL TYPE

1978

BOILING WATER REACTORS

Personnel Occupation	Station Employees Man-rem % of Total	Utility Employees Man-rem % of Total	Contract Workers & Others Man-rem % of Total	Total per Occupation Man-rem % of Total
Maintenance	1,993	1,753	5,064	8,810
Operations	1,406	23	61	1,490
Health Physics	482	20	469	971
Supervisory	388	28	120	536
Engineering	259	102	366	727
Totals	4,528	1,926	6,080	12,534 ^a
	15.9%	14.0%	40.4%	70.3%
	11.2%	0.2%	0.5%	11.9%
	3.8%	0.2%	3.7%	7.7%
	3.1%	0.2%	1.0%	4.3%
	2.1%	0.8%	2.9%	5.8%
	36.1%	15.4%	48.5%	100%

PRESSURIZED WATER REACTORS

Maintenance	2,193	1,611	4,005	7,809
Operations	1,036	23	58	1,117
Health Physics	570	55	427	1,052
Supervisory	319	20	162	501
Engineering	284	92	735	1,111
Totals	4,402	1,801	5,387	11,590 ^b
	18.9%	13.9%	34.6%	67.4%
	8.9%	0.2%	0.5%	9.6%
	4.9%	0.5%	3.7%	9.1%
	2.8%	0.2%	1.4%	4.3%
	2.5%	0.8%	6.3%	9.6%
	38.0%	15.5%	46.5%	100%

ALL LIGHT WATER REACTORS

Maintenance	4,186	3,364	9,069	16,619
Operations	2,442	46	119	2,607
Health Physics	1,052	75	896	2,023
Supervisory	707	48	282	1,037
Engineering	543	194	1,101	1,838
Totals	8,930	3,727	11,467	24,124
	17.4%	13.9%	37.6%	68.9%
	10.1%	0.2%	0.5%	10.8%
	4.4%	0.3%	3.7%	8.4%
	2.9%	0.2%	1.2%	4.3%
	2.2%	0.8%	4.6%	7.6%
	37.0%	15.4%	47.5%	100%

^aThe remaining 1,529 man-rem of the 14,063 total shown in Table 8 were not categorized by personnel occupation by the Dresden and Quad Cities plants.

^bThe remaining 3,938 man-rem of the 15,528 total shown in Table 8 were not categorized by personnel occupation by the Indian Point 1 & 2, Point Beach, Surry and Zion plants.

incurred about 70% of the cumulative dose, with contractor maintenance personnel receiving 6.3% more than the station and utility maintenance employees. Supervisory personnel received only 4.3% while workers in the remaining three occupations - operations, health physics, and engineering - received between 7% and 11% of the collective dose. The total collective dose, 24,124 man-rem, shown in Table 10 does not equal that shown in Table 8 because several sites did not provide the distribution of the collective dose by occupation. Also, the collective doses shown in Tables 8 and 10 do not equal those shown in other tables in the report because they are the sum of the doses taken from the type of annual reports shown in Appendix C rather than the collective dose that was calculated via the 10 CFR 20.407 type reports.

High Temperature Gas Cooled Reactor (HTGR)

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

As shown in the following table, annual whole body doses incurred by workers at the plant have been minimal. No one has exceeded an annual dose of 0.25 rems, and the average dose per worker remains at

about 0.05 rems. For the five years ending on December 31, 1978, the total collective dose for workers at the site was 9.2 man-rems, and a total of 108 megawatt-years of electricity had been generated. This yields a five-year average of 0.09 man-rems per megawatt-year.

TABLE 11
ANNUAL DOSES AT FORT ST. VRAIN
1974 - 1978

Year	No. of Individuals with Annual Doses in Ranges (Rems)			No. of Individuals Monitored	Annual Collective Dose (Man-Rems)	Gross MW-Yrs Generated	Average Annual Dose Per Worker (Rems)
	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

III. PERSONNEL OVEREXPOSURES

Table 12 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. The majority of them involved exposures slightly in excess of the applicable quarterly limits specified in 10 CFR 20.101. However, in 1978, an incident occurred at Trojan in which two individuals received whole body doses of 27.3 rems and 17.1 rems. They were conducting radiation surveys near an unshielded, unmarked portion of the spent fuel transfer tube while fuel was moving through the tube. More details about this event may be found in NUREG-0090, Vol. 1, No. 2.¹³ Summing the figures in the second column of Table 12, one finds that 150 individuals were overexposed to external radiation at nuclear power reactors during the last eight years. The cumulative whole body doses incurred by these individuals is 513.8 man-rems which is a small fraction (0.3%) of the total number of man-rems (149,506) accumulated by all workers at LWRs during those years.

TABLE 12

PERSONNEL OVEREXPOSURES AT POWER REACTORS

1971 - 1978

Year	Number of Workers Overexposed to External Radiation	Sum of 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 rem (thyroid)
1972	16	49.7	5.1	2	2000 MPC-hrs
1973	19	61.2	4.0	0	—
1974	43	155.9	6.1	12	433 MPC-hrs
1975	14	44.2	3.8	7	13.5 rem (lung)
1976	20	74.3	10.1	1	248 MPC-hrs
1977	27	52.9	3.6	0	—
1978	9	71.1	27.3	0	—

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APPENDIX A

Personnel, Dose & Power Generation Summary

1969 - 1978

Appendix A
Personnel, Dose and Power Generation Summary

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Personnel Contractor	Man-rem per Station & Utility	Average Dose per Worker (Rems)	Man-rem per MW-Yr
						Operations	Maintenance				
ARKANSAS 1 Docket 50-313; DPR-51 1st commercial operation 12/74 Type - PWR Capacity - 836 MWe	1975	588.0	76.5	147	21	27	262	100	189	0.14	0.0
	1976	464.6	56.6	476	289	28	228	111	145	0.61	0.6
	1977	610.3	76.8	601	256	32	157	109	80	0.43	0.4
	1978	627.2	77.5	722	189					0.26	0.3
BEAVER VALLEY 1 Docket 50-334; DPR-66 1st commercial operation 10/76 Type - PWR Capacity - 800 MWe	1977	355.6	57.0	331	87	8	79	58	29	0.26	0.2
	1978	304.2	40.8	646	190	11	179	152	38	0.29	0.6
BIG ROCK POINT Docket 50-155, DPR-6 1st commercial operation 3/63 Type - BWR Capacity - 64 MWe	1969	48.1		165	136					0.82	2.8
	1970	43.5		290	194					0.67	4.5
	1971	44.4		260	184					0.71	4.1
	1972	43.5		195	181					0.93	4.2
	1973	50.9		241	285	54	222	119	166	1.18	5.6
	1974	40.7	70.3	281	276	58	122	42	234	0.98	6.8
	1975	35.1	59.8	300	180	82	207	20	160	0.60	5.1
	1976	29.5	50.1	488	289	94	240	105	184	0.59	9.8
	1977	43.6	73.4	465	334	93	82	60	274	0.72	7.7
	1978	48.5	77.9	285	175			9	166	0.61	3.6
BROWNS FERRY 1, 2, 3 Docket 50-259, 50-260, 50-296; DPR-33, -52, -68 1st commercial operation 8/74, 3/75, 3/77 Type - BWR Capacity - 1065, 1065, 1065 MWe	1975	161.7	17.8	2380	325	60	803	249	614	0.14	2.0
	1976	337.6	26.9	2207	234	4	1788	259	1533	0.11	0.7
	1977	1327.5	73.0	1858	863					0.46	0.6
	1978	1992.1	73.5	2376	1792					0.75	0.9

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Personnel Type		Average Dose per Worker (Rems)	Man-rem per MW-Yr
						Operations	Maintenance	Contractor	Station & Utility		
BRUNSWICK 2, 1 Docket 50-324, 50-325; DPR-62, -71 1st commercial operation 11/75, 3/77 Type - BWR Capacity - 790, 790 MWe	1976	297.2	56.0	1265	326	15	311	222	104	0.26	1.1
	1977	291.1	55.7	1512	1119	48	1071	782	337	0.74	3.8
	1978	1173.1	83.7	1458	1004	99	905	695	309	0.69	0.8
CALVERT CLIFFS 1, 2 Docket 50-317, 50-318; DPR-53, -69 1st commercial operation 5/75, 4/77 Type - PWR Capacity - 810, 810 MWe	1976	753.4	95.2	507	74	28	46	8	66	0.15	0.1
	1977	583.0	72.1	2265	547	36	511	224	323	0.24	0.9
	1978	1188.5	75.8	1391	500	13	487	143	357	0.36	0.4
COOK 1 Docket 50-315; DPR-58 1st commercial operation 8/75 Type - PWR Capacity - 1044 MWe	1976	807.4	83.1	395	116	13	103	71	45	0.29	0.1
	1977	573.0	76.1	802	299	21	278	138	161	0.37	0.5
	1978	744.8	73.6	778	336	49	287	139	197	0.43	0.4
COOPER STATION Docket 50-298; DPR-46 1st commercial operation 7/74 Type - BWR Capacity - 764 MWe	1975	456.4	83.6	579	117	30	87	19	98	0.20	0.2
	1976	433.3	75.5	763	350	39	311	210	140	0.46	0.8
	1977	538.2	86.2	315	197	50	147	66	131	0.63	0.4
	1978	576.0	91.0	297	158	40	118	58	100	0.53	0.3
CRYSTAL RIVER 3 Docket 50-302; DPR-72 1st commercial operation 3/77 Type - PWR Capacity - 797 MWe	1978	311.5	41.4	643	321	8	313	244	77	0.50	1.0

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Contractor	Man-rem per Station & Utility	Average Dose per Worker (Rems)	Man-rem per MW-Yr
						Operations	Maintenance				
DAVIS-BESSE 1 Docket 50-346; NPF-3 1st commercial operation 11/77 Type - PWR Capacity - 906 MWe	1978	326.4	48.7	421	48	13	35	14	34	0.11	0.1
DRESDEN 1, 2, 3 Docket 50-010, 50-237, 50-249; DPR-2, -19, -25 1st commercial operation 7/60, 7/70, 11/71 Type - BWR Capacity - 197, 772, 773 MWe	1969 1970 1971 1972 1973 1974 1975 1976 1977 1978	99.7 163.1 394.5 1243.7 1112.2 842.5 708.1 1127.2 1132.9 1242.2		1341 1594 2310 1746 1862 1946	286 143 715 728 939 1662 3423 1680 1693 1529	143 271 228 316 204	796 3152 1452 1377 1325	344 57 2252 749 693 619	595 1605 1171 931 1000 910	0.70 1.04 1.48 0.96 0.91 0.79	2.9 0.9 1.8 0.6 0.8 2.0 4.8 1.5 1.5 1.2
DUANE ARNOLD Docket 50-331; DPR-49 1st commercial operation 2/75 Type - BWR Capacity - 515 MWe	1976 1977 1978	305.2 353.6 149.2	78.0 78.9 33.2	350 538 1112	105 299 974	14 36 59	91 263 915	62 220 932	43 79 42	0.30 0.56 0.88	0.3 0.8 6.5
FARLEY 1 Docket 50-348; NPF-2 1st commercial operation 12/77 Type - PWR Capacity - 829 MWe	1978	713.8	86.5	527	108	39	69	34	74	0.20	0.1

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Contractor	Man-rem per Personnel Type		Average Dose per Worker (Rems)	Man-rem per MM-Yr
						Operations	Maintenance		Station & Utility	Utility		
FITZPATRICK Docket 50-333; DPR-59 1st commercial operation 7/75 Type - BWR Capacity - 800 MWe	1976	489.0	71.6	600	202	14	1066	937			0.34	0.4
	1977	460.5	68.4	1380	1080	166	743	597	143		0.78	2.3
	1978	497.0	72.1	904	909				312		1.00	1.8
FORT CALHOUN Docket 50-285; DPR-40 1st commercial operation 9/73 Type - PWR Capacity - 456 MWe	1974	294.0	83.5	327	71			24	47		0.22	0.2
	1975	252.3	67.4	469	294			92	202		0.63	1.2
	1976	265.9	69.5	516	313	28	285	38	275		0.61	1.2
	1977	351.8	79.4	535	297	33	264	72	225		0.56	0.8
	1978	342.3	75.1	596	410	59	351	151	259		0.69	1.2
GINNA Docket 50-244; DPR-18 1st commercial operation 7/70 Type - PWR Capacity - 470 MWe	1971	327.8		340	430	69	361	108	322		1.26	1.3
	1972	293.6		677	1032	71	961	278	754		1.52	3.5
	1973	409.5		319	224	55	169	84	140		0.70	0.5
	1974	253.7	62.4	884	1225						1.39	4.8
	1975	365.2	76.7	685	538						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

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Contractor	Man-rem per Station & Utility	Average Dose per Worker (Rems)	Man-rem per MM-Yr
						Operations	Maintenance				
HADDAM NECK (CONN. YANKEE) Docket 50-213; DPR-61 1st commercial operation 1/68 Type - PWR Capacity - 550 MWe	1969	438.5		138	106			27	79	0.77	0.2
	1970	424.7		734	689			463	226	0.94	1.6
	1971	502.2		289	342			166	176	1.18	0.7
	1972	515.6		355	325			181	144	0.91	0.6
	1973	293.1		951	697			544	153	0.73	2.4
	1974	521.4	91.2	550	201					0.36	0.4
	1975	494.3	89.9	795	703	20	683	253	196	0.88	1.4
	1976	482.9	82.5	644	449	5	444	440	201	0.70	0.9
	1977	480.7	83.9	894	641	59	582			0.72	1.3
	1978	563.4	98.6	216	117	25	92	18	99	0.54	0.2
HATCH 1 Docket 50-321; DPR-57 1st commercial operation 12/75 Type - BWR Capacity - 717 MWe	1976	496.3	83.8	630	134	79	55	4	130	0.21	0.3
	1977	446.8	66.3	1303	465	96	369	220	245	0.36	1.0
	1978	513.0	72.8	1304	248	88	160	52	196	0.19	0.5
HUMBOLDT BAY Docket 50-133; DPR-7 1st commercial operation 8/63 Type - BWR Capacity - 63 MWe	1969	44.6		125	164	69	95	12	152	1.31	3.7
	1970	49.3		115	209	130	79	37	172	1.82	4.2
	1971	39.6		140	292	114	178	65	227	2.09	7.4
	1972	43.1		127	253	81	172	57	196	1.99	5.9
	1973	50.1		210	266	60	206			1.27	5.3
	1974	43.4	83.8	296	318	103	215			1.07	7.3
	1975	45.3	83.9	265	339	131	208			1.28	7.5
	1976	23.5	46.4	523	683	37	646	112	227	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	-

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Contractor	Man-rem per Station & Utility	Average Dose per Worker (Rems)	Man-rem per MW-Yr
						Operations	Maintenance				
*INDIAN POINT 1, 2, 3 Docket 50-3, 50-247, 50-286; DPR-5, -26, -64 1st commercial operation 10/62, 8/73, 8/76 Type - PWR Capacity - 0, 859, 911 MWe	1969	206.2			298						1.4
	1970	43.3			1639						37.8
	1971	154.0			768						5.0
	1972	142.3			967						6.8
	1973	0			2998	709	4553	2847	2415	1.75	-
	1974	556.1	59.4		1019	166	539	47	658	0.89	1.6
	1975	584.4	74.8		891	154	1796	172	1778	0.79	1.2
	1976	273.9	34.8		1590	189	881	383	687	1.23	7.1
	1977	1278.3	75.3		1391	260	1746	759	1247	0.77	0.8
	1978	1172.3	67.8		1909					1.05	1.7
KEWAUNEE Docket 50-305; DPR-43 1st commercial operation 6/74 Type - PWR Capacity - 519 MWe	1975	401.9	88.2	104	28	1	27	12	16	0.27	0.1
	1976	405.9	78.9	381	270	16	254	193	77	0.71	0.7
	1977	425.0	79.9	312	139	8	131	76	63	0.44	0.3
	1978	466.6	89.5	335	154	11	143	89	65	0.46	0.3
LACROSSE Docket 50-409; DPR-45 1st commercial operation 11/69 Type - BWR Capacity - 48 MWe	1970	15.3			111						7.2
	1971	33.1		218	158					0.72	4.8
	1972	29.2		151	172					1.14	5.9
	1973	24.4		157.	221					1.41	9.1
	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

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

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-REMs	Man-REMs per Work Function		Man-REMs per Contractor	Man-REMs per Station & Utility	Average Dose per Worker (REMs)	Man-REMs per MW-Yr
						Operations	Maintenance				
MAINE YANKEE Docket 50-309; DPR-36 1st commercial operation 12/72 Type - PWR Capacity - 772 MWe	1973	408.7		782	117			59	58	0.15	0.3
	1974	432.6	68.7	619	420			188	232	0.68	1.0
	1975	542.9	79.9	440	319			181	138	0.72	0.6
	1976	712.2	95.0	244	85			26	59	0.35	0.1
	1977	617.6	82.2	508	245			112	133	0.48	0.4
	1978	642.7	84.1	638	420			262	158	0.66	0.6
MILLSTONE POINT 1 Docket 50-245; DPR-21 1st commercial operation 3/71 Type - BWR Capacity - 654 MWe	1972	377.6		612	596			340	256	0.97	1.6
	1973	225.1		1184	663			422	241	0.56	2.9
	1974	430.3	79.1	2477	1430					0.58	3.3
	1975	465.4	75.6	2587	2022					0.78	4.3
	1976	449.8	76.1	1377	1194			955	239	0.87	2.6
	1977	575.7	89.6	1075	392			159	233	0.36	0.7
1978	556.6	87.6	1391	1239			907	332	0.89	2.2	
MILLSTONE POINT 2 Docket 50-336; DPR-65 1st commercial operation 12/75 Type - PWR Capacity - 802 MWe	1976	545.7	78.7	620	168			73	95	0.27	0.3
	1977	518.7	65.7	667	242			153	89	0.36	0.5
	1978	536.6	67.3	1420	1621			1534	87	1.14	3.0
MONTICELLO Docket 50-263; DPR-22 1st commercial operation 6/71 Type - BWR Capacity - 536 MWe	1972	424.4		99	61			1	60	0.62	0.1
	1973	389.5		401	176			67	109	0.44	0.4
	1974	349.3	74.9	842	349			91	258	0.41	1.0
	1975	344.8	72.2	1353	1353					1.00	3.9
	1976	476.4	91.5	325	263			51	212	0.81	0.5
	1977	425.6	79.9	860	1000			661	339	1.16	2.3
1978	459.4	87.2	679	375			165	210	0.55	0.8	

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Personnel Type	Average Dose per Worker (Rems)	Man-rem per MW-Yr
						Operations	Maintenance			
NINE MILE POINT I Docket 50-220; DPR-63 1st commercial operation 12/69 Type - BWR Capacity - 610 MWe	1970	227.0		821	44	12	32	17	27	0.05
	1971	346.5		1006	195	43	152	63	132	0.19
	1972	381.8		735	285	59	226	28	257	0.39
	1973	411.0		550	567	139	428	118	449	1.03
	1974	385.9	70.5	740	824	42	782	279	545	1.11
	1975	359.0	72.1	649	681	68	613	203	478	1.05
	1976	484.6	88.2	392	428	52	376	229	199	1.09
	1977	347.4	59.2	1093	1383	41	1342	883	500	1.26
	1978	527.7	95.1	561	314	59	255	26	288	0.56
	OCONEE 1, 2, 3 Docket 50-269, 50-270, 50-287; DPR-38, -47; -55 1st commercial operation 7/73 9/74, 12/74 Type - PWR Capacity - 860, 860, 860 MWe	1974	650.6	60.1	844	517	18	499	144	373
1975	1838.3	75.5	829	497	72	425	90	407	0.60	
1976	1561.4	63.0	1215	1026	65	961	219	807	0.84	
1977	1566.4	65.9	1595	1328	244	1084	294	1034	0.83	
1978	1909.0	75.8	1636	1393	179	1214	340	1053	0.85	
OYSTER CREEK Docket 50-219; DPR-16 1st commercial operation 12/69 Type - BWR Capacity - 620 MWe	1970	413.6		95	63	21	42	11	52	0.66
1971	448.9		249	240	50	190	92	92	148	0.96
1972	515.0		339	582	150	432	167	167	415	1.72
1973	424.6		782	1236	195	1041	683	683	553	1.58
1974	434.5	70.4	935	984	166	818	162	162	822	1.05
1975	373.6	73.3	1210	1140	169	971	271	271	869	0.94
1976	456.5	79.3	1582	1078	70	1008	587	587	491	0.68
1977	385.7	70.1	1673	1614	76	1538	1048	1048	566	0.96
1978	431.8	74.3	1411	1279	134	1145	696	696	583	0.91

