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Comparison of Compensation Paid Scientists and Engineers in Research and Development

DOE National Survey of Compensation

1981 Data

January 1982

U.S. Department of Energy

Directorate of Administration
Office of Industrial Relations

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U.S. Department of Energy

Directorate of Administration
Office of Industrial Relations
Washington, D.C. 20545

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PREFACE

Under a contract with the U.S. Department of Energy, the Columbus Laboratories of Battelle conducts an annual salary survey entitled "A National Survey of Compensation Paid to Scientists and Engineers Engaged in Research and Development Activities". The 1981 report contained the results of its 14th annual survey and included data for five types of R&D establishments (sectors): Industry, Nonprofit Research Institutes, Federally Funded R&D Centers (referred to as Contract Research Centers), Federal Government Laboratories, and Educational Institutions.

This study covers 18 DOE contractor-operated laboratories, 7 of which are included in the Contract Research Center sector of Battelle's National Survey. Each DOE Laboratory agreed that computer tapes of its submission, reflecting Survey input, would be made available to DOE for this study.

The purpose of this study is to compare compensation and other characteristics of the DOE Laboratories with National Survey patterns.

PARTICIPANTS

The following DOE Laboratories are included in this study:

Ames	Iowa State University, Ames Laboratory
ANL	Argonne National Laboratory
BAPL	Bettis Atomic Power Laboratory
BNL	Brookhaven National Laboratory
FNAL	Fermi National Accelerator Laboratory
HEDL	Hanford Engineering Development Laboratory
INEL	Idaho National Engineering Laboratory
KAPL	Knolls Atomic Power Laboratory
LASL	Los Alamos Scientific Laboratory
LBL	E. O. Lawrence Berkeley Laboratory
LLL	E. O. Lawrence Livermore Laboratory
Mound	Monsanto Research Laboratory
ORNL	Oak Ridge National Laboratory
PNL	Pacific Northwest Laboratory
PPL	Plasma Physics Laboratory
Sandia	Sandia Corporation
SLAC	Stanford Linear Accelerator Center
SRL	Savannah River Laboratory

SUMMARY OF FINDINGS

The eighteen DOE contractor-operated laboratories employed 18,785 scientists and engineers (S&E's) in 1981, a decrease of 157 (0.8%) below 1980. The major findings of the study are summarized below.

A. Education Levels

The proportion of advanced degrees among S&E's at DOE Laboratories in 1981 remained consistent with the two prior years. The proportion of DOE Laboratory S&E's with MS degrees increased by 0.4%, while the proportion with PhD's (37.7%) is more than double the National Survey average (17.5%).

At 7 DOE Laboratories, over 40% of the S&E's held PhD degrees. Only the Educational sector in the National Survey, accounting for 6% of all S&E's, had more than 40% PhD's. DOE Laboratories continued to employ smaller proportions at the BS and nondegreed levels than the National Survey.

In the National Survey, the proportion of S&E's at each degree level changed very little between 1980 and 1981.

B. Management Levels

As in previous years, DOE Laboratories utilized a smaller percentage of S&E's as supervisors in 1981 (19.0%) than did National Survey establishments (21.9%).

C. Age Distribution

The proportion of S&E's at DOE Laboratories age 40 and above in 1980 was 55%, compared to 50% of the Total National Survey.

At the BS level, the 50th percentile age at DOE Laboratories (45.4) was 7.6 years older than among BS holders in the National Survey. At the MS and PhD levels, the average ages among DOE Laboratories varied only slightly from the comparable National Survey groups.

The 50th percentile age of all S&E's at DOE Laboratories was 41.3 years versus 38.4 in the Total National Survey.

D. Field of Highest Degree

Approximately 8 out of 10 S&E's at DOE Laboratories (83.0%) held a degree in one of four fields: engineering, chemistry, physics, or mathematics/statistics. In the National Survey, 79.6% of all S&E's held degrees in these fields.

