

# White-Collar Pay: Private Goods-Producing Industries, March 1990



U.S. Department of Labor  
Bureau of Labor Statistics  
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U.S. Department of Labor  
Elizabeth Dole, Secretary

Bureau of Labor Statistics  
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# Preface

This bulletin summarizes the results of the Bureau's March 1990 survey of white-collar pay in private goods-producing industries. Goods-producing industries include manufacturing, construction, and mining. Prior to 1989, the annual survey was referred to as the National Survey of Professional, Administrative, Technical, and Clerical Pay (PATC).

Beginning in 1986, survey coverage was expanded to include smaller establishments and all private industries except agriculture, forestry and fishing, and private households. Consequently, the results of the March 1990 survey cannot be compared directly with earlier survey data. The 1990 salary information, collected from establishments employing 50 workers or more, is representative of a broad spectrum of private goods-producing industries throughout the United States, except Alaska and Hawaii.

Current plans call for surveys of service-producing industries in odd-numbered years and goods-producing industries in even-numbered years. (Service-producing industries include transportation, communications, and other public utilities; wholesale trade; retail trade; finance, insurance, and real estate; and services.) Information on the survey changes may be found in appendix B.

Expansion of survey coverage reflects a growing need for broad-based information on white-collar pay and benefits. The new survey scope still permits the Bureau of Labor Statistics to carry out its responsibility under the Federal Pay Comparability Act of 1970, which provides the basis for recommended pay adjustments for Federal white-collar employees.

Under the act, the Pay Agent designated by the President (currently the Secretary of Labor and the Directors of the Office of Management and Budget and the Office of Personnel Management) sets up comparability procedures and recommends Federal pay adjustments annually to the President. The report compares salaries of Federal employees with those paid in private industry for the same levels of work, as determined by the Bureau survey.

For purposes of the comparability process, the Bureau selects a list of sample establishments and collects, edits, tabulates, and reports the data. The scope of the analysis, including the industries to be covered and the occupations to be studied, is the responsibility of the President's Pay Agent. It should be emphasized that the Bureau's survey, like any other salary survey, does not provide mechanical answers to pay policy questions. For more information on the survey scope, see appendix A.

The occupations studied span a wide range of duties and responsibilities. The job definitions used to collect salary data (appendix D) reflect duties and responsibilities in private industry; however, they also are designed to be translatable to specific General Schedule (GS) grades applying to Federal employees (appendix E).

The survey could not have been conducted without the cooperation of the many firms whose salary data provided the statistical information in this bulletin. The Bureau, on its own behalf and on behalf of the other Federal agencies that contributed to survey planning, wishes to express appreciation for the cooperation it has received.

The analysis in this bulletin was prepared in the Bureau's Office of Compensation and Working Conditions by Lawrence Jeff Johnson of the Division of Occupational Pay and Employee Benefit Levels. Computer programming and systems design were provided by Teresa Green, Richard Schildt, and Thomas Shipman of the Division of Directly Collected Periodic Surveys, under the direction of Richard Maylott. Terry Burdette, Reed George, and Mark Lincoln of the Statistical Methods Group were responsible for the sample design, nonresponse adjustments, and other statistical procedures, under the direction of Stephen Cohen. Fieldwork for the survey was directed by the Bureau's Assistant Regional Commissioners for Operations.

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# White-Collar Pay: Private Goods-Producing Industries, March 1990

## Summary

The March 1990 survey of private goods-producing industries yielded measures of average annual salaries for 111 occupational work levels. These averages ranged from \$11,522 for general clerks who follow a few clearly detailed procedures (level I) to \$119,670 for the highest level of attorney studied (level VI). Even within individual occupations, average salaries varied widely, depending on specific duties and responsibilities. For example, among four levels of personnel clerks/assistants, salaries ranged from \$15,368 to \$26,366; from \$16,577 to \$29,797 among four levels of computer operators; and from \$24,723 for beginning accountants to \$73,097 for supervisory accountants responsible for the development of highly complex accounting systems.

For most occupations, salary levels in metropolitan areas and in large establishments were slightly higher than the averages for all establishments covered by the survey.

## Characteristics of the survey

This survey—the 31st in an annual series of white-collar pay studies—provides nationwide data for 111 work level categories in 28 different occupations. (An additional 36 work levels were covered by the survey, but insufficient data were available to permit publication of findings.<sup>1</sup>)

Salary information was collected from establishments employing 50 workers or more throughout the United States, except Alaska and Hawaii. This survey included establishments in the mining, construction, and manufacturing industry divisions. The results, therefore, cannot be compared with those from last year's survey, which was limited to private service-producing industries.<sup>2</sup>

<sup>1</sup> For the following occupational work levels surveyed, insufficient data were obtained to warrant publication for goods-producing industries alone: Chief accountant IV and V; public accountant I-IV; personnel supervisor/manager V; director of personnel V; computer programmer IV and V; chemist VIII; registered nurse II specialist and registered nurse IV; licensed practical nurse I and III; nursing assistant I-IV; medical machine technician I-I V; civil engineering technician I-V; computer operator V and VI; photographer I and V; file clerk II and III; typist II; and personnel clerk/assistant V.

<sup>2</sup> For a description and results of the 1989 survey, see *White-Collar Pay: Private Service-Producing Industries, March 1989*, Bulletin 2347 (Bureau of Labor Statistics, 1990).

Surveys earlier than 1987 covered all private nonservices industries as well as a limited selection of services industries.

The survey occupations are divided into work levels based on duties and responsibilities. (See appendix D.) The number of work levels—designated by roman numerals, with "I" the lowest—varies from occupation to occupation, as do the degrees of difficulty and responsibility.<sup>3</sup>

The number of levels in each occupation ranges from one for messengers to eight for engineers. These work levels, however, are not intended to represent all the workers in a specific occupation. The duties and responsibilities of an establishment's top engineers, for example, may exceed those of the highest level of engineers in the survey. Thus, the survey does not present comparisons of overall occupational salary levels, such as between accountants as a group and engineers.

The approximately 74,000 establishments within the scope of the survey employed about 16.4 million workers; 32 percent were professional, administrative, technical, and clerical employees on full-time schedules. Of these white-collar workers, 26 percent, or approximately 1.4 million, were in occupations and work levels for which salary data were developed. The survey presents separate occupational salary data for metropolitan areas—where almost nine-tenths of the white-collar workers covered by the study were employed—and for various establishment size groups based on employment.

## Employment

The number of employees varied widely among the occupations in the survey, reflecting both differences in employment in the occupations and differences in the range of duties and responsibilities covered by survey definitions. For example, there were 474,329 incumbents in the eight levels of engineers; they accounted for 77 percent of the 615,045 professional employees classified in survey occupations. Accountants, in contrast, numbered 87,694.

<sup>3</sup> The roman numerals do not necessarily identify equal levels of work among occupations. For example, attorney levels I to IV equate to accountant levels III to VI. See appendix E.

The three levels of computer programmers included 31,931 employees, and the five levels of systems analysts included 54,009. Systems analyst managers totaled 5,161. Altogether, computer occupations accounted for 49 percent of the 184,976 employees matching the survey's administrative job descriptions. Other administrative jobs included personnel specialists, personnel supervisors/managers, directors of personnel, and buyers.

Among the technical support occupations surveyed, engineering technicians accounted for 50 percent of the 162,375 incumbents. Drafters and computer operators accounted for 33 percent and 16 percent, respectively. The other two technical support occupations studied—photographers and licensed practical nurses—each accounted for less than 1 percent of the total.

Of the nine clerical occupations surveyed, secretaries accounted for 37 percent of the 391,397 incumbents. Three occupations accounted for most of the remaining workers: Accounting clerks (29 percent), general clerks (18 percent), and key entry operators (8 percent). The remaining five clerical occupations—purchasing clerks/assistants, personnel clerks/assistants, typists, messengers, and file clerks—each accounted for less than 4 percent.

The occupations studied were heavily concentrated in manufacturing industries (see table 7). These industries employed at least four-fifths of the workers in each of the surveyed occupations, and also accounted for 95 percent or more of the personnel specialists, personnel supervisors/managers, buyers, computer programmers, systems analysts, chemists, registered nurses, licensed practical nurses, engineering technicians, computer operators, photographers, key entry operators, messengers, and purchasing clerks/assistants.

### Average salaries, March 1990

Reflecting the wide range of duties and responsibilities covered by the survey occupations, average annual salaries ranged from \$11,522 for general clerks I to \$119,670 for the top level of attorneys (table 1). Within more homogeneous groupings, however, salary averages often fell within a relatively narrow band. For example, annual salary averages for the following equivalent work levels in professional occupations fell within a band of \$10,000 a year: Accountant VI (\$73,097), chief accountant III (\$72,068), attorney IV (\$80,502), personnel specialist VI (\$71,262), personnel supervisor/manager III (\$75,501), director of personnel III (\$74,831), chemist VI (\$73,114), and engineer VI (\$70,646). The following paragraphs summarize findings for the occupations studied.

*Professional and administrative occupations.* Annual salaries of accountants ranged from \$24,723 for beginning professional accountants (level I) to \$73,097 for specialists in complex accounting systems (level VI). Salaries for

the most numerous group (level III) averaged \$36,055 a year.

Salaries for the three levels of *chief accountants* are determined by the degree of their authority and responsibility, the technical complexity of the accounting system, and, to a lesser degree, the size of the subordinate professional staff (usually one or two accountants at level I to as many as 20 accountants at level III). Chief accountants who administer a stable accounting system with prescribed authority (level I) averaged \$43,353 a year. At level III, those who have authority to decide the specific methods and procedures to be used, subject to general policy guidelines, for a company with numerous and varied accounting functions and work processes, averaged \$72,068 annually.

*Auditors* at the trainee level (level I) averaged \$28,622 a year, and those at level IV, who conduct complex financial audits, averaged \$48,999.

*Attorneys* who are newly graduated from law school with bar membership and whose work is relatively uncomplicated due to clearly applicable precedents and well-established facts (level I) averaged \$46,760 a year. Attorneys in the top level surveyed (VI), who work at the highest degrees of difficulty and responsibility, averaged \$119,670. These attorneys deal with legal matters of major importance to the organization and usually report directly to the general counsel or, in very large firms, to the deputy general counsel. Although manufacturing firms employed 80 percent of the attorneys surveyed, 17 percent were reported by mining establishments.

*Chemists and engineers* were surveyed in eight levels starting with a professional trainee level typically requiring a bachelor's degree. The highest level surveyed involves either (1) full responsibility over a broad, complex, and diversified chemical or engineering program, with several subordinates each directing large and important segments of the program, or (2) individual research and consultation in problem areas where the incumbent is a recognized authority and where solutions represent a major scientific or technological advance. Average yearly salaries of chemists ranged from \$28,798 for level I to \$85,676 for level VII (the highest level publishable).

Annual salaries of engineers ranged from \$31,412 for level I to \$93,514 for level VIII. Level IV engineers, the largest group in the profession and representing employees performing complex, conventional engineering tasks, averaged \$49,195.

*Buyers*, who purchase "off-the-shelf" and readily available items and services from local sources (level I), averaged \$23,935 a year. Buyers IV, who purchase highly complex and technical items, or materials that are custom designed and manufactured, averaged \$45,932.

*Computer programmer trainees* (level I) averaged \$27,861 a year. Those at level III, fully qualified com-

puter programmers who apply standard programming procedures, averaged \$34,425 annually.

*Computer systems analysts* who work independently on routine problems (level I) averaged \$34,883 a year. Systems analysts V, the highest nonsupervisory level studied, averaged \$69,520 a year. At this level, analysts are senior personnel responsible for the development of broad unprecedented computer systems.

*Systems analyst supervisors/managers* at level I earned, on average, \$55,630 a year. Those at the top level for which data could be published (IV), who direct a staff of 15 employees or more through at least two subordinate levels of supervisors, averaged \$87,388. Managers are classified according to the technical level of their staff and the level of their supervisory and managerial responsibilities.<sup>4</sup>

Salary data are published for three personnel occupations in 1990: *Directors of personnel* and two personnel classifications newly surveyed in goods-producing industries, *personnel supervisors/managers* and *personnel specialists*. Directors of personnel are defined as those who, at a minimum, are responsible for administering a job evaluation system, have employment and placement functions, and provide employee relations and services. Those with significant responsibility as the principal company representative in contract negotiations with labor unions are excluded. Various combinations of work force size, duties, and responsibilities determine the work level. Average annual salaries for directors of personnel ranged from \$45,032 for level I to \$97,381 for level IV.

Salaries for personnel supervisors/managers started at \$47,085 for first-line supervisors of moderately complex personnel areas (level I) and ranged upward to \$92,676 for higher level managers of complex personnel functions (level IV).<sup>5</sup> Salaries for personnel specialists ranged from \$26,344 for trainees at level I to \$71,262 for experts at level VI, who evaluate and develop highly complex personnel policies and procedures.

*Registered nurses* were primarily found in occupational health units in establishment workplaces and were providing nursing care to employees. Average salaries for registered nurses ranged from \$26,063 for level I to \$39,974 for level III.

*Technical support occupations. Licensed practical nurse II* was the only level in this series that met publication standards. At this level, licensed practical nurses provide nursing care requiring an understanding of diseases and

<sup>4</sup> Data were collected separately for five levels of nonsupervisory systems analysts and four levels of systems analyst supervisors/managers. In surveys prior to 1988, earnings of systems analyst managers were combined with those of systems analysts for publication purposes. Had such combinations been made for 1990, the average (mean) earnings would be as follows: Systems analyst I—\$34,883; II—\$40,838; III—\$49,639; IV—\$58,978; and V—\$71,239.

<sup>5</sup> The director of personnel and personnel supervisor/manager jobs have equivalent work levels; that is, each level (such as level I) of one job is equivalent to the same level of the other job. See appendix E.

illnesses and use judgment in applying guidelines to specific situations; their salaries averaged \$19,826 a year.

*Engineering technician* is a five-level series limited to employees providing technical support to engineers in such areas as research, design, development, testing, or manufacturing process improvement. The work deals with electrical, electronic, or mechanical components or equipment. Technicians involved in production, maintenance, or quality control work are excluded. Engineering technicians at level I perform simple, routine tasks under close supervision or from detailed procedures; they averaged \$19,674 a year. Engineering technicians V, who plan and conduct complex projects under general guidelines supplied by a supervisor or professional engineer, averaged \$37,036. Salaries for intermediate levels III and IV, containing a majority of the technicians surveyed, averaged \$26,868 and \$32,245, respectively.

*Drafters* at level I who trace or copy finished drawings and work under close supervision averaged \$14,382 a year, while those at level V who work closely with designers preparing drawings of unusual, complex, or original designs averaged \$34,158.

*Computer operators* are classified on the basis of responsibility for problem solving, variability of assignments, and scope of authority for corrective actions. Computer operators at level I, whose work assignments consist of on-the-job training, averaged \$16,577 a year. Level II operators, the largest group surveyed, averaged \$20,220, and those in the top level publishable (IV) averaged \$29,797.