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Contractor	Man-rem per Personnel Type		Average Dose per Worker (Rems)	Man-rem per MW-Yr	
						Operations	Maintenance		Station & Utility				
PALISADES Docket 50-255; DPR-20 1st commercial operation 12/71 Type - PWR Capacity - 635 MWe	1972	216.8		975	78	16	1117	661		472	1.16	0.4	
	1973	286.8		774	1133						0.81	3.9	
	1974	10.7	5.5	495	627						0.62	58.6	
	1975	302.0	64.5	742	306	23	673	109		587	0.94	1.0	
	1976	346.9	55.2	332	696	13	87	23		77	0.30	2.0	
	1977	616.6	91.4	849	100	52	712	173		591	0.90	0.2	
	1978	320.2	49.7		764							2.4	
PEACH BOTTOM 2, 3 Docket 50-277, 50-278; DPR-44, -56 1st commercial operation 7/74, 12/74 Type - BWR Capacity - 1051, 1035 MWe	1975	1234.3	80.9	971	228	180	660	434		406	0.23	0.2	
	1976	1379.2	73.0	2136	840	223	1813	1374		562	0.39	0.6	
	1977	1052.4	58.7	2827	2036	162	1155	709		608	0.72	1.9	
	1978	1636.3	84.0	2244	1317						0.59	0.8	
PILGRIM 1 Docket 50-293; DPR-35 1st commercial operation 12/72 Type - BWR Capacity - 669 MWe	1973	484.0		230	126	49	77				0.55	0.3	
	1974	234.1	39.2	454	415	142	656	412		386	0.91	1.8	
	1975	308.1	71.3	473	798	66	2582	2270		378	1.69	2.6	
	1976	287.8	60.7	1317	2648	146	2996	2176		966	2.01	9.2	
	1977	316.6	61.4	1875	3142	157	1170	895		432	1.68	9.9	
	1978	519.5	83.1	1667	1327						0.80	2.5	

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel		Average Dose per Worker (Rems)	Man-rems per MW-Yr	
						Operations	Maintenance	Contractor	Station & Utility			
POINT BEACH 1, 2 Docket 50-266, 50-301; DPR-24, -27 1st commercial operation 12/70, 10/72 Type - PWR Capacity - 495, 495 MWe	1971	393.4			164						0.4	
	1972	378.3			580					1.17	1.5	
	1973	693.7		501	588					0.74	0.8	
	1974	760.2	81.3	400	295	72	516	81	214	1.35	0.4	
	1975	801.2	82.9	339	459	70	225			1.18	0.6	
	1976	857.3	86.7	313	370	58	312	107	263	1.03	0.4	
	1977	873.9	87.3	417	429	63	366	212	217	0.95	0.5	
	1978	914.4	90.9	336	320	71	249	111	209		0.3	
PRAIRIE ISLAND 1, 2 Docket 50-282, 50-306; DPR-42, -60 1st commercial operation 12/73, 12/74 Type - PWR Capacity - 507, 507 MWe	1974	181.9	43.9	150	18					0.12	0.1	
	1975	836.0	83.3	477	123					0.26	0.1	
	1976	725.2	76.6	818	447		379	235	212	0.55	0.6	
	1977	922.9	87.2	718	300	68	227	60	240	0.42	0.3	
	1978	941.1	92.2	546	221	43	178	48	173	0.40	0.2	
	QUAD CITIES 1, 2 Docket 50-254, 50-265; DPR-29, -30 1st commercial operation 2/73, 3/73 Type - BWR Capacity - 769, 769 MWe	1974	958.1	72.3	678	482					0.71	0.5
		1975	833.6	68.4	1083	1618		1504	36	926	1.49	1.9
		1976	951.2	73.1	1225	1651	114	1382	692	1003	1.35	1.7
1977		970.1	84.0	907	1031	269	923	648	658	1.14	1.1	
1978		1124.5	88.6	1207	1618	108	1462	373	896	1.34	1.4	
RANCHO SECO Docket 50-312; DPR-54 1st commercial operation 4/75 Type - PWR Capacity - 873 MWe	1976	268.1	30.4	297	58		52	17	41	0.19	0.2	
	1977	706.4	77.1	515	390	6	329	248	142	0.76	0.5	
	1978	607.7	80.5	508	323	76	247	176	147	0.64	0.5	

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rem	Man-rem per Work Function		Man-rem per Contractor	Man-rem per Personnel Type Station & Utility	Average Dose per Worker (Rems)	Man-rem per MW-Yr
						Operations	Maintenance				
ROBINSON 2 Docket 50-261; DPR-23 1st commercial operation 3/71 Type - PWR Capacity - 665 MWe	1972	580.0		245	215	42	173	137	78	0.88	0.4
	1973	455.1		831	695					0.84	1.5
	1974	578.1	83.3	853	672	185	487			0.79	1.2
	1975	501.8	72.7	849	1142					1.34	2.3
	1976	585.5	84.7	597	715	30	685	457	758	1.20	1.2
	1977	511.5	85.2	634	455	52	403	223	232	0.72	0.9
	1978	480.5	72.0	943	963	63	900	529	434	1.02	2.0
SALEM 1 Docket 50-272; DPR-70 1st commercial operation 6/77 Type - PWR Capacity - 1079 MWe	1978	546.4	55.6	574	122	28	94	32	90	0.21	0.2
	1969	314.1		123	42	10	32	5	37	0.34	0.1
SAN ONOFRE 1 Docket 50-206; DPR-13 1st commercial operation 1/68 Type - PWR Capacity - 436 MWe	1970	365.9		251	155	13	142	59	96	0.62	0.4
	1971	362.1		121	50	12	38	3	47	0.41	0.1
	1972	338.5		326	256	29	227	117	139	0.78	0.8
	1973	273.7		570	353	40	313	168	185	0.62	1.3
	1974	377.8	86.1	219	71					0.32	0.2
	1975	389.0	87.4	424	292					0.69	0.7
	1976	297.9	70.2	1330	880	147	733	629	251	0.66	2.9
	1977	281.2	63.7	985	847	77	770	451	396	0.86	3.0
	1978	323.2	80.2	764	401	25	376	234	167	0.52	1.2
	ST. LUCIE 1 Docket 50-335; DPR-67 1st commercial operation 12/76 Type - PWR Capacity - 777 MWe	1977	649.1	84.7	445	152	26	126	92	60	0.34
1978		606.4	76.5	797	337	15	322	140	197	0.42	0.6

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

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

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

Reporting Organization	Year	Mega-watt-Year (MW-Yr)	Unit Availability Factor	Total Personnel With Measurable Doses	Total Man-rems	Man-rems per Work Function		Man-rems per Personnel Type	Average Dose per Worker (Rems)	Man-rems per MM-Yr	
						Operations	Maintenance				
VERMONT YANKEE Docket 50-271; DPR-28 1st commercial operation 11/72 Type - BWR Capacity - 504 MWe	1973	222.1		244	85	24	192	103	0.35	0.4	
	1974	303.5		357	216	70	83	63	0.60	0.7	
	1975	429.0	87.8	282	153	36	375	246	0.54	0.4	
	1976	389.6	77.1	815	411	83	175	90	0.50	1.0	
	1977	423.5	85.1	641	258	78	261	158	0.40	0.6	
	1978	387.5	75.9	934	339				0.36	0.9	
YANKEE ROWE Docket 50-29; DPR-3 1st commercial operation 7/61 Type - PWR Capacity - 175 MWe	1969	138.3		193	215	83	132	78	1.11	1.5	
	1970	146.1		355	255	90	165	158	0.72	1.7	
	1971	173.5		155	90	46	44	19	0.58	0.5	
	1972	78.7		282	255	63	192	146	0.90	3.2	
	1973	127.1		133	99			47	0.74	0.8	
	1974	111.3		243	205			99	0.84	1.8	
	1975	145.1	82.4	249	116	52	64	66	0.47	0.8	
	1976	152.2	89.8	152	59	17	42	4	0.39	0.4	
	1977	124.6	73.9	725	356	28	328	174	0.49	2.9	
	1978	145.0	81.0	565	282	26	256	95	0.50	1.9	
	ZION 1, 2 Docket 50-295, 50-304; DPR-39, -48 1st commercial operation 12/73, 9/74 Type - PWR Capacity - 1040, 1040 MWe	1974	425.3	71.1	306	56	17	110	13	0.18	0.1
1975		1181.5	74.9	436	127	64	507	49	0.29	0.1	
1976		1134.9	61.9	774	571	43	960	257	0.74	0.5	
1977		1358.6	75.0	784	1003	150	867	561	1.28	0.7	
1978		1613.5	80.2	1104	1017			418	0.92	0.6	

APPENDIX B

Annual Whole Body Doses at
Licensed Nuclear Power Facilities

1978

APPENDIX B
ANNUAL WHOLE BODY DOSE AT LICENSED NUCLEAR POWER FACILITIES
 1978

Plant Name and Type	Number of Individuals with Whole Body Doses in the Following Ranges (Rems)													Total Number Monitored	Number with Measurable Exposure	Total Man-Rems		
	No Measurable Exposure	Measurable < 0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	5.0-6.0	6.0-7.0	7.0-8.0				8.0-9.0	9.0-10.0
	ARKANSAS 1 PWR	490	372	138	90	64	26	30	2									
BEAVER VALLEY 1 PWR	602	347	106	88	43	15	39	6	1	1						1,248	646	190.4
BIG ROCK POINT 1 BWR	153	149	39	31	15	8	16	11	5	3	4	2	2			438	285	174.8
BROWNS FERRY 1-3 BWR	4,482	633	317	374	246	166	419	144	69	8						6,858	2,376	1,792.4
BRUNSWICK 1 & 2 BWR	885	569	200	191	95	69	167	104	45	18						2,343	1,458	1,003.8
CALVERT CLIFFS 1 & 2 PWR	413	654	267	179	97	66	98	20	7	3						1,804	1,391	499.9
COOK 1 PWR	924	309	134	113	78	43	85	15	1							1,702	778	336.1
COOPER STATION BWR	781	102	44	33	38	32	39	9								1,078	297	157.9
CRYSTAL RIVER 3 PWR	634	286	114	89	30	22	57	33	8	3	1					1,277	643	320.6

APPENDIX B (Continued)
ANNUAL WHOLE BODY DOSE AT LICENSED NUCLEAR POWER FACILITIES
 1978

Plant Name and Type	Number of Individuals with Whole Body Doses in the Following Ranges (Rems)													Total Number Monitored	Number with Measurable Exposure	Total Man-Rems		
	No. Measurable Exposure	Measurable < 0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	5.0-6.0	6.0-7.0	7.0-8.0				8.0-9.0	9.0-10.0
DAVIS BESSE 1 PWR	486	294	88	28	7	4										907	421	48.5
DRESDEN 1-3 BWR	1,171	645	314	223	147	95	256	169	70	20	4	3				3,117	1,946	1,528.8
DUANE ARNOLD BWR	913	255	149	138	111	90	239	87	36	5	2					2,025	1,112	974.2
FARLEY 1 PWR	598	288	115	78	20	11	15									1,125	527	108.4
FITZPATRICK BWR	515	264	121	68	66	46	165	113	39	20	2					1,419	904	908.9
FT. CALHOUN PWR	122	259	44	66	39	33	91	51	11	2						718	596	410.2
GINNA PWR	172	209	65	77	57	47	185	14	3							829	657	450.4
HADDAM NECK PWR	283	75	41	38	17	10	19	12	4							499	216	117.1

APPENDIX B (Continued)

ANNUAL WHOLE BODY DOSE AT LICENSED NUCLEAR POWER FACILITIES

Plant Name and Type	Number of Individuals with Whole Body Doses in the Following Ranges (Rems)													Total Number Monitored	Number with Measurable Exposure	Total Man-Rems		
	1978																	
	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
HATCH 1 BWR	723	841	218	117	68	21	35	3	1							2,027	1,304	248.4
HUMBOLDT BAY BWR	35	87	37	29	28	20	46	49	21	3						355	320	335.2
INDIAN POINT 1 ^a , 2, 3 PWR	924	389	281	278	184	122	313	144	111	85	2					2,823	1,909	2,006.1
KEWAUNEE PWR	158	105	61	65	38	25	36	4	0	1						493	335	154.4
LACROSSE BWR	73	99	4	10	9	3	18	20	16	3						255	182	164.2
MAINE YANKEE PWR	302	261	58	47	48	37	151	36								940	638	419.7
MILLSTONE 1 & 2 BWR ^b (1) PWR ^b (2)	(281) 567 (286)	(243) 491 (248)	(206) 416 (210)	(173) 350 (177)	(106) 215 (109)	(98) 198 (100)	(317) 640 (323)	(207) 418 (211)	(27) 55 (28)	(14) 28 (14)						(1,672) 3,378 (1,706)	(1,391) 2,811 (1,420)	(1,238.9) 2,859.7 (1,620.9)
MONTICELLO BWR	644	225	111	120	72	34	84	20	10	3						1,323	679	374.9
NINE MILE POINT 1 BWR	497	266	90	56	25	11	62	39	6	6						1,058	561	313.8

^aIndian Point 1 was defueled in 1975.

^bSeparated in the same proportion as the data reported in the annual report submitted in accordance with Regulatory Guide 1.16.

ANNUAL WHOLE BODY DOSE AT LICENSED NUCLEAR POWER FACILITIES

1978

Plant Name and Type	Number of Individuals with Whole Body Doses in the Following Ranges (Rems)													Total Number Monitored	Number with Measurable Exposure	Total Man-Rems		
	No Measurable Exposure	Measurable < 0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	5.0-6.0	6.0-7.0	7.0-8.0				8.0-9.0	9.0-10.0
OCONEE 1-3 PWR	393	503	206	163	111	114	287	211	41							2,029	1,636	1,392.9
OYSTER CREEK BWR	239	325	230	201	101	97	258	120	48	26	5					1,650	1,411	1,279.4
PALISADES PWR	296	243	83	104	58	44	193	103	18	3						1,145	849	763.9
PEACH BOTTOM 2 & 3 BWR	1,086	728	376	334	201	164	324	83	26	8						3,330	2,244	1,317.1
PILGRIM BWR	1,013	695	208	158	96	89	206	95	51	49	17	3				2,680	1,667	1,326.8
POINT BEACH 1 & 2 PWR	127	52	55	44	39	31	65	34	15	1						463	336	319.7
PRAIRIE ISLAND 1 & 2 PWR	189	181	123	102	61	24	45	9	1							735	546	221.5
QUAD-CITIES 1 & 2 BWR	1,036	209	113	80	102	91	273	213	103	18	2	3				2,243	1,207	1,617.6
RANCHO SECO PWR	415	155	94	73	41	33	72	32	7	1						923	508	323.1

APPENDIX B (Continued)

ANNUAL WHOLE BODY DOSE AT LICENSED NUCLEAR POWER FACILITIES

Plant Name and Type	Number of Individuals with Whole Body Doses in the Following Ranges (Rems)														Total Number Monitored	Number with Measurable Exposure	Total Man-Rems	
	No. Measurable Exposure	Measurable < 0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	5.0-6.0	6.0-7.0	7.0-8.0	8.0-9.0				9.0-10.0
ROBINSON 2 PWR	799	334	95	53	46	48	166	134	46	21						1,742	943	963.4
SALEM 1 PWR	506	320	128	67	24	16	18	1								1,080	574	122.0
SAN ONOFRE PWR	620	263	140	116	75	32	103	32	3							1,384	764	401.0
ST. LUCIE PWR	834	254	200	128	64	52	92	7								1,631	797	336.7
SURRY 1 & 2 PWR	1,301	1,077	215	111	76	77	341	147	75	40	24	14	6			3,504	2,203	837.5
TROJAN PWR	226	281	139	126	65	36	43	14	5						(> 12) 2	937	711	319.1
THREE MILE ISLAND 1 PWR	119	1,046	407	189	94	79	104	9	1							2,048	1,929	504.3
TURKEY POINT 3 & 4 PWR	1,058	332	251	190	118	85	220	88	37	11	3	1				2,394	1,336	803.9
VERMONT YANKEE BWR	560	490	136	124	57	37	59	23	6	2						1,494	934	338.8

APPENDIX B (Continued)
ANNUAL WHOLE BODY DOSE AT LICENSED NUCLEAR POWER FACILITIES

Plant Name and Type	Number of Individuals with Whole Body Doses in the Following Ranges (Rems)													Total Number Monitored	Number with Measurable Exposure	Total Man-Rems		
	No Measurable Exposure	Measurable < 0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	5.0-6.0	6.0-7.0	7.0-8.0				8.0-9.0	9.0-10.0
YANKEE ROWE PWR	1,319	279	50	57	37	31	90	21								1,884	565	281.8
ZION 1 & 2 PWR	460	398	122	108	76	64	141	90	78	26	1					1,564	1,104	1,017.2
*FORT ST. VRAIN	896	34														930	34	1.7
*NORTH ANNA 1 PWR	80	1,141	59	29	3	3	12									1,327	1,247	100.7
*North Anna did not begin commercial operation until June 1978 and Fort St. Vrain did not begin commercial operation until July 1979																		

APPENDIX C

Number of Personnel & Man-Reqs
by Work & Job Function

1978

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 & 2¹ (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	9		0		3.117		0.000	
Operating Personnel	15		0		9.263		0.000	
Health Physics Personnel	11		4		7.595		1.597	
Supervisory Personnel	6		0		1.822		0.000	
Engineering Personnel	0		1		0.000		0.181	
TOTAL	41	0	5	46	21.797	0.000	1.778	23.575
Routine Maintenance								
Maintenance Personnel	34	5	40		7.655	0.935	12.645	
Operating Personnel	1	0	0		0.110	0.000	0.000	
Health Physics Personnel	0	0	1		0.000	0.000	0.649	
Supervisory Personnel	0	0	0		0.000	0.000	0.000	
Engineering Personnel	1	0	5		0.489	0.000	1.841	
TOTAL	36	5	46	87	8.254	0.935	15.135	24.324
In-Service Inspection								
Maintenance Personnel			11				1.822	
Operating Personnel			0				0.000	
Health Physics Personnel			0				0.000	
Supervisory Personnel			1				0.140	
Engineering Personnel			1				0.230	
TOTAL	0	0	13	13	0.000	0.000	2.192	2.192
Special Maintenance								
Maintenance Personnel	13		52		2.833		10.067	
Operating Personnel	0		0		0.000		0.000	
Health Physics Personnel	0		0		0.000		0.000	
Supervisory Personnel	0		1		0.000		0.114	
Engineering Personnel	1		1		0.118		0.344	
TOTAL	14	0	54	68	2.951	0.000	10.525	13.476
Waste Processing								
Maintenance Personnel	31	1			6.893	0.117		
Operating Personnel	7	0			2.744	0.000		
Health Physics Personnel	4	0			0.846	0.000		
Supervisory Personnel	0	0			0.000	0.000		
Engineering Personnel	0	0			0.000	0.000		
TOTAL	42	1	0	43	10.483	0.117	0.000	10.600
Refueling								
Maintenance Personnel	43	9	62		8.659	1.706	39.865	
Operating Personnel	4	0	0		0.525	0.000	0.000	
Health Physics Personnel	7	0	10		2.069	0.000	3.202	
Supervisory Personnel	4	0	4		0.637	0.000	2.965	
Engineering Personnel	5	4	11		0.777	0.537	4.921	
TOTAL	63	13	87	163	12.667	2.243	50.953	65.863
Total By Job Function								
Maintenance Personnel	130	15	165	310	29.157	2.758	64.399	96.314
Operating Personnel	27	0	0	27	12.642	0.000	0.000	12.642
Health Physics Personnel	22	0	15	37	10.510	0.000	5.488	15.958
Supervisory Personnel	10	0	6	16	2.459	0.000	3.219	5.678
Engineering Personnel	7	4	19	30	1.384	0.537	7.517	9.438
GRAND TOTAL	196	19	205	420	56.152	3.295	80.583	140.030

¹Unit 2 did not begin commercial operation until 12/78.

APPENDIX C

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

Plant: BEAVER VALLEY (PWR)

1978

WORK & JOB FUNCTION	* NUMBER OF PERSONNEL (>100 mrem)				*TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	1		3		0.375		0.310	
Operating Personnel	13		0		2.720		0.000	
Health Physics Personnel	0		1		0.000		0.180	
Supervisory Personnel	0		0		0.000		0.000	
Engineering Personnel	5		0		1.295		0.000	
TOTAL	19	0	4	23	4.390	0.000	0.490	4.880
Routine Maintenance								
Maintenance Personnel	26		84		9.900		46.924	
Operating Personnel	3		0		0.870		0.000	
Health Physics Personnel	0		1		0.600		0.110	
Supervisory Personnel	0		3		0.000		2.010	
Engineering Personnel	2		1		0.470		0.370	
TOTAL	31	0	89	120	11.240	0.000	49.414	60.654
In-Service Inspection								
Maintenance Personnel	0		17		0.000		6.155	
Operating Personnel	0		0		0.000		0.000	
Health Physics Personnel	2		3		0.235		0.495	
Supervisory Personnel	0		0		0.000		0.000	
Engineering Personnel	0		0		0.000		0.000	
TOTAL	2	0	20	22	0.235	0.000	6.650	6.885
Special Maintenance								
Maintenance Personnel	0		17		0.000		8.680	
Operating Personnel	1		0		0.120		0.000	
Health Physics Personnel	1		2		0.160		0.350	
Supervisory Personnel	0		0		0.000		0.000	
Engineering Personnel	0		0		0.000		0.000	
TOTAL	2	0	19	21	0.280	0.000	9.030	9.310
Waste Processing								
Maintenance Personnel	0		2		0.000		0.240	
Operating Personnel	1		0		0.100		0.000	
Health Physics Personnel	0		0		0.000		0.000	
Supervisory Personnel	0		0		0.000		0.000	
Engineering Personnel	0		0		0.000		0.000	
TOTAL	1	0	2	3	0.100	0.000	0.240	0.340
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
Total By Job Function								
Maintenance Personnel	27		123	150	10.275		62.309	72.584
Operating Personnel	18		0	18	3.810		0.000	3.810
Health Physics Personnel	3		7	10	0.395		1.135	1.530
Supervisory Personnel	0		3	3	0.000		2.010	2.010
Engineering Personnel	7		1	8	1.765		0.370	2.135
GRAND TOTAL	55	0	134	189	16.245	0.000	65.824	82.069

*A worker's dose must exceed 100 mrem on each job (RWP) before he, or his dose, are included in this report.