DOE Laboratories employed a significantly larger proportion of total S&E's in physics (20.9% versus 7.1% in the National Survey), and larger percentages in chemistry and mathematics/statistics, but a smaller proportion in engineering.

E. Compensation Levels

The average DOE Laboratory S&E salary increased 10.6% between 1980 and 1981 while the average salary in the National Survey advanced by 9.9% (see note below). The National Survey percentage increase over the year was greater at each degree level than among DOE Laboratories.

At the BS Level, the DOE Laboratory average salary still leads the National average (by 3.1% in 1981). However, at both the MS and PhD levels, the National Survey average exceeds the DOE Laboratory average salary (by 4.8% and 1.6%, respectively).

NOTE:

To make the DOE Laboratory and National Survey data comparable, the National Survey average salary for "All Degree Levels" is a composite figure calculated by weighting the average salary for each degree level in the National Survey by the DOE Laboratory population for the corresponding degree level. This procedure recognizes the higher ratio of PhD's in DOE Laboratories.

I. INTRODUCTION

This study compares several compensation characteristics of DOE contractor-operated laboratories with those reported in the "1981 National Survey of Compensation Paid Scientists and Engineers Engaged in Research and Development Activities". The same forms and procedures used in the National Survey were used by participants in the DOE Laboratory study. The data in Table 1 are as of August 1, 1981..

TABLE 1. PARTICIPANTS IN THE NATIONAL SURVEY

Type of Establishment	No. of Estabs.	% of Total	No. of S&E's*	% of Total
Industry	240	71.4	65,540	68.3
Federal Laboratories	28	8.3	5,654	5.9
Federal Contract Research Centers	16**	4.8	14,196	14.8
Nonprofit Research Institutes	32	9.5	7,280	7.6
Educational Institutions	20	6.0	3,339	3.5
Total Survey	336	100.0	96,009	100.0
DOE Laboratories	18	100.0	18,785	100.0

*These establishment totals will not agree with later totals because of the inclusion here of MD, DVM, and DDS degree holders.

**Includes seven DOE Laboratories.

The number of establishments participating in the National Survey decreased by 3 this year to 336. The Industry sector continues to represent about three-fourths of the total. The Industry and Federal sectors account for most of the increase this year. The same 18 DOE Laboratories as were in last year's study are included in this report.

The total number of scientists and engineers (S&E's) in the National Survey decreased by 2,631 with all sectors except Nonprofit sharing the loss. The Federal Contract Research Center sector and Industry sector contributed proportionately fewer S&E's and proportionately fewer establishments. The number of S&E's at DOE Laboratories decreased by 157 (0.8%) between 1980 and 1981.

Characteristics of DOE Laboratories such as salaries by field of degree, maturity, and management levels are shown on the following pages and are compared with the National Survey patterns. Significant differences from last year's data are also highlighted.

II. SURVEY CHARACTERISTICS

This section presents information on the distribution of scientists and engineers in DOE Laboratories compared with distribution in the National Survey by level of degree (BS, MS, PhD), by management level, by age, and by field of highest degree.

A. Educational Levels

In 1981, the proportion of degreed scientists and engineers for DOE Laboratories remained consistent with that of the two prior years (95%) as shown in Table 2. This stabilization is noted too for the National Survey which reported 92% to be degreed for 1981 and the two prior years. Nationally, as well as for DOE Laboratories, the proportion of scientists and engineers at each degree level changed very little.

Overall, the DOE Laboratories employ a noticeably higher proportion of PhD's compared to the National Survey (37.7% versus 17.5%, respectively), and a lower proportion of BS degree holders (30.4% versus 48.5%, respectively), as shown in Figure 1.