The average annual salary for level II *photographers*, who take photographs which involve limited problems of speed, motion, color contrast, or lighting, was \$25,940. Photographers at level IV, who use special-purpose cameras under technically demanding conditions such as extremes in lighting or ultra high speed, averaged \$36,242.

*Clerical occupations.* Among the 26 clerical levels for which data are published, average yearly salaries ranged from \$11,522 for general clerks I to \$32,830 for secretaries V, the highest of a five-level series. Averages for 11 of the clerical levels exceeded \$20,000; 12 were between \$15,000 and \$20,000; and 3 fell below \$15,000.

*Secretaries* were the most populous of the clerical occupations surveyed; average annual salaries ranged from \$19,850 for level I to \$32,830 for level V. *Typists* I averaged \$16,276, while *messengers* averaged \$15,283 a year.

Average annual salaries of *accounting clerks* who perform simple and routine clerical accounting operations, level I, averaged \$14,638 a year. Level IV clerks who maintain journals or subsidiary ledgers averaged \$25,843. Over four-fifths of the accounting clerks

surveyed were classified in levels II and III, where they averaged \$17,207 and \$20,706 a year, respectively.

*Personnel clerks/assistants* who perform routine tasks requiring a knowledge of personnel rules and procedures (level I) averaged \$15,368 a year. Level IV assistants, who provide support such as interviewing and recommending placement for well-defined occupations, averaged \$26,366.

Level I *purchasing clerks/assistants* follow well-established and clear-cut procedures to prepare and process purchasing documents; their yearly average salary was \$15,784. The average was \$32,552 for level IV assistants, who prepare complicated purchase documents, expedite the purchase of highly specialized items, or provide detailed technical support to buyers.

Four levels of *general clerks*, who perform a combination of clerical tasks to support office, business, or administrative operations, were surveyed. Level I clerks, who follow detailed procedures in performing simple and repetitive tasks, averaged \$11,522 annually. Level IV clerks, who use subject matter knowledge and judgment to complete various nonroutine assignments, averaged \$22,312 a year. Level II and III clerks, the most populous levels, averaged \$15,027 and \$18,368 a year, respectively.

### Salary levels in metropolitan areas

Salary data for metropolitan areas were published for 105 separate occupational levels. For most of these occupational levels, average salaries in metropolitan areas<sup>6</sup> (table 2) were slightly higher than the national averages (table 1). In only 13 cases, however, did such differences exceed 1 percent.

Almost four-fifths of the employees within the scope of the survey were located in metropolitan areas. The proportion varied, however, among the occupations studied, ranging from 96 percent or more for auditors, attorneys, and messengers to about 75 percent for registered nurses. In 92 of the 105 work levels published in table 2, at least 80 percent of the workers were in metropolitan areas.

### Salary levels by establishment size

Table 3 compares average annual salaries among 76 work levels across three establishment size groupings—under 1,000 employees, 1,000 to 2,499 employees, and 2,500 employees or more. Of the 62 work levels for which data are published in each of the three size groups, these comparisons show that average salaries were usually higher in the largest size category than in the smallest. For professional and administrative positions, the pay differences between these two size categories varied by occupation and level. The lowest levels of accountants, personnel specialists, buyers, and registered nurses

<sup>6</sup> Metropolitan Statistical Areas as defined by the U.S. Office of Management and Budget through October 1984.

typically averaged 10 to 20 percent more in the largest size group than in the smallest. The corresponding pay advantage for more senior professionals in these occupations usually amounted to 10 percent or less. Pay differences between the largest and smallest size categories for scientific and data processing professionals were typically less than 5 percent. Among the 16 clerical occupational levels published for each of the three size classes, the pay differential in large establishments fell between 27 percent for secretaries I and 2 percent for general clerks IV.

The largest employment size category (establishments with 2,500 employees or more) accounted for nearly two-fifths of all employees in the 62 work levels published for each of the three size groups shown in table 3. The proportions ranged from one-tenth or less of directors of personnel III, drafters II, personnel clerk/assistants II, and purchasing clerk/assistants II to seven-tenths of engineering technicians V. Large establishments employed about half of the engineers for whom data are shown in table 3.

### Salary distributions

Salary distributions for professional and administrative occupations are presented in table 4; for technical support occupations, in table 5; and for clerical occupations, in table 6. Within most work levels, the highest salaries were at least twice the lowest salaries. As illustrated in charts 1 to 4, pay differences within occupations tended to increase with each rise in the work level. Salary ranges for specific work levels also tended to overlap. This reflects both salary differences among establishments and the frequent overlapping of salary ranges within individual firms.<sup>7</sup>

Median annual salaries for most work levels were slightly lower than mean annual salaries.<sup>8</sup> Hence, salaries in the upper half of the arrays affected the means more than salaries in the lower half. The relative difference (plus or minus) between the mean and the median was less than 1 percent for 19 of the 111 published work levels, from 1 to 4 percent for 81 levels, and from over 4 to 9 percent in the remaining 11 levels.

The degree of salary dispersion tended to be larger for clerical occupations than for professional, administrative, or technical occupations. The dispersions shown in text table 1 reflect the salary range of the middle 50 percent of employees expressed as a percent of the median salary. This eliminates the extremely low and high salaries for each comparison. (A lower number for the degree of salary dispersion means less dispersion.) In just under eight-tenths of the 111 publishable work levels, the degree

<sup>7</sup> For an analysis of rate ranges within establishments, see Martin E. Personick, "White-Collar Pay Determination Under Range-of-Rate Systems," *Monthly Labor Review*, December 1984, pp. 25-30.

<sup>8</sup> The median designates position; one-half of the workers receive the same as or more than this rate and one-half receive the same as or less than this rate. The mean is computed for each job by totaling the earnings of all workers and dividing by the number of workers.



**Text table 1. Distribution of work levels by degree of salary dispersion, March 1990**

Occupation	Number of work levels	Number of levels having degree of dispersion <sup>1</sup> of—				
		Under 15 percent	15 and under 20 percent	20 and under 25 percent	25 and under 30 percent	30 percent and over
All occupations .....	111	9	44	44	11	3
Professional and administrative						
Total .....	67	8	30	25	3	1
Accountants .....	6	-	4	2	-	-
Auditors .....	4	1	1	2	-	-
Chief accountants .....	3	1	1	1	-	-
Attorneys .....	6	-	2	1	2	1
Buyers .....	4	-	-	4	-	-
Computer programmers .....	3	-	1	1	1	-
Systems analysts .....	5	-	3	2	-	-
Systems analyst managers .....	4	1	2	1	-	-
Personnel specialists .....	6	-	-	6	-	-
Personnel supervisors/managers .....	4	-	2	2	-	-
Directors of personnel .....	4	-	3	1	-	-
Chemists .....	7	3	4	-	-	-
Engineers .....	8	2	5	1	-	-
Registered nurses .....	3	-	2	1	-	-
Technical support						
Total .....	18	1	8	8	1	-
Licensed practical nurses .....	1	-	-	-	1	-
Engineering technicians .....	5	-	3	2	-	-
Drafters .....	5	-	3	2	-	-
Computer operators .....	4	-	1	3	-	-
Photographers .....	3	1	1	1	-	-
Clerical						
Total .....	26	-	6	11	7	2
Accounting clerks .....	4	-	-	2	2	-
File clerks .....	1	-	-	1	-	-
Key entry operators .....	2	-	-	1	1	-
Messengers .....	1	-	-	-	1	-
Secretaries .....	5	-	-	2	3	-
Typists .....	1	-	-	-	-	1
Personnel clerks/assistants .....	4	-	3	1	-	-
Purchasing clerks/assistants .....	4	-	2	1	-	1
General clerks .....	4	-	1	3	-	-

<sup>1</sup> Degree of salary dispersion equals the salary range of the middle 50 percent of employees in a work level expressed as a percent of the median salary for that level.

Note: A dash indicates no data.

of dispersion ranged from 15 to 25 percent. The majority of work levels with dispersions of 25 percent and over were in clerical jobs.

Salary differences within work levels reflect a variety of factors other than duties and responsibilities. These include salary structures within establishments which provide for a range of rates for each grade level; variations in occupational employment among industries (table 7 and chart 5); and geographic salary differences, especially for clerical employees.<sup>9</sup> Clerical employees usually are

recruited locally and their salaries are determined in local labor markets, while professional and administrative employees generally are recruited on a broad regional or national basis.

<sup>9</sup> For an analysis of interarea pay differentials in clerical salaries, see *Wage Differences Among Metropolitan Areas, 1989*, Summary 90-10 (Bureau of Labor Statistics, 1989); and Mark S. Sieling, "Clerical Pay Differences in Metropolitan Areas, 1961-80," *Monthly Labor Review*, July 1982, pp. 10-14.

### **Pay differences by industry**

Pay levels varied among manufacturing industries, as illustrated in table 8. Where comparisons were possible, employees in establishments producing chemicals and allied products and transportation equipment generally averaged more than their counterparts in other manufacturing industries.

### **Average standard weekly hours**

Information on standard weekly hours, the base for regular straight-time salary, was obtained for individual employees in the occupations studied. When individual hours were not available, particularly for some higher level professional and administrative positions, the

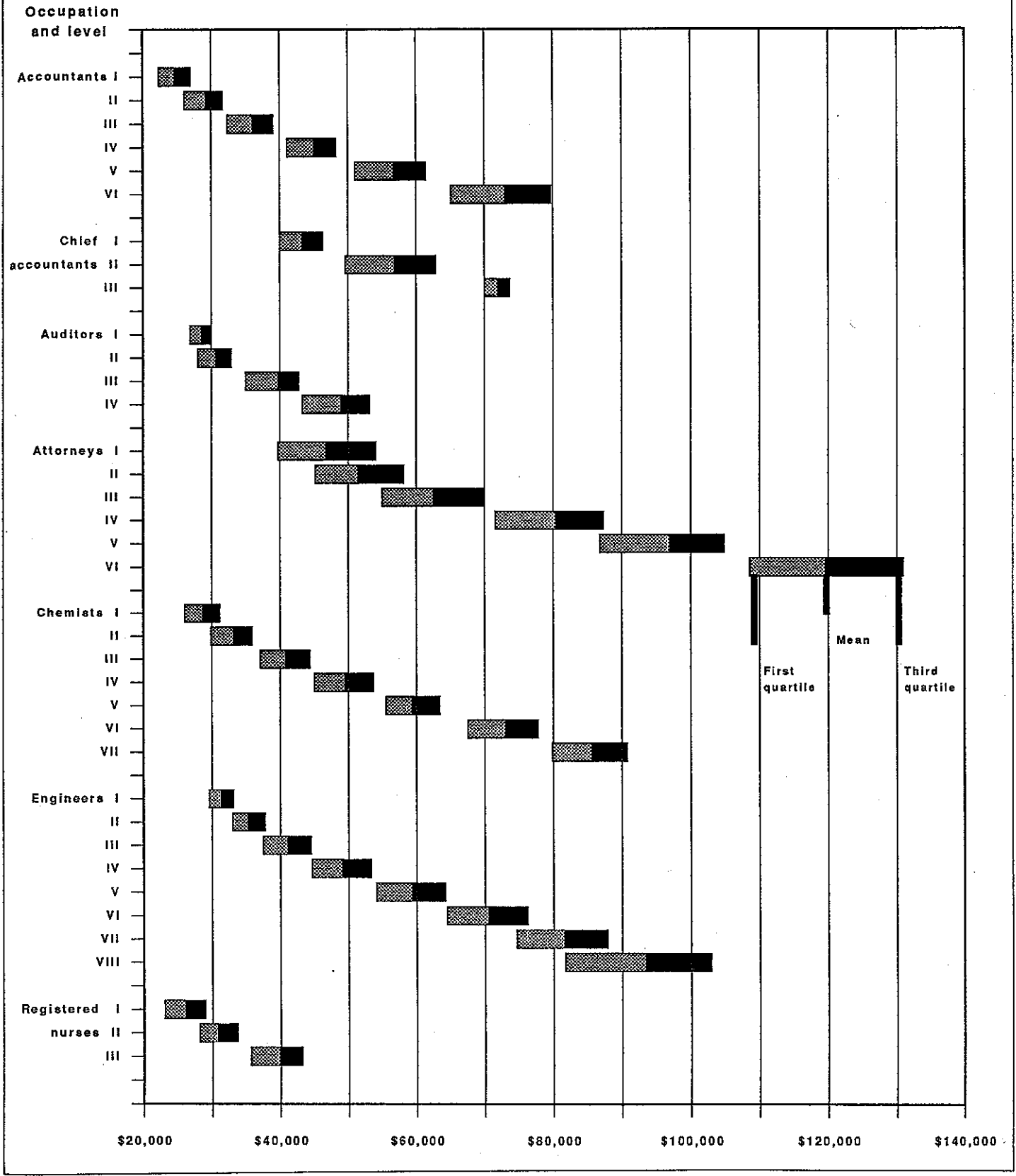
predominant workweek of the office work force was used as the standard. Average weekly hours (rounded to the nearest half hour) are shown in table 9 for occupations studied by major industry division.

Average weekly hours for publishable occupations ranged between 39 and 40 hours. In the manufacturing sector, where data were sufficient to allow comparison, average weekly hours were usually greater for workers in establishments producing durable goods than for those in establishments producing non-durable goods. Average weekly hours have been fairly stable over the past decade.<sup>10</sup>

<sup>10</sup> For information on scheduled weekly hours of office workers employed in metropolitan areas, see *Area Wage Surveys, Selected Metropolitan Areas, 1989*, Bulletin 3050-60 (Bureau of Labor Statistics, 1989).