APPENDIX C

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

Plant: † BIG ROCK POINT PLANT (BWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	17	20	7		16.041	7.129	0.707	
Operating Personnel	25	6	6		33.693	2.043	1.006	
Health Physics Personnel	10	0	0		23.504	0.000	0.000	
Supervisory Personnel	19	0	0		18.650	0.000	0.000	
Engineering Personnel	11	0	0		5.458	0.000	0.000	
TOTAL	82	26	13	121	97.346	9.172	1.713	108.231
* Routine Maintenance								
Maintenance Personnel	17	39	49		39.528	3.242	7.838	
Operating Personnel	20	0	0		0.958	0.000	0.000	
Health Physics Personnel	10	0	0		0.228	0.000	0.000	
Supervisory Personnel	14	0	0		0.617	0.000	0.000	
Engineering Personnel	17	0	0		1.224	0.000	0.000	
TOTAL	78	39	49	166	42.555	3.242	7.838	53.635
* In-Service Inspection								
Maintenance Personnel	0	4	0		0.000	1.031	0.000	
Operating Personnel	0	0	6		0.000	0.000	1.410	
Health Physics Personnel	0	0	0		0.000	0.000	0.000	
Supervisory Personnel	2	0	0		0.170	0.000	0.000	
Engineering Personnel	2	0	0		0.140	0.000	0.000	
TOTAL	4	4	6	14	0.310	1.031	1.410	2.751
* Special Maintenance								
Maintenance Personnel	13	0			16.922	5.754		
Operating Personnel	7	3			4.122	0.000		
Health Physics Personnel	4	0			5.997	0.000		
Supervisory Personnel	2	0			3.464	0.000		
Engineering Personnel	3	4			0.108	0.140		
TOTAL	29	7	0	36	30.613	5.894	0.000	36.507
* Waste Processing								
Maintenance Personnel	3				0.609			
Operating Personnel	9				1.175			
Health Physics Personnel	4				0.087			
Supervisory Personnel	0				0.000			
Engineering Personnel	0				0.000			
TOTAL	16	0	0	16	1.871	0.000	0.000	1.871
* Refueling								
Maintenance Personnel	3				0.234			
Operating Personnel	4				1.040			
Health Physics Personnel	0				0.000			
Supervisory Personnel	1				0.067			
Engineering Personnel	0				0.000			
TOTAL	8	0	0	8	1.341	0.000	0.000	1.341
* Total By Job Function								
Maintenance Personnel	53 (17)	63 (50)	56 (49)	172 (116)	73.334	17.156	8.545	99.035
Operating Personnel	65 (25)	9 (6)	12 (6)	86 (37)	40.988	2.043	2.416	45.447
Health Physics Personnel	28 (10)	0 (0)	0 (0)	28 (10)	29.816	0.000	0.000	29.816
Supervisory Personnel	38 (19)	0 (0)	0 (0)	38 (19)	22.968	0.000	0.000	22.968
Engineering Personnel	33 (11)	4 (4)	0 (0)	37 (15)	6.930	0.140	0.000	7.070
* GRAND TOTAL	217 (82)	76 (60)	68 (55)	361 (197)	174.036	19.339	10.961	204.336

*One worker may be counted in more than one work function. The number in parentheses is the total number of individuals.

APPENDIX C

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

Plant: † BROWNS FERRY PLANTS 1, 2 3 (BWRs)

1978

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	8	5			1.6	0.6		
Operating Personnel	1	0			0.1	0.0		
Health Physics Personnel	1	0			0.2	0.0		
Supervisory Personnel	0	0			0.0	0.0		
Engineering Personnel	0	0			0.0	0.0		
TOTAL	10	5	0	15	1.9	0.6	0.0	2.5
Routine Maintenance								
Maintenance Personnel	186	880	63		95.8	639.9	41.5	
Operating Personnel	163	0	0		51.6	0.0	0.0	
Health Physics Personnel	20	15	23		8.8	4.5	9.3	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	27	50	1		22.7	22.3	0.2	
TOTAL	396	945	87	1428	188.9	666.7	51.0	906.6
In-Service Inspection								
Maintenance Personnel		0				0.0		
Operating Personnel		0				0.0		
Health Physics Personnel		0				0.0		
Supervisory Personnel		0				0.0		
Engineering Personnel		3				0.7		
TOTAL	0	3	0	3	0.0	0.7	0.0	0.7
Special Maintenance								
Maintenance Personnel	6	227	94		1.3	105.3	118.8	
Operating Personnel	6	0	0		1.3	0.0	0.0	
Health Physics Personnel	0	2	3		0.0	0.5	0.8	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	19	16	1		10.1	5.8	0.1	
TOTAL	31	245	98	374	12.7	111.6	119.7	244.0
Waste Processing								
Maintenance Personnel	11	9	0		2.2	3.3	0.0	
Operating Personnel	2	0	0		1.8	0.0	0.0	
Health Physics Personnel	1	1	1		0.2	0.3	0.3	
Supervisory Personnel	0	0	0		0.0	0.0	0.0	
Engineering Personnel	0	0	0		0.0	0.0	0.0	
TOTAL	14	10	1	25	4.2	3.6	0.3	8.1
Refueling								
Maintenance Personnel	6	110	18		1.4	33.9	5.7	
Operating Personnel	34	0	1		14.8	0.0	0.1	
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	4	15	2		0.7	5.1	0.3	
TOTAL	44	125	21	190	16.9	39.0	6.1	62.0
Total By Job Function								
Maintenance Personnel	217	1231	175	1623	102.3	783.0	166.0	1051.3
Operating Personnel	206	0	1	207	79.6	0.0	0.1	79.7
Health Physics Personnel	22	18	27	67	9.2	5.2	10.4	24.9
Supervisory Personnel	0	0	0	0	0.0	0.0	0.0	0.0
Engineering Personnel	50	84	4	138	33.5	33.9	0.6	68.0
GRAND TOTAL	495	1333	207	2035	224.6	822.2	177.1	1223.9

APPENDIX C

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

Plant: BRUNSWICK PLANTS 1 & 2 (BWRs)

1978

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	13		0.653	0.000	14.663	
Operating Personnel	37	0	18		42.383	0.000	5.521	
Health Physics Personnel	13	3	0		14.162	4.362	0.000	
Supervisory Personnel	3	0	0		0.806	0.000	0.000	
Engineering Personnel	12	0	10		6.705	0.030	8.364	
TOTAL	65	3	41	109	64.709	4.392	28.548	97.649
Routine Maintenance								
Maintenance-Personnel	44	0	114		54.259	0.000	151.358	
Operating Personnel	1	0	0		1.803	0.000	0.000	
Health Physics Personnel	5	3	0		3.693	2.762	0.000	
Supervisory Personnel	0	0	0		0.091	0.000	0.000	
Engineering Personnel	5	0	4		2.526	0.054	3.004	
TOTAL	55	3	118	176	62.372	2.816	154.362	219.550
In-Service Inspection								
Maintenance Personnel	0		0		0.000		0.000	
Operating Personnel	0		0		0.000		0.000	
Health Physics Personnel	0		0		0.000		0.000	
Supervisory Personnel	0		0		0.000		0.000	
Engineering Personnel	4		8		3.444		5.558	
TOTAL	4	0	8	12	3.444	0.000	5.558	9.002
Special Maintenance								
Maintenance Personnel	40	30	283		50.469	16.203	324.046	
Operating Personnel	4	0	0		9.440	0.368	0.000	
Health Physics Personnel	9	4	12		8.309	4.437	7.520	
Supervisory Personnel	3	0	2		0.657	0.000	0.587	
Engineering Personnel	16	5	32		8.843	2.625	29.658	
TOTAL	72	39	329	440	77.718	23.633	361.811	463.162
Waste Processing								
Maintenance Personnel	18	0	98		24.579	0.000	131.324	
Operating Personnel	27	0	0		31.320	0.000	0.000	
Health Physics Personnel	5	1	0		5.807	1.866	0.000	
Supervisory Personnel	0	0	0		0.105	0.000	0.000	
Engineering Personnel	2	0	1		0.990	0.054	1.224	
TOTAL	52	1	99	152	62.801	1.920	132.548	197.269
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
Total By Job Function								
Maintenance Personnel	102	30	508	640	129.960	16.203	621.391	767.554
Operating Personnel	69	0	18	87	84.946	0.000	5.521	90.467
Health Physics Personnel	32	11	12	55	31.971	13.427	7.520	52.918
Supervisory Personnel	6	0	2	8	1.659	0.368	0.587	2.614
Engineering Personnel	39	5	55	99	22.508	2.763	47.808	73.079
GRAND TOTAL	248	46	595	889	271.044	32.761	682.827	986.632

APPENDIX C

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

Plant: CALVERT CLIFFS PLANTS 1 & 2 (PWRs)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	0	0			0.000	0.000		
Operating Personnel	23	0			6.662	0.000		
Health Physics Personnel	1	0			0.732	0.000		
Supervisory Personnel	6	1			2.146	0.116		
Engineering Personnel	1	0			0.561	0.000		
TOTAL	31	1	0	32	10.101	0.116	0.000	10.217
* Routine Maintenance								
Maintenance Personnel	56	9	8		14.180	1.356	3.159	
Operating Personnel	12	4	0		2.909	0.682	0.000	
Health Physics Personnel	17	0	15		10.510	0.000	0.000	
Supervisory Personnel	6	0	1		1.055	0.000	0.000	
Engineering Personnel	1	3	0		0.177	0.853	0.000	
TOTAL	92	16	24	132	28.831	2.891	3.159	34.881
* In-Service Inspection								
Maintenance Personnel	5	58	16		0.831	25.274	7.578	
Operating Personnel	1	1	0		0.160	0.151	0.000	
Health Physics Personnel	0	0	1		0.000	0.000	0.112	
Supervisory Personnel	3	0	1		1.741	0.000	0.138	
Engineering Personnel	3	2	8		1.031	0.328	3.051	
TOTAL	12	61	26	99	3.763	25.753	10.879	40.395
* Special Maintenance								
Maintenance Personnel	71	138	140		61.732	67.598	47.176	
Operating Personnel	29	42	0		7.261	10.354	0.000	
Health Physics Personnel	5	52	70		1.144	19.213	33.463	
Supervisory Personnel	9	2	16		4.555	0.252	5.637	
Engineering Personnel	8	2	8		2.937	0.268	2.155	
TOTAL	122	236	234	592	77.629	97.685	88.431	263.745
* Waste Processing								
Maintenance Personnel	11	6			1.784	0.987		
Operating Personnel	1	1			0.147	0.129		
Health Physics Personnel	0	0			0.000	0.000		
Supervisory Personnel	0	0			0.000	0.000		
Engineering Personnel	0	0			0.000	0.000		
TOTAL	12	7	0	19	1.931	1.116	0.000	3.047
* Refueling								
Maintenance Personnel	33	45	45		15.673	16.201	11.833	
Operating Personnel	21	2	0		3.873	0.580	0.000	
Health Physics Personnel	0	2	0		0.000	0.388	0.000	
Supervisory Personnel	10	0	4		3.157	0.000	0.775	
Engineering Personnel	2	0	7		0.269	0.000	1.129	
TOTAL	66	49	56	171	22.972	17.169	13.737	53.878
* Total By Job Function								
Maintenance Personnel	176 (89)	256(164)	209(190)	641	94.200	111.416	69.746	275.362
Operating Personnel	87 (57)	50 (43)	0 (1)	137	21.012	11.896	0.000	32.908
Health Physics Personnel	23 (17)	54 (53)	86 (77)	163	12.386	19.601	33.575	65.562
Supervisory Personnel	34 (26)	3 (4)	22 (17)	59	12.654	0.368	6.550	19.572
Engineering Personnel	15 (17)	7 (8)	23 (22)	45 (78)	4.975	1.449	6.335	12.759
* GRAND TOTAL	335(206)	370(272)	307(340)	1045	145.227	144.730	116.206	406.163

*One worker may be counted in more than one category. Numbers in parentheses is the total number of individuals.

APPENDIX C

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

Plant: D. C. COOK (PWR)

1978

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	33		6		2.545		0.412	
Operating Personnel	67		0		30.752		0.000	
Health Physics Personnel	14		4		9.931		0.411	
Supervisory Personnel	12		2		2.326		0.208	
Engineering Personnel	3		0		0.320		0.000	
TOTAL	129	0	12	141	45.874	0.000	1.031	46.905
* Routine Maintenance								
Maintenance Personnel	91	1	49		67.030	0.402	10.467	
Operating Personnel	8	0	0		1.030	0.000	0.000	
Health Physics Personnel	8	0	0		1.361	0.000	0.000	
Supervisory Personnel	15	0	1		4.260	0.000	0.011	
Engineering Personnel	3	0	0		0.437	0.000	0.000	
TOTAL	125	1	50	176	74.118	0.402	10.478	84.998
* In-Service Inspection								
Maintenance Personnel	38	1	50		10.564	0.127	27.628	
Operating Personnel	1	0	1		0.157	0.000	0.014	
Health Physics Personnel	2	0	1		0.144	0.000	0.375	
Supervisory Personnel	3	0	2		0.728	0.000	0.457	
Engineering Personnel	4	0	0		0.352	0.000	0.000	
TOTAL	48	1	54	103	11.945	0.127	28.474	40.546
* Special Maintenance								
Maintenance Personnel	63	4	144		20.586	0.483	38.563	
Operating Personnel	1	0	6		0.026	0.000	0.616	
Health Physics Personnel	4	0	0		0.480	0.000	0.000	
Supervisory Personnel	8	0	6		2.085	0.000	1.414	
Engineering Personnel	4	0	0		0.555	0.000	0.000	
TOTAL	80	4	156	240	23.732	0.483	40.593	64.808
* Waste Processing								
Maintenance Personnel	53		43		13.319		14.048	
Operating Personnel	22		2		2.916		0.667	
Health Physics Personnel	4		0		0.455		0.000	
Supervisory Personnel	4		1		0.179		0.119	
Engineering Personnel	2		0		1.223		0.000	
TOTAL	85	0	46	131	18.092	0.000	14.834	32.926
* Refueling								
Maintenance Personnel	34	1	57		10.262	0.017	21.392	
Operating Personnel	0	0	2		0.000	0.000	0.159	
Health Physics Personnel	1	0	19		0.077	0.000	11.526	
Supervisory Personnel	8	0	3		2.432	0.000	3.152	
Engineering Personnel	3	0	0		0.095	0.000	0.000	
TOTAL	46	1	81	128	12.866	0.017	36.229	49.112
* Total By Job Function								
Maintenance Personnel	312(111)	7(5)	349(231)	668(347)	124.306	1.029	112.510	237.845
Operating Personnel	99(68)	0(0)	11(9)	110(77)	34.881	0.000	1.456	36.337
Health Physics Personnel	33(14)	0(0)	24(19)	57(33)	12.448	0.000	12.312	24.760
Supervisory Personnel	50(23)	0(0)	15(9)	65(32)	12.010	0.000	5.361	17.371
Engineering Personnel	19(8)	0(0)	0(0)	19(8)	2.982	0.000	0.000	2.982
* GRAND TOTAL	513(224)	7(5)	399(268)	919(497)	186.627	1.029	131.639	319.295

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

APPENDIX C

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

Plant: COOPER (BWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	2	0	2		.080	.000	.739	
Operating Personnel	38	0	0		22.302	.000	.000	
Health Physics Personnel	12	0	0		4.710	.000	.000	
Supervisory Personnel	7	0	0		3.902	.000	.000	
Engineering Personnel	12	1	0		4.599	.320	.000	
TOTAL	71	1	2	74	35.593	.320	.739	36.652
* Routine Maintenance								
Maintenance Personnel	46		49		41.106		22.646	
Operating Personnel	6		0		.332		.000	
Health Physics Personnel	10		0		1.804		.000	
Supervisory Personnel	3		1		.133		.570	
Engineering Personnel	1		0		.015		.000	
TOTAL	66	0	50	116	43.390	.000	23.216	66.606
* In-Service Inspection								
Maintenance Personnel	0		21		.000		17.472	
Operating Personnel	1		0		.036		.000	
Health Physics Personnel	5		0		.548		.000	
Supervisory Personnel	3		2		.185		2.140	
Engineering Personnel	1		0		1.068		.000	
TOTAL	10	0	23	33	1.837	.000	19.612	21.449
* Special Maintenance								
Maintenance Personnel	8		13		2.305		8.175	
Operating Personnel	4		0		.689		.000	
Health Physics Personnel	5		0		.511		.000	
Supervisory Personnel	2		1		.058		.120	
Engineering Personnel	3		0		.349		.000	
TOTAL	22	0	14	36	3.912	.000	8.295	12.207
* Waste Processing								
Maintenance Personnel	3				.541			
Operating Personnel	9				2.815			
Health Physics Personnel	9				1.202			
Supervisory Personnel	1				.010			
Engineering Personnel	1				.010			
TOTAL	23	0	0	23	4.578	.000	.000	4.578
* Refueling								
Maintenance Personnel	4		7		.475		1.648	
Operating Personnel	27		0		2.028		.000	
Health Physics Personnel	3		0		.102		.000	
Supervisory Personnel	3		0		.082		.000	
Engineering Personnel	3		0		.569		.000	
TOTAL	40	0	7	47	3.256	.000	1.648	4.904
* Total By Job Function								
Maintenance Personnel	63 (46)	0 (0)	92 (72)	155 (118)	44.507	.000	50.680	95.187
Operating Personnel	85 (39)	0 (0)	0 (0)	85 (39)	28.202	.000	.000	28.202
Health Physics Personnel	44 (12)	0 (0)	0 (0)	44 (12)	8.877	.000	.000	8.877
Supervisory Personnel	19 (9)	0 (0)	4 (4)	23 (13)	4.370	.000	2.830	7.200
Engineering Personnel	21 (12)	1 (1)	0 (0)	22 (13)	6.610	.320	.000	6.930
* GRAND TOTAL	232 (118)	1 (1)	96 (76)	329 (195)	92.566	.320	53.510	146.396

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

APPENDIX C

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

1978

Plant: CRYSTAL RIVER 3 (PWR)

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	0				0.03		0.03	
Operating Personnel	25				6.02		0.00	
Health Physics Personnel	21				1.32		0.00	
Supervisory Personnel	0				0.00		0.00	
Engineering Personnel	0				0.00		0.00	
TOTAL	46	0	0	46	7.37	0.00	0.03	7.40
Routine Maintenance								
Maintenance-Personnel	49	21	81		13.93	5.79	42.67	
Operating Personnel	7	0	0		1.22	0.00	0.00	
Health Physics Personnel	7	0	13		1.74	0.00	0.00	
Supervisory Personnel	7	0	9		1.59	0.30	6.66	
Engineering Personnel	0	1	9		0.07	0.45	4.48	
TOTAL	70	22	112	204	18.55	6.54	53.81	78.90
In-Service Inspection								
Maintenance Personnel	1		14		0.64	0.03	5.40	
Operating Personnel	0		0		0.04	0.00	0.00	
Health Physics Personnel	0		0		0.04	0.00	0.01	
Supervisory Personnel	0		1		0.03	0.00	0.29	
Engineering Personnel	3		1		0.80	0.02	0.51	
TOTAL	4	0	16	20	1.55	0.05	6.21	7.81
Special Maintenance								
Maintenance Personnel	25	6	95		14.48	2.43	128.33	
Operating Personnel	6	0	0		1.82	0.00	0.00	
Health Physics Personnel	1	0	0		12.30	0.00	10.92	
Supervisory Personnel	4	0	10		1.27	0.05	8.35	
Engineering Personnel	2	0	15		0.35	0.00	10.03	
TOTAL	38	6	120	164	30.22	2.48	157.63	190.33
Waste Processing								
Maintenance Personnel	3	3	4		0.95	0.23	1.18	
Operating Personnel	0	0	5		0.16	0.00	5.21	
Health Physics Personnel	2	0	1		0.79	0.00	2.40	
Supervisory Personnel	1	0	0		0.20	0.00	0.17	
Engineering Personnel	0	0	0		0.00	0.00	0.01	
TOTAL	6	3	10	19	2.10	0.23	8.97	11.30
Refueling								
Maintenance Personnel	4	3	0		1.34	1.10	0.21	
Operating Personnel	1	0	0		0.57	0.00	0.00	
Health Physics Personnel	0	0	0		0.00	0.00	0.00	
Supervisory Personnel	1	0	0		0.25	0.08	0.00	
Engineering Personnel	0	0	2		0.00	0.00	1.41	
TOTAL	6	3	2	11	2.16	1.18	1.62	4.96
Total By Job Function								
Maintenance Personnel	82	33	194	309	31.37	9.58	177.82	218.77
Operating Personnel	39	0	5	44	9.83	0.00	5.21	15.04
Health Physics Personnel	31	0	14	45	16.19	0.00	13.33	29.52
Supervisory Personnel	13	0	20	33	3.34	0.43	15.47	19.24
Engineering Personnel	5	1	27	33	1.22	0.47	16.44	18.13
GRAND TOTAL	170	34	260	464	61.95	10.48	228.27	300.70

APPENDIX C

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

Plant: DAVIS BESSE, UNIT 1 (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS ¹			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	14	0	6		2.135	0.000	1.090	
Operating Personnel	26	0	0		5.950	0.000	0.000	
Health Physics Personnel	18	0	0		9.070	0.000	0.000	
Supervisory Personnel	3	0	0		0.675	0.000	0.000	
Engineering Personnel	2	1	0		0.250	0.120	0.000	
TOTAL	63	1	6	70	18.080	0.120	1.090	19.290
Routine Maintenance								
Maintenance Personnel	64	6	51		14.265	0.870	9.060	
Operating Personnel	0	0	0		0.000	0.000	0.000	
Health Physics Personnel	0	0	0		0.000	0.000	0.000	
Supervisory Personnel	0	0	0		0.000	0.000	0.000	
Engineering Personnel	0	0	0		0.000	0.000	0.000	
TOTAL	64	6	51	121	14.265	0.870	9.060	24.195
In-Service Inspection								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
Special Maintenance								
Maintenance Personnel	39	5	38		12.740	0.965	9.905	
Operating Personnel	1	0	0		0.125	0.000	0.000	
Health Physics Personnel	0	0	0		0.000	0.000	0.000	
Supervisory Personnel	1	0	0		0.100	0.000	0.000	
Engineering Personnel	1	0	2		0.110	0.000	0.370	
TOTAL	42	5	40	87	13.075	0.965	10.275	24.315
Waste Processing								
Maintenance Personnel	7		1		2.515		0.135	
Operating Personnel	0		0		0.000		0.000	
Health Physics Personnel	0		0		0.000		0.000	
Supervisory Personnel	0		0		0.000		0.000	
Engineering Personnel	0		0		0.000		0.000	
TOTAL	7	0	1	8	2.515	0.000	0.135	2.650
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0		0.000	0.000	0.000	0.000
Total By Job Function								
Maintenance Personnel	124	11	96	231	31.655	1.835	20.190	53.680
Operating Personnel	27	0	0	27	6.075	0.000	0.000	6.075
Health Physics Personnel	18	0	0	18	9.070	0.000	0.000	9.070
Supervisory Personnel	4	0	2	6	0.775	0.000	0.000	0.775
Engineering Personnel	3	1	0	4	0.360	0.120	0.370	0.850
GRAND TOTAL	176	12	98	286	47.935	1.955	20.560	70.450

¹ Based on self-reading dosimeters.