TABLE 2. EDUCATIONAL LEVELS

	Total	Non-degreed*	BS	MS	PhD
Total National Survey	95,776	8.4%	48.5%	25.6%	17.5%
Industry	65,487	10.3	54.0	24.5	11.3
Federal Government Laboratories	5,603	1.8	52.2	22.7	23.4
Federal Contract Research Centers	14,161	4.7	34.5	32.0	28.8
Nonprofit Research Institutes	7,208	5.6	36.8	28.4	29.2
Educational Institutions	3,317	3.7	19.9	19.4	57.0
DOE Laboratories (1981 Data)	18,730	5.5	30.4	26.4	37.7
DOE Laboratories (1980 Data)	18,891	5.6	31.1	26.0	37.3

*Nondegreed are included in this table only.

B. Management Levels

The following data in Table 3 compare the distribution of S&E's among supervisory levels in the National Survey and DOE Laboratories. On a percentage basis in 1981, DOE Laboratories operated with fewer supervisory personnel than research and development organizations in all sectors except Educational Institutions.

FIGURE 1. DISTRIBUTION OF SCIENTISTS AND ENGINEERS BY DEGREE LEVEL, 1976-1981

TABLE 3. MANAGEMENT LEVELS

	Nonsuper- visory	Assistant Unit Head	Unit Head	Middle Management
Total National Survey	78.2%	6.5%	10.0%	5.4%
Industry	78.9	6.6	8.8	5.7
Federal Government Laboratories	82.0	4.1	12.0	2.0
Federal Contract Research Centers	78.2	5.6	11.2	5.0
Nonprofit Research Institutes	75.2	8.7	9.2	6.8
Educational Institutions	65.0	7.1	23.8	4.1
DOE Laboratories (1981 Data)	81.0	5.3	10.6	3.1
DOE Laboratories (1980 Data)	81.2	4.7	10.5	3.6

C. Age Distribution

Figure 2 shows the distribution of scientists and engineers by age from 1976-1981. As shown in Table 4, a total of 55% of the scientists and engineers in DOE Laboratories are 40 years of age or over. The DOE Laboratory staff has a higher percentage of BS degree holders (62%) in the 40-years-and-above group compared to the National Survey (47%). In the MS and PhD categories, DOE Laboratory age distributions are close to the distribution patterns in the Total National Survey.

FIGURE 2. DISTRIBUTION OF SCIENTISTS AND ENGINEERS BY AGE, 1976-1981

TABLE 4. AGE DISTRIBUTION BY LEVEL OF DEGREE

	Totals	20 Thru 29 Yrs.	30 Thru 39 Yrs.	40 Thru 49 Yrs.	50 Thru 60 Yrs.	61 Years and Over	50th Percentile Age
<u>BS</u>							
Total National Survey	46,487	30%	23%	22%	22%	3%	37.8
DOE Laboratories	5,701	19	19	22	34	6	45.4
<u>MS</u>							
Total National Survey	24,509	14	34	28	21	3	40.1
DOE Laboratories	4,947	16	32	28	20	3	40.1
<u>PhD</u>							
Total National Survey	16,747	4	41	34	17	3	40.4
DOE Laboratories	7,062	4	42	34	17	3	40.4
<u>All Degree Levels</u>							
Total National Survey	87,743	20	30	26	21	3	38.4
DOE Laboratories (1981)	17,710	12	32	28	23	4	41.3
DOE Laboratories (1980)	17,827	12	33	29	23	3	40.9*

*Median Age.

D. Salaries by Field of Degree and Degree Level

A large majority of S&E's in both the National Survey and among DOE Laboratories are in one of four academic fields: engineering, chemistry, physics, or mathematics/statistics.

There were no significant shifts since last year in representation by field among the National Survey participants. The DOE Laboratories showed a 1.0% decrease in the engineering field, accounting for most of the 4-field total decrease of 1.8%. The distribution in 1981 is indicated in Table 5, while Table 6 shows the salaries by degree level and field of degree.