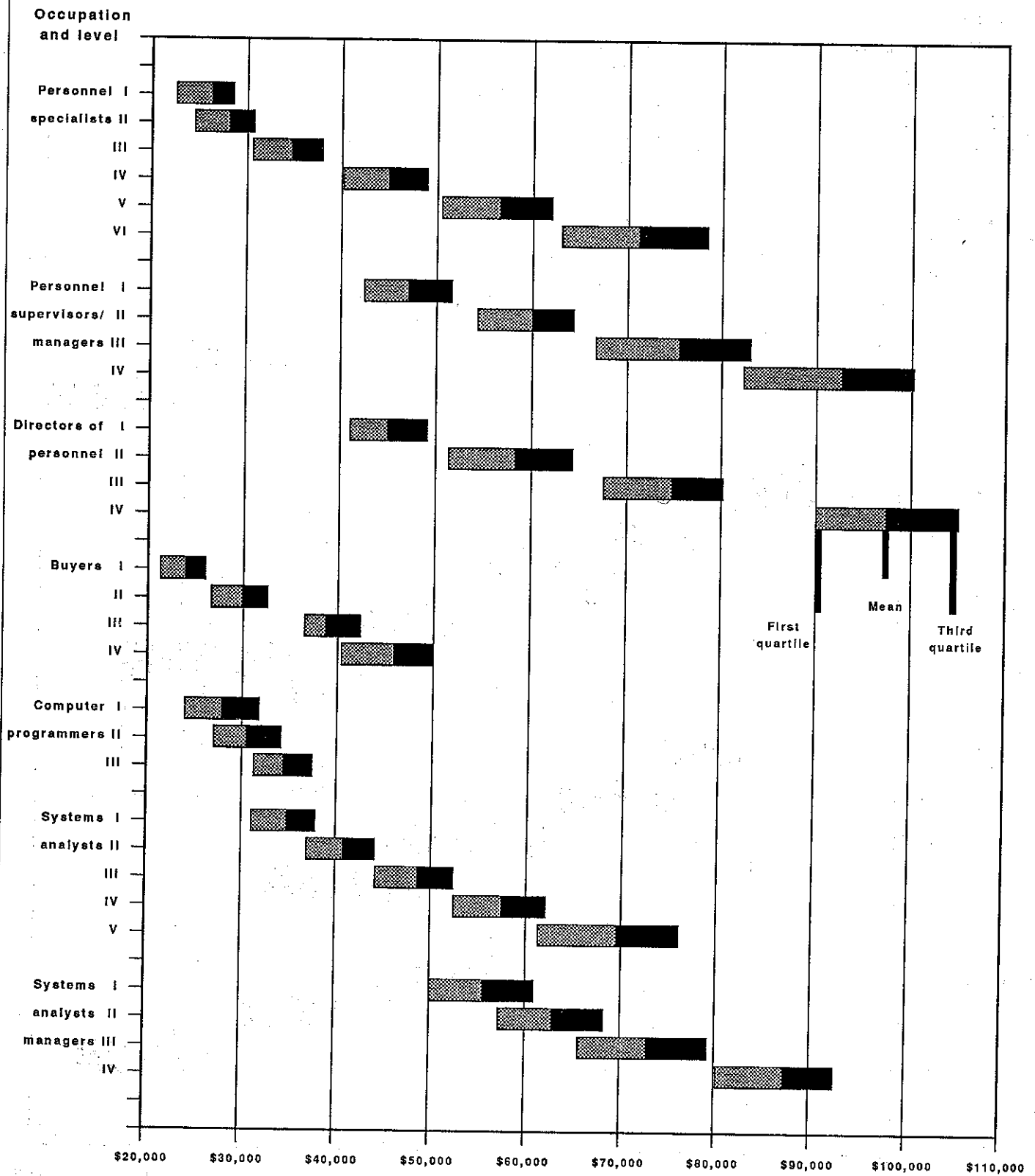
# Chart 1. Salaries in professional occupations, March 1990

(Mean annual salaries and ranges within which fell 50 percent of employees)



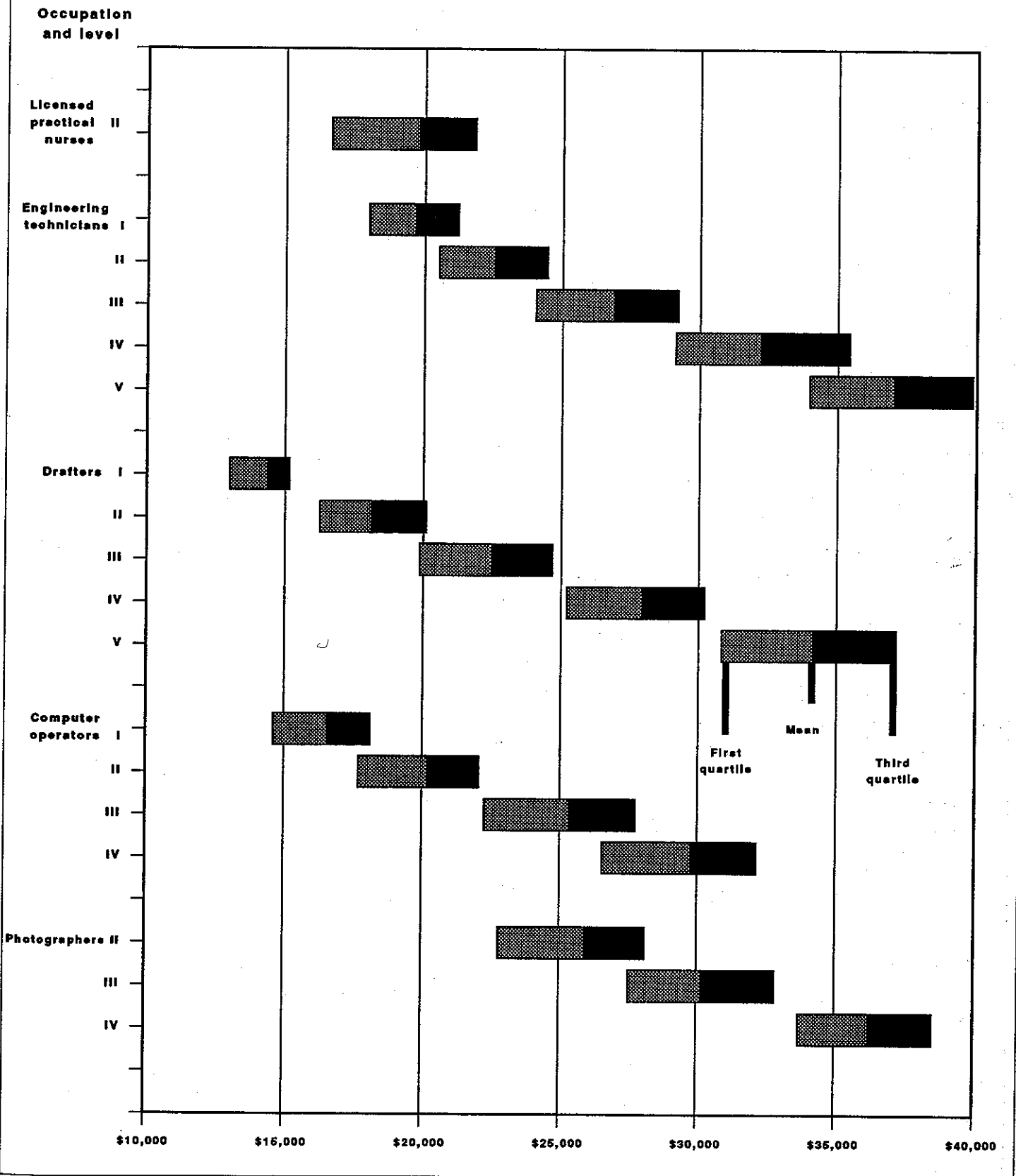
# Chart 2. Salaries in administrative occupations, March 1990

(Mean annual salaries and ranges within which fell 50 percent of employees)



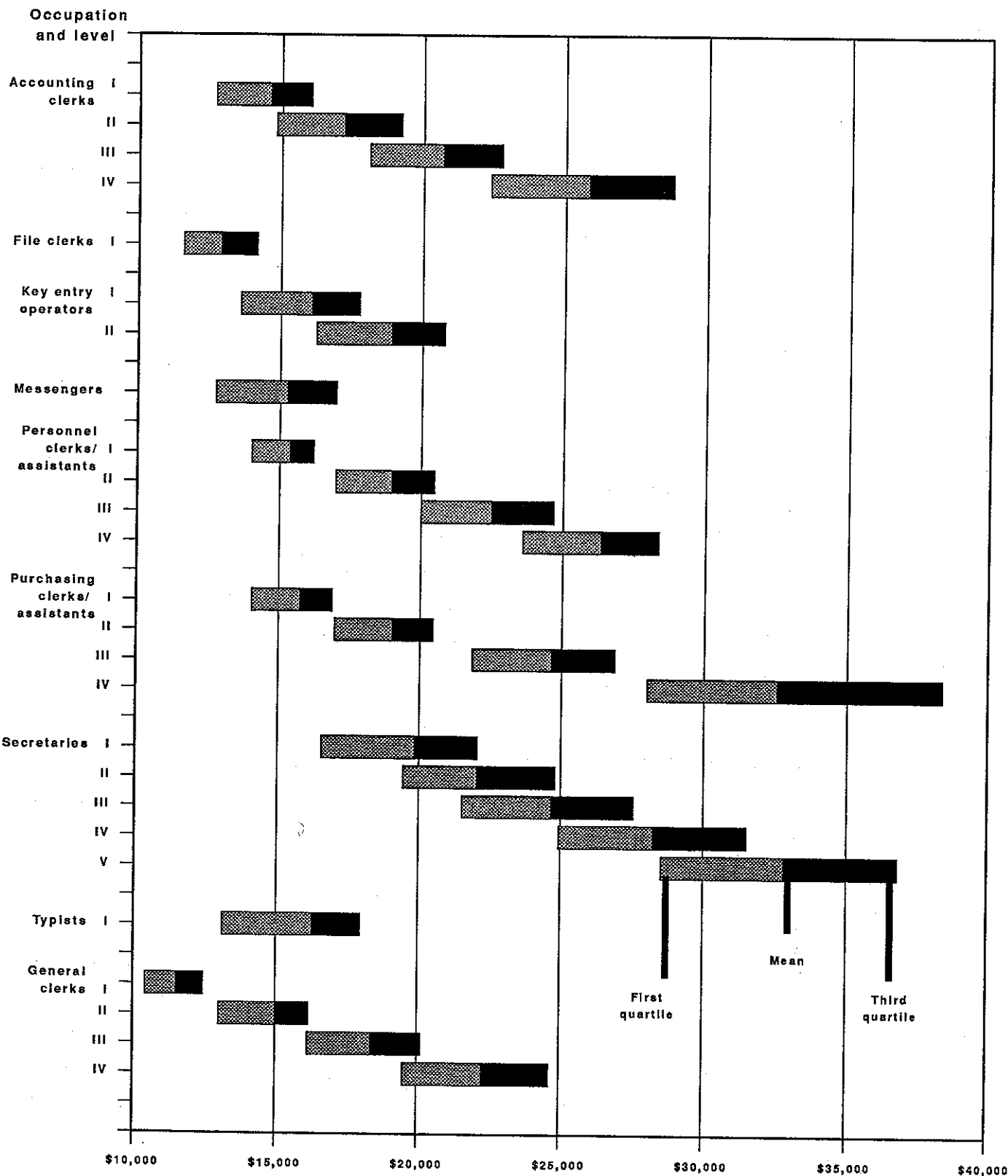
# Chart 3. Salaries in technical occupations, March 1990

(Mean annual salaries and ranges within which fell 50 percent of employees)

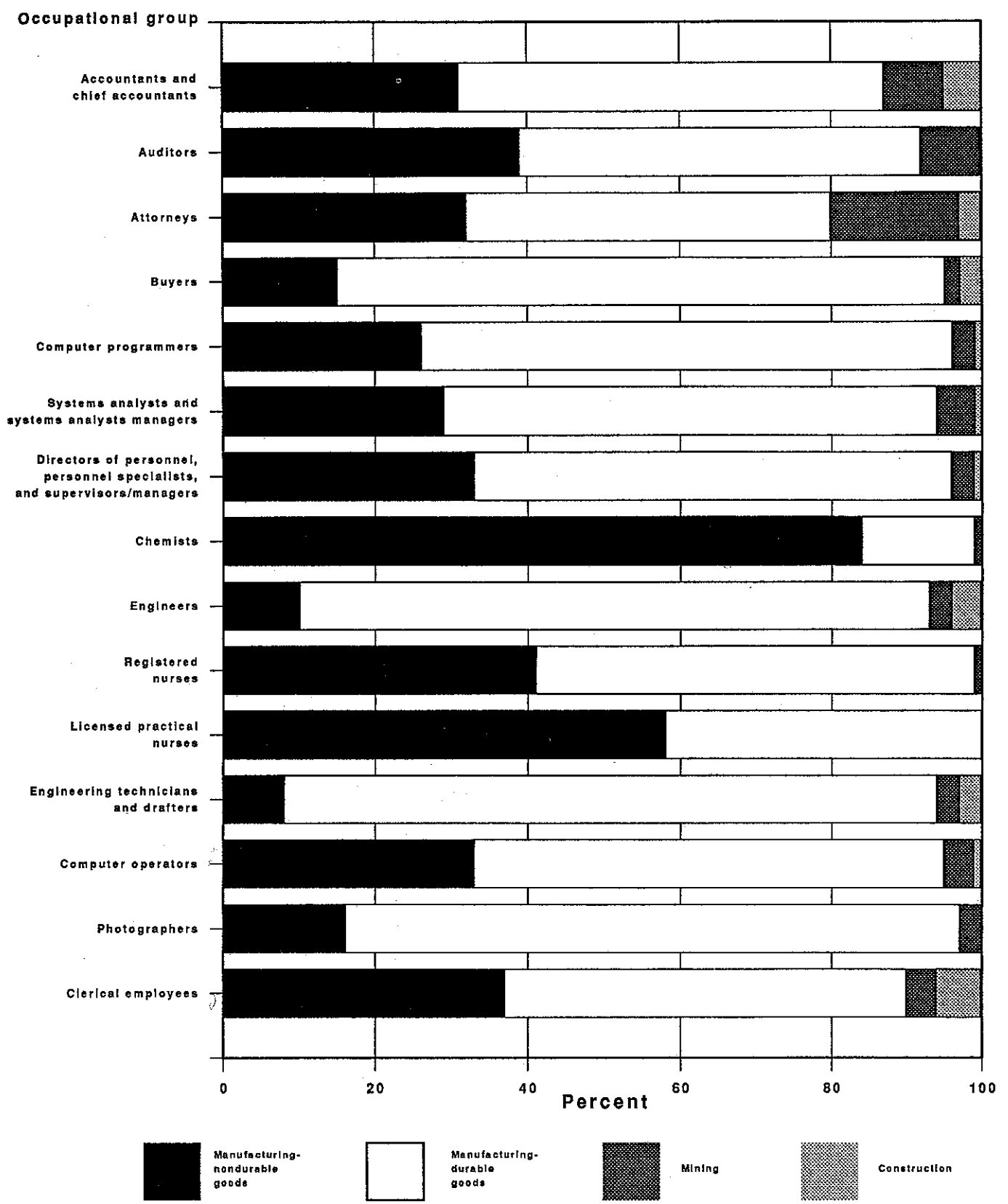


# Chart 4. Salaries in clerical occupations, March 1990

(Mean annual salaries and ranges within which fell 50 percent of employees)



**Chart 5. Relative employment in selected occupational groups by industry division, March 1990**



**TABLE 1. Average salaries: United States**

(Employment and average salaries in private goods-producing industries for selected professional, administrative, technical, and clerical occupations, United States, except Alaska and Hawaii, March 1990)