APPENDIX C

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

Plant: DRESDEN PLANTS 1, 2, 3 (BWRs)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	16				19.1			
Operating Personnel	153				109.3			
Health Physics Personnel	6				7.9			
Supervisory Personnel	18				4.9			
Engineering Personnel	294				56.3			
TOTAL	487			487	197.5			197.5
Routine Maintenance								
Maintenance Personnel	186				305.3			
Operating Personnel	24				35.1			
Health Physics Personnel	32				45.2			
Supervisory Personnel	223				108.8			
Engineering Personnel	0				0.0			
TOTAL	465		2060	2525	494.4		599.7	1094.1
In-Service Inspection (Included with Routine Maintenance)								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL								
Special Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL		141		141		40.2		40.2
Waste Processing								
Maintenance Personnel	3				3.0			
Operating Personnel	42				61.8			
Health Physics Personnel	18				26.2			
Supervisory Personnel	9				2.2			
Engineering Personnel	0				0.0			
TOTAL	72			72	93.2			93.2
Refueling								
Maintenance Personnel	0				0.0			
Operating Personnel	19				45.0			
Health Physics Personnel	0				0.0			
Supervisory Personnel	5				10.4			
Engineering Personnel	0				0.0			
TOTAL	24			24	55.4			55.4
Total By Job Function								
Maintenance Personnel	205				327.4			
Operating Personnel	238				251.2			
Health Physics Personnel	56				79.3			
Supervisory Personnel	255				126.3			
Engineering Personnel	294				56.3			
GRAND TOTAL	1048	141	2060	3249	840.5	40.2	599.7	1480.4

APPENDIX C

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

Plant: DUANE ARNOLD (BWR)

1978

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	6		28		1.057		11.059	
Operating Personnel	19		0		6.320		0.000	
Health Physics Personnel	3		62		0.719		36.704	
Supervisory Personnel	4		3		0.719		0.622	
Engineering Personnel	1		5		0.419		3.792	
TOTAL	33	0	98	131	9.234	0.000	52.177	61.411
Routine Maintenance								
Maintenance Personnel	16	0	117		4.610	0.000	34.897	
Operating Personnel	8	0	0		1.398	0.000	0.000	
Health Physics Personnel	4	0	5		1.075	0.000	1.499	
Supervisory Personnel	1	0	1		0.215	0.000	0.120	
Engineering Personnel	1	1	8		0.760	0.200	5.572	
TOTAL	30	1	131	162	8.058	0.200	42.088	50.346
In-Service Inspection								
Maintenance Personnel	5	0	86		1.717	0.000	38.889	
Operating Personnel	1	0	0		0.113	0.000	0.000	
Health Physics Personnel	0	0	8		0.000	0.000	1.817	
Supervisory Personnel	0	2	37		0.000	0.495	24.158	
Engineering Personnel	3	4	43		1.086	1.085	39.563	
TOTAL	9	6	174	189	2.916	1.580	104.427	108.923
Special Maintenance								
Maintenance Personnel	15	0	530		3.668		690.206	
Operating Personnel	14	0	0		4.073		0.000	
Health Physics Personnel	3	0	27		0.739		10.784	
Supervisory Personnel	11	1	35		3.297	0.375	21.367	
Engineering Personnel	3	3	49		1.234	0.728	46.496	
TOTAL	46	4	641	691	13.011	1.103	768.854	782.967
Waste Processing								
Maintenance Personnel	0		1		0.000		0.142	
Operating Personnel	1		2		0.175		0.228	
Health Physics Personnel	5		0		1.758		0.000	
Supervisory Personnel	2		2		0.578		0.340	
Engineering Personnel	1		1		0.104		0.210	
TOTAL	9	0	6	15	2.615	0.000	0.920	3.535
Refueling								
Maintenance Personnel	1		7		0.180		1.130	
Operating Personnel	9		0		3.824		0.000	
Health Physics Personnel	0		0		0.000		0.000	
Supervisory Personnel	2		0		0.512		0.000	
Engineering Personnel	0		3		0.000		0.480	
TOTAL	12	0	10	22	4.516	0.000	1.610	6.126
Total By Job Function								
Maintenance Personnel	43	0	769	812	11.232	0.000	776.323	787.555
Operating Personnel	52	0	2	54	15.903	0.000	0.228	16.131
Health Physics Personnel	15	0	102	117	4.291	0.000	50.804	55.095
Supervisory Personnel	20	3	78	101	5.321	0.870	46.607	52.798
Engineering Personnel	9	8	109	126	3.603	2.013	96.113	101.729
GRAND TOTAL	139	11	1060	1210	40.350	2.883	970.075	1013.308

APPENDIX C

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

Plant: FARLEY NUCLEAR PLANT (PWR)

1978

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	36	0	5		2.088	0.000	0.340	
Operating Personnel	41	0	0		7.314	0.000	0.000	
Health Physics Personnel	19	0	5		10.110	0.000	3.715	
Supervisory Personnel	12	1	0		3.051	0.000	0.000	
Engineering Personnel	1	0	9		0.027	0.008	0.939	
TOTAL	109	1	19	129	27.590	0.008	4.994	27.592
Routine Maintenance								
Maintenance Personnel	50		5		2.784		0.178	
Operating Personnel	29		0		2.772		0.000	
Health Physics Personnel	2		1		0.034		0.034	
Supervisory Personnel	5		0		0.372		0.000	
Engineering Personnel	1		31		0.179		2.503	
TOTAL	87	0	37	124	6.141	0.000	2.715	8.856
In-Service Inspection								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
Special Maintenance								
Maintenance Personnel	55	0	6		14.617	0.000	1.388	
Operating Personnel	47	0	0		6.614	0.000	0.000	
Health Physics Personnel	13	0	6		1.282	0.000	0.790	
Supervisory Personnel	10	1	0		1.073	0.000	0.000	
Engineering Personnel	1	0	65		0.002	0.116	13.591	
TOTAL	126	1	77	204	23.588	0.116	15.769	39.473
Waste Processing								
Maintenance Personnel	0		0		0.000		0.000	
Operating Personnel	1		0		0.026		0.000	
Health Physics Personnel	0		1		0.000		0.593	
Supervisory Personnel	0		0		0.000		0.000	
Engineering Personnel	0		1		0.000		0.000	
TOTAL	1	0	2	3	0.026	0.000	0.593	0.619
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
Total By Job Function								
Maintenance Personnel	141	0	16	157	19.489	0.000	1.906	21.395
Operating Personnel	118	0	0	118	16.726	0.000	0.000	16.726
Health Physics Personnel	34	0	13	47	11.426	0.000	5.132	16.558
Supervisory Personnel	27	2	0	29	4.496	0.124	0.000	4.620
Engineering Personnel	3	0	105	108	0.208	0.000	17.033	17.241
GRAND TOTAL	323	2	134	459	52.345	0.124	24.071	76.540

APPENDIX C

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

Plant: † JAMES A. FITZPATRICK POWER PLANT (BWR)

1978

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	92	16	53		51	7	28	
Operating Personnel	73	2	11		78	0	10	
Health Physics Personnel	12	0	51		10	0	14	
Supervisory Personnel	42	10	47		2	1	0	
Engineering Personnel	7	5	15		1	0	5	
TOTAL	226	33	177	436	142	8	57	207
* Routine Maintenance								
Maintenance Personnel	92	22	140		31	35	264	
Operating Personnel	74	1	4		12	0	6	
Health Physics Personnel	12	0	50		8	0	15	
Supervisory Personnel	42	12	47		2	5	0	
Engineering Personnel	7	6	16		0	3	3	
TOTAL	227	41	257	525	53	43	288	384
* In-Service Inspection								
Maintenance Personnel	92	0	53		2	0	5	
Operating Personnel	73	3	32		1	1	1	
Health Physics Personnel	12	0	38		1	0	0	
Supervisory Personnel	42	9	47		0	2	0	
Engineering Personnel	7	4	13		0	1	7	
TOTAL	226	16	183	425	4	4	13	21
* Special Maintenance								
Maintenance Personnel	92	25	137		12	54	306	
Operating Personnel	73	2	31		4	1	4	
Health Physics Personnel	12	0	47		4	0	25	
Supervisory Personnel	42	12	47		4	2	0	
Engineering Personnel	7	7	13		2	2	40	
TOTAL	226	46	275	547	26	59	375	460
* Waste Processing								
Maintenance Personnel	92	0	60		13	0	8	
Operating Personnel	73	3	6		32	2	4	
Health Physics Personnel	12	0	38		3	0	0	
Supervisory Personnel	42	4	48		0	0	0	
Engineering Personnel	7	2	12		0	0	0	
TOTAL	226	9	164	399	48	2	12	62
* Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0	0	0	0
* Total By Job Function								
Maintenance Personnel	460	63	443	966	109	96	611	816
Operating Personnel	366	11	84	461	127	4	25	156
Health Physics Personnel	60	0	224	284	26	0	54	80
Supervisory Personnel	210	47	236	493	8	10	0	18
Engineering Personnel	35	24	69	128	3	6	55	64
* GRAND TOTAL	1131	145	1056	2332	273	116	745	1134

*Workers may be counted in more than one category.

APPENDIX C

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

Plant: FORT CALHOUN (PWR)

1978

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	19	9	13		8.046	3.219	6.571	
Operating Personnel	27	0	0		22.191	0.060	0.000	
Health Physics Personnel	13	0	4		13.703	0.000	0.890	
Supervisory Personnel	6	1	0		1.415	0.301	0.020	
Engineering Personnel	4	10	0		1.947	5.161	0.000	
TOTAL	69	20	17	106	47.302	8.471	7.481	63.524
* Routine Maintenance								
Maintenance Personnel	31	8	11		11.484	2.724	4.454	
Operating Personnel	0	0	0		0.096	0.020	0.000	
Health Physics Personnel	0	0	0		0.091	0.000	0.000	
Supervisory Personnel	0	0	0		0.030	0.000	0.000	
Engineering Personnel	0	2	0		0.057	0.987	0.000	
TOTAL	31	10	11	52	11.758	3.731	4.454	19.943
* In-Service Inspection								
Maintenance Personnel	2	2	19		0.739	0.760	8.908	
Operating Personnel	0	0	0		0.045	0.000	0.000	
Health Physics Personnel	0	0	0		0.050	0.000	0.000	
Supervisory Personnel	0	0	0		0.000	0.000	0.000	
Engineering Personnel	0	2	7		0.000	0.443	2.030	
TOTAL	2	4	26	32	0.834	1.203	10.938	12.975
* Special Maintenance								
Maintenance Personnel	39	44	103		32.627	25.497	63.472	
Operating Personnel	4	2	0		1.648	0.873	0.000	
Health Physics Personnel	9	0	2		2.205	0.090	0.328	
Supervisory Personnel	2	0	0		0.482	0.003	0.000	
Engineering Personnel	2	11	0		0.681	3.977	0.000	
TOTAL	56	57	105	218	37.643	30.440	63.800	131.883
* Waste Processing								
Maintenance Personnel	16	10	11		16.151	3.120	2.581	
Operating Personnel	16	0	0		6.277	0.079	0.000	
Health Physics Personnel	6	0	0		4.419	0.000	0.005	
Supervisory Personnel	2	0	0		1.366	0.000	0.000	
Engineering Personnel	1	1	0		0.600	0.710	0.000	
TOTAL	41	11	11	63	28.813	3.909	2.586	35.308
* Refueling								
Maintenance Personnel	38	46	66		37.249	45.961	61.198	
Operating Personnel	24	4	0		8.100	1.529	0.000	
Health Physics Personnel	6	0	12		2.205	0.026	12.063	
Supervisory Personnel	7	0	1		2.198	0.035	0.632	
Engineering Personnel	1	8	0		0.702	6.299	0.090	
TOTAL	76	58	79	213	50.454	53.850	73.983	178.287
* Total By Job Function								
Maintenance Personnel	145	119	223	487	106.296	81.281	147.184	334.761
Operating Personnel	71	6	0	77	38.357	2.561	0.000	40.918
Health Physics Personnel	34	0	18	52	22.673	0.116	13.286	36.075
Supervisory Personnel	17	1	1	19	5.491	0.339	0.652	6.482
Engineering Personnel	8	34	7	49	3.987	17.577	2.120	23.684
GRAND TOTAL	275 (128)	160 (62)	249 (158)	684 (348)	176.804	101.874	163.242	441.920

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

APPENDIX C

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

Plant: GINNA NUCLEAR PLANT (PWR)

1978

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	5				2.210			
Operating Personnel	23				10.030			
Health Physics Personnel	13				3.100			
Supervisory Personnel	1				0.800			
Engineering Personnel	0				0.000			
TOTAL	42	0	0	42	16.140	0.000	0.000	16.140
* Routine Maintenance								
Maintenance Personnel	27		7		9.010		1.610	
Operating Personnel	10		0		5.000		0.000	
Health Physics Personnel	11		0		7.600		0.000	
Supervisory Personnel	0		0		0.000		0.000	
Engineering Personnel	0		0		0.000		0.000	
TOTAL	48	0	7	55	21.610	0.000	1.610	23.220
* In-Service Inspection								
Maintenance Personnel	0	126	10		0.000	117.190	8.670	
Operating Personnel	23	5	15		0.860	4.210	13.700	
Health Physics Personnel	4	0	4		2.530	0.000	1.000	
Supervisory Personnel	11	0	0		4.910	0.000	0.000	
Engineering Personnel	1	0	0		0.600	1.020	0.000	
TOTAL	39	131	29	199	8.900	122.420	23.370	154.690
* Special Maintenance								
Maintenance Personnel	41	123	110		23.210	34.760	40.480	
Operating Personnel	9	0	0		2.510	0.000	0.000	
Health Physics Personnel	7	1	10		3.900	0.410	6.075	
Supervisory Personnel	2	0	0		0.100	0.000	0.000	
Engineering Personnel	3	26	0		0.990	1.335	0.000	
TOTAL	62	150	120	332	30.710	36.505	46.555	113.770
* Waste Processing								
Maintenance Personnel	5	11	17		0.790	1.325	1.820	
Operating Personnel	11	0	0		0.330	0.000	0.000	
Health Physics Personnel	7	1	6		0.900	0.300	0.350	
Supervisory Personnel	0	0	0		0.000	0.000	0.000	
Engineering Personnel	1	0	0		0.410	0.000	0.000	
TOTAL	24	12	23	59	2.430	1.625	2.170	6.225
* Refueling								
Maintenance Personnel	8	66	17		1.895	38.680	3.770	
Operating Personnel	9	0	0		6.800	0.000	0.000	
Health Physics Personnel	8	1	7		0.750	0.050	1.480	
Supervisory Personnel	1	0	0		0.020	0.000	0.000	
Engineering Personnel	2	3	1		0.760	0.050	1.310	
TOTAL	28	70	25	123	10.225	38.780	6.560	55.565
* Total By Job Function								
Maintenance Personnel	86 (27)	326 (188)	161 (100)	573 (315)	37.115	191.955	56.350	255.420
Operating Personnel	85 (23)	5 (5)	15 (15)	105 (43)	25.530	4.210	13.700	43.440
Health Physics Personnel	50 (14)	3 (3)	27 (27)	80 (44)	18.780	0.760	8.905	28.445
Supervisory Personnel	15 (12)	0 (0)	0 (0)	15 (12)	5.830	0.000	0.000	5.830
Engineering Personnel	7 (3)	29 (30)	1 (1)	37 (34)	2.760	2.405	1.310	6.475
* GRAND TOTAL	243 (79)	363 (226)	204 (143)	810 (448)	90.015	199.330	80.265	369.610

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

APPENDIX C

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

Plant: HADDAM NECK (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	14	0	3		3.510	0.030	0.815	
Operating Personnel	29	0	0		8.745	0.000	0.000	
Health Physics Personnel	5	0	0		1.725	0.000	0.010	
Supervisory Personnel	0	0	1		0.255	0.000	0.360	
Engineering Personnel	1	1	1		0.272	0.780	0.500	
TOTAL	49	1	5	55	14.507	0.810	1.685	17.002
Routine Maintenance								
Maintenance Personnel	22	10	10		27.480	3.484	2.615	
Operating Personnel	11	0	0		2.508	0.000	0.000	
Health Physics Personnel	6	0	0		1.740	0.000	0.000	
Supervisory Personnel	1	1	1		0.255	0.240	0.510	
Engineering Personnel	4	0	1		1.490	0.330	0.390	
TOTAL	44	11	12	67	33.473	4.054	3.515	41.042
In-Service Inspection								
Maintenance Personnel	0				0.050	0.000		
Operating Personnel	1				0.555	0.000		
Health Physics Personnel	0				0.060	0.000		
Supervisory Personnel	0				0.000	0.000		
Engineering Personnel	0				0.065	0.050		
TOTAL	1	0	0	1	0.730	0.050	0.000	0.780
Special Maintenance								
Maintenance Personnel	13	1	8		3.328	0.785	2.910	
Operating Personnel	2	0	0		0.775	0.000	0.000	
Health Physics Personnel	3	0	0		0.850	0.000	0.000	
Supervisory Personnel	2	0	1		0.350	0.000	1.026	
Engineering Personnel	1	0	2		0.161	0.125	0.335	
TOTAL	21	1	11	33	5.464	0.910	4.271	10.645
Waste Processing								
Maintenance Personnel	3		4		1.675	0.000	1.825	
Operating Personnel	11		0		4.055	0.000	0.000	
Health Physics Personnel	4		0		0.895	0.000	0.000	
Supervisory Personnel	0		1		0.025	0.000	0.565	
Engineering Personnel	0		0		0.030	0.095	0.010	
TOTAL	18	0	5	23	6.680	0.095	2.400	9.175
Refueling								
Maintenance Personnel	0				0.195		0.055	
Operating Personnel	1				0.330		0.000	
Health Physics Personnel	0				0.025		0.000	
Supervisory Personnel	0				0.000		0.020	
Engineering Personnel	0				0.000		0.000	
TOTAL	1	0	0	1	0.550	0.000	0.075	0.625
Total By Job Function								
Maintenance Personnel	52	11	25	88	36.238	4.299	8.220	48.757
Operating Personnel	55	0	0	55	16.968	0.000	0.000	16.968
Health Physics Personnel	18	0	0	18	5.295	0.000	0.010	5.305
Supervisory Personnel	3	1	4	8	0.885	0.240	2.481	3.606
Engineering Personnel	6	1	4	11	2.018	1.380	1.235	4.633
GRAND TOTAL	134	13	33	180	61.404	5.919	11.946	79.269

APPENDIX C

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

Plant: E. I. HATCH PLANT (BWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS ¹			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	8		0		3		0	
Operating Personnel	94		0		38		0	
Health Physics Personnel	32		0		15		0	
Supervisory Personnel	0		1		0		0	
Engineering Personnel	14		12		3		5	
TOTAL	148	0	13	161	59	0	5	64
* Routine Maintenance								
Maintenance Personnel	75	1	1		39		1	
Operating Personnel	45	0	0		13		0	
Health Physics Personnel	2	0	0		0		0	
Supervisory Personnel	0	0	0		0		0	
Engineering Personnel	0	0	1		0		1	
TOTAL	122	1	2	125	52	0	2	54
* In-Service Inspection								
Maintenance Personnel			0				0	
Operating Personnel			0				0	
Health Physics Personnel			0				0	
Supervisory Personnel			0				0	
Engineering Personnel			8				3	
TOTAL	0	0	8	8	0	0	3	3
* Special Maintenance								
Maintenance Personnel	43	1	8		21		1	
Operating Personnel	18	0	0		5		0	
Health Physics Personnel	4	0	1		1		0	
Supervisory Personnel	0	0	1		0		0	
Engineering Personnel	3	0	154		1		27	
TOTAL	68	1	164	233	28	0	28	56
* Waste Processing								
Maintenance Personnel	2				0			
Operating Personnel	13				3			
Health Physics Personnel	0				0			
Supervisory Personnel	0				0			
Engineering Personnel	0				0			
TOTAL	15	0	0	15	3	0	0	3
* Refueling								
Maintenance Personnel	0							
Operating Personnel	1							
Health Physics Personnel	0							
Supervisory Personnel	0							
Engineering Personnel	0							
TOTAL	1	0	0	1	0	0	0	0
* Total By Job Function								
Maintenance Personnel	128 (87)	2 (3)	9 (27)	139 (117)	63		2	65
Operating Personnel	171 (146)	0 (0)	0 (0)	171 (146)	59		0	59
Health Physics Personnel	38 (32)	0 (0)	1 (1)	39 (33)	16		0	16
Supervisory Personnel	0 (0)	0 (0)	2 (1)	2 (1)	0		0	0
Engineering Personnel	17 (16)	0 (0)	175 (172)	192 (188)	4		36	40
GRAND TOTAL	354 (281)	2 (3)	187 (201)	543 (485)	142	0	38	180

*Workers are counted in more than one category. (Numbers in parentheses is the actual number of individuals whose exposure exceeded 100 mrem.)