TABLE 5. PERCENTAGE OF ALL SCIENTISTS AND ENGINEERS

	Engineering	Chemistry	Physics	Math/Stat.	4-Field Total
Total National Survey	57.7%	9.5%	7.1%	5.3%	79.6%
DOE Laboratories	43.8	11.4	20.9	6.9	83.0

TABLE 6. SALARIES BY DEGREE LEVEL AND FIELD OF DEGREE*

	National Survey			DOE Laboratories		
	1980	1981	% Change	1980	1981	% Change
<u>BS</u>						
All Fields	\$2407	\$2634	9.4	\$2482	\$2735	10.2
Engineering	2487	2718	9.3	2603	2861	9.9
Chemistry	2181	2370	8.7	2333	2567	10.0
Physics	2538	2781	9.6	2473	2742	10.9
Math/Stat.	2235	2474	10.7	2317	2580	11.4
<u>MS</u>						
All Fields	2656	2941	10.7	2572	2844	10.6
Engineering	2751	3037	10.4	2657	2929	10.2
Chemistry	2440	2635	8.0	2442	2729	11.8
Physics	2682	2955	10.2	2606	2892	11.0
Math/Stat.	2574	2835	10.1	2497	2755	10.3
<u>PhD</u>						
All Fields	2917	3185	9.2	2855	3177	11.3
Engineering	3069	3392	10.5	2941	3270	11.2
Chemistry	2912	3162	8.6	2843	3173	11.6
Physics	2946	3214	9.1	2843	3166	11.4
Math/Stat.	2827	3068	8.5	2896	3186	10.0

*Does not include Middle Management.

E. Work Force Distributions

The data in Figure 3 are derived from a summary of the information submitted by both Laboratories and Production facilities of DOE on their hours and earnings reports for March 1981. These data show the distribution of the DOE Laboratory work force and payroll by broad groups compared to DOE Production, Maintenance and Support contractors.

Approximately one-third (35%) of the Laboratories' work force are S&E's while only 14% of the Production and Maintenance contractors' employees are in this category. Conversely, approximately half (43%) of the work force of Production contractors are production and related workers, whereas only 14% of the Laboratories' employees are production workers. Other job groups are employed in similar proportions in each type of establishment, except for technicians which the Laboratories employ at about twice the rate as Production facilities (17% versus 11%).

FIGURE 3. COMPARISON OF WORK FORCE DISTRIBUTIONS* BY CATEGORIES OF EMPLOYEES IN THE LABORATORIES VERSUS PRODUCTION, MAINTENANCE AND SUPPORT FACILITIES

*Total payroll may not equal 100% due to rounding.

The distribution of wages and salaries at both Laboratories and Production facilities follows similar patterns as the work force distribution. As shown in Figure 4, Laboratories spend 44% of their payroll for S&E's; Production contractors spend 18% on that group. Production facilities spend 39% of their annual payroll on production and related workers; Laboratories spend 11%. Figure 5 shows the distribution of work force and salary-wage costs by employee categories.

FIGURE 4. COMPARISON OF SALARY-WAGE COST DISTRIBUTIONS* BY CATEGORIES OF EMPLOYEES IN THE LABORATORIES VERSUS PRODUCTION, MAINTENANCE AND SUPPORT FACILITIES

*Total payroll may not equal 100% due to rounding.

FIGURE 5. DISTRIBUTION OF WORK FORCE AND SALARY-WAGE COSTS BY EMPLOYEE CATEGORIES

DOE Laboratories Versus Production, Maintenance and Support Facilities, March 1981

Work Force Distribution

Salary-Wage Cost Distribution

DOE Laboratories

Total Employees: 62,045

Annual Total: \$1.574 Billion

Production, Maintenance and Support Facilities

Total Employees: 56,612

Annual Total: \$1.293 Billion

III. COMPARISON OF SALARIES BY MANAGEMENT AND DEGREE LEVELS

In the following sections, compensation in DOE Laboratories is compared with the Total National Survey data and with the five sectors comprising the National Survey. The comparisons show the salary interrelationships between level of degree and the four management levels. In these comparisons, the effect of differences in maturity distribution (experience) of the scientists and engineers among Survey sectors is disregarded.