Occupation and level <sup>2</sup>	Number of employees <sup>3</sup>	Monthly salaries <sup>4</sup>				Annual salaries <sup>4</sup>			
		Mean <sup>5</sup>	Median <sup>5</sup>	Middle range <sup>5</sup>		Mean <sup>5</sup>	Median <sup>5</sup>	Middle range <sup>5</sup>	
				First quartile	Third quartile			First quartile	Third quartile
<b>Accountants</b>									
I .....	9,534	\$2,060	\$2,041	\$1,858	\$2,250	\$24,723	\$24,490	\$22,292	\$27,000
II .....	22,169	2,442	2,374	2,171	2,650	29,307	28,489	26,050	31,800
III .....	30,158	3,005	2,957	2,691	3,265	36,055	35,486	32,297	39,180
IV .....	18,387	3,751	3,725	3,415	4,024	45,013	44,700	40,984	48,290
V .....	6,097	4,733	4,616	4,248	5,125	56,792	55,392	50,980	61,499
VI .....	1,349	6,091	6,039	5,417	6,650	73,097	72,471	65,004	79,800
<b>Chief accountants</b>									
I .....	953	3,613	3,499	3,332	3,860	43,353	41,983	39,984	46,320
II .....	1,097	4,746	4,831	4,123	5,248	56,947	57,977	49,480	62,975
III .....	631	6,006	5,833	5,831	6,148	72,068	69,996	69,968	73,770
<b>Auditors</b>									
I .....	265	2,385	2,404	2,232	2,500	28,622	28,848	26,789	30,000
II .....	1,424	2,559	2,457	2,332	2,743	30,708	29,488	27,989	32,913
III .....	1,284	3,313	3,200	2,907	3,571	39,751	38,400	34,886	42,850
IV .....	581	4,083	4,005	3,600	4,435	48,999	48,060	43,195	53,220
<b>Personnel specialists</b>									
I .....	1,401	2,195	2,128	1,874	2,383	26,344	25,532	22,491	28,598
II .....	7,434	2,352	2,250	2,041	2,565	28,229	26,994	24,490	30,780
III .....	15,107	2,897	2,870	2,545	3,165	34,759	34,435	30,540	37,985
IV .....	11,392	3,750	3,706	3,347	4,082	44,998	44,471	40,158	48,980
V .....	3,938	4,714	4,601	4,200	5,165	56,570	55,209	50,400	61,980
VI .....	423	5,939	5,791	5,248	6,539	71,262	69,492	62,975	78,469
<b>Personnel supervisors/managers</b>									
I .....	1,558	3,924	3,980	3,532	4,299	47,085	47,762	42,383	51,591
II .....	2,212	5,006	4,919	4,524	5,368	60,072	59,028	54,291	64,410
III .....	1,442	6,292	6,248	5,550	6,920	75,501	74,970	66,600	83,040
IV .....	352	7,723	7,498	6,859	8,355	92,676	89,970	82,302	100,260
<b>Directors of personnel</b>									
I .....	924	3,753	3,749	3,415	4,098	45,032	44,982	40,984	49,179
II .....	1,643	4,865	4,915	4,277	5,366	58,385	58,976	51,324	64,392
III .....	905	6,236	6,023	5,623	6,691	74,831	72,271	67,473	80,294
IV .....	260	8,115	8,022	7,497	8,750	97,381	96,261	89,964	105,000
<b>Attorneys</b>									
I .....	133	3,897	3,978	3,302	4,515	46,760	47,736	39,621	54,178
II .....	616	4,297	3,918	3,756	4,853	51,560	47,011	45,078	58,236
III .....	1,341	5,217	5,000	4,582	5,831	62,603	60,000	54,978	69,972
IV .....	1,297	6,708	6,664	5,955	7,289	80,502	79,968	71,460	87,465
V .....	879	8,088	7,916	7,236	8,740	97,060	94,992	86,839	104,880
VI .....	375	9,972	9,996	9,038	10,912	119,670	119,952	108,457	130,948
<b>Buyers</b>									
I .....	4,787	1,995	1,998	1,771	2,167	23,935	23,970	21,256	25,998
II .....	17,618	2,493	2,433	2,220	2,716	29,917	29,196	26,640	32,587
III .....	17,800	3,228	3,179	2,884	3,532	38,742	38,145	34,607	42,383
IV .....	4,679	3,828	3,752	3,358	4,159	45,932	45,029	40,297	49,908
<b>Computer programmers</b>									
I .....	4,572	2,322	2,357	2,000	2,652	27,861	28,289	24,000	31,824
II .....	15,948	2,549	2,541	2,250	2,844	30,584	30,488	27,000	34,130
III .....	11,411	2,869	2,870	2,601	3,124	34,425	34,440	31,215	37,485

See footnotes at end of table.



**TABLE 1. Average salaries: United States—Continued**

(Employment and average salaries in private goods-producing industries for selected professional, administrative, technical, and clerical occupations, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Occupation and level <sup>2</sup>	Number of employees <sup>3</sup>	Monthly salaries <sup>4</sup>				Annual salaries <sup>4</sup>			
		Mean <sup>5</sup>	Median <sup>5</sup>	Middle range <sup>5</sup>		Mean <sup>5</sup>	Median <sup>5</sup>	Middle range <sup>5</sup>	
				First quartile	Third quartile			First quartile	Third quartile
<b>Systems analysts</b>									
I .....	12,452	\$2,907	\$2,827	\$2,582	\$3,156	\$34,883	\$33,922	\$30,988	\$37,872
II .....	21,359	3,403	3,350	3,074	3,682	40,838	40,205	36,886	44,184
III .....	14,359	4,054	4,009	3,683	4,369	48,651	48,108	44,197	52,433
IV .....	5,063	4,793	4,718	4,369	5,179	57,512	56,616	52,428	62,148
V .....	776	5,793	5,835	5,104	6,342	69,520	70,026	61,251	76,101
<b>Systems analysts managers</b>									
I .....	2,368	4,636	4,630	4,165	5,081	55,630	55,564	49,980	60,976
II .....	1,892	5,242	5,181	4,766	5,690	62,902	62,175	57,192	68,278
III .....	809	6,074	5,917	5,460	6,605	72,888	71,000	65,520	79,260
IV .....	92	7,282	7,333	6,678	7,719	87,388	88,000	80,141	92,627
<b>Chemists</b>									
I .....	2,686	2,400	2,357	2,166	2,600	28,798	28,289	25,990	31,200
II .....	7,478	2,766	2,774	2,484	2,999	33,191	33,287	29,802	35,990
III .....	8,433	3,405	3,374	3,082	3,699	40,863	40,484	36,985	44,382
IV .....	7,896	4,124	4,091	3,749	4,475	49,494	49,092	44,993	53,700
V .....	6,438	4,954	4,925	4,623	5,290	59,448	59,100	55,478	63,479
VI .....	2,538	6,093	6,055	5,614	6,482	73,114	72,660	67,373	77,790
VII .....	565	7,140	7,097	6,650	7,575	85,676	85,166	79,800	90,900
<b>Engineers</b>									
I .....	26,427	2,618	2,621	2,462	2,770	31,412	31,458	29,538	33,240
II .....	59,692	2,949	2,924	2,742	3,150	35,389	35,086	32,903	37,794
III .....	113,889	3,430	3,391	3,124	3,710	41,157	40,696	37,485	44,520
IV .....	134,983	4,100	4,080	3,716	4,448	49,195	48,960	44,592	53,379
V .....	86,458	4,955	4,915	4,507	5,358	59,462	58,980	54,078	64,293
VI .....	40,757	5,887	5,845	5,366	6,355	70,646	70,143	64,392	76,260
VII .....	10,284	6,800	6,690	6,209	7,329	81,597	80,281	74,503	87,948
VIII .....	1,839	7,793	7,508	6,803	8,580	93,514	90,100	81,640	102,956
<b>Registered nurses</b>									
I .....	2,153	2,172	2,158	1,912	2,418	26,063	25,898	22,942	29,016
II .....	3,873	2,576	2,582	2,339	2,807	30,910	30,988	28,068	33,687
III .....	86	3,331	3,349	2,962	3,605	39,974	40,184	35,544	43,260
<b>Licensed practical nurses</b>									
II .....	691	1,652	1,634	1,385	1,820	19,826	19,612	16,625	21,838
<b>Engineering technicians</b>									
I .....	2,991	1,640	1,648	1,500	1,768	19,674	19,771	18,000	21,214
II .....	12,506	1,882	1,855	1,710	2,038	22,581	22,256	20,520	24,459
III .....	22,517	2,239	2,213	1,999	2,435	26,868	26,561	23,990	29,222
IV .....	28,492	2,687	2,677	2,426	2,954	32,245	32,123	29,108	35,453
V .....	14,380	3,086	3,041	2,830	3,324	37,036	36,494	33,966	39,891
<b>Drafters</b>									
I .....	1,049	1,199	1,200	1,083	1,265	14,382	14,394	12,999	15,183
II .....	8,054	1,512	1,504	1,355	1,677	18,146	18,053	16,264	20,122
III .....	16,564	1,876	1,837	1,655	2,058	22,516	22,039	19,856	24,691
IV .....	19,104	2,330	2,332	2,099	2,520	27,959	27,989	25,189	30,236
V .....	9,480	2,846	2,816	2,570	3,097	34,158	33,797	30,844	37,162
<b>Computer operators</b>									
I .....	2,079	1,381	1,343	1,216	1,514	16,577	16,119	14,588	18,168

See footnotes at end of table.

**TABLE 1. Average salaries: United States—Continued**

 (Employment and average salaries in private goods-producing industries for selected professional, administrative, technical, and clerical occupations, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Occupation and level <sup>2</sup>	Number of employees <sup>3</sup>	Monthly salaries <sup>4</sup>				Annual salaries <sup>4</sup>			
		Mean <sup>5</sup>	Median <sup>5</sup>	Middle range <sup>5</sup>		Mean <sup>5</sup>	Median <sup>5</sup>	Middle range <sup>5</sup>	
				First quartile	Third quartile			First quartile	Third quartile
<b>Computer operators—Continued</b>									
II .....	11,859	\$1,685	\$1,646	\$1,476	\$1,840	\$20,220	\$19,752	\$17,712	\$22,080
III .....	9,779	2,111	2,040	1,854	2,314	25,331	24,482	22,247	27,766
IV .....	2,830	2,483	2,426	2,210	2,682	29,797	29,118	26,518	32,184
<b>Photographers</b>									
II .....	286	2,162	2,129	1,898	2,343	25,940	25,553	22,774	28,119
III .....	646	2,516	2,516	2,292	2,738	30,186	30,188	27,504	32,856
IV .....	307	3,020	3,028	2,807	3,213	36,242	36,335	33,687	38,556
<b>Accounting clerks</b>									
I .....	7,077	1,220	1,158	1,057	1,340	14,638	13,897	12,679	16,077
II .....	61,468	1,434	1,400	1,233	1,604	17,207	16,800	14,792	19,243
III .....	31,994	1,726	1,685	1,506	1,900	20,706	20,218	18,074	22,800
IV .....	11,172	2,154	2,100	1,863	2,400	25,843	25,200	22,358	28,800
<b>File clerks</b>									
I .....	2,840	1,075	1,050	962	1,180	12,905	12,594	11,550	14,155
<b>Key entry operators</b>									
I .....	20,524	1,345	1,313	1,131	1,482	16,141	15,760	13,577	17,783
II .....	10,591	1,577	1,565	1,356	1,733	18,925	18,782	16,271	20,798
<b>Messengers</b>									
.....	3,217	1,274	1,218	1,061	1,418	15,283	14,619	12,731	17,011
<b>Secretaries</b>									
I .....	20,541	1,654	1,581	1,379	1,839	19,850	18,968	16,553	22,067
II .....	31,140	1,840	1,837	1,619	2,068	22,081	22,040	19,430	24,820
III .....	57,385	2,057	2,022	1,794	2,298	24,683	24,266	21,526	27,576
IV .....	25,273	2,355	2,352	2,076	2,626	28,266	28,223	24,913	31,510
V .....	9,866	2,736	2,699	2,376	3,066	32,830	32,389	28,517	36,798
<b>Typists</b>									
I .....	4,362	1,356	1,257	1,092	1,498	16,276	15,079	13,103	17,981
<b>Personnel clerks/assistants</b>									
I .....	1,207	1,281	1,274	1,166	1,352	15,368	15,287	13,994	16,223
II .....	3,218	1,581	1,549	1,416	1,706	18,974	18,593	16,993	20,475
III .....	2,718	1,876	1,830	1,666	2,058	22,507	21,960	19,992	24,698
IV .....	1,133	2,197	2,196	1,965	2,366	26,366	26,352	23,580	28,389
<b>Purchasing clerks/assistants</b>									
I .....	2,812	1,315	1,276	1,170	1,408	15,784	15,312	14,039	16,896
II .....	7,862	1,585	1,569	1,416	1,707	19,025	18,823	16,993	20,480
III .....	3,404	2,053	2,041	1,820	2,240	24,641	24,490	21,838	26,880
IV .....	593	2,713	2,607	2,333	3,199	32,552	31,281	27,995	38,394
<b>General clerks</b>									
I .....	4,161	960	927	866	1,040	11,522	11,122	10,396	12,479
II .....	22,705	1,252	1,237	1,083	1,350	15,027	14,845	12,995	16,200
III .....	30,026	1,531	1,473	1,343	1,679	18,368	17,673	16,119	20,148
IV .....	14,108	1,859	1,809	1,624	2,054	22,312	21,712	19,488	24,646

<sup>1</sup> For the scope of the survey, see table A-1 in appendix A.

<sup>2</sup> Occupational definitions appear in appendix D.

<sup>3</sup> Occupational employment estimates relate to the total in all establishments within the scope of the survey and not to the number actually surveyed. For further explanation, see appendix A.

<sup>4</sup> Excludes premium pay for overtime and for work on weekends, holidays, and late shifts. Also excluded are performance bonuses and lump-sum payments of the type negotiated in the auto and aerospace industries, as well as profit-sharing payments, attendance bonuses, Christmas or year-end bonuses, and other nonproduction

bonuses. Pay increases—but not bonuses—under cost-of-living allowance clauses, and incentive payments, however, are included.

<sup>5</sup> The mean is computed for each job by totaling the earnings of all workers and dividing by the number of workers. The median designates position; one-half of the workers receive the same as or more and one-half receive the same as or less than the rate shown. The middle range is defined by two rates of pay; one-fourth of the workers earn the same as or less than the lower of these rates and one-fourth earn the same as or more than the higher rate.