¹Based on self-reading dosimeters.

APPENDIX C

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

Plant: HUMBOLDT BAY PLANT (BWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	0				0.0			
Operating Personnel	23				9.4			
Health Physics Personnel	1				1.0			
Supervisory Personnel	3				0.6			
Engineering Personnel	3				1.1			
TOTAL	30	0	0	30	12.1	0.0	0.0	12.1
Routine Maintenance								
Maintenance Personnel	15				9.3			
Operating Personnel	0				0.0			
Health Physics Personnel	1				0.6			
Supervisory Personnel	2				0.4			
Engineering Personnel	1				0.5			
TOTAL	19	0	0	19	10.8	0.0	0.0	10.8
In-Service Inspection								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
Special Maintenance								
Maintenance Personnel	3	56	56		1.7	128.2	103.5	
Operating Personnel	0	0	0		0.0	0.0	0.0	
Health Physics Personnel	1	0	12		1.2	0.0	9.0	
Supervisory Personnel	2	7	6		0.7	11.0	9.9	
Engineering Personnel	2	9	27		0.8	11.8	15.0	
TOTAL	8	72	101	181	4.4	151.0	137.4	292.8
Waste Processing								
Maintenance Personnel	0	2			0.0	1.9		
Operating Personnel	0	0			0.0	0.0		
Health Physics Personnel	1	0			0.3	0.0		
Supervisory Personnel	0	0			0.0	0.0		
Engineering Personnel	0	0			0.0	0.0		
TOTAL	1	2	0	3	0.3	1.9	0.0	2.2
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.0	0.0	0.0	0.0
Total By Job Function								
Maintenance Personnel	18	58	56	132	11.0	130.1	103.5	244.6
Operating Personnel	23	0	0	23	9.4	0.0	0.0	9.4
Health Physics Personnel	4	0	12	16	3.1	0.0	9.0	12.1
Supervisory Personnel	7	7	6	20	1.7	11.0	9.9	22.6
Engineering Personnel	6	9	27	42	2.4	11.8	15.0	29.2
GRAND TOTAL	58	74	101	233	27.6	152.9	137.4	317.9

APPENDIX C

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

Plant: INDIAN POINT PLANTS 1¹ & 2 (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	140	0	0	140	219.5	0.0	0.0	219.5
Routine Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	20	0	0	20	69.8	0.0	0.0	69.8
In-Service Inspection								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	2	44	40	86	2.3	51.1	42.4	95.8
Special Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	3	322	415	740	9.8	490.4	435.4	935.6
Waste Processing								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	38	0	12	50	113.0	0.0	30.0	143.0
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	42	3	16	61	141.7	5.1	17.6	164.4
Total By Job Function								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
GRAND TOTAL	245	369	483	1097	556.1	546.6	525.4	1628.1

¹Unit 1 is defueled, and data for Unit 3 is included until March 10, 1978.

²No breakdown by job function was provided.

APPENDIX C

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

Plant: INDIAN POINT PLANT 3¹ (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	0		0		0.450	0.000	0.260	
Operating Personnel	28		0		15.810	0.020	0.200	
Health Physics Personnel	13		3		12.750	0.010	1.190	
Supervisory Personnel	11		0		6.200	0.000	0.030	
Engineering Personnel	1		0		0.620	0.020	0.150	
TOTAL	53	0	3	56	35.830	0.050	1.830	37.710
Routine Maintenance								
Maintenance Personnel	35		49		12.580	0.000	14.470	
Operating Personnel	0		0		0.300	0.000	0.400	
Health Physics Personnel	0		5		0.130	0.000	1.830	
Supervisory Personnel	3		2		0.730	0.000	0.560	
Engineering Personnel	0		2		0.260	0.010	0.550	
TOTAL	38	0	58	96	14.000	0.010	17.810	31.820
In-Service Inspection								
Maintenance Personnel	8		52		4.040		25.440	
Operating Personnel	1		1		0.250		0.160	
Health Physics Personnel	0		0		0.080		0.100	
Supervisory Personnel	6		0		2.990		0.150	
Engineering Personnel	3		0		1.220		0.170	
TOTAL	18	0	53	71	8.580	0.000	26.020	34.600
Special Maintenance								
Maintenance Personnel	43	0	197		37.240	0.010	106.170	
Operating Personnel	10	0	9		2.140	0.020	4.070	
Health Physics Personnel	7	0	31		6.820	0.010	24.010	
Supervisory Personnel	20	0	4		12.860	0.020	2.790	
Engineering Personnel	11	1	2		3.330	0.260	0.980	
TOTAL	91	1	243	335	62.390	0.320	138.020	200.730
Waste Processing								
Maintenance Personnel	2				0.460		0.070	
Operating Personnel	0				0.000		0.030	
Health Physics Personnel	0				0.010		0.000	
Supervisory Personnel	0				0.000		0.000	
Engineering Personnel	0				0.000		0.000	
TOTAL	2	0	0	2	0.470	0.000	0.100	0.570
Refueling								
Maintenance Personnel	18		37		7.130		38.080	
Operating Personnel	0		3		0.030		0.680	
Health Physics Personnel	0		1		0.040		0.220	
Supervisory Personnel	5		1		2.350		1.790	
Engineering Personnel	1		1		0.910		1.670	
TOTAL	24	0	43	67	10.460	0.000	42.440	52.900
Total By Job Function								
Maintenance Personnel	106	0	335	441	61.900	0.010	184.490	246.400
Operating Personnel	39	0	13	52	18.530	0.040	5.540	24,110
Health Physics Personnel	20	0	40	60	19.830	0.020	27.350	47,200
Supervisory Personnel	45	0	7	52	25.130	0.020	5.320	30,470
Engineering Personnel	16	1	5	22	6.340	0.290	3.520	10,150
GRAND TOTAL	226	1	400	627	131,730	0.380	226,220	358,330

¹Applicable for the licensed period of March 10, 1978 to December 31, 1978.

APPENDIX C

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

Plant: KEWAUNEE (PWR)

1978

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			.000	.000	.000	
Operating Personnel	10	0			5.753	.000	.274	
Health Physics Personnel	0	0			.000	.000	.000	
Supervisory Personnel	5	1			3.907	.215	.185	
Engineering Personnel	1	0			.455	.000	.011	
TOTAL	16	1	0	17	10.115	.215	.470	10.800
Routine Maintenance								
Maintenance Personnel	21	3	11		4.810	1.130	6.568	
Operating Personnel	2	0	0		.627	.000	.000	
Health Physics Personnel	5	0	12		2.512	.000	4.951	
Supervisory Personnel	0	0	0		.052	.000	.000	
Engineering Personnel	0	0	0		.000	.000	.000	
TOTAL	28	3	23	54	8.001	1.130	11.519	20.650
In-Service Inspection								
Maintenance Personnel	0	2	26		.030	.562	12.803	
Operating Personnel	3	0	0		.919	.000	.000	
Health Physics Personnel	1	0	0		.350	.000	.000	
Supervisory Personnel	1	0	1		.134	.013	.165	
Engineering Personnel	0	1	2		.000	.188	1.455	
TOTAL	5	3	29	37	1.433	0.763	14.423	16.619
Special Maintenance								
Maintenance Personnel	25	12	82		9.546	2.884	36.030	
Operating Personnel	3	0	0		.448	.055	.000	
Health Physics Personnel	6	0	0		2.056	.000	.000	
Supervisory Personnel	1	0	0		.458	.047	.010	
Engineering Personnel	0	1	1		.023	.212	.302	
TOTAL	35	13	83	131	12.531	3.198	36.342	52.071
Waste Processing								
Maintenance Personnel	10		7		2.327	.080	2.473	
Operating Personnel	10		0		6.157	.000	.000	
Health Physics Personnel	6		0		4.857	.000	.000	
Supervisory Personnel	1		0		1.561	.000	.000	
Engineering Personnel	0		0		.000	.000	.000	
TOTAL	27	0	7	34	14.902	.080	2.473	17.455
Refueling								
Maintenance Personnel	8	8	19		3.268	3.012	18.751	
Operating Personnel	1	0	0		.270	.000	.000	
Health Physics Personnel	2	0	0		.513	.000	.000	
Supervisory Personnel	2	0	1		1.032	.000	.766	
Engineering Personnel	1	0	1		.838	.043	.171	
TOTAL	14	8	21	43	5.921	3.055	19.688	28.664
Total By Job Function								
Maintenance Personnel	64	25	145	234	19.981	7.668	76.625	104.274
Operating Personnel	29	0	0	29	14.174	.055	.274	14.503
Health Physics Personnel	20	0	12	32	10.288	.000	4.951	15.239
Supervisory Personnel	10	1	2	13	7.144	.275	1.126	8.545
Engineering Personnel	2	2	4	8	1.316	.443	1.939	3.698
GRAND TOTAL	125	28	163	316	52.903	8.441	84.915	146.259

APPENDIX C

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

Plant: LACROSSE PLANT (BWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	0		0		0.000		0.000	
Operating Personnel	21		0		43.888		0.206	
Health Physics Personnel	6		0		10.545		0.000	
Supervisory Personnel	15		1		10.747		0.450	
Engineering Personnel	3		0		0.973		0.165	
TOTAL	45	0	1	46	66.153	0.000	0.821	66.974
* Routine Maintenance								
Maintenance Personnel	15				8.774		0.047	
Operating Personnel	8				2.273		0.000	
Health Physics Personnel	4				0.699		0.000	
Supervisory Personnel	5				1.333		0.000	
Engineering Personnel	2				0.626		0.099	
TOTAL	34	0	0	34	13.705	0.000	0.146	13.851
* In-Service Inspection								
Maintenance Personnel	0		4		0.192		1.532	
Operating Personnel	1		0		0.314		0.000	
Health Physics Personnel	0		0		0.045		0.000	
Supervisory Personnel	1		0		0.720		0.004	
Engineering Personnel	2		7		0.375		2.832	
TOTAL	4	0	11	15	1.646	0.000	4.368	6.014
* Special Maintenance								
Maintenance Personnel	18		0		40.145		0.000	
Operating Personnel	19		0		10.035		0.000	
Health Physics Personnel	6		0		2.938		0.000	
Supervisory Personnel	10		0		6.104		0.055	
Engineering Personnel	3		1		2.277		0.515	
TOTAL	56	0	1	57	61.499	0.000	0.570	62.069
* Waste Processing								
Maintenance Personnel	0				0.134		0.000	
Operating Personnel	4				1.188		0.011	
Health Physics Personnel	4				2.602		0.000	
Supervisory Personnel	7				5.077		0.015	
Engineering Personnel	1				1.661		0.000	
TOTAL	16	0	0	16	10.662	0.000	0.026	10.688
* Refueling								
Maintenance Personnel					0.020		0.000	
Operating Personnel					0.241		0.000	
Health Physics Personnel					0.058		0.000	
Supervisory Personnel					0.054		0.000	
Engineering Personnel					0.065		0.086	
TOTAL	0	0	0	0	0.438	0.000	0.086	0.524
* Total By Job Function								
Maintenance Personnel	33 (18)		4 (4)	37 (22)	49.265		1.579	50.844
Operating Personnel	53 (22)		0 (0)	53 (22)	57.939		0.217	58.156
Health Physics Personnel	20 (6)		0 (0)	20 (6)	16.887		0.000	16.887
Supervisory Personnel	38 (18)		1 (1)	39 (19)	24.035		0.524	24.559
Engineering Personnel	11 (6)		8 (8)	19 (14)	5.977		3.697	9.674
GRAND TOTAL	155 (70)	0	13 (13)	168 (83)	154.103	0.000	6.017	160.120

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

APPENDIX C

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

Plant: MAINE YANKEE (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	4	0	2		2.008	.065	.520	
Operating Personnel	28	0	0		23.181	.000	.000	
Health Physics Personnel	9	2	1		11.705	.604	.540	
Supervisory Personnel	23	4	1		8.481	1.145	.702	
Engineering Personnel	12	1	0		8.162	.590	.092	
TOTAL	76	7	4	87	53.537	2.404	1.854	57.795
Routine Maintenance								
Maintenance Personnel	30	0	6		30.147	.000	2.834	
Operating Personnel	2	0	0		1.372	.000	.000	
Health Physics Personnel	0	0	0		.000	.000	.000	
Supervisory Personnel	0	1	2		.000	.378	.505	
Engineering Personnel	1	0	0		.115	.000	.000	
TOTAL	33	1	8	42	31.634	.378	3.339	35.351
In-Service Inspection								
Maintenance Personnel	2	1	49		.780	.220	42.143	
Operating Personnel	5	0	0		1.533	.000	.085	
Health Physics Personnel	0	0	0		.000	.000	.000	
Supervisory Personnel	0	1	1		.130	.318	.140	
Engineering Personnel	1	4	7		1.572	1.912	4.483	
TOTAL	8	6	57	71	4.015	2.450	46.851	53.316
Special Maintenance								
Maintenance Personnel	26	5	152		14.586	1.299	110.613	
Operating Personnel	11	0	1		3.450	.000	.380	
Health Physics Personnel	0	0	6		.072	.088	1.305	
Supervisory Personnel	1	1	2		.135	.150	1.775	
Engineering Personnel	5	1	9		.935	.515	2.400	
TOTAL	43	7	170	220	19.178	2.052	116.473	137.703
Waste Processing								
Maintenance Personnel	2		0		.785	.010	.165	
Operating Personnel	9		0		2.121	.000	.000	
Health Physics Personnel	1		2		.315	.000	.965	
Supervisory Personnel	0		0		.000	.000	.075	
Engineering Personnel	0		0		.022	.000	.000	
TOTAL	12	0	2	14	3.243	.010	1.205	4.458
Refueling								
Maintenance Personnel	32	5	103		23.698	2.158	80.350	
Operating Personnel	25	0	0		13.802	.000	.000	
Health Physics Personnel	5	0	25		1.375	.093	20.952	
Supervisory Personnel	3	1	7		1.740	.181	1.695	
Engineering Personnel	6	8	21		2.220	5.486	9.467	
TOTAL	71	14	156	241	42.835	7.918	112.464	163.217
Total By Job Function								
Maintenance Personnel	96	11	312	419	72.004	3.752	236.625	312.381
Operating Personnel	80	0	1	81	45.459	.000	.465	45.924
Health Physics Personnel	15	2	34	51	13.467	.785	23.762	38.014
Supervisory Personnel	27	8	13	48	10.486	2.172	4.892	17.550
Engineering Personnel	25	14	37	76	13.026	8.503	16.442	37.971
GRAND TOTAL	243	35	397	675	154.442	15.212	282.186	451.840

APPENDIX C

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

Plant: MILLSTONE 1 PLANT (BWR)

1978

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	18	5	31		11.670	2.000	7.243	
Operating Personnel	36	1	0		56.810	0.105	0.000	
Health Physics Personnel	7	0	37		13.690	0.000	27.005	
Supervisory Personnel	10	0	1		7.880	0.010	0.230	
Engineering Personnel	4	1	2		1.690	0.230	0.833	
TOTAL	75	7	71	153	91.740	2.345	35.311	129.396
Routine Maintenance								
Maintenance Personnel	5		4		1.970	0.545	2.381	
Operating Personnel	0		0		0.070	0.000	0.000	
Health Physics Personnel	0		0		0.080	0.000	0.000	
Supervisory Personnel	0		0		0.020	0.000	0.015	
Engineering Personnel	0		0		0.030	0.025	0.055	
TOTAL	5	0	4	9	2.170	0.570	2.451	5.191
In-Service Inspection								
Maintenance Personnel	3	0	9		0.445	0.055	2.215	
Operating Personnel	1	0	0		0.160	0.000	0.000	
Health Physics Personnel	0	0	0		0.070	0.000	0.095	
Supervisory Personnel	0	0	1		0.065	0.055	0.405	
Engineering Personnel	2	2	13		1.025	0.545	4.370	
TOTAL	6	2	23	31	1.765	0.655	7.085	9.505
Special Maintenance								
Maintenance Personnel	44	74	642		76.595	55.054	629.136	
Operating Personnel	28	0	0		9.240	0.000	0.000	
Health Physics Personnel	5	0	30		3.600	0.000	8.300	
Supervisory Personnel	10	2	34		3.635	0.440	44.348	
Engineering Personnel	12	24	61		10.987	13.050	51.207	
TOTAL	99	100	767	966	104.057	68.544	732.991	905.592
Waste Processing								
Maintenance Personnel	18	1	23		11.950	1.215	42.260	
Operating Personnel	4	0	0		4.435	0.000	0.000	
Health Physics Personnel	2	0	1		1.560	0.000	0.825	
Supervisory Personnel	1	0	1		0.995	0.000	2.775	
Engineering Personnel	2	1	0		0.735	0.145	0.290	
TOTAL	27	2	25	54	19.675	1.360	46.150	67.185
Refueling								
Maintenance Personnel	12	17	18		6.115	4.355	11.165	
Operating Personnel	4	0	0		2.465	0.000	0.000	
Health Physics Personnel	0	0	1		0.040	0.000	0.470	
Supervisory Personnel	0	1	0		0.145	0.190	0.100	
Engineering Personnel	1	3	7		0.360	0.985	2.755	
TOTAL	17	21	26	64	9.125	5.530	14.490	29.145
Total By Job Function								
Maintenance Personnel	100	97	727	924	108.745	63.224	694.400	866.369
Operating Personnel	73	1	0	74	73.180	0.105	0.000	73.285
Health Physics Personnel	14	0	69	83	19.040	0.000	36.695	55.735
Supervisory Personnel	21	3	37	61	12.740	0.695	47.873	61.308
Engineering Personnel	21	31	83	135	14.827	14.980	59.510	89.317
GRAND TOTAL	229	132	916	1277	228.532	79.004	838.478	1146.014

APPENDIX C

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

Plant: MILLSTONE 2 (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	3		25		0.940	0.115	13.100	
Operating Personnel	12		0		5.353	0.000	0.000	
Health Physics Personnel	5		42		5.330	0.000	36.852	
Supervisory Personnel	1		4		0.665	0.010	1.415	
Engineering Personnel	5		5		1.512	0.295	1.405	
TOTAL	26	0	76	102	13.800	0.420	52.772	66.992
Routine Maintenance								
Maintenance Personnel	2		1		1.335	0.195	0.520	
Operating Personnel	1		0		0.390	0.000	0.000	
Health Physics Personnel	0		0		0.030	0.000	0.045	
Supervisory Personnel	0		0		0.000	0.000	0.000	
Engineering Personnel	0		0		0.005	0.005	0.015	
TOTAL	3	0	1	4	1.760	0.200	0.580	2.540
In-Service Inspection								
Maintenance Personnel	3	3	378		1.145	0.665	524.922	
Operating Personnel	1	0	0		0.195	0.000	0.000	
Health Physics Personnel	2	0	3		0.425	0.000	0.970	
Supervisory Personnel	0	0	24		0.005	0.000	29.760	
Engineering Personnel	3	0	39		2.640	0.125	37.212	
TOTAL	9	3	444	456	4.410	0.790	592.864	598.064
Special Maintenance								
Maintenance Personnel	39	20	497		31.218	8.100	647.616	
Operating Personnel	6	0	0		1.630	0.000	0.020	
Health Physics Personnel	3	0	11		1.015	0.000	3.380	
Supervisory Personnel	2	0	38		1.170	0.000	46.190	
Engineering Personnel	4	3	50		0.940	1.550	57.507	
TOTAL	54	23	596	673	35.973	9.650	754.713	800.336
Waste Processing								
Maintenance Personnel	0		1		0.095	0.025	0.325	
Operating Personnel	1		0		0.330	0.000	0.000	
Health Physics Personnel	0		0		0.170	0.000	0.000	
Supervisory Personnel	0		0		0.050	0.000	0.005	
Engineering Personnel	0		0		0.000	0.000	0.000	
TOTAL	1	0	1	2	0.645	0.025	0.330	1.000
Refueling								
Maintenance Personnel	24	4	30		10.490	1.330	15.065	
Operating Personnel	1	0	0		0.545	0.000	0.000	
Health Physics Personnel	0	0	0		0.000	0.000	0.025	
Supervisory Personnel	1	0	2		0.380	0.000	0.975	
Engineering Personnel	1	0	3		0.450	0.025	1.195	
TOTAL	27	4	35	66	11.865	1.355	17.260	30.480
Total By Job Function								
Maintenance Personnel	71	27	932	1030	45.223	10.430	1201.548	1257.201
Operating Personnel	22	0	0	22	8.443	0.000	0.020	8.463
Health Physics Personnel	10	0	56	66	6.970	0.000	41.272	48.242
Supervisory Personnel	4	0	68	72	2.270	0.010	78.345	80.625
Engineering Personnel	13	3	97	113	5.547	2.000	97.334	104.881
GRAND TOTAL	120	30	1153	1303	68.453	12.440	1418.519	1499.412