A. All Management Levels

In Table 7 and Figure 6, all management levels (i.e., Nonsupervisory, Assistant Unit Head, Unit Head, and Middle Management) are combined to show average (mean) salary movement by level of degree. All degree levels are also combined to show the average salary movement of all degreed personnel in the National Survey and DOE Laboratories.

TABLE 7. CHANGE IN COMPENSATION BY DEGREE LEVELS--NATIONAL SURVEY
VERSUS DOE LABORATORIES
(All Management Levels Combined)

	Average (Mean) Monthly Salary					Change 1980-1981		Annualized Percentage Change, 1977-1981
	1977	1978	1979	1980	1981	Amt.	%	
<u>BS</u>								
Total National Survey	\$1939	\$2094	\$2247	\$2455	\$2688	\$233	9.5	8.5%
DOE Laboratories	2040	2189	2320	2517	2771	254	10.1	8.0
<u>MS</u>								
Total National Survey	2132	2319	2495	2725	3019	294	10.8	9.1
DOE Laboratories	2099	2240	2389	2606	2880	274	10.5	8.2
<u>PhD</u>								
Total National Survey	2389	2519	2731	2991	3270	279	9.3	8.2
DOE Laboratories	2375	2535	2692	2906	3220	314	10.8	7.9
<u>All Degree Levels</u>								
Total National Survey*	2159	2320	2503	2741	3013	272	9.9	8.7
DOE Laboratories	2180	2333	2482	2695	2981	286	10.6	8.1

*For comparability, National Survey data are adjusted to DOE Laboratory distributions for BS, MS, and PhD levels.

FIGURE 6. COMPENSATION BY DEGREE LEVELS--NATIONAL SURVEY
VERSUS DOE LABORATORIES
(All Management Levels Combined)

B. Nonsupervisory Employees

Figure 7 shows the nonsupervisory employees average (mean) monthly salary by degree level and sector. Nonsupervisory personnel are responsible for the actual performance of research and development activities with little, if any, supervision of other professional or administrative duties, although they may supervise technicians. Table 8 shows the changes in compensation for nonsupervisory employees, by degree level.

FIGURE 7. NONSUPERVISORY EMPLOYEES AVERAGE (MEAN) MONTHLY SALARY BY DEGREE LEVEL AND SECTOR

TABLE 8. CHANGE IN COMPENSATION FOR NONSUPERVISORY
EMPLOYEES, BY DEGREE LEVEL

	Average (Mean) Monthly Salary		Change	
	1980	1981	Amount	Percent
<u>BS</u>				
Total National Survey	\$2309	\$2527	\$218	9.4
Industry	2317	2531	214	9.2
Federal Government Laboratories	2566	2865	299	11.7
Federal Contract Research Centers	2411	2657	246	10.2
Nonprofit Research Institutes	1778	2064	286	16.1
Educational Institutions*	1814	1796	-18	-1.0
DOE Laboratories	2373	2617	244	10.3
<u>MS</u>				
Total National Survey	2551	2824	273	10.7
Industry	2611	2877	266	10.2
Federal Government Laboratories	2554	2842	288	11.3
Federal Contract Research Centers	2609	2879	270	10.4
Nonprofit Research Institutes	2171	2494	323	14.9
Educational Institutions*	2022	2147	125	6.2
DOE Laboratories	2463	2716	253	10.3
<u>PhD</u>				
Total National Survey	2820	3066	246	8.7
Industry	2982	3254	272	9.1
Federal Government Laboratories	2807	3034	227	8.1
Federal Contract Research Centers	2835	3103	268	9.5
Nonprofit Research Institutes	2515	2783	268	10.7
Educational Institutions*	2560	2422	-138	-5.4
DOE Laboratories	2744	3039	295	10.8

*Decrease in average monthly salary was due to the input of incorrectly coded data from one large educational institution in 1980. Data from this establishment were not used for the 1981 survey.