**Table 2. Average salaries: Metropolitan areas**

(Employment and average salaries in private goods-producing industries for selected professional, administrative, technical, and clerical occupations, metropolitan areas,<sup>1</sup> United States, except Alaska and Hawaii, March 1990)

Occupation and level <sup>2</sup>	Number of employees <sup>3</sup>	Monthly salaries <sup>4</sup>				Annual salaries <sup>4</sup>			
		Mean <sup>5</sup>	Median <sup>5</sup>	Middle range <sup>5</sup>		Mean <sup>5</sup>	Median <sup>5</sup>	Middle range <sup>5</sup>	
				First quartile	Third quartile			First quartile	Third quartile
<b>Accountants</b>									
I .....	8,417	\$2,074	\$2,061	\$1,885	\$2,250	\$24,884	\$24,732	\$22,620	\$27,000
II .....	19,458	2,458	2,383	2,200	2,666	29,495	28,598	26,400	31,993
III .....	26,244	3,009	2,957	2,699	3,274	36,114	35,484	32,388	39,284
IV .....	16,212	3,753	3,725	3,415	4,040	45,032	44,698	40,984	48,481
V .....	5,760	4,727	4,615	4,248	5,123	56,728	55,378	50,980	61,475
VI .....	1,294	6,043	6,020	5,415	6,625	72,516	72,240	64,974	79,500
<b>Chief accountants</b>									
II .....	901	4,738	4,643	4,123	5,330	56,851	55,716	49,480	63,955
III .....	577	5,973	5,831	5,831	5,998	71,680	69,968	69,968	71,971
<b>Auditors</b>									
I .....	238	2,393	2,394	2,232	2,499	28,715	28,728	26,789	29,988
II .....	1,403	2,560	2,457	2,332	2,730	30,720	29,488	27,989	32,760
III .....	1,240	3,308	3,200	2,907	3,564	39,696	38,400	34,886	42,768
IV .....	553	4,077	4,005	3,590	4,415	48,925	48,060	43,080	52,979
<b>Personnel specialists</b>									
I .....	1,154	2,247	2,166	1,905	2,557	26,968	25,990	22,857	30,684
II .....	6,508	2,381	2,291	2,083	2,612	28,571	27,489	24,990	31,344
III .....	12,618	2,922	2,874	2,582	3,209	35,068	34,486	30,988	38,508
IV .....	9,429	3,778	3,749	3,366	4,100	45,341	44,982	40,388	49,200
V .....	3,588	4,718	4,602	4,173	5,201	56,611	55,224	50,075	62,409
VI .....	401	5,961	5,833	5,209	6,600	71,528	69,986	62,508	79,200
<b>Personnel supervisors/managers</b>									
I .....	1,369	3,948	3,992	3,532	4,335	47,381	47,899	42,383	52,021
II .....	2,018	5,014	4,898	4,549	5,376	60,164	58,776	54,590	64,517
III .....	1,354	6,257	6,180	5,500	6,900	75,089	74,157	66,000	82,800
IV .....	335	7,695	7,480	6,854	8,355	92,336	89,764	82,247	100,260
<b>Directors of personnel</b>									
I .....	428	3,836	3,749	3,473	4,170	46,036	44,982	41,671	50,040
II .....	1,273	4,847	4,888	4,248	5,366	58,163	58,651	50,990	64,392
III .....	813	6,305	6,098	5,623	6,950	75,661	73,171	67,473	83,400
IV .....	258	8,123	8,022	7,497	8,750	97,478	96,261	89,964	105,000
<b>Attorneys</b>									
II .....	597	4,307	3,920	3,756	4,854	51,690	47,040	45,078	58,248
III .....	1,305	5,219	4,998	4,582	5,831	62,623	59,976	54,978	69,972
IV .....	1,248	6,714	6,664	5,955	7,289	80,564	79,968	71,460	87,465
V .....	861	8,075	7,914	7,197	8,730	96,894	94,962	86,365	104,758
VI .....	351	9,910	9,663	8,806	10,829	118,926	115,954	105,669	129,948
<b>Buyers</b>									
I .....	3,795	2,031	2,012	1,790	2,200	24,378	24,147	21,485	26,400
II .....	13,879	2,526	2,476	2,249	2,772	30,311	29,716	26,989	33,266
III .....	16,161	3,234	3,196	2,891	3,525	38,811	38,349	34,686	42,300
IV .....	4,421	3,813	3,745	3,354	4,132	45,761	44,940	40,245	49,584
<b>Computer programmers</b>									
I .....	4,246	2,346	2,396	2,040	2,652	28,146	28,752	24,480	31,824
II .....	14,285	2,561	2,565	2,257	2,853	30,734	30,780	27,089	34,236
III .....	10,210	2,881	2,885	2,612	3,140	34,587	34,620	31,344	37,685

See footnotes at end of table.

**Table 2. Average salaries: Metropolitan areas—Continued**

(Employment and average salaries in private goods-producing industries for selected professional, administrative, technical, and clerical occupations, metropolitan areas,<sup>1</sup> United States, except Alaska and Hawaii, March 1990)

Occupation and level <sup>2</sup>	Number of employees <sup>3</sup>	Monthly salaries <sup>4</sup>				Annual salaries <sup>4</sup>			
		Mean <sup>5</sup>	Median <sup>5</sup>	Middle range <sup>5</sup>		Mean <sup>5</sup>	Median <sup>5</sup>	Middle range <sup>5</sup>	
				First quartile	Third quartile			First quartile	Third quartile
<b>Systems analysts</b>									
I .....	11,534	\$2,915	\$2,832	\$2,582	\$3,165	\$34,976	\$33,986	\$30,988	\$37,985
II .....	20,059	3,410	3,358	3,076	3,696	40,920	40,297	36,906	44,353
III .....	13,622	4,057	4,014	3,687	4,373	48,689	48,169	44,238	52,479
IV .....	4,895	4,786	4,712	4,360	5,170	57,437	56,544	52,320	62,040
V .....	744	5,776	5,773	5,100	6,342	69,309	69,279	61,200	76,101
<b>Systems analysts managers</b>									
I .....	2,243	4,657	4,679	4,200	5,090	55,883	56,148	50,400	61,076
II .....	1,816	5,252	5,185	4,759	5,744	63,020	62,218	57,105	68,929
III .....	734	6,075	5,900	5,391	6,660	72,905	70,800	64,692	79,920
IV .....	80	7,263	7,309	6,612	7,749	87,154	87,705	79,343	92,991
<b>Chemists</b>									
I .....	2,519	2,399	2,358	2,150	2,589	28,792	28,294	25,800	31,068
II .....	6,764	2,762	2,783	2,499	2,999	33,150	33,391	29,988	35,986
III .....	7,364	3,397	3,374	3,060	3,708	40,758	40,484	36,720	44,490
IV .....	6,957	4,135	4,095	3,750	4,473	49,624	49,136	45,000	53,679
V .....	5,538	4,934	4,913	4,587	5,260	59,203	58,956	55,043	63,120
VI .....	2,108	6,132	6,112	5,664	6,527	73,581	73,345	67,973	78,328
VII .....	469	7,127	7,050	6,581	7,625	85,518	84,600	78,968	91,500
<b>Engineers</b>									
I .....	23,236	2,626	2,625	2,487	2,774	31,512	31,500	29,846	33,287
II .....	53,541	2,967	2,943	2,752	3,164	35,601	35,316	33,024	37,968
III .....	105,047	3,438	3,401	3,130	3,720	41,258	40,808	37,560	44,640
IV .....	126,888	4,101	4,082	3,720	4,450	49,216	48,980	44,640	53,400
V .....	83,056	4,961	4,923	4,520	5,363	59,530	59,076	54,240	64,359
VI .....	39,319	5,896	5,852	5,373	6,361	70,746	70,220	64,475	76,330
VII .....	10,030	6,801	6,695	6,213	7,329	81,608	80,344	74,556	87,948
VIII .....	1,777	7,794	7,531	6,791	8,580	93,526	90,369	81,488	102,956
<b>Registered nurses</b>									
I .....	1,449	2,243	2,249	1,999	2,470	26,915	26,989	23,990	29,638
II .....	3,053	2,628	2,624	2,409	2,843	31,531	31,487	28,909	34,116
<b>Engineering technicians</b>									
I .....	2,843	1,643	1,650	1,501	1,772	19,719	19,800	18,012	21,269
II .....	10,640	1,897	1,874	1,725	2,061	22,763	22,488	20,694	24,729
III .....	20,083	2,248	2,220	2,007	2,441	26,975	26,643	24,085	29,288
IV .....	26,823	2,685	2,673	2,419	2,959	32,222	32,081	29,028	35,513
V .....	13,983	3,089	3,047	2,841	3,325	37,071	36,564	34,089	39,900
<b>Drafters</b>									
II .....	6,362	1,529	1,520	1,378	1,713	18,344	18,240	16,535	20,556
III .....	13,707	1,893	1,848	1,666	2,080	22,715	22,176	19,987	24,958
IV .....	16,437	2,352	2,357	2,107	2,566	28,221	28,286	25,290	30,788
V .....	8,762	2,868	2,838	2,600	3,115	34,421	34,057	31,200	37,385
<b>Computer operators</b>									
I .....	1,548	1,432	1,387	1,253	1,565	17,190	16,649	15,035	18,781
II .....	10,255	1,705	1,662	1,495	1,875	20,461	19,940	17,939	22,500
III .....	8,998	2,112	2,045	1,849	2,313	25,345	24,542	22,192	27,757
IV .....	2,668	2,488	2,427	2,216	2,691	29,860	29,128	26,589	32,292
<b>Photographers</b>									
II .....	268	2,159	2,129	1,898	2,340	25,910	25,553	22,774	28,078

See footnotes at end of table.

**Table 2. Average salaries: Metropolitan areas—Continued**

(Employment and average salaries in private goods-producing industries for selected professional, administrative, technical, and clerical occupations, metropolitan areas,<sup>1</sup> United States, except Alaska and Hawaii, March 1990)

Occupation and level <sup>2</sup>	Number of employees <sup>3</sup>	Monthly salaries <sup>4</sup>				Annual salaries <sup>4</sup>			
		Mean <sup>5</sup>	Median <sup>5</sup>	Middle range <sup>5</sup>		Mean <sup>5</sup>	Median <sup>5</sup>	Middle range <sup>5</sup>	
				First quartile	Third quartile			First quartile	Third quartile
Photographers									
III .....	607	\$2,526	\$2,516	\$2,327	\$2,747	\$30,314	\$30,188	\$27,922	\$32,965
IV .....	291	3,032	3,043	2,807	3,232	36,385	36,522	33,687	38,784
Accounting clerks									
I .....	5,609	1,257	1,209	1,092	1,374	15,086	14,509	13,104	16,482
II .....	51,966	1,455	1,422	1,252	1,627	17,458	17,070	15,023	19,525
III .....	27,264	1,743	1,708	1,517	1,916	20,919	20,492	18,199	22,991
IV .....	10,373	2,156	2,102	1,863	2,401	25,876	25,218	22,358	28,811
File clerks									
I .....	2,553	1,089	1,050	969	1,199	13,064	12,594	11,622	14,387
Key entry operators									
I .....	18,363	1,361	1,326	1,145	1,494	16,328	15,911	13,735	17,928
II .....	9,989	1,583	1,565	1,356	1,733	18,997	18,782	16,271	20,798
Messengers	3,091	1,266	1,213	1,061	1,398	15,198	14,559	12,731	16,778
Secretaries									
I .....	18,054	1,685	1,620	1,407	1,863	20,215	19,438	16,879	22,350
II .....	29,240	1,852	1,849	1,629	2,073	22,229	22,188	19,542	24,882
III .....	54,384	2,068	2,039	1,799	2,311	24,811	24,468	21,589	27,731
IV .....	24,461	2,360	2,360	2,078	2,633	28,318	28,320	24,935	31,591
V .....	9,760	2,735	2,695	2,376	3,066	32,825	32,338	28,517	36,798
Typists									
I .....	3,927	1,382	1,278	1,121	1,513	16,589	15,339	13,450	18,162
Personnel clerks/assistants									
I .....	853	1,309	1,299	1,208	1,384	15,706	15,594	14,494	16,608
II .....	2,500	1,588	1,557	1,416	1,706	19,053	18,684	16,993	20,475
III .....	2,230	1,878	1,833	1,669	2,054	22,537	21,996	20,029	24,646
IV .....	1,040	2,211	2,212	2,039	2,375	26,530	26,549	24,471	28,498
Purchasing clerks/assistants									
I .....	1,974	1,322	1,276	1,170	1,456	15,859	15,312	14,039	17,471
II .....	6,135	1,618	1,603	1,426	1,795	19,413	19,239	17,117	20,820
III .....	3,042	2,057	2,035	1,820	2,241	24,679	24,420	21,838	26,889
IV .....	590	2,714	2,607	2,330	3,204	32,568	31,281	27,960	38,452
General clerks									
II .....	18,334	1,284	1,256	1,121	1,386	15,405	15,074	13,457	16,633
III .....	25,673	1,555	1,499	1,366	1,707	18,657	17,991	16,393	20,486
IV .....	12,676	1,878	1,836	1,647	2,071	22,541	22,027	19,758	24,849

<sup>1</sup> For the scope of the survey, see table A-1 in appendix A.

<sup>2</sup> Occupational definitions appear in appendix D.

<sup>3</sup> Occupational employment estimates relate to the total in all establishments within the scope of the survey and not to the number actually surveyed. For further explanation, see appendix A.

<sup>4</sup> Excludes premium pay for overtime and for work on weekends, holidays, and late shifts. Also excluded are performance bonuses and lump-sum payments of the type negotiated in the auto and aerospace industries, as well as profit-sharing payments, attendance bonuses, Christmas or year-end bonuses, and other nonproduction bonuses.

Pay increases—but not bonuses—under cost-of-living allowance clauses, and incentive payments, however, are included.

<sup>5</sup> The mean is computed for each job by totaling the earnings of all workers and dividing by the number of workers. The median designates position; one-half of the workers receive the same as or more and one-half receive the same as or less than the rate shown. The middle range is defined by two rates of pay; one-fourth of the workers earn the same as or less than the lower of these rates and one-fourth earn the same as or more than the higher rate.

**Table 3. Average salaries by size of establishment**

(Employment and average salaries in private goods-producing industries for selected professional, administrative, technical, and clerical occupations, three establishment size groupings, United States, except Alaska and Hawaii, March 1980)

Occupation and level <sup>f</sup>	Establishments employing under 1,000 workers <sup>a</sup>			Establishments employing 1,000 to 2,499 workers			Establishments employing 2,500 workers or more <sup>a</sup>		
	Number of employees <sup>b</sup>	Annual salaries <sup>c</sup>		Number of employees <sup>b</sup>	Annual salaries <sup>c</sup>		Number of employees <sup>b</sup>	Annual salaries <sup>c</sup>	
		Mean <sup>d</sup>	Median <sup>e</sup>		Mean <sup>d</sup>	Median <sup>e</sup>		Mean <sup>d</sup>	Median <sup>e</sup>
<b>Accountants</b>									
I .....	5,244	\$23,192	\$23,998	1,966	\$26,208	\$25,790	2,324	\$26,922	\$26,802
II .....	13,426	28,042	27,664	3,977	30,754	30,228	5,366	31,563	31,020
III .....	20,228	35,326	34,986	3,861	36,979	36,563	6,069	37,894	37,500
IV .....	11,017	44,770	44,482	3,162	44,973	44,782	4,208	45,679	44,982
V .....	2,946	57,614	55,680	1,567	56,645	55,744	1,584	55,409	54,030
VI .....	-	-	-	365	73,532	73,171	714	70,337	67,629
<b>Auditors</b>									
II .....	-	-	-	451	32,709	31,987	249	33,122	32,507
III .....	-	-	-	452	39,310	38,784	514	42,332	40,980
<b>Personnel specialists</b>									
I .....	-	-	-	246	27,226	26,989	528	29,555	27,814
II .....	4,534	\$25,987	\$25,478	1,243	30,025	29,520	1,657	33,015	32,352
III .....	10,317	33,077	32,987	1,593	37,168	36,840	3,197	38,986	38,753
IV .....	6,713	43,871	43,483	1,854	46,217	45,282	2,825	46,876	45,982
V .....	1,952	55,969	54,978	798	56,452	55,278	1,188	57,636	56,645
<b>Personnel supervisors/managers</b>									
II .....	766	60,007	57,977	638	61,349	60,848	808	59,126	58,279
III .....	-	-	-	585	75,602	73,488	592	74,712	72,999
<b>Directors of personnel</b>									
III .....	593	\$73,384	\$71,971	224	77,528	77,605	88	77,711	75,000
<b>Attorneys</b>									
III .....	542	58,522	54,978	342	62,631	57,311	457	67,422	67,080
IV .....	374	81,457	81,667	393	82,031	79,968	530	78,694	78,814
<b>Buyers</b>									
I .....	3,051	22,775	22,353	656	24,817	24,790	1,080	26,674	26,136
II .....	11,271	29,125	28,371	2,237	31,341	30,192	4,110	31,314	30,773
III .....	7,568	38,545	37,500	3,881	38,977	38,984	6,331	38,833	37,920
IV .....	-	-	-	815	46,230	45,300	3,360	45,642	44,196

See footnotes at end of table.