APPENDIX C

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

Plant: † MONTICELLO PLANT (BWR)

1978

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	7	0	14		4.491	0.000	1.079	
Operating Personnel	33	0	2		32.075	0.000	0.310	
Health Physics Personnel	7	0	24		8.523	0.000	4.205	
Supervisory Personnel	12	1	6		2.910	0.251	0.653	
Engineering Personnel	12	2	4		2.910	0.250	0.448	
TOTAL	71	3	50	124	50.909	0.501	6.695	58.105
* Routine Maintenance								
Maintenance Personnel	29	59	157		23.757	9.810	23.035	
Operating Personnel	0	0	0		0.000	0.000	0.000	
Health Physics Personnel	0	0	0		0.000	0.000	0.000	
Supervisory Personnel	0	0	0		0.000	0.000	0.000	
Engineering Personnel	0	0	0		0.000	0.000	0.000	
TOTAL	29	59	157	245	23.757	9.810	23.035	56.602
* In-Service Inspection								
Maintenance Personnel		1	29			0.009	27.750	
Operating Personnel		0	0			0.000	0.000	
Health Physics Personnel		0	0			0.000	0.000	
Supervisory Personnel		1	0			0.064	0.000	
Engineering Personnel		0	0			0.064	0.000	
TOTAL	0	2	29	31	0.000	0.137	27.750	27.887
* Special Maintenance								
Maintenance Personnel	34	67	195		24.213	44.027	80.905	
Operating Personnel	33	0	0		9.138	0.000	0.000	
Health Physics Personnel	7	0	15		1.240	0.000	5.451	
Supervisory Personnel	9	1	5		2.876	0.388	1.354	
Engineering Personnel	9	2	6		2.877	0.389	1.355	
TOTAL	92	70	221	383	40.344	44.804	89.065	174.213
* Waste Processing								
Maintenance Personnel	28	2	13		14.208	0.098	0.876	
Operating Personnel	20	0	7		3.914	0.000	4.441	
Health Physics Personnel	6	0	1		0.871	0.000	0.004	
Supervisory Personnel	2	0	0		0.107	0.000	0.000	
Engineering Personnel	3	0	0		0.108	0.000	0.000	
TOTAL	59	2	21	82	19.208	0.098	5.321	24.627
* Refueling								
Maintenance Personnel	18	24	16		1.591	1.729	0.737	
Operating Personnel	19	0	0		2.366	0.000	0.000	
Health Physics Personnel	1	0	1		0.049	0.000	0.009	
Supervisory Personnel	2	0	2		0.115	0.004	0.522	
Engineering Personnel	3	1	3		0.116	0.005	0.523	
TOTAL	43	25	22	90	4.237	1.738	1.791	7.766
* Total By Job Function								
Maintenance Personnel	116	153	424	693	68.260	55.673	134.382	258.315
Operating Personnel	105	0	9	114	47.493	0.000	4.751	52.244
Health Physics Personnel	21	0	41	62	10.683	0.000	9.669	20.352
Supervisory Personnel	26	4	14	44	6.008	0.707	2.530	9.245
Engineering Personnel	26	4	12	42	6.011	0.708	2.325	9.044
* GRAND TOTAL	294	161	500	955	138.455	57.088	153.657	349.200

*Workers may be counted in more than one category.

APPENDIX C

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

Plant: † NINE MILE POINT PLANT (BWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			TOTAL MAN-REM
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	
* Reactor Operations & Surv.								
Maintenance Personnel	90	19	31		11.359	0.338	1.710	
Operating Personnel	28	0	0		15.695	0.000	0.000	
Health Physics Personnel	21	0	4		5.994	0.000	0.184	
Supervisory Personnel	33	1	3		7.872	0.001	0.026	
Engineering Personnel	8	12	26		0.642	0.166	0.415	
TOTAL	180	32	64	276	41.562	0.505	2.335	44.402
* Routine Maintenance								
Maintenance Personnel	180	39	30		28.651	3.365	0.631	
Operating Personnel	18	0	0		0.865	0.000	0.000	
Health Physics Personnel	30	0	1		1.254	0.000	0.020	
Supervisory Personnel	25	0	1		1.562	0.000	0.060	
Engineering Personnel	14	12	11		0.385	0.320	0.155	
TOTAL	267	51	43	361	32.717	3.685	0.866	37.268
* In-Service Inspection								
Maintenance Personnel	10	0	6		2.533	0.000	0.058	
Operating Personnel	4	0	0		0.017	0.000	0.000	
Health Physics Personnel	2	0	0		0.025	0.000	0.000	
Supervisory Personnel	5	0	0		0.080	0.000	0.000	
Engineering Personnel	1	1	5		0.002	0.018	0.021	
TOTAL	22	1	11	34	2.657	0.018	0.079	2.754
* Special Maintenance								
Maintenance Personnel	244	64	24		52.471	13.243	6.164	
Operating Personnel	31	0	0		1.435	0.000	0.000	
Health Physics Personnel	59	0	4		4.306	0.000	0.103	
Supervisory Personnel	33	0	2		3.293	0.000	0.365	
Engineering Personnel	22	9	6		1.380	0.394	0.056	
TOTAL	389	73	36	498	62.885	13.637	6.688	83.210
* Waste Processing								
Maintenance Personnel	76	7	22		23.784	0.431	1.603	
Operating Personnel	30	0	0		10.329	0.000	0.000	
Health Physics Personnel	15	0	2		2.606	0.000	0.056	
Supervisory Personnel	14	0	0		1.233	0.000	0.000	
Engineering Personnel	3	5	5		0.193	0.036	0.145	
TOTAL	138	12	29	179	38.145	0.467	1.804	40.416
* Refueling								
Maintenance Personnel	62	9	27		9.521	1.519	5.748	
Operating Personnel	32	0	0		4.936	0.000	0.000	
Health Physics Personnel	16	0	2		1.985	0.000	1.119	
Supervisory Personnel	13	0	0		0.720	0.000	0.000	
Engineering Personnel	10	8	6		0.325	0.067	1.201	
TOTAL	133	17	35	185	17.487	1.586	8.068	27.141
* Total By Job Function								
Maintenance Personnel	662	138	140	940	128.319	18.896	15.914	163.129
Operating Personnel	143	0	0	143	33.277	0.000	0.000	33.277
Health Physics Personnel	143	0	13	156	16.170	0.000	1.482	17.652
Supervisory Personnel	123	1	6	130	14.760	0.001	0.451	15.212
Engineering Personnel	58	47	59	164	2.927	1.001	1.993	5.921
* GRAND TOTAL	1129 (49)	186 (47)	218 (107)	1533 (203)	195.453	19.898	19.840	235.191

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

APPENDIX C

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

Plant: OCONEE 1, 2, & 3 PLANTS (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS ¹			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	215	178	205		8.053	10.411	12.289	
Operating Personnel	314	5	0		62.876	0.855	0.000	
Health Physics Personnel	157	9	94		31.285	0.395	6.420	
Supervisory Personnel	26	0	0		1.110	0.000	0.000	
Engineering Personnel	194	45	35		39.330	0.939	1.140	
TOTAL					142.654	12.600	19.849	175.103
* Routine Maintenance								
Maintenance Personnel	939	975	188		93.442	96.423	31.845	
Operating Personnel	330	1	0		23.296	0.010	0.000	
Health Physics Personnel	269	18	378		11.040	0.330	16.115	
Supervisory Personnel	22	3	0		0.560	0.020	0.000	
Engineering Personnel	261	77	118		12.200	2.790	5.548	
TOTAL					140.538	99.573	53.508	293.619
* In-Service Inspection								
Maintenance Personnel	94	288	12		36.090	122.585	1.015	
Operating Personnel	46	1	0		20.740	1.080	0.000	
Health Physics Personnel	62	3	192		4.140	0.075	18.350	
Supervisory Personnel	9	0	0		8.320	0.000	0.000	
Engineering Personnel	48	19	224		16.600	1.630	88.272	
TOTAL					85.890	125.370	107.637	318.897
* Special Maintenance								
Maintenance Personnel	517	725	50		53.835	151.917	6.150	
Operating Personnel	283	2	0		19.406	0.190	0.000	
Health Physics Personnel	186	4	194		12.165	0.880	13.180	
Supervisory Personnel	24	0	0		3.065	0.000	0.000	
Engineering Personnel	185	55	185		19.855	4.570	93.875	
TOTAL					108.326	157.557	113.205	379.088
* Waste Processing								
Maintenance Personnel	34	20	50		4.685	1.460	11.830	
Operating Personnel	151	3	0		19.300	0.090	0.000	
Health Physics Personnel	50	4	11		3.340	0.095	0.405	
Supervisory Personnel	13	0	0		2.785	0.000	0.000	
Engineering Personnel	40	4	9		8.190	0.155	7.105	
TOTAL					38.300	1.800	13.340	53.440
* Refueling								
Maintenance Personnel	204	135	5		32.000	27.315	0.057	
Operating Personnel	390	7	0		51.705	0.160	0.000	
Health Physics Personnel	57	1	164		3.070	0.010	9.700	
Supervisory Personnel	5	0	0		0.185	0.000	0.000	
Engineering Personnel	82	6	91		5.315	0.075	16.445	
TOTAL					92.275	27.560	26.202	146.037
* Total By Job Function								
Maintenance Personnel	(257)	(341)	(189)		228.105	410.111	63.186	701.402
Operating Personnel	(149)	(7)	(0)		197.323	2.385	0.000	199.708
Health Physics Personnel	(87)	(11)	(52)		65.040	1.785	64.170	130.995
Supervisory Personnel	(29)	(2)	(0)		16.025	0.020	0.000	16.045
Engineering Personnel	(161)	(63)	(270)		101.490	10.159	206.385	318.034
* GRAND TOTAL	(683)	(424)	(511)	(1618)	607.983	424.460	333.741	1366.184

*Workers may be counted more than once in the same work and job function, as well as in different ones. Number in parentheses is total number of individuals.

¹Doses based on pocket dosimeters. Multiply by 0.89 to obtain approximate TLD dose values.

APPENDIX C

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

Plant: OYSTER CREEK PLANT (BWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	73	23	122		7.861	1.920	4.549	
Operating Personnel	63	1	8		74.808	0.000	0.249	
Health Physics Personnel	16	0	26		10.820	0.000	1.419	
Supervisory Personnel	74	1	0		18.593	0.249	0.000	
Engineering Personnel	26	21	0		12.393	1.725	0.000	
TOTAL	252	46	156	454	124.475	3.894	6.217	134.586
* Routine Maintenance								
Maintenance Personnel	84	53	434		47.820	26.242	291.808	
Operating Personnel	54	1	9		19.388	0.521	3.910	
Health Physics Personnel	17	0	105		20.194	0.000	73.651	
Supervisory Personnel	55	1	2		8.503	0.406	1.192	
Engineering Personnel	20	4	0		5.930	1.656	0.000	
TOTAL	230	59	550	839	101.835	28.825	370.561	501.221
* In-Service Inspection								
Maintenance Personnel	50	33	186		3.623	1.380	46.447	
Operating Personnel	23	0	1		1.495	0.000	0.166	
Health Physics Personnel	3	0	10		0.337	0.000	0.581	
Supervisory Personnel	6	1	0		0.601	0.112	0.000	
Engineering Personnel	12	6	3		1.281	0.661	0.327	
TOTAL	94	40	200	334	7.337	2.153	47.521	57.011
* Special Maintenance								
Maintenance Personnel	81	65	598		133.143	51.325	213.137	
Operating Personnel	53	3	12		22.599	0.585	12.943	
Health Physics Personnel	17	0	62		10.849	0.000	20.872	
Supervisory Personnel	26	1	1		13.143	0.999	0.130	
Engineering Personnel	24	7	1		8.712	0.723	0.104	
TOTAL	201	76	674	951	188.446	53.632	247.186	489.264
* Waste Processing								
Maintenance Personnel	63	5	71		17.842	0.896	14.514	
Operating Personnel	39	0	2		19.465	0.000	0.358	
Health Physics Personnel	1	0	0		0.175	0.000	0.000	
Supervisory Personnel	11	0	0		4.450	0.000	0.000	
Engineering Personnel	4	0	0		0.458	0.000	0.000	
TOTAL	118	5	73	196	42.390	0.896	14.872	58.158
* Refueling								
Maintenance Personnel	61	2	59		19.381	0.267	12.186	
Operating Personnel	45	0	5		9.437	0.000	1.251	
Health Physics Personnel	0	0	0		0.000	0.000	0.000	
Supervisory Personnel	8	0	0		2.532	0.000	0.000	
Engineering Personnel	5	5	0		0.568	0.528	0.000	
TOTAL	119	7	64	190	31.918	0.795	13.437	46.150
* Total By Job Function								
Maintenance Personnel	412 (92)	181 (75)	1470 (831)	2063 (998)	229.670	82.030	582.641	894.341
Operating Personnel	277 (63)	5 (3)	37 (25)	319 (91)	147.192	1.106	18.877	167.175
Health Physics Personnel	54 (17)	0 (0)	203 (110)	257 (127)	42.375	0.000	96.523	138.898
Supervisory Personnel	180 (80)	4 (6)	3 (11)	187 (97)	47.822	1.766	1.322	50.910
Engineering Personnel	91 (27)	43 (30)	4 (5)	138 (62)	29.342	5.293	0.431	35.066
* GRAND TOTAL	1014 (279)	233 (114)	1717 (982)	2964 (1375)	496.401	90.195	699.794	1286.390

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

APPENDIX C

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

Plant: PALISADES PLANT (PWR)

1978

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					.515	.926	.132	
Operating Personnel	27		2		16.256	.099	.623	
Health Physics Personnel	8		16		12.199	.307	12.333	
Supervisory Personnel	6				2.424	.328	.261	
Engineering Personnel	5				2.654	.422	.061	
TOTAL	46	0	18	64	34.048	2.082	13.410	49.540
Routine Maintenance								
Maintenance Personnel	36	90	12		96.565	173.563	11.164	
Operating Personnel	4				2.141	.234	.119	
Health Physics Personnel	6				1.574		.155	
Supervisory Personnel	12	8			28.255	5.498	.140	
Engineering Personnel	3				4.160	2.433	3.436	
TOTAL	61	98	12	171	132.695	181.728	15.014	329.437
In-Service Inspection								
Maintenance Personnel	3	10	15		1.672	7.984	23.917	
Operating Personnel					.257		.210	
Health Physics Personnel					.285	.014	.325	
Supervisory Personnel					.151	.025	.041	
Engineering Personnel	3	4	4		2.237	2.615	6.944	
TOTAL	6	14	19	39	4.602	10.638	31.437	46.677
Special Maintenance								
Maintenance Personnel	4	94	43		4.003	143.105	90.676	
Operating Personnel					1.286	.018	.090	
Health Physics Personnel	10		18		1.209	.026	6.327	
Supervisory Personnel	9		4		1.793	1.888	1.028	
Engineering Personnel	7				5.364	4.426	6.039	
TOTAL	30	94	65	189	13.655	149.463	104.160	267.278
Waste Processing								
Maintenance Personnel					1.362	1.162	.024	
Operating Personnel	7				2.425			
Health Physics Personnel	3				.442			
Supervisory Personnel					.098			
Engineering Personnel					.212			
TOTAL	10	0	0	10	4.539	1.162	.024	5.725
Refueling								
Maintenance Personnel	5	5	3		6.291	6.102	1.090	
Operating Personnel	20				13.133			
Health Physics Personnel	6				.812		.378	
Supervisory Personnel	7				2.331	.187		
Engineering Personnel	1				2.922	.144	.613	
TOTAL	39	5	3	47	25.489	6.433	2.081	34.003
Total By Job Function								
Maintenance Personnel	48	199	73	320	110.408	332.842	127.003	570.253
Operating Personnel	58		2	60	35.498	.351	1.042	36.891
Health Physics Personnel	33		34	67	16.521	.347	19.518	36.386
Supervisory Personnel	34	8	4	46	35.052	7.926	1.470	44.448
Engineering Personnel	19	4	4	27	17.549	10.040	17.093	44.682
GRAND TOTAL	192	211	117	520	215.028	351.506	166.126	732.660

APPENDIX C

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

Plant: PEACH BOTTOM PLANTS 2 & 3 (BWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	2	63	47		0.35	10.20	9.95	
Operating Personnel	45	17	21		25.55	10.96	3.09	
Health Physics Personnel	14	1	58		12.40	0.20	34.39	
Supervisory Personnel	3	3	0		0.31	0.43	0.00	
Engineering Personnel	11	29	10		5.03	16.61	12.54	
TOTAL	75	113	136	324	43.64	38.40	59.97	142.01
* Routine Maintenance								
Maintenance Personnel	11	504	465		5.12	389.24	301.11	
Operating Personnel	5	11	2		0.57	4.64	0.26	
Health Physics Personnel	25	0	45		32.09	0.00	50.32	
Supervisory Personnel	0	0	1		0.00	0.00	0.46	
Engineering Personnel	7	13	10		3.09	4.77	2.64	
TOTAL	48	528	523	1099	40.87	398.65	354.79	794.31
* In-Service Inspection								
Maintenance Personnel		1	37			0.17	58.82	
Operating Personnel		0	0			0.00	0.00	
Health Physics Personnel		0	3			0.00	2.83	
Supervisory Personnel		0	1			0.00	1.20	
Engineering Personnel		0	0			0.00	0.00	
TOTAL	0	1	41	42	0.00	0.17	62.85	63.02
* Special Maintenance								
Maintenance Personnel	0		118		0.00		126.63	
Operating Personnel	0		1		0.00		0.26	
Health Physics Personnel	1		9		1.59		7.07	
Supervisory Personnel	0		0		0.00		0.00	
Engineering Personnel	0		0		0.00		0.00	
TOTAL	1	0	128	129	1.59	0.00	133.96	135.55
* Waste Processing								
Maintenance Personnel	0	4	7		0.00	0.57	1.39	
Operating Personnel	4	0	0		2.95	0.00	0.00	
Health Physics Personnel	4	0	9		0.89	0.00	3.39	
Supervisory Personnel	0	0	0		0.00	0.00	0.00	
Engineering Personnel	0	0	0		0.00	0.00	0.00	
TOTAL	8	4	16	28	3.84	0.57	4.78	9.19
* Refueling								
Maintenance Personnel	0	2	3		0.00	0.66	0.49	
Operating Personnel	0	0	0		0.00	0.00	0.00	
Health Physics Personnel	7	0	6		3.85	0.00	4.59	
Supervisory Personnel	0	0	0		0.00	0.00	0.00	
Engineering Personnel	0	0	0		0.00	0.00	0.00	
TOTAL	7	2	9	18	3.85	0.66	5.08	9.59
* Total By Job Function								
Maintenance Personnel	13 (11)	574 (531)	677 (642)	1264 (1184)	5.47	400.84	498.39	904.70
Operating Personnel	54 (52)	28 (22)	24 (33)	106 (107)	29.07	15.60	3.61	48.28
Health Physics Personnel	51 (32)	1 (1)	130 (101)	182 (134)	50.82	0.20	102.59	153.61
Supervisory Personnel	3 (4)	3 (4)	2 (3)	8 (11)	0.31	0.43	1.66	2.40
Engineering Personnel	18 (13)	42 (38)	20 (21)	80 (72)	8.12	21.38	15.18	44.68
* GRAND TOTAL	139 (112)	648 (596)	853 (800)	1640 (1508)	93.79	438.45	621.43	1153.67

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

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

Plant: PILGRIM PLANT (BWR)