C. Unit Heads and Assistant Unit Heads Combined

Figure 8 shows the average (mean) monthly salary by degree level and sector for Unit Heads and Assistant Unit Heads combined. Unit Head personnel are responsible for the operation of the smallest R&D group functioning as an organized unit to carry out one or more projects or program activities. The Unit Head has hiring and termination authority or makes formal recommendations concerning hiring and termination. Assistant Unit Head personnel assist the Unit Head in the work direction of the R&D group. Table 9 shows the change in compensation for Unit Heads and Assistant Unit Heads, by degree level.

FIGURE 8. UNIT HEADS AND ASSISTANT UNIT HEADS COMBINED--AVERAGE (MEAN) MONTHLY SALARY BY DEGREE LEVEL AND SECTOR

TABLE 9. CHANGE IN COMPENSATION FOR UNIT HEADS AND ASSISTANT UNIT HEADS, BY DEGREE LEVEL

	Average (Mean) Monthly Salary		Change	
	1980	1981	Amount	Percent
<u>BS</u>				
Total National Survey	\$3018	\$3331	\$313	10.4
Industry	2997	3305	308	10.3
Federal Government Laboratories	3126	3548	422	13.5
Federal Contract Research Centers	3251	3528	277	8.5
Nonprofit Research Institutes	2782	3176	394	14.2
Educational Institutions	2275	2602	327	14.4
DOE Laboratories	3190	3541	351	11.0
<u>MS</u>				
Total National Survey	3131	3455	324	10.4
Industry	3142	3457	315	10.0
Federal Government Laboratories	3130	3428	298	9.5
Federal Contract Research Centers	3247	3575	328	10.1
Nonprofit Research Institutes	2924	3386	462	15.8
Educational Institutions	2629	2852	223	8.5
DOE Laboratories	3238	3569	331	10.2
<u>PhD</u>				
Total National Survey	3249	3501	252	7.8
Industry	3406	3686	280	8.2
Federal Government Laboratories	3390	3589	199	5.9
Federal Contract Research Centers	3352	3725	373	11.1
Nonprofit Research Institutes	2990	3299	309	10.3
Educational Institutions	2716	2995	279	10.3
DOE Laboratories	3324	3717	393	11.8

D. Middle Management

Figure 9 shows the average (mean) monthly salary for Middle Managers by degree level, and Table 10 shows the change in compensation for Middle Management, by degree level. Middle Managers are responsible for the operation of several research and development units and spend a major portion of their time planning and directing the overall administration and direction

of their units. They are responsible for executing employer policies; however, Middle Managers are distinct from Top Management personnel who deal primarily with policy making. On page 16, Figure 10 shows the average monthly salary by supervisory level and Table 11 shows the average (mean) salaries by degree and supervisory levels.

FIGURE 9. MIDDLE MANAGEMENT AVERAGE (MEAN) MONTHLY SALARY BY DEGREE LEVEL

TABLE 10. CHANGE IN COMPENSATION FOR MIDDLE MANAGEMENT, BY DEGREE LEVEL

	Average (Mean) Monthly Salary		Change	
	1980	1981	Amount	Percent
<u>BS</u>				
Total National Survey	\$3587	\$3984	\$397	\$11.1
DOE Laboratories	3873	4228	355	9.2
<u>MS</u>				
Total National Survey	3730	4136	406	10.9
DOE Laboratories	3828	4183	355	9.3
<u>PhD</u>				
Total National Survey	3923	4327	404	10.3
DOE Laboratories	3848	4280	432	11.2