**Table 3. Average salaries by size of establishment—Continued**

(Employment and average salaries in private goods-producing industries for selected professional, administrative, technical, and clerical occupations, three establishment size groupings,<sup>1</sup> United States, except Alaska and Hawaii, March 1990)

Occupation and level <sup>2</sup>	Establishments employing under 1,000 workers <sup>3</sup>			Establishments employing 1,000 to 2,499 workers			Establishments employing 2,500 workers or more <sup>4</sup>		
	Number of employees <sup>5</sup>	Annual salaries <sup>6</sup>		Number of employees <sup>5</sup>	Annual salaries <sup>6</sup>		Number of employees <sup>5</sup>	Annual salaries <sup>6</sup>	
		Mean <sup>7</sup>	Median <sup>7</sup>		Mean <sup>7</sup>	Median <sup>7</sup>		Mean <sup>7</sup>	Median <sup>7</sup>
<b>Computer programmers</b>									
I .....	1,151	\$22,997	\$22,400	844	\$27,766	\$28,128	-	-	-
II .....	5,653	27,461	27,000	3,133	31,100	30,996	-	-	-
III .....	5,423	33,714	33,986	3,240	35,565	35,212	2,748	\$34,458	\$34,588
<b>Systems analysts</b>									
I .....	3,942	33,970	32,995	3,685	37,295	36,585	4,825	33,787	33,407
II .....	6,964	40,535	39,994	4,992	42,464	41,597	9,413	40,202	39,864
III .....	2,633	48,709	48,044	3,381	49,140	48,328	8,345	48,435	48,024
IV .....	-	-	-	976	57,414	55,809	3,713	57,156	56,592
<b>Systems analysts managers</b>									
I .....	914	\$55,054	\$55,020	733	56,598	56,577	721	55,377	55,376
II .....	498	62,838	61,076	585	63,881	62,775	809	62,234	62,160
III .....	-	-	-	253	71,308	70,320	479	72,044	70,972
<b>Chemists</b>									
II .....	4,200	\$32,488	\$32,487	1,601	34,341	34,118	1,677	33,855	33,527
III .....	5,202	39,631	39,801	1,448	42,796	42,767	1,783	42,887	42,533
IV .....	4,120	48,699	47,981	1,916	50,752	50,045	1,860	49,959	49,840
V .....	2,692	59,038	58,876	1,240	60,851	59,412	2,506	59,193	59,112
<b>Engineers</b>									
I .....	9,229	30,309	29,988	6,480	32,458	32,508	10,718	31,729	31,512
II .....	18,875	34,586	34,464	14,100	36,660	36,561	26,717	35,285	34,892
III .....	36,160	40,978	40,384	25,106	42,488	42,420	52,623	40,646	40,176
IV .....	36,246	49,473	49,751	30,925	50,841	50,810	67,812	48,327	48,225
V .....	16,908	59,809	58,992	19,674	60,906	60,068	49,876	58,774	58,500
VI .....	6,656	72,338	71,072	11,714	71,037	70,224	22,387	69,938	69,772
VII .....	1,585	85,507	82,778	2,986	80,360	78,840	5,713	81,159	80,288
<b>Registered nurses</b>									
I .....	1,356	24,792	24,600	417	27,830	27,709	380	28,656	28,804
II .....	1,765	30,195	29,721	917	30,692	30,988	1,191	32,147	32,040
<b>Engineering technicians</b>									
I .....	6,199	\$22,000	\$21,891	672	20,438	20,489	970	19,854	20,088
II .....	-	-	-	2,417	23,688	23,513	3,900	22,816	22,611

See footnotes at end of table.

**Table 3. Average salaries by size of establishment—Continued**

(Employment and average salaries in private goods-producing industries for selected professional, administrative, technical, and clerical occupations, three establishment size groupings,<sup>1</sup> United States, except Alaska and Hawaii, March 1990)

Occupation and level <sup>f</sup>	Establishments employing under 1,000 workers <sup>3</sup>			Establishments employing 1,000 to 2,499 workers			Establishments employing 2,500 workers or more <sup>4</sup>		
	Number of employees <sup>5</sup>	Annual salaries <sup>6</sup>		Number of employees <sup>5</sup>	Annual salaries <sup>6</sup>		Number of employees <sup>5</sup>	Annual salaries <sup>6</sup>	
		Mean <sup>7</sup>	Median <sup>7</sup>		Mean <sup>7</sup>	Median <sup>7</sup>		Mean <sup>7</sup>	Median <sup>7</sup>
<b>Engineering technicians—Continued</b>									
III .....	8,795	\$25,986	\$25,690	4,742	\$27,803	\$27,454	8,980	\$27,238	\$27,038
IV .....	9,916	32,333	32,498	4,158	32,517	31,593	15,418	32,120	32,082
V .....	1,795	36,427	36,397	2,562	37,543	36,252	10,003	37,014	36,588
<b>Drafters</b>									
II .....	6,609	17,923	17,993	694	20,082	19,576	751	18,315	17,533
III .....	12,815	22,222	21,838	1,494	24,430	23,934	2,255	22,917	22,462
IV .....	12,432	27,756	27,989	2,217	28,983	28,598	4,455	28,016	27,724
V .....	3,379	33,882	33,708	1,451	33,794	33,600	4,650	34,471	34,234
<b>Computer operators</b>									
I .....	1,186	15,714	15,624	378	16,540	16,320	515	16,590	17,627
II .....	7,898	19,493	19,200	2,205	21,351	20,715	1,816	22,240	21,370
III .....	4,990	24,570	23,918	2,247	25,628	24,916	2,542	26,563	25,686
IV .....				793	28,589	28,332	1,545	30,143	29,400
<b>Accounting clerks</b>									
I .....	5,861	\$14,318	\$13,657	905	15,980	15,494	311	16,769	16,306
III .....	22,862	20,266	19,742	4,922	21,365	21,242	4,210	22,327	21,422
<b>Key entry operators</b>									
I .....	17,488	15,710	15,438	2,161	17,707	16,772	1,171	\$22,034	\$21,157
II .....	7,742	18,298	18,199	1,678	19,923	19,601			
<b>Secretaries</b>									
I .....	9,557	18,429	17,905	5,391	18,755	18,124	5,593	23,332	21,820
II .....	11,644	21,119	20,811	4,917	21,404	20,849	14,579	23,079	23,244
III .....	18,696	22,977	22,735	12,567	24,085	23,667	26,122	26,191	25,801
IV .....	7,475	26,720	26,702	5,066	27,847	27,278	12,730	29,340	29,456
V .....	2,264	30,619	29,752	3,585	32,159	31,483	3,997	34,696	35,064
<b>Personnel clerks/assistants</b>									
II .....	2,252	18,359	17,993	638	20,351	19,966	328	20,520	19,772
III .....	1,697	22,030	21,291	542	23,894	24,540	479	22,625	22,566
IV .....	531	25,821	25,890	248	26,508	27,329	354	27,083	26,752

See footnotes at end of table.



**Table 3. Average salaries by size of establishment—Continued**

(Employment and average salaries in private goods-producing industries for selected professional, administrative, technical, and clerical occupations, three establishment size groupings, United States, except Alaska and Hawaii, March 1990)

Occupation and level <sup>1</sup>	Establishments employing under 1,000 workers <sup>2</sup>		Establishments employing 1,000 to 2,499 workers		Establishments employing 2,500 workers or more <sup>3</sup>				
	Number of employees <sup>4</sup>	Annual salaries <sup>5</sup>		Number of employees <sup>4</sup>	Annual salaries <sup>5</sup>		Number of employees <sup>4</sup>	Annual salaries <sup>5</sup>	
		Mean <sup>7</sup>	Median <sup>7</sup>		Mean <sup>7</sup>	Median <sup>7</sup>		Mean <sup>7</sup>	Median <sup>7</sup>
Purchasing clerks/assistants	6,175	\$18,461	\$18,180	906	\$20,691	\$20,137	781	\$21,555	\$20,892
.....	1,612	24,050	24,001	895	25,329	25,210	897	25,017	24,540
General clerks	15,261	\$14,212	\$14,299	546	13,938	14,039	467	13,253	12,600
.....	16,399	17,298	17,159	2,364	15,592	15,250	5,080	17,214	15,682
.....	5,574	22,002	21,318	5,017	18,541	18,199	8,610	20,306	19,170
.....				3,024	22,748	22,670	5,510	22,384	21,963

<sup>1</sup> For the scope of the survey, see table A-1 in appendix A.

<sup>2</sup> Occupational definitions appear in appendix D.

<sup>3</sup> Includes establishments employing fewer than 50 workers at the time of the survey.

<sup>4</sup> Includes data from some large companies that provide company-wide data not identified by size of establishment.

<sup>5</sup> Occupational employment estimates relate to the total in all establishments within the scope of the survey and not to the number actually surveyed. For further explanation, see appendix A.

<sup>6</sup> Excludes premium pay for overtime and for work on weekends, holidays, and late shifts. Also excluded are performance bonuses and lump-sum payments of the type negotiated in the auto and aerospace industries, as well as profit-sharing payments, attendance bonuses, Christmas or year-end bonuses, and other nonproduction bonuses. Pay increases—but not bonuses—under cost-of-living allowance clauses, and incentive payments, however, are included.

<sup>7</sup> The mean is computed for each job by totaling the earnings of all workers and dividing by the number of workers. The median designates position; one-half of the workers receive the same as or more and one-half receive the same as or less than the rate shown.

NOTE: Dashes indicate no data or that data do not meet publication criteria.

**Table 4. Earnings distribution: Professional and administrative occupations**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Accountants					
	I	II	III	IV	V	VI
Number of employees .....	9,534	22,169	30,158	18,387	6,097	1,349
Average annual salary .....	\$24,723	\$29,307	\$36,055	\$45,013	\$56,792	\$73,097
Total .....	100.0	100.0	100.0	100.0	100.0	100.0
Under \$18,000 .....	1.3	-	( <sup>1</sup> )	-	-	-
\$18,000 and under \$19,000 .....	5.6	-	-	-	-	-
\$19,000 and under \$20,000 .....	4.8	.2	( <sup>1</sup> )	-	-	-
\$20,000 and under \$21,000 .....	5.8	.5	-	-	-	-
\$21,000 and under \$22,000 .....	5.6	.9	-	-	-	-
\$22,000 and under \$23,000 .....	9.2	2.6	( <sup>1</sup> )	-	-	-
\$23,000 and under \$24,000 .....	11.9	4.4	( <sup>1</sup> )	-	-	-
\$24,000 and under \$25,000 .....	12.1	6.6	.7	-	-	-
\$25,000 and under \$26,000 .....	11.2	9.7	.8	( <sup>1</sup> )	-	-
\$26,000 and under \$27,000 .....	7.2	9.7	.5	( <sup>1</sup> )	-	-
\$27,000 and under \$28,000 .....	8.3	11.9	2.1	-	-	-
\$28,000 and under \$29,000 .....	4.4	9.3	3.4	( <sup>1</sup> )	-	-
\$29,000 and under \$30,000 .....	3.5	9.0	4.4	.1	-	-
\$30,000 and under \$31,000 .....	2.9	5.8	5.2	.1	-	-
\$31,000 and under \$32,000 .....	2.6	5.8	6.7	.2	-	-
\$32,000 and under \$33,000 .....	2.0	5.1	5.5	.2	-	-
\$33,000 and under \$34,000 .....	.6	4.1	8.4	1.7	-	-
\$34,000 and under \$35,000 .....	.5	3.3	9.3	.6	( <sup>1</sup> )	-
\$35,000 and under \$36,000 .....	.3	2.9	7.2	2.1	( <sup>1</sup> )	-
\$36,000 and under \$37,000 .....	.1	3.4	7.0	2.5	-	-
\$37,000 and under \$38,000 .....	( <sup>1</sup> )	1.3	7.6	3.5	.1	-
\$38,000 and under \$39,000 .....	.1	.7	5.6	5.0	.4	-
\$39,000 and under \$40,000 .....	-	.5	5.4	4.9	.1	-
\$40,000 and under \$41,000 .....	( <sup>1</sup> )	.5	3.7	4.0	.3	-
\$41,000 and under \$42,000 .....	-	.5	4.3	8.2	.4	-
\$42,000 and under \$43,000 .....	-	.4	2.4	6.2	.5	-
\$43,000 and under \$44,000 .....	-	.3	2.5	7.6	.6	-
\$44,000 and under \$45,000 .....	-	.3	2.3	7.9	1.1	-
\$45,000 and under \$46,000 .....	-	.1	1.2	6.7	2.0	-
\$46,000 and under \$47,000 .....	-	.1	.7	5.6	1.2	-
\$47,000 and under \$48,000 .....	-	.1	.7	5.3	2.3	.1
\$48,000 and under \$49,000 .....	-	( <sup>1</sup> )	.6	5.3	2.8	-
\$49,000 and under \$50,000 .....	-	( <sup>1</sup> )	.3	5.2	4.7	.1
\$50,000 and under \$51,000 .....	-	( <sup>1</sup> )	.2	3.2	9.5	.1
\$51,000 and under \$53,000 .....	-	-	.6	4.4	8.3	1.1
\$53,000 and under \$55,000 .....	-	-	.2	3.2	13.8	2.1
\$55,000 and under \$57,000 .....	-	-	.2	2.1	11.2	2.9
\$57,000 and under \$59,000 .....	-	-	( <sup>1</sup> )	1.5	7.0	4.4
\$59,000 and under \$61,000 .....	-	-	.1	.8	7.2	4.6
\$61,000 and under \$63,000 .....	-	-	( <sup>1</sup> )	.7	6.1	4.3
\$63,000 and under \$65,000 .....	-	-	( <sup>1</sup> )	.4	4.5	5.3
\$65,000 and under \$67,000 .....	-	-	-	.3	3.4	6.2
\$67,000 and under \$69,000 .....	-	-	-	.1	6.8	8.5
\$69,000 and under \$71,000 .....	-	-	-	.3	1.7	4.7
\$71,000 and under \$73,000 .....	-	-	-	( <sup>1</sup> )	1.2	9.0
\$73,000 and under \$75,000 .....	-	-	-	( <sup>1</sup> )	.8	5.3
\$75,000 and under \$77,000 .....	-	-	-	( <sup>1</sup> )	.8	8.5
\$77,000 and under \$79,000 .....	-	-	-	-	.6	5.3
\$79,000 and under \$81,000 .....	-	-	( <sup>1</sup> )	-	.2	5.4
\$81,000 and under \$83,000 .....	-	-	-	-	.1	4.5
\$83,000 and under \$85,000 .....	-	-	-	-	.1	4.2
\$85,000 and under \$87,000 .....	-	-	-	-	( <sup>1</sup> )	1.5
\$87,000 and under \$89,000 .....	-	-	-	-	.1	2.2
\$89,000 and under \$91,000 .....	-	-	-	-	.1	3.2
\$91,000 and under \$93,000 .....	-	-	-	-	( <sup>1</sup> )	1.7
\$93,000 and under \$95,000 .....	-	-	-	-	( <sup>1</sup> )	1.0
\$95,000 and over .....	-	-	-	-	( <sup>1</sup> )	3.8

See footnotes at end of table.