1978

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	54		109		26.425		25.255	
Operating Personnel	22		0		49.186		0.000	
Health Physics Personnel	16		27		13.895		9.208	
Supervisory Personnel	14		2		7.314		0.075	
Engineering Personnel	4		1		3.954		0.000	
TOTAL	110	0	139	249	100.774	0.000	34.538	135.312
* Routine Maintenance								
Maintenance Personnel	56	14	380		99.594	46.566	339.214	
Operating Personnel	26	0	0		7.271	0.015	0.000	
Health Physics Personnel	17	0	60		11.136	0.000	58.584	
Supervisory Personnel	12	5	6		8.927	0.440	3.200	
Engineering Personnel	8	0	38		1.115	0.000	28.455	
TOTAL	119	19	484	622	128.043	47.021	429.453	604.517
* In-Service Inspection								
Maintenance Personnel	20		27		1.080		1.665	
Operating Personnel	9		0		0.485		0.000	
Health Physics Personnel	10		4		0.245		0.150	
Supervisory Personnel	2		0		0.270		0.000	
Engineering Personnel	3		0		0.115		0.000	
TOTAL	44	0	31	75	2.195	0.000	1.815	4.010
* Special Maintenance								
Maintenance Personnel	48	27	140		44.580	2.850	246.654	
Operating Personnel	26	0	0		6.325	0.000	0.000	
Health Physics Personnel	12	0	51		4.940	0.000	8.162	
Supervisory Personnel	16	3	8		6.513	1.130	0.630	
Engineering Personnel	5	2	2		3.175	0.090	0.010	
TOTAL	107	32	201	340	65.533	4.070	255.456	325.059
* Waste Processing								
Maintenance Personnel	28	11	89		14.296	1.750	44.828	
Operating Personnel	26	0	0		4.760	0.000	0.000	
Health Physics Personnel	10	0	37		3.414	0.000	1.023	
Supervisory Personnel	0	0	0		0.000	0.000	0.000	
Engineering Personnel	8	5	12		0.170	0.085	2.705	
TOTAL	72	16	138	226	22.640	1.835	48.556	73.031
* Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
* Total By Job Function								
Maintenance Personnel	206 (57)	52 (53)	745 (521)	1003 (631)	185.975	51.166	657.616	894.757
Operating Personnel	109 (30)	0 (1)	0 (0)	109 (31)	68.027	0.015	0.000	68.042
Health Physics Personnel	65 (17)	0 (0)	179 (65)	244 (82)	33.630	0.000	77.127	110.757
Supervisory Personnel	44 (21)	8 (6)	16 (12)	68 (39)	23.024	1.570	3.905	28.499
Engineering Personnel	28 (14)	7 (22)	53 (44)	88 (80)	8.529	0.175	31.170	39.874
* GRAND TOTAL	452 (139)	67 (82)	993 (642)	1512 (863)	319.185	52.926	769.818	1141.929

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

APPENDIX C

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

Plant: † POINT BEACH 1 & 2 PLANTS (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES ¹	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES ¹	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.					0.488			
Maintenance Personnel					44.651			
Operating Personnel					21.418			
Health Physics Personnel					0.000			
Supervisory Personnel					1.920			
Engineering Personnel								
TOTAL					68.477		0.000	68.477
Routine Maintenance					39.970			
Maintenance Personnel					0.141			
Operating Personnel					0.318			
Health Physics Personnel					0.000			
Supervisory Personnel					0.000			
Engineering Personnel								
TOTAL					40.429		0.000	40.429
In-Service Inspection					28.771			
Maintenance Personnel					8.428			
Operating Personnel					0.023			
Health Physics Personnel					1.103			
Supervisory Personnel					1.285			
Engineering Personnel								
TOTAL					39.610		77.496	117.106
Special Maintenance					26.248			
Maintenance Personnel					0.895			
Operating Personnel					0.000			
Health Physics Personnel					0.000			
Supervisory Personnel					0.000			
Engineering Personnel								
TOTAL					27.143		29.530	56.673
Waste Processing					0.326			
Maintenance Personnel					17.942			
Operating Personnel					1.677			
Health Physics Personnel					0.000			
Supervisory Personnel					0.000			
Engineering Personnel								
TOTAL					19.945		0.000	19.945
Refueling					0.147			
Maintenance Personnel					5.139			
Operating Personnel					0.533			
Health Physics Personnel					0.000			
Supervisory Personnel					0.319			
Engineering Personnel								
TOTAL					6.138		0.000	6.138
Total By Job Function								
Maintenance Personnel	83				95.950			
Operating Personnel	43				77.196			
Health Physics Personnel	24				23.969			
Supervisory Personnel	3				1.103			
Engineering Personnel	3				3.524			
GRAND TOTAL	156		128	284	201.742		107.026	308.768

¹ Includes utility employees. No further breakdown provided.

APPENDIX C

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

Plant: PRAIRIE ISLAND 1 & 2 PLANTS (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	12	3	0		5.76	0.68	0.05	
Operating Personnel	38	0	0		15.87	0.00	0.00	
Health Physics Personnel	13	0	2		7.72	0.00	0.69	
Supervisory Personnel	2	0	0		2.18	0.07	0.02	
Engineering Personnel	13	1	4		4.19	0.17	0.73	
TOTAL	78	4	6	88	35.72	0.92	1.49	38.13
Routine Maintenance								
Maintenance Personnel	1	0	0		0.88	0.09		
Operating Personnel	0	0	0		0.01	0.00		
Health Physics Personnel	0	0	0		0.00	0.00		
Supervisory Personnel	0	0	0		0.00	0.00		
Engineering Personnel	0	0	0		0.01	0.00		
TOTAL	1	0	0	1	0.90	0.09	0.00	0.99
In-Service Inspection								
Maintenance Personnel	2	2	7		0.78	0.38	1.82	
Operating Personnel	0	0	0		0.01	0.00	0.00	
Health Physics Personnel	2	0	3		0.67	0.00	0.67	
Supervisory Personnel	1	0	11		0.25	0.02	5.64	
Engineering Personnel	0	2	5		0.03	0.54	2.13	
TOTAL	5	4	26	35	1.74	0.94	10.26	12.94
Special Maintenance								
Maintenance Personnel	67	73	30		41.03	20.09	15.31	
Operating Personnel	10	0	1		2.35	0.00	0.65	
Health Physics Personnel	11	0	13		3.31	0.00	4.25	
Supervisory Personnel	1	3	10		0.38	1.13	2.49	
Engineering Personnel	10	0	16		2.88	0.02	6.69	
TOTAL	99	76	70	245	49.95	21.24	29.39	100.58
Waste Processing								
Maintenance Personnel	12	1			4.80	0.49	0.00	
Operating Personnel	1	0			0.74	0.00	0.00	
Health Physics Personnel	1	0			0.79	0.00	0.04	
Supervisory Personnel	0	0			0.00	0.00	0.00	
Engineering Personnel	0	0			0.05	0.00	0.00	
TOTAL	14	1	0	15	6.38	0.49	0.04	6.91
Refueling								
Maintenance Personnel	36	40	3		18.04	11.84	0.57	
Operating Personnel	7	0	0		2.35	0.00	0.00	
Health Physics Personnel	0	0	1		0.33	0.00	0.34	
Supervisory Personnel	1	3	1		0.20	0.39	0.34	
Engineering Personnel	1	1	0		0.40	0.10	0.14	
TOTAL	45	44	5	94	21.32	12.33	1.39	35.04
Total By Job Function								
Maintenance Personnel	130	119	40	289	71.29	33.57	17.75	122.61
Operating Personnel	56	0	1	57	21.33	0.00	0.65	21.98
Health Physics Personnel	27	0	19	46	12.82	0.00	5.99	18.81
Supervisory Personnel	5	6	22	33	3.01	1.61	8.49	13.11
Engineering Personnel	24	4	25	53	7.56	0.83	9.69	18.08
GRAND TOTAL	242	129	107	478	116.01	36.01	42.57	194.59

APPENDIX C

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

Plant: QUAD CITIES 1 & 2 (BWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	10				23.3			
Operating Personnel	71				37.6			
Health Physics Personnel	11				28.4			
Supervisory Personnel	42				27.3			
Engineering Personnel	144				34.1			
TOTAL	278			278	150.7			150.7
Routine Maintenance								
Maintenance Personnel	105				255.3			
Operating Personnel	9				15.3			
Health Physics Personnel	6				14.8			
Supervisory Personnel	65				57.3			
Engineering Personnel	0				0.0			
TOTAL	185		1808	1993	342.7		699.5	1042.2
In-Service Inspection (Included with Routine Maintenance)								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL								
Special Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL		193		193		187.8		187.8
Waste Processing								
Maintenance Personnel	1				1.8			
Operating Personnel	74				125.1			
Health Physics Personnel	9				23.1			
Supervisory Personnel	3				1.6			
Engineering Personnel	0				0.0			
TOTAL	87			87	151.6			151.6
Refueling								
Maintenance Personnel	0				0.0			
Operating Personnel	13				33.0			
Health Physics Personnel	0				0.0			
Supervisory Personnel	7				2.5			
Engineering Personnel	0				0.0			
TOTAL	20			20	35.5			35.5
Total By Job Function								
Maintenance Personnel	116				280.4			
Operating Personnel	167				211.0			
Health Physics Personnel	26				66.3			
Supervisory Personnel	117				88.7			
Engineering Personnel	144				34.1			
GRAND TOTAL	570	193	1808	2571	680.5	187.8	699.5	1567.8

APPENDIX C

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

Plant: RANCHO SECO PLANT (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	40	3	30		4.38	0.51	4.80	
Operating Personnel	45	0	2		11.67	0.07	0.35	
Health Physics Personnel	12	0	24		6.18	0.00	12.46	
Supervisory Personnel	24	0	3		0.45	0.00	0.22	
Engineering Personnel	13	7	30		1.05	0.09	30.49	
TOTAL	134	10	89	233	23.73	0.67	48.32	72.72
* Routine Maintenance								
Maintenance Personnel	81	10	273		24.61	1.36	18.22	
Operating Personnel	45	6	30		2.74	0.00	0.07	
Health Physics Personnel	13	0	24		2.62	0.00	2.54	
Supervisory Personnel	29	4	9		0.59	0.10	0.06	
Engineering Personnel	20	21	91		1.07	0.84	35.26	
TOTAL	188	41	427	656	31.63	2.30	56.15	90.08
In-Service Inspection (Included with Routine Maintenance)								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL								
* Special Maintenance								
Maintenance Personnel	31	0	48		20.69	1.49	14.33	
Operating Personnel	16	0	0		2.84	0.00	0.71	
Health Physics Personnel	13	0	24		2.89	0.00	0.97	
Supervisory Personnel	25	1	9		0.47	0.00	0.34	
Engineering Personnel	19	14	49		2.17	1.86	9.64	
TOTAL	104	15	130	249	29.06	3.35	25.99	58.40
* Waste Processing								
Maintenance Personnel	21	0	19		16.54	0.26	20.32	
Operating Personnel	18	0	0		4.15	0.00	0.00	
Health Physics Personnel	12	0	24		5.54	0.00	1.01	
Supervisory Personnel	19	1	1		2.29	0.00	1.14	
Engineering Personnel	5	1	3		0.32	0.08	1.61	
TOTAL	75	2	47	124	28.84	0.34	24.08	53.26
* Refueling								
Maintenance Personnel	48	3	70		3.53	0.53	9.45	
Operating Personnel	41	0	10		12.88	0.00	1.60	
Health Physics Personnel	12	0	24		1.62	0.00	0.14	
Supervisory Personnel	24	0	5		1.43	0.00	0.15	
Engineering Personnel	10	2	30		0.51	0.29	3.15	
TOTAL	135	5	139	279	19.97	0.82	14.49	35.28
* Total By Job Function								
Maintenance Personnel	221 (81)	16 (10)	440 (273)	677 (364)	69.75	4.15	67.12	141.02
Operating Personnel	165 (45)	6 (6)	42 (32)	213 (83)	34.28	0.07	2.73	37.08
Health Physics Personnel	62 (13)	0 (0)	120 (24)	182 (37)	18.85	0.00	17.12	35.97
Supervisory Personnel	121 (29)	6 (4)	27 (9)	154 (42)	5.23	0.10	1.91	7.24
Engineering Personnel	67 (20)	45 (30)	203 (109)	315 (159)	5.12	3.16	80.15	88.43
* GRAND TOTAL	636 (188)	73 (50)	832 (447)	1541 (685)	133.23	7.48	169.03	309.74

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

APPENDIX C

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

Plant: ROBINSON PLANT (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	1	0	0		4.185	0.223	0.000	
Operating Personnel	16	0	10		32.647	0.000	3.669	
Health Physics Personnel	6	0	0		12.854	4.812	0.000	
Supervisory Personnel	0	0	0		0.096	0.206	0.017	
Engineering Personnel	4	2	0		2.371	1.327	0.000	
TOTAL	27	2	10	39	52.153	6.568	3.686	62.407
Routine Maintenance								
Maintenance Personnel	15	4	28		38.525	5.590	19.185	
Operating Personnel	0	0	0		0.833	0.000	0.000	
Health Physics Personnel	5	0	0		12.352	5.513	0.000	
Supervisory Personnel	0	0	0		0.140	0.000	0.000	
Engineering Personnel	0	0	0		0.471	0.000	0.000	
TOTAL	20	4	28	52	52.321	11.103	19.185	82.609
In-Service Inspection								
Maintenance Personnel	0	0	0		0.803	0.000	0.000	
Operating Personnel	0	0	0		0.000	0.000	0.000	
Health Physics Personnel	0	0	0		0.529	0.425	0.000	
Supervisory Personnel	0	0	0		0.000	0.000	0.000	
Engineering Personnel	4	2	7		6.334	0.816	1.007	
TOTAL	4	2	7	13	7.666	1.241	1.007	9.914
Special Maintenance								
Maintenance Personnel	13	15	157		26.436	28.361	257.094	
Operating Personnel	4	0	0		8.243	0.000	0.000	
Health Physics Personnel	7	7	17		14.036	7.576	15.569	
Supervisory Personnel	6	0	0		2.182	0.000	0.000	
Engineering Personnel	10	8	61		19.153	2.848	76.540	
TOTAL	40	30	235	305	70.050	38.785	349.203	458.038
Waste Processing								
Maintenance Personnel	4		28		10.786	1.688	41.625	
Operating Personnel	15		0		28.953	0.000	0.000	
Health Physics Personnel	4		0		7.254	2.493	0.000	
Supervisory Personnel	0		0		0.164	0.000	0.000	
Engineering Personnel	0		0		0.201	0.000	0.000	
TOTAL	23	0	28	51	47.358	4.181	41.625	93.164
Refueling								
Maintenance Personnel	21	27	51		52.556	52.978	75.618	
Operating Personnel	12	0	0		20.856	0.000	0.000	
Health Physics Personnel	3	5	11		5.320	3.785	6.672	
Supervisory Personnel	1	0	0		0.262	0.000	0.000	
Engineering Personnel	3	2	21		3.018	0.816	27.590	
TOTAL	40	34	83	157	82.012	57.579	109.880	249.471
Total By Job Function								
Maintenance Personnel	54	46	264	364	133.291	88.840	393.522	615.653
Operating Personnel	47	0	10	57	91.532	0.000	3.669	95.201
Health Physics Personnel	25	12	28	65	52.345	24.604	22.241	99.190
Supervisory Personnel	7	0	0	7	2.844	0.206	0.017	3.067
Engineering Personnel	21	14	89	124	31.548	5.807	105.137	142.492
GRAND TOTAL	154	72	391	617	311.560	119.457	524.586	955.603

APPENDIX C

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

Plant: † SALEM 1 PLANT (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	0	0	0		0.810	0.000	0.120	
Operating Personnel	74	1	1		18.237	0.090	0.770	
Health Physics Personnel	7	0	18		2.594	0.050	6.801	
Supervisory Personnel	4	0	0		1.402	0.000	0.075	
Engineering Personnel	0	0	0		0.000	0.060	0.015	
TOTAL	85	1	19	105	23.043	0.200	7.781	31.024
Routine Maintenance								
Maintenance Personnel	7		5		4.493		1.560	
Operating Personnel	1		0		0.150		0.050	
Health Physics Personnel	1		11		0.390		3.125	
Supervisory Personnel	4		0		1.122		0.090	
Engineering Personnel	0		0		0.000		0.000	
TOTAL	13	0	16	29	6.155	0.000	4.825	10.980
In-Service Inspection								
Maintenance Personnel					0.410	0.000	0.015	
Operating Personnel					0.005	0.000	0.015	
Health Physics Personnel					0.020	0.000	0.060	
Supervisory Personnel					0.545	0.000	0.050	
Engineering Personnel					0.000	0.015	0.010	
TOTAL	0	0	0	0	0.980	0.015	0.150	1.145
Special Maintenance								
Maintenance Personnel	112	0	20		59.457	0.182	16.730	
Operating Personnel	0	1	1		1.200	0.120	0.115	
Health Physics Personnel	0	0	2		0.520	0.000	1.160	
Supervisory Personnel	17	0	3		5.382	0.065	0.915	
Engineering Personnel	0	0	0		0.028	0.105	0.080	
TOTAL	129	1	26	156	66.587	0.472	19.000	86.059
Waste Processing								
Maintenance Personnel	1		0		0.610	0.005	0.265	
Operating Personnel	0		4		0.090	0.035	2.525	
Health Physics Personnel	2		2		0.100	0.010	1.060	
Supervisory Personnel	0		0		0.000	0.000	0.000	
Engineering Personnel	0		0		0.000	0.000	0.000	
TOTAL	3	0	6	9	0.800	0.050	3.850	4.700
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	0	0	0	0	0.000	0.000	0.000	0.000
Total By Job Function								
Maintenance Personnel	120	0	25	145	65.780	0.187	18.690	84.657
Operating Personnel	75	2	6	83	19.682	0.245	3.475	23.402
Health Physics Personnel	10	0	33	43	3.624	0.060	12.206	15.890
Supervisory Personnel	25	0	3	28	8.451	0.065	1.130	9.646
Engineering Personnel	0	0	0	0	0.028	0.180	0.105	0.313
GRAND TOTAL	230	2	67	299	97.565	0.737	35.606	133.908

APPENDIX C

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

Plant: SAN ONOFRE PLANT (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
* Reactor Operations & Surv.								
Maintenance Personnel	2	0	4		0.340	0.000	1.200	
Operating Personnel	19	0	2		6.980	0.000	0.380	
Health Physics Personnel	6	3	0		1.320	0.450	0.000	
Supervisory Personnel	9	0	1		5.040	0.000	0.150	
Engineering Personnel	11	8	6		4.340	1.420	1.330	
TOTAL	47	11	13	71	18.020	1.870	3.060	22.950
* Routine Maintenance								
Maintenance Personnel	34	90	192		33.900	53.250	147.110	
Operating Personnel	18	0	5		4.630	0.000	2.030	
Health Physics Personnel	7	7	8		10.060	5.840	6.200	
Supervisory Personnel	8	8	6		5.320	2.380	4.550	
Engineering Personnel	12	15	59		4.990	4.800	36.410	
TOTAL	79	120	270	469	58.900	66.270	196.300	321.470
* In-Service Inspection								
Maintenance Personnel			1				1.080	
Operating Personnel			0				0.000	
Health Physics Personnel			4				0.780	
Supervisory Personnel			0				0.000	
Engineering Personnel			0				0.000	
TOTAL	0	0	5	5	0.000	0.000	1.860	1.860
* Special Maintenance								
Maintenance Personnel	6	8	5		2.510	1.520	2.010	
Operating Personnel	0	0	0		0.000	0.000	0.000	
Health Physics Personnel	2	0	0		0.420	0.000	0.000	
Supervisory Personnel	1	2	0		0.180	0.330	0.000	
Engineering Personnel	0	0	1		0.000	0.000	0.220	
TOTAL	9	10	6	25	3.110	1.850	2.230	7.190
* Waste Processing								
Maintenance Personnel	0				0.000			
Operating Personnel	3				0.390			
Health Physics Personnel	0				0.000			
Supervisory Personnel	0				0.000			
Engineering Personnel	1				0.180			
TOTAL	4	0	0	4	0.570	0.000	0.000	0.570
* Refueling								
Maintenance Personnel	2		15		0.490		6.320	
Operating Personnel	0		0		0.000		0.000	
Health Physics Personnel	0		0		0.000		0.000	
Supervisory Personnel	0		1		0.000		0.530	
Engineering Personnel	0		2		0.000		0.450	
TOTAL	2	0	18	20	0.490	0.000	7.300	7.790
* Total By Job Function								
Maintenance Personnel	44 (36)	98 (91)	217 (195)	359 (322)	37.240	54.770	157.720	249.730
Operating Personnel	40 (24)	0 (0)	7 (10)	47 (34)	12.000	0.000	2.410	14.410
Health Physics Personnel	15 (7)	10 (8)	12 (8)	37 (23)	11.800	6.290	6.980	25.070
Supervisory Personnel	18 (10)	10 (8)	8 (6)	36 (24)	10.540	2.710	5.230	18.480
Engineering Personnel	24 (13)	23 (19)	68 (66)	115 (98)	9.510	6.220	38.410	54.140
* GRAND TOTAL	141 (90)	141 (126)	312 (285)	594 (501)	81.090	69.990	210.750	361.830

The number of employees during outages in 1978 who received single radiation exposures accounting for more than 10% of allowable annual limit is 34.