E. Relationship of Compensation to Education and Level of Supervision

FIGURE 10. AVERAGE MONTHLY SALARY BY SUPERVISORY LEVEL AND DEGREE LEVEL

TABLE 11. AVERAGE (MEAN) SALARIES BY DEGREE AND SUPERVISORY LEVELS

	Total National Survey		DOE Laboratories	
	1980	1981	1980	1981
<u>BS</u>				
Middle Management	\$3587	\$3984	\$3873	\$4228
Unit Head	3220	3539	3359	3674
Assistant Unit Head	2774	3046	2891	3265
Nonsupervisory	2309	2527	2373	2617
<u>MS</u>				
Middle Management	3730	4136	3828	4183
Unit Head	3288	3622	3366	3699
Assistant Unit Head	2915	3204	2963	3322
Nonsupervisory	2551	2824	2463	2716
<u>PhD</u>				
Middle Management	3923	4327	3848	4280
Unit Head	3361	3591	3427	3842
Assistant Unit Head	3064	3334	3055	3464
Nonsupervisory	2820	3066	2744	3039

IV. RELATIONSHIP OF SECTOR AND DOE LABORATORY ACTUAL AVERAGE (MEAN) SALARIES TO ADJUSTED NATIONAL SURVEY SALARIES

Figures 11, 12, and 13 compare the salary levels of the five sectors in the National Survey and in DOE Laboratories to the total National Survey at each degree level. On this basis, total Survey salary levels represent rates paid scientists and engineers in the market.

National Survey salaries are adjusted for comparability on the basis of experience. The National Survey predicted averages (means) are multiplied for each year since BS degree by the number of individuals at each of these years in the sector group to be compared. The sector average developed in this manner is compared with the actual average salary for the group, and the difference is the amount the group is "ahead" or "behind" the National Survey.

A. Bachelor Degree Graduates (excluding Middle Management)

FIGURE 11. PERCENT SECTORS ARE AHEAD OR BEHIND NATIONAL SURVEY AVERAGE (MEAN) SALARY, 1980-1981

B. Master Degree Graduates (excluding Middle Management)

FIGURE 12. PERCENT SECTORS ARE AHEAD OR BEHIND NATIONAL SURVEY
AVERAGE (MEAN) SALARY, 1980-1981

C. Doctorate Degree Graduates (excluding Middle Management)

FIGURE 13. PERCENT SECTORS ARE AHEAD OR BEHIND NATIONAL SURVEY
AVERAGE (MEAN) SALARY, 1980-1981

V. COMPARISON OF SALARY CURVE VALUES OF DOE LABORATORIES WITH NATIONAL SURVEY OF COMPENSATION

The following curves, Figures 14-19, are plotted with computed curve values, Tables 12-14. For each degree level, one curve compares DOE Laboratories with the National Survey in 1981 and the other compares DOE Laboratories for 1980 and 1981.

A. Bachelor Degree Graduates

FIGURE 14. NATIONAL SURVEY COMPARED TO DOE LABS

FIGURE 15. 1980 AND 1981 DOE LAB COMPARISONS

TABLE 12. PREDICTED VALUES FOR SALARY CURVES - 1981

BS

Years Since First Degree	DOE Laboratories		National Survey
	1980	1981	1981
0	\$1577	\$1782	\$1803
1	1649	1859	1886
2	1721	1934	1968
3	1792	2009	2050
4	1862	2083	2120
5	1931	2155	2208
6	1998	2225	2284
7	2064	2293	2359
8	2127	2360	2431
9	2189	2424	2500
10	2248	2486	2567
11	2305	2545	2631
12	2360	2602	2691
13	2411	2656	2749
14	2460	2707	2803
15	2507	2756	2855
16	2550	2801	2902
17	2591	2844	2947
18.5	2646	2902	3007
20.5	2710	2970	3075
22.5	2763	3026	3131
24.5	2806	3072	3175
26.5	2839	3107	3207
28.5	2863	3134	3230
30.5	2880	3153	3244
32.5	2890	3165	3251
34.5	2895	3171	3252
38.0	2895	3173	3246
45.5	2889	3167	3229