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Chief accountants		
	I	II	III
Number of employees .....	953	1,097	631
Average annual salary .....	\$43,353	\$56,947	\$72,068
Total .....	100.0	100.0	100.0
\$34,000 and under \$35,000 .....	9.2	-	-
\$35,000 and under \$36,000 .....	5.4	-	-
\$36,000 and under \$37,000 .....	-	-	-
\$37,000 and under \$38,000 .....	4.7	-	-
\$38,000 and under \$39,000 .....	2.9	-	-
\$39,000 and under \$40,000 .....	12.4	-	-
\$40,000 and under \$41,000 .....	4.3	.1	-
\$41,000 and under \$42,000 .....	12.3	-	-
\$42,000 and under \$43,000 .....	5.9	-	-
\$43,000 and under \$44,000 .....	3.1	-	-
\$44,000 and under \$45,000 .....	4.1	-	-
\$45,000 and under \$46,000 .....	7.7	4.4	-
\$46,000 and under \$47,000 .....	9.1	2.1	-
\$47,000 and under \$48,000 .....	2.0	10.2	-
\$48,000 and under \$49,000 .....	.2	4.2	-
\$49,000 and under \$50,000 .....	1.5	6.9	-
\$50,000 and under \$51,000 .....	1.4	.9	-
\$51,000 and under \$52,000 .....	.4	3.3	-
\$52,000 and under \$53,000 .....	6.1	2.3	-
\$53,000 and under \$54,000 .....	3.9	3.8	-
\$54,000 and under \$55,000 .....	.1	6.1	-
\$55,000 and under \$57,000 .....	.3	3.9	.2
\$57,000 and under \$59,000 .....	1.7	5.9	3.6
\$59,000 and under \$61,000 .....	-	10.8	.8
\$61,000 and under \$63,000 .....	1.3	10.1	1.0
\$63,000 and under \$65,000 .....	-	16.2	1.4
\$65,000 and under \$67,000 .....	-	3.0	6.5
\$67,000 and under \$69,000 .....	.1	2.6	4.8
\$69,000 and under \$71,000 .....	-	2.1	40.3
\$71,000 and under \$73,000 .....	-	-	14.9
\$73,000 and under \$75,000 .....	-	.2	2.4
\$75,000 and under \$77,000 .....	-	.7	1.7
\$77,000 and under \$79,000 .....	-	-	11.4
\$79,000 and under \$81,000 .....	-	-	4.1
\$81,000 and under \$83,000 .....	-	-	.2
\$83,000 and under \$85,000 .....	-	-	.3
\$85,000 and under \$87,000 .....	-	-	3.0
\$87,000 and under \$89,000 .....	-	.1	.5
\$89,000 and under \$91,000 .....	-	-	1.9
\$91,000 and over .....	-	-	1.0

See footnotes at end of table.

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Auditors			
	I	II	III	IV
Number of employees .....	265	1,424	1,284	581
Average annual salary .....	\$28,622	\$30,708	\$39,751	\$48,999
Total .....	100.0	100.0	100.0	100.0
Under \$23,000 .....	2.6	.4	.1	-
\$23,000 and under \$24,000 .....	6.4	1.7	.1	-
\$24,000 and under \$25,000 .....	4.9	1.5	.1	-
\$25,000 and under \$26,000 .....	6.0	7.6	.1	-
\$26,000 and under \$27,000 .....	8.7	4.8	.2	-
\$27,000 and under \$28,000 .....	6.0	13.8	.2	-
\$28,000 and under \$29,000 .....	22.3	17.5	1.2	-
\$29,000 and under \$30,000 .....	15.8	10.0	1.1	-
\$30,000 and under \$31,000 .....	9.8	6.4	4.1	-
\$31,000 and under \$32,000 .....	3.4	7.0	2.2	-
\$32,000 and under \$33,000 .....	5.3	6.5	6.5	.2
\$33,000 and under \$34,000 .....	4.2	5.1	5.1	.2
\$34,000 and under \$35,000 .....	2.3	3.1	7.2	.7
\$35,000 and under \$36,000 .....	1.5	2.7	4.5	1.0
\$36,000 and under \$37,000 .....	.4	2.5	9.1	1.7
\$37,000 and under \$38,000 .....	-	2.1	5.1	2.9
\$38,000 and under \$39,000 .....	-	1.5	8.3	1.0
\$39,000 and under \$40,000 .....	-	1.1	5.6	2.1
\$40,000 and under \$41,000 .....	-	.6	6.5	7.4
\$41,000 and under \$42,000 .....	-	1.3	4.6	2.9
\$42,000 and under \$43,000 .....	.4	.8	3.7	4.1
\$43,000 and under \$44,000 .....	-	.2	3.1	4.5
\$44,000 and under \$45,000 .....	-	1.0	4.1	3.8
\$45,000 and under \$46,000 .....	-	.3	1.3	4.8
\$46,000 and under \$47,000 .....	-	.1	1.6	7.7
\$47,000 and under \$48,000 .....	-	.2	1.2	3.1
\$48,000 and under \$49,000 .....	-	-	1.2	7.1
\$49,000 and under \$50,000 .....	-	.2	2.9	3.4
\$50,000 and under \$51,000 .....	-	-	2.0	2.8
\$51,000 and under \$52,000 .....	-	-	.6	11.0
\$52,000 and under \$53,000 .....	-	-	1.2	2.2
\$53,000 and under \$54,000 .....	-	-	.5	3.4
\$54,000 and under \$55,000 .....	-	-	.5	1.7
\$55,000 and under \$56,000 .....	-	-	.4	1.9
\$56,000 and under \$57,000 .....	-	-	.5	1.4
\$57,000 and under \$58,000 .....	-	-	.2	2.9
\$58,000 and under \$59,000 .....	-	-	.2	2.2
\$59,000 and under \$60,000 .....	-	-	.3	.2
\$60,000 and under \$61,000 .....	-	-	.4	2.2
\$61,000 and under \$62,000 .....	-	-	.5	1.2
\$62,000 and under \$63,000 .....	-	-	.2	1.0
\$63,000 and under \$64,000 .....	-	-	.2	3.3
\$64,000 and under \$65,000 .....	-	-	.3	1.0
\$65,000 and over .....	-	-	.9	2.8

See footnotes at end of table.

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii, March 1990)

Annual salary	Personnel specialists					
	I	II	III	IV	V	VI
Number of employees .....	1,401	7,434	15,107	11,392	3,938	423
Average annual salary .....	\$26,344	\$28,229	\$34,759	\$44,998	\$56,570	\$71,262
Total .....	100.0	100.0	100.0	100.0	100.0	100.0
Under \$18,000 .....	2.5	.3	-	-	-	-
\$18,000 and under \$19,000 .....	.9	1.1	-	-	-	-
\$19,000 and under \$20,000 .....	7.1	1.1	-	-	-	-
\$20,000 and under \$21,000 .....	6.2	1.2	-	-	-	-
\$21,000 and under \$22,000 .....	4.4	2.5	( <sup>1</sup> )	-	-	-
\$22,000 and under \$23,000 .....	14.3	5.0	( <sup>1</sup> )	-	-	-
\$23,000 and under \$24,000 .....	6.3	10.2	.2	-	-	-
\$24,000 and under \$25,000 .....	4.0	7.6	1.8	-	-	-
\$25,000 and under \$26,000 .....	13.7	13.6	2.1	-	-	-
\$26,000 and under \$27,000 .....	6.3	7.4	1.0	-	-	-
\$27,000 and under \$28,000 .....	8.0	7.3	6.3	( <sup>1</sup> )	-	-
\$28,000 and under \$29,000 .....	2.8	6.3	3.9	-	-	-
\$29,000 and under \$30,000 .....	1.3	6.6	7.5	( <sup>1</sup> )	-	-
\$30,000 and under \$31,000 .....	2.5	5.8	5.0	.5	.1	-
\$31,000 and under \$32,000 .....	4.3	5.4	5.5	.5	-	-
\$32,000 and under \$33,000 .....	1.3	2.6	7.6	.5	-	-
\$33,000 and under \$34,000 .....	1.4	3.4	5.9	1.3	-	-
\$34,000 and under \$35,000 .....	2.0	2.3	11.2	1.5	-	-
\$35,000 and under \$36,000 .....	1.9	1.9	6.4	2.7	-	-
\$36,000 and under \$37,000 .....	1.5	1.6	6.8	2.4	.1	-
\$37,000 and under \$38,000 .....	2.5	1.1	4.0	4.0	.2	-
\$38,000 and under \$39,000 .....	1.0	.8	4.9	2.8	.2	-
\$39,000 and under \$40,000 .....	2.1	1.3	4.4	8.1	.2	-
\$40,000 and under \$41,000 .....	.8	.8	2.4	5.7	.3	-
\$41,000 and under \$42,000 .....	.4	.6	2.6	6.1	1.0	-
\$42,000 and under \$43,000 .....	.6	.4	2.2	5.9	.6	-
\$43,000 and under \$44,000 .....	.2	.4	1.8	6.3	1.0	.7
\$44,000 and under \$45,000 .....	-	.6	1.4	7.4	.8	-
\$45,000 and under \$46,000 .....	-	.2	1.4	6.1	2.6	.5
\$46,000 and under \$47,000 .....	-	.2	.8	6.0	1.6	.2
\$47,000 and under \$48,000 .....	-	.3	1.0	3.8	7.5	-
\$48,000 and under \$50,000 .....	-	.2	.8	9.3	7.7	-
\$50,000 and under \$52,000 .....	-	.1	.5	6.2	7.0	.7
\$52,000 and under \$54,000 .....	-	( <sup>1</sup> )	.2	3.2	9.1	.9
\$54,000 and under \$56,000 .....	-	( <sup>1</sup> )	.2	2.8	14.3	3.8
\$56,000 and under \$58,000 .....	-	( <sup>1</sup> )	.2	3.0	7.3	2.8
\$58,000 and under \$60,000 .....	-	-	.1	1.3	8.1	8.5
\$60,000 and under \$62,000 .....	-	-	( <sup>1</sup> )	1.0	5.3	3.3
\$62,000 and under \$64,000 .....	-	-	( <sup>1</sup> )	.7	6.0	7.8
\$64,000 and under \$66,000 .....	-	-	( <sup>1</sup> )	.3	7.1	6.1
\$66,000 and under \$68,000 .....	-	-	( <sup>1</sup> )	.3	3.1	7.6
\$68,000 and under \$70,000 .....	-	-	( <sup>1</sup> )	.2	2.4	10.9
\$70,000 and under \$72,000 .....	-	-	-	.1	1.5	2.4
\$72,000 and under \$74,000 .....	-	-	-	( <sup>1</sup> )	1.4	3.1
\$74,000 and under \$76,000 .....	-	-	-	.1	.8	12.1
\$76,000 and under \$78,000 .....	-	-	-	( <sup>1</sup> )	1.1	2.6
\$78,000 and under \$80,000 .....	-	-	-	-	.7	2.6
\$80,000 and under \$82,000 .....	-	-	-	-	.5	2.8
\$82,000 and under \$84,000 .....	-	-	-	-	.1	7.6
\$84,000 and under \$86,000 .....	-	-	-	-	.2	3.5
\$86,000 and under \$88,000 .....	-	-	-	-	-	1.4
\$88,000 and under \$90,000 .....	-	-	-	-	( <sup>1</sup> )	.9
\$90,000 and under \$92,000 .....	-	-	-	-	-	.9
\$92,000 and under \$94,000 .....	-	-	-	-	-	1.7
\$94,000 and over .....	-	-	-	-	-	4.5

See footnotes at end of table.

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Personnel supervisors/managers			
	I	II	III	IV
Number of employees .....	1,558	2,212	1,442	352
Average annual salary .....	\$47,085	\$60,072	\$75,501	\$92,676
Total .....	100.0	100.0	100.0	100.0
Under \$32,000 .....	.5	-	-	-
\$32,000 and under \$33,000 .....	.9	( <sup>1</sup> )	-	-
\$33,000 and under \$34,000 .....	2.7	-	-	-
\$34,000 and under \$35,000 .....	2.2	-	-	-
\$35,000 and under \$36,000 .....	.5	-	-	-
\$36,000 and under \$37,000 .....	2.1	.1	-	-
\$37,000 and under \$38,000 .....	2.4	-	-	-
\$38,000 and under \$39,000 .....	1.0	.5	-	-
\$39,000 and under \$40,000 .....	2.6	.2	-	-
\$40,000 and under \$41,000 .....	2.4	.1	.1	-
\$41,000 and under \$42,000 .....	3.6	( <sup>1</sup> )	-	-
\$42,000 and under \$43,000 .....	9.0	.3	-	-
\$43,000 and under \$44,000 .....	4.7	1.2	.2	-
\$44,000 and under \$45,000 .....	3.0	.8	-	-
\$45,000 and under \$46,000 .....	4.2	1.6	-	-
\$46,000 and under \$47,000 .....	3.6	1.2	.3	-
\$47,000 and under \$48,000 .....	7.8	.6	.2	-
\$48,000 and under \$49,000 .....	6.5	2.6	.1	-
\$49,000 and under \$50,000 .....	5.0	1.4	.2	-
\$50,000 and under \$51,000 .....	6.9	2.8	.2	-
\$51,000 and under \$52,000 .....	5.5	5.4	.3	-
\$52,000 and under \$54,000 .....	9.2	5.8	.7	-
\$54,000 and under \$56,000 .....	5.0	10.7	1.0	-
\$56,000 and under \$58,000 .....	5.0	11.7	1.7	.3
\$58,000 and under \$60,000 .....	1.6	9.0	2.2	-
\$60,000 and under \$62,000 .....	1.1	7.5	5.3	-
\$62,000 and under \$64,000 .....	.4	8.7	2.8	.6
\$64,000 and under \$66,000 .....	.4	5.5	8.3	.3
\$66,000 and under \$68,000 .....	-	5.7	4.9	.3
\$68,000 and under \$70,000 .....	-	3.2	5.1	.6
\$70,000 and under \$72,000 .....	-	1.3	6.0	1.1
\$72,000 and under \$74,000 .....	-	2.7	8.0	4.0
\$74,000 and under \$76,000 .....	-	4.0	8.7	6.0
\$76,000 and under \$78,000 .....	.2	1.9	3.3	.9
\$78,000 and under \$80,000 .....	-	1.4	9.6	4.5
\$80,000 and under \$82,000 .....	-	.5	3.7	1.7
\$82,000 and under \$84,000 .....	-	.4	2.6	6.0
\$84,000 and under \$86,000 .....	-	.4	4.2	8.0
\$86,000 and under \$88,000 .....	-	.1	5.3	7.4
\$88,000 and under \$90,000 .....	-	.4	2.8	8.8
\$90,000 and under \$92,000 .....	-	.1	4.1	4.0
\$92,000 and under \$94,000 .....	-	-	1.2	7.7
\$94,000 and under \$96,000 .....	-	.1	2.4	2.6
\$96,000 and under \$98,000 .....	-	.1	1.1	3.4
\$98,000 and under \$100,000 .....	-	-	.3	2.3
\$100,000 and under \$102,000 .....	-	-	.4	7.4
\$102,000 and under \$104,000 .....	-	-	.5	2.0
\$104,000 and under \$106,000 .....	-	-	.6	2.8
\$106,000 and under \$108,000 .....	-	-	-	2.6
\$108,000 and under \$110,000 .....	-	-	.8	4.0
\$110,000 and under \$112,000 .....	-	-	-	1.4
\$112,000 and under \$114,000 .....	-	-	.1	1.7
\$114,000 and under \$116,000 .....	-	-	.1	3.1
\$116,000 and over .....	-	-	.3	4.8

See footnotes at end of table.