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

APPENDIX C

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

Plant: ST. LUCIE (PWR)

1978

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				0.00			
Operating Personnel	21				8.20			
Health Physics Personnel	7				3.37			
Supervisory Personnel	2				1.68			
Engineering Personnel	0				0.00			
TOTAL	30	0	0	30	13.25	0.00	0.00	13.25
* Routine Maintenance								
Maintenance Personnel	96	39	138		43.43	18.31	55.22	
Operating Personnel	11	0	0		4.33	0.00	0.00	
Health Physics Personnel	15	0	3		6.69	0.00	0.74	
Supervisory Personnel	8	1	1		2.19	0.14	0.12	
Engineering Personnel	3	0	3		1.12	0.00	0.46	
TOTAL	133	40	145	318	57.76	18.45	56.54	132.75
* In-Service Inspection								
Maintenance Personnel	4	5	3		1.59	2.51	0.66	
Operating Personnel	0	0	0		0.00	0.00	0.00	
Health Physics Personnel	3	0	6		0.82	0.00	1.69	
Supervisory Personnel	6	0	0		4.05	0.00	0.00	
Engineering Personnel	2	0	49		0.74	0.00	27.70	
TOTAL	15	5	58	78	2.20	2.51	30.05	39.76
* Special Maintenance								
Maintenance Personnel	0	0	59		0.00	0.00	25.20	
Operating Personnel	0	0	0		0.00	0.00	0.00	
Health Physics Personnel	1	0	0		0.15	0.00	0.00	
Supervisory Personnel	0	1	2		0.00	0.12	0.77	
Engineering Personnel	2	0	2		0.33	0.00	0.45	
TOTAL	3	1	63	67	0.48	0.12	26.42	27.02
* Waste Processing								
Maintenance Personnel	15		1		4.58		0.14	
Operating Personnel	11		0		3.74		0.00	
Health Physics Personnel	6		0		2.06		0.00	
Supervisory Personnel	1		0		0.62		0.00	
Engineering Personnel	0		0		0.00		0.00	
TOTAL	33	0	1	34	11.00	0.00	0.14	11.14
* Refueling								
Maintenance Personnel	38	53	0		17.96	38.43	0.00	
Operating Personnel	10	0	0		2.12	0.00	0.00	
Health Physics Personnel	4	0	20		1.41	0.00	8.35	
Supervisory Personnel	6	0	1		1.81	0.00	0.11	
Engineering Personnel	1	0	2		0.51	0.00	0.72	
TOTAL	59	53	23	135	23.81	38.43	9.18	71.42
* Total By Job Function								
Maintenance Personnel	153 (105)	97 (84)	201 (191)	451 (380)	67.56	59.25	81.22	208.03
Operating Personnel	53 (31)	0 (0)	0 (0)	53 (31)	18.39	0.00	0.00	18.39
Health Physics Personnel	36 (15)	0 (0)	29 (28)	65 (43)	14.50	0.00	10.78	25.28
Supervisory Personnel	23 (16)	2 (2)	4 (4)	29 (22)	10.35	0.26	1.00	11.61
Engineering Personnel	8 (4)	0 (0)	56 (56)	64 (60)	2.70	0.00	29.33	32.03
* GRAND TOTAL	273 (171)	99 (86)	290 (279)	662 (536)	113.50	59.51	122.33	295.34

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

APPENDIX C

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

Plant: ¹ SURRY 1 & 2 PLANT (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	366	21	150	537	502,363	5,928	177,456	685,747
Routine Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	24	0	51	75	101,232	0.000	83,376	184,608
In-Service Inspection								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL								
Special Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	17	33	385	435	51,495	59,728	676,818	788,041
Waste Processing								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	22	0	38	60	21,445	0.000	32,009	53,454
Refueling								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL	5	8	6	19	15,022	5,313	1,941	22,276
Total By Job Function								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
GRAND TOTAL	434	62	630	1126	691,557	70,969	971,600	1734,126

APPENDIX C

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

Plant: † THREE MILE 1 PLANT (PWR)

1978

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	78	12	66		1.117	0.102	0.869	
Operating Personnel	116	19	2		9.029	0.128	0.000	
Health Physics Personnel	19	1	11		1.202	0.030	0.083	
Supervisory Personnel	37	10	12		2.162	0.312	0.242	
Engineering Personnel	23	26	17		0.276	0.327	0.365	
TOTAL	273	68	108	449	13.786	0.899	1.559	16.244
* Routine Maintenance								
Maintenance Personnel	142	30	235		16.183	0.692	31.016	
Operating Personnel	100	4	3		2.244	0.040	0.307	
Health Physics Personnel	25	1	26		0.980	0.010	12.207	
Supervisory Personnel	41	7	35		2.871	0.134	3.545	
Engineering Personnel	16	22	33		0.211	0.483	1.680	
TOTAL	324	64	332	720	22.489	1.359	48.755	72.603
* In-Service Inspection								
Maintenance Personnel	56	14	47		0.603	0.302	3.223	
Operating Personnel	72	33	8		1.949	0.522	1.723	
Health Physics Personnel	19	6	2		1.081	0.855	0.130	
Supervisory Personnel	31	9	19		1.651	0.281	0.638	
Engineering Personnel	10	40	15		0.765	0.385	0.185	
TOTAL	188	102	91	381	6.049	2.345	5.899	14.293
* Special Maintenance								
Maintenance Personnel	138	58	257		21.141	1.650	36.397	
Operating Personnel	92	7	5		3.690	0.142	0.014	
Health Physics Personnel	22	0	11		1.365	0.000	0.106	
Supervisory Personnel	41	14	45		1.908	0.205	4.601	
Engineering Personnel	23	44	53		0.987	0.495	2.971	
TOTAL	316	123	371	810	29.091	2.492	44.089	75.672
* Waste Processing								
Maintenance Personnel	51	5	33		21.616	0.210	2.804	
Operating Personnel	42	7	1		9.271	0.047	0.149	
Health Physics Personnel	6	3	12		0.056	0.168	0.089	
Supervisory Personnel	13	8	6		2.728	0.367	0.176	
Engineering Personnel	3	18	2		0.034	0.604	0.011	
TOTAL	115	41	54	210	33.705	1.396	3.229	38.330
* Refueling								
Maintenance Personnel	98	12	133		14.640	0.768	9.433	
Operating Personnel	98	9	11		4.326	0.112	3.093	
Health Physics Personnel	19	1	21		0.233	0.005	1.046	
Supervisory Personnel	40	4	22		3.703	0.021	2.200	
Engineering Personnel	21	18	23		0.255	0.899	1.434	
TOTAL	276	44	210	530	23.157	1.805	17.206	42.168
* Total By Job Function								
Maintenance Personnel	563 (150)	131 (77)	771 (315)	1465 (542)	75.300	3.724	83.742	162.766
Operating Personnel	520 (146)	79 (51)	30 (13)	629 (210)	30.509	0.991	5.286	36.786
Health Physics Personnel	110 (27)	12 (8)	83 (27)	205 (62)	4.917	1.068	13.661	19.646
Supervisory Personnel	203 (63)	52 (33)	139 (54)	394 (150)	15.023	1.320	11.402	27.745
Engineering Personnel	96 (36)	168 (113)	143 (84)	407 (233)	2.528	3.193	6.646	12.367
* GRAND TOTAL	1492 (422)	442 (282)	1166 (493)	3100 (1197)	128.277	10.296	120.737	259.310

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

APPENDIX C

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

Plant: TROJAN PLANT (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	0	2	15		0.26	0.78	6.15	
Operating Personnel	26	0	0		10.70	0.00	0.00	
Health Physics Personnel	24	0	0		51.81	0.00	0.01	
Supervisory Personnel	7	0	3		5.45	0.00	1.66	
Engineering Personnel	8	0	2		2.53	0.00	0.60	
TOTAL	65	2	20	87	70.75	0.78	8.42	79.95
Routine Maintenance								
Maintenance Personnel	6	24	4		2.94	12.82	1.60	
Operating Personnel	0	0	0		0.15	0.00	0.00	
Health Physics Personnel	4	0	25		1.40	0.00	8.97	
Supervisory Personnel	0	0	1		0.02	0.00	0.20	
Engineering Personnel	3	0	5		0.93	0.00	2.32	
TOTAL	13	24	35	72	5.44	12.82	13.09	31.35
In-Service Inspection (Included with Routine Maintenance)								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL								
Special Maintenance								
Maintenance Personnel	53	66	129		26.94	23.66	59.73	
Operating Personnel	0	0	0		0.11	0.00	0.00	
Health Physics Personnel	2	0	2		2.58	0.00	1.00	
Supervisory Personnel	2	0	3		0.74	0.00	0.96	
Engineering Personnel	2	0	21		0.99	0.00	8.17	
TOTAL	59	66	155	280	31.36	23.66	69.86	124.88
Waste Processing								
Maintenance Personnel	0		4		0.09		1.80	
Operating Personnel	0		0		0.01		0.00	
Health Physics Personnel	1		0		0.20		0.02	
Supervisory Personnel	0		0		0.06		0.00	
Engineering Personnel	0		1		0.03		0.15	
TOTAL	1	0	5	6	0.39	0.00	1.97	2.36
Refueling								
Maintenance Personnel	6	10	0		6.55	16.08	0.20	
Operating Personnel	2	0	0		0.95	0.00	0.00	
Health Physics Personnel	9	0	0		18.96	0.00	0.02	
Supervisory Personnel	0	0	0		0.01	0.00	0.04	
Engineering Personnel	0	0	23		0.06	0.00	25.51	
TOTAL	17	10	23	50	26.53	16.08	25.59	68.38
Total By Job Function								
Maintenance Personnel	65	102	152	319	36.78	53.34	69.48	159.60
Operating Personnel	28	0	0	28	11.92	0.00	0.00	11.92
Health Physics Personnel	40	0	27	67	74.95	0.00	10.02	84.97
Supervisory Personnel	9	0	7	16	6.28	0.00	2.86	9.14
Engineering Personnel	13	0	52	65	4.54	0.00	36.75	41.29
GRAND TOTAL	155	102	238	495	134.47	53.34	119.11	306.92

APPENDIX C

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

Plant: TURKEY POINT PLANT (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	0	0	0		0.00	0.00	0.00	
Operating Personnel	61	0	4		45.42	0.00	0.00	
Health Physics Personnel	11	0	0		21.00	0.00	0.70	
Supervisory Personnel	13	4	10		10.14	2.46	1.47	
Engineering Personnel	11	0	0		4.46	0.00	0.00	
TOTAL	96	4	14	114	81.02	2.46	2.17	85.65
Routine Maintenance								
Maintenance Personnel	162	99	72		237.14	69.08	27.69	
Operating Personnel	0	0	0		0.00	0.00	0.00	
Health Physics Personnel	0	0	11		0.00	0.00	8.19	
Supervisory Personnel	16	0	0		17.80	0.00	0.00	
Engineering Personnel	0	0	0		0.00	0.00	0.00	
TOTAL	178	99	83	360	254.94	69.08	35.88	359.90
In-Service Inspection								
Maintenance Personnel	4		173		6.13		187.28	
Operating Personnel	0		0		0.00		0.00	
Health Physics Personnel	2		8		3.05		7.19	
Supervisory Personnel	6		0		3.52		0.00	
Engineering Personnel	10		31		13.75		32.15	
TOTAL	22	0	212	234	26.45	0.00	226.62	253.07
* Special Maintenance								
Maintenance Personnel	0		249		0.00		235.83	
Operating Personnel	0		0		0.00		0.00	
Health Physics Personnel	0		10		0.00		7.03	
Supervisory Personnel	4		0		2.02		0.00	
Engineering Personnel	0		0		0.00		0.00	
TOTAL	4	0	259	263	2.02	0.00	242.86	244.88
Waste Processing								
Maintenance Personnel	5		0		3.60		0.00	
Operating Personnel	3		6		6.03		10.94	
Health Physics Personnel	1		0		3.64		0.00	
Supervisory Personnel	1		0		0.15		0.00	
Engineering Personnel	0		0		0.00		0.00	
TOTAL	10	0	6	16	13.43	0.00	10.94	24.36
Refueling								
Maintenance Personnel	11		0		8.66		0.00	
Operating Personnel	3		0		1.25		0.00	
Health Physics Personnel	0		0		0.00		0.00	
Supervisory Personnel	0		0		0.00		0.00	
Engineering Personnel	3		1		2.86		1.27	
TOTAL	17	0	1	18	12.77	0.00	1.27	14.04
Total By Job Function								
Maintenance Personnel	182	99	494	775	255.53	69.08	450.80	775.41
Operating Personnel	67	0	10	77	52.70	0.00	11.64	64.34
Health Physics Personnel	14	0	29	43	27.69	0.00	22.41	50.10
Supervisory Personnel	40	4	10	54	33.63	2.46	1.47	37.56
Engineering Personnel	24	0	32	56	21.07	0.00	33.42	54.49
GRAND TOTAL	327	103	575	1005	390.620	71.54	519.74	981.90

*Repair of spent fuel pits and charging system modifications.

APPENDIX C

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

Plant: VERMONT YANKEE PLANT (BWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	17	4	9		12.630	1.394	4.582	
Operating Personnel	33	0	0		26.832	0.000	0.000	
Health Physics Personnel	13	0	5		15.774	0.000	2.949	
Supervisory Personnel	1	1	6		0.300	0.177	1.702	
Engineering Personnel	18	5	2		8.701	1.178	0.354	
TOTAL	82	10	22	114	64.237	2.749	9.587	76.573
Routine Maintenance								
Maintenance Personnel	46	56	43		51.710	34.447	64.250	
Operating Personnel	22	0	0		11.429	0.000	0.000	
Health Physics Personnel	6	2	24		1.848	0.655	7.485	
Supervisory Personnel	0	0	0		0.024	0.008	0.118	
Engineering Personnel	6	0	1		1.494	0.117	0.643	
TOTAL	80	58	68	206	66.505	35.227	72.496	174.228
In-Service Inspection								
Maintenance Personnel	0	6	27		0.054	2.722	18.226	
Operating Personnel	0	0	0		0.308	0.000	0.000	
Health Physics Personnel	1	0	3		0.158	0.027	0.905	
Supervisory Personnel	0	0	0		0.000	0.000	0.000	
Engineering Personnel	1	0	0		0.166	0.000	0.039	
TOTAL	2	6	30	38	0.686	2.749	19.170	22.605
Special Maintenance								
Maintenance Personnel	1		129		0.389	0.219	51.160	
Operating Personnel	1		0		0.304	0.000	0.000	
Health Physics Personnel	0		0		0.039	0.000	0.135	
Supervisory Personnel	0		0		0.000	0.000	0.000	
Engineering Personnel	0		0		0.039	0.000	0.077	
TOTAL	2	0	129	131	0.771	0.219	51.372	52.362
Waste Processing								
Maintenance Personnel	0				0.000		0.000	
Operating Personnel	13				2.296		0.000	
Health Physics Personnel	0				0.000		0.015	
Supervisory Personnel	0				0.000		0.000	
Engineering Personnel	0				0.000		0.000	
TOTAL	13	0	0	13	2.296	0.000	0.015	2.311
Refueling								
Maintenance Personnel	1	1	4		0.647	0.239	1.444	
Operating Personnel	9	0	0		1.598	0.000	0.000	
Health Physics Personnel	0	0	6		0.193	0.000	1.860	
Supervisory Personnel	0	0	0		0.000	0.012	0.000	
Engineering Personnel	2	0	1		0.320	0.000	0.089	
TOTAL	12	1	11	24	2.758	0.251	3.393	6.402
Total By Job Function								
Maintenance Personnel	65	67	212	344	65.430	39.021	139.662	244.113
Operating Personnel	78	0	0	78	42.767	0.000	0.000	42.767
Health Physics Personnel	20	2	38	60	18.012	0.682	13.349	32.043
Supervisory Personnel	1	1	6	8	0.324	0.197	1.820	2.341
Engineering Personnel	27	5	4	36	10.720	1.295	1.202	13.217
GRAND TOTAL	191	75	260	526	137.253	41.195	156.033	334.481

APPENDIX C

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

Plant: YANKEE ROWE (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	12	2	1		2.872	1.230	.633	
Operating Personnel	28	0	0		12.081	.000	.000	
Health Physics Personnel	3	0	7		.999	.005	1.524	
Supervisory Personnel	0	0	0		.191	.000	.444	
Engineering Personnel	0	7	0		.105	2.707	.000	
TOTAL	43	9	8	60	16.248	3.942	2.601	22.791
Routine Maintenance								
Maintenance Personnel	22	68	29		10.783	23.465	10.897	
Operating Personnel	16	0	0		3.201	.000	.000	
Health Physics Personnel	3	0	7		.832	.000	2.150	
Supervisory Personnel	1	0	1		.148	.000	.594	
Engineering Personnel	0	1	0		.095	.524	.000	
TOTAL	42	69	37	148	15.059	23.989	13.641	52.689
In-Service Inspection								
Maintenance Personnel	5	25	11		2.397	9.995	9.875	
Operating Personnel	4	0	0		1.360	.000	.000	
Health Physics Personnel	3	0	5		1.802	.000	1.655	
Supervisory Personnel	4	0	2		3.650	.000	.292	
Engineering Personnel	3	12	3		4.705	12.024	.452	
TOTAL	19	37	21	77	13.914	22.019	12.274	48.207
Special Maintenance								
Maintenance Personnel	15	55	45		9.894	30.498	31.399	
Operating Personnel	8	0	0		2.186	.000	.000	
Health Physics Personnel	9	0	24		3.428	.000	10.447	
Supervisory Personnel	2	0	1		1.518	.000	.515	
Engineering Personnel	3	5	0		.945	.789	.000	
TOTAL	37	60	70	167	17.971	31.287	42.361	91.619
Waste Processing								
Maintenance Personnel	0		0		.063	.137	.070	
Operating Personnel	13		0		3.624	.000	.000	
Health Physics Personnel	0		7		.020	.000	2.911	
Supervisory Personnel	0		0		.000	.000	.060	
Engineering Personnel	0		0		.000	.000	.000	
TOTAL	13	0	7	20	3.707	.137	3.041	6.885
Refueling								
Maintenance Personnel	15	32	6		4.157	9.689	2.275	
Operating Personnel	20	0	0		10.492	.000	.000	
Health Physics Personnel	4	0	24		.745	.000	13.125	
Supervisory Personnel	1	0	0		.495	.000	.028	
Engineering Personnel	0	2	0		.095	.906	.020	
TOTAL	40	34	30	104	15.984	10.595	15.448	42.027
Total By Job Function								
Maintenance Personnel	69	182	92	343	30.166	75.014	55.149	160.329
Operating Personnel	89	0	0	89	32.944	.000	.000	32.944
Health Physics Personnel	22	0	74	96	7.826	.005	31.812	39.643
Supervisory Personnel	8	0	4	12	6.002	.000	1.933	7.935
Engineering Personnel	6	27	3	36	5.945	16.950	.472	23.367
GRAND TOTAL	194	209	173	576	82.883	91.969	89.366	264.218

APPENDIX C

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

Plant: ZION PLANT (PWR)

1978

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)				TOTAL MAN-REMS			
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL PERSONS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT & OTHERS	TOTAL MAN-REM
Reactor Operations & Surv.								
Maintenance Personnel	10				5.4			
Operating Personnel	99				79.5			
Health Physics Personnel	9				19.6			
Supervisory Personnel	31				9.8			
Engineering Personnel	164				26.4			
TOTAL	313			313	140.7			140.7
Routine Maintenance								
Maintenance Personnel	89				191.4			
Operating Personnel	17				12.7			
Health Physics Personnel	18				39.3			
Supervisory Personnel	142				55.4			
Engineering Personnel	0				0.0			
TOTAL	266		1121	1387	298.8		390.9	689.7
In-Service Inspection (Included with Routine Maintenance)								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL								
Special Maintenance								
Maintenance Personnel								
Operating Personnel								
Health Physics Personnel								
Supervisory Personnel								
Engineering Personnel								
TOTAL		81		81		75.1		75.1
Waste Processing								
Maintenance Personnel	0				0.0			
Operating Personnel	22				16.3			
Health Physics Personnel	3				6.5			
Supervisory Personnel	5				1.5			
Engineering Personnel	0				0.0			
TOTAL	30			30	24.3			24.3
Refueling								
Maintenance Personnel	0				0.0			
Operating Personnel	6				17.1			
Health Physics Personnel	0				0.0			
Supervisory Personnel	3				5.3			
Engineering Personnel	0				0.0			
TOTAL	9			9	22.4			22.4
Total By Job Function								
Maintenance Personnel	99				196.8			
Operating Personnel	144				125.6			
Health Physics Personnel	30				65.4			
Supervisory Personnel	181				72.0			
Engineering Personnel	164				26.4			
GRAND TOTAL	618	81	1121	1820	486.2	75.1	390.9	952.2

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16. ABSTRACT (200 words or less) <p>This report summarizes the occupational radiation exposure information that has been reported to the U.S.N.R.C. by commercial nuclear power reactors during the years 1969 through 1978. The bulk of the data presented in the report was obtained from annual radiation exposure reports submitted in accordance with the requirements of 10 CFR 20.407 and Regulatory Guide 1.16. The reports submitted by the 64 nuclear power plants that had completed at least one full year of operation as of December 31, 1978, indicated that the number of personnel monitored during 1978 was 76,121 persons, and the annual collective dose incurred by these individuals was 31,806 man-rem. The average annual dose for each worker that received a measurable dose was 0.7 rems, and the average collective dose per reactor was 497 man-rem.</p>				9. (Leave blank)	
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