B. Master Degree Graduates

FIGURE 16. NATIONAL SURVEY COMPARED TO DOE LABS

FIGURE 17. 1980 AND 1981 DOE LAB COMPARISONS

TABLE 13. PREDICTED VALUES FOR SALARY CURVES — 1981

MS

Years Since First Degree	<u>DOE Laboratories</u>		<u>National Survey</u>
	1980	1981	1981
0	\$1527	\$1702	\$1754
1	1613	1796	1852
2	1699	1890	1949
3	1785	1983	2046
4	1869	2075	2142
5	1952	2165	2236
6	2033	2253	2328
7	2112	2339	2418
8	2189	2421	2505
9	2263	2501	2589
10	2333	2578	2669
11	2401	2651	2746
12	2465	2720	2819
13	2525	2785	2888
14	2582	2846	2953
15	2635	2902	3013
16	2684	2955	3069
17	2728	3003	3121
18.5	2788	3067	3190
20.5	2854	3138	3267
22.5	2906	3192	3327
24.5	2943	3232	3371
26.5	2968	3258	3401
28.5	2982	3272	3419
30.5	2987	3276	3427
32.5	2985	3273	3426
34.5	2977	3264	3419
38.0	2958	3242	3400
45.5	2932	3210	3372

C. Doctorate Degree Graduates

FIGURE 18. NATIONAL SURVEY COMPARED TO DOE LABS

FIGURE 19. 1980 AND 1981 DOE LAB COMPARISONS

TABLE 14. PREDICTED VALUES FOR SALARY CURVES — 1981

PhD

Years Since First Degree	DOE Laboratories		National Survey
	1980	1981	1981
0	\$1414	\$1652	\$1685
1	1508	1750	1689
2	1603	1849	1794
3	1698	1948	1900
4	1794	2047	2006
5	1890	2146	2112
6	1986	2243	2217
7	2080	2340	2321
8	2173	2434	2424
9	2264	2527	2524
10	2353	2617	2622
11	2439	2705	2716
12	2522	2790	2808
13	2603	2871	2896
14	2680	2950	2980
15	2753	3024	3060
16	2823	3095	3136
17	2888	3162	3207
18.5	2979	3255	3306
20.5	3085	3364	3420
22.5	3174	3457	3516
24.5	3246	3534	3594
26.5	3303	3596	3655
28.5	3346	3643	3700
30.5	3376	3678	3731
32.5	3395	3702	3750
34.5	3405	3716	3759
38.0	3407	3725	3759
45.5	3396	3719	3744

VI. NONSURVEY SUPPLEMENTARY INFORMATION

Data on selected fringe benefits paid by DOE contractors for the three most recent years are shown below. The figures were compiled from reports of Contractor Expenditures for Employee Supplementary Compensation (Form DOE-390)* submitted annually to DOE. This summary covers all production and related workers and nonproductive workers.

The information shown in Table 15 is for R&D contractors and for all contractors in total. Some columns may not total 100% due to rounding.

TABLE 15. EXPENDITURES FOR SUPPLEMENTARY COMPENSATION
BY DOE CONTRACTORS 1978-1980
(As Percentage of Total Compensation)

	1978		1979		1980	
	R&D	All	R&D	All	R&D	All
Total Compensation	100%	100%	100%	100%	100%	100%
Pay for Working Time:						
Straight-time Pay.....	71.4%	70.1%	70.3%	69.6%	69.7%	69.1%
Premium Pay.....	1.1	1.4	1.0	1.4	0.9	1.4
Paid Leave.....	9.4	9.1	10.0	9.2	9.6	9.1
Retirement Programs (including Social Security) ..	11.1	11.5	11.9	12.1	12.2	12.4
Life Insurance & Health Benefits (including sick leave).....	5.9	6.4	6.0	6.3	6.2	6.5
Other: Unemployment Benefits; Nonproduction Bonuses; Savings & Thrift Plans.....	1.7	1.5	1.2	1.5	1.3	1.5

*The definitions used and data requested in the form are similar to the form being used by the Bureau of Labor Statistics in its program for surveying Expenditures for Employee Compensation.

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