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Directors of personnel			
	I	II	III	IV
Number of employees .....	924	1,643	905	260
Average annual salary .....	\$45,032	\$58,385	\$74,831	\$97,381
Total .....	100.0	100.0	100.0	100.0
Under \$31,000 .....	.9	-	-	-
\$31,000 and under \$32,000 .....	3.5	-	-	-
\$32,000 and under \$33,000 .....	-	-	-	-
\$33,000 and under \$34,000 .....	2.6	-	-	-
\$34,000 and under \$35,000 .....	.2	-	-	-
\$35,000 and under \$36,000 .....	-	-	-	-
\$36,000 and under \$37,000 .....	1.3	-	-	-
\$37,000 and under \$38,000 .....	2.2	-	-	-
\$38,000 and under \$39,000 .....	2.9	-	-	-
\$39,000 and under \$40,000 .....	7.9	.2	-	-
\$40,000 and under \$41,000 .....	5.3	-	-	-
\$41,000 and under \$42,000 .....	9.1	-	-	-
\$42,000 and under \$43,000 .....	2.7	1.5	-	-
\$43,000 and under \$44,000 .....	1.5	3.3	-	-
\$44,000 and under \$45,000 .....	16.7	.7	-	-
\$45,000 and under \$46,000 .....	3.8	3.0	-	-
\$46,000 and under \$47,000 .....	5.7	1.0	-	-
\$47,000 and under \$48,000 .....	4.7	.3	-	-
\$48,000 and under \$49,000 .....	4.1	4.0	-	-
\$49,000 and under \$50,000 .....	5.0	2.7	-	-
\$50,000 and under \$51,000 .....	4.4	6.9	-	-
\$51,000 and under \$52,000 .....	2.2	5.1	.2	-
\$52,000 and under \$53,000 .....	1.1	3.2	.3	-
\$53,000 and under \$54,000 .....	2.4	4.3	-	-
\$54,000 and under \$55,000 .....	3.4	2.6	.2	-
\$55,000 and under \$56,000 .....	2.7	2.9	.1	-
\$56,000 and under \$57,000 .....	-	3.2	-	-
\$57,000 and under \$58,000 .....	.4	1.5	-	-
\$58,000 and under \$59,000 .....	1.9	3.7	.1	-
\$59,000 and under \$60,000 .....	-	9.4	2.3	-
\$60,000 and under \$61,000 .....	1.5	3.2	.7	-
\$61,000 and under \$62,000 .....	-	2.5	1.3	-
\$62,000 and under \$63,000 .....	-	2.6	-	-
\$63,000 and under \$64,000 .....	-	6.7	1.3	-
\$64,000 and under \$65,000 .....	-	5.1	12.6	-
\$65,000 and under \$66,000 .....	-	6.5	2.7	-
\$66,000 and under \$67,000 .....	-	3.5	1.4	-
\$67,000 and under \$68,000 .....	-	1.0	9.1	-
\$68,000 and under \$69,000 .....	-	.7	2.4	-
\$69,000 and under \$70,000 .....	-	1.3	2.7	.4
\$70,000 and under \$72,000 .....	-	2.3	9.6	.4
\$72,000 and under \$74,000 .....	-	1.6	12.4	1.9
\$74,000 and under \$76,000 .....	-	1.2	3.3	.4
\$76,000 and under \$78,000 .....	-	.3	5.4	1.9
\$78,000 and under \$80,000 .....	-	1.0	6.0	.8
\$80,000 and under \$82,000 .....	-	.5	2.2	4.6
\$82,000 and under \$84,000 .....	-	-	2.8	7.7
\$84,000 and under \$86,000 .....	-	-	10.3	.8
\$86,000 and under \$88,000 .....	-	.1	2.4	3.8
\$88,000 and under \$90,000 .....	-	-	1.8	11.2
\$90,000 and under \$92,000 .....	-	-	1.7	2.3
\$92,000 and under \$94,000 .....	-	-	2.0	2.7
\$94,000 and under \$96,000 .....	-	-	.4	6.5
\$96,000 and under \$98,000 .....	-	.3	.3	8.8
\$98,000 and under \$100,000 .....	-	-	-	4.2
\$100,000 and under \$102,000 .....	-	-	-	5.8

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii, March 1990)

Annual salary	Directors of personnel			
	I	II	III	IV
\$102,000 and under \$104,000 .....	-	-	-	6.9
\$104,000 and under \$106,000 .....	-	0.4	-	4.2
\$106,000 and under \$108,000 .....	-	-	-	7.3
\$108,000 and under \$110,000 .....	-	-	-	4.2
\$110,000 and under \$112,000 .....	-	-	-	-
\$112,000 and under \$114,000 .....	-	-	-	5.4
\$114,000 and under \$116,000 .....	-	-	-	2.3
\$116,000 and under \$118,000 .....	-	-	0.8	-
\$118,000 and under \$120,000 .....	-	-	.1	1.9
\$120,000 and over .....	-	-	1.1	3.1

See footnotes at end of table.



**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii, March 1990)

Annual salary	Attorneys					
	I	II	III	IV	V	VI
Number of employees .....	133	616	1,341	1,297	879	375
Average annual salary .....	\$46,760	\$51,560	\$62,603	\$80,502	\$97,060	\$119,670
Total .....	100.0	100.0	100.0	100.0	100.0	100.0
Under \$31,000 .....	1.5	-	-	-	-	-
\$31,000 and under \$32,000 .....	6.8	-	-	-	-	-
\$32,000 and under \$33,000 .....	-	-	-	-	-	-
\$33,000 and under \$34,000 .....	.8	.3	-	-	-	-
\$34,000 and under \$35,000 .....	1.5	.3	-	-	-	-
\$35,000 and under \$36,000 .....	-	-	-	-	-	-
\$36,000 and under \$37,000 .....	5.3	-	-	-	-	-
\$37,000 and under \$38,000 .....	.8	.5	-	-	-	-
\$38,000 and under \$39,000 .....	5.3	1.9	-	-	-	-
\$39,000 and under \$40,000 .....	12.8	.3	-	-	-	-
\$40,000 and under \$41,000 .....	1.5	.3	-	-	-	-
\$41,000 and under \$42,000 .....	-	.8	-	-	-	-
\$42,000 and under \$43,000 .....	2.3	.3	-	-	-	-
\$43,000 and under \$44,000 .....	.8	8.6	.7	-	-	-
\$44,000 and under \$45,000 .....	2.3	1.9	.6	-	-	-
\$45,000 and under \$46,000 .....	1.5	32.8	.4	-	-	-
\$46,000 and under \$47,000 .....	6.8	1.8	4.3	-	-	-
\$47,000 and under \$48,000 .....	4.5	1.9	.6	-	-	-
\$48,000 and under \$49,000 .....	-	2.3	1.0	-	-	-
\$49,000 and under \$50,000 .....	6.8	3.6	1.8	-	-	-
\$50,000 and under \$51,000 .....	1.5	1.1	.6	-	-	-
\$51,000 and under \$52,000 .....	4.5	1.5	1.8	-	-	-
\$52,000 and under \$53,000 .....	1.5	1.3	2.6	-	-	-
\$53,000 and under \$54,000 .....	6.0	1.1	1.0	-	-	-
\$54,000 and under \$55,000 .....	6.8	2.8	14.5	.2	-	-
\$55,000 and under \$56,000 .....	3.8	1.6	7.2	.2	-	-
\$56,000 and under \$58,000 .....	6.0	6.8	10.4	.6	-	-
\$58,000 and under \$60,000 .....	3.8	6.0	2.2	1.8	-	-
\$60,000 and under \$62,000 .....	1.5	3.7	5.4	1.9	.3	-
\$62,000 and under \$64,000 .....	3.8	4.4	5.1	1.7	.7	-
\$64,000 and under \$66,000 .....	-	3.6	5.0	5.1	.5	-
\$66,000 and under \$68,000 .....	-	1.9	6.0	6.4	.5	-
\$68,000 and under \$70,000 .....	-	2.8	4.8	4.4	.3	-
\$70,000 and under \$72,000 .....	-	1.0	3.4	5.2	1.4	-
\$72,000 and under \$74,000 .....	-	1.6	3.1	5.3	1.0	-
\$74,000 and under \$76,000 .....	-	1.0	4.5	5.9	3.3	-
\$76,000 and under \$78,000 .....	-	-	2.8	4.5	1.3	-
\$78,000 and under \$80,000 .....	-	-	3.4	7.5	3.0	.3
\$80,000 and under \$82,000 .....	-	-	1.1	7.3	3.2	-
\$82,000 and under \$84,000 .....	-	-	.9	6.2	4.0	.5
\$84,000 and under \$86,000 .....	-	-	2.0	6.7	4.6	1.1
\$86,000 and under \$88,000 .....	-	-	.5	5.8	4.4	-
\$88,000 and under \$90,000 .....	-	-	.9	3.2	4.6	.3
\$90,000 and under \$92,000 .....	-	-	.4	4.8	8.5	1.9
\$92,000 and under \$94,000 .....	-	-	.2	2.7	4.4	.5
\$94,000 and under \$96,000 .....	-	-	.2	2.1	7.3	1.6
\$96,000 and under \$98,000 .....	-	-	.2	3.1	6.8	3.7
\$98,000 and under \$100,000 .....	-	-	.1	.8	5.1	2.7
\$100,000 and under \$102,000 .....	-	-	-	1.1	2.3	4.0
\$102,000 and under \$104,000 .....	-	-	.2	.9	5.2	2.4
\$104,000 and under \$106,000 .....	-	-	-	.3	3.6	4.5
\$106,000 and under \$108,000 .....	-	-	-	-	1.9	1.1
\$108,000 and under \$110,000 .....	-	-	-	2.9	3.6	9.1
\$110,000 and under \$112,000 .....	-	-	-	.2	2.7	5.1
\$112,000 and under \$114,000 .....	-	-	-	.7	1.9	2.1
\$114,000 and under \$116,000 .....	-	-	-	-	1.7	6.1

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Attorneys					
	I	II	III	IV	V	VI
\$116,000 and under \$118,000 .....	-	-	-	0.3	2.8	1.6
\$118,000 and under \$120,000 .....	-	-	-	.2	1.7	2.9
\$120,000 and under \$122,000 .....	-	-	-	.1	1.4	9.9
\$122,000 and under \$124,000 .....	-	-	-	.2	.8	4.0
\$124,000 and under \$126,000 .....	-	-	-	-	.8	3.5
\$126,000 and under \$128,000 .....	-	-	-	-	1.0	3.5
\$128,000 and under \$130,000 .....	-	-	-	-	.2	1.3
\$130,000 and under \$132,000 .....	-	-	-	-	.9	2.1
\$132,000 and under \$134,000 .....	-	-	-	-	-	3.5
\$134,000 and under \$136,000 .....	-	-	-	-	.5	3.7
\$136,000 and under \$138,000 .....	-	-	-	-	-	4.3
\$138,000 and under \$140,000 .....	-	-	-	-	.2	2.1
\$140,000 and under \$142,000 .....	-	-	-	-	.5	.5
\$142,000 and under \$144,000 .....	-	-	-	-	-	2.1
\$144,000 and under \$146,000 .....	-	-	-	-	-	.5
\$146,000 and under \$148,000 .....	-	-	-	-	.2	.3
\$148,000 and under \$150,000 .....	-	-	-	-	-	1.6
\$150,000 and over .....	-	-	-	-	.8	5.6

See footnotes at end of table.

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Buyers			
	I	II	III	IV
Number of employees .....	4,787	17,618	17,800	4,679
Average annual salary .....	\$23,935	\$29,917	\$38,742	\$45,932
Total .....	100.0	100.0	100.0	100.0
Under \$17,000 .....	1.9	.2	-	-
\$17,000 and under \$18,000 .....	3.3	.2	-	-
\$18,000 and under \$19,000 .....	4.2	.4	-	-
\$19,000 and under \$20,000 .....	8.5	.2	-	-
\$20,000 and under \$21,000 .....	6.2	.2	-	-
\$21,000 and under \$22,000 .....	13.4	2.0	-	-
\$22,000 and under \$23,000 .....	7.1	2.6	-	-
\$23,000 and under \$24,000 .....	7.1	2.8	-	-
\$24,000 and under \$25,000 .....	12.5	6.2	( <sup>9</sup> )	-
\$25,000 and under \$26,000 .....	11.7	5.7	( <sup>9</sup> )	( <sup>9</sup> )
\$26,000 and under \$27,000 .....	6.4	8.5	.2	-
\$27,000 and under \$28,000 .....	6.1	11.1	1.4	-
\$28,000 and under \$29,000 .....	3.1	8.8	1.1	.1
\$29,000 and under \$30,000 .....	1.5	7.6	2.1	( <sup>9</sup> )
\$30,000 and under \$31,000 .....	1.3	7.7	2.5	.1
\$31,000 and under \$32,000 .....	1.2	7.1	5.0	.5
\$32,000 and under \$33,000 .....	.9	5.8	4.9	.6
\$33,000 and under \$34,000 .....	.8	5.1	5.2	1.3
\$34,000 and under \$35,000 .....	1.0	4.6	6.9	1.5
\$35,000 and under \$36,000 .....	.6	3.3	6.7	1.4
\$36,000 and under \$37,000 .....	.3	1.6	6.8	3.0
\$37,000 and under \$38,000 .....	.5	2.0	6.6	4.0
\$38,000 and under \$39,000 .....	.2	1.4	6.1	4.5
\$39,000 and under \$40,000 .....	.1	1.1	6.0	5.9
\$40,000 and under \$41,000 .....	( <sup>9</sup> )	1.3	6.0	5.2
\$41,000 and under \$42,000 .....	-	.5	5.0	5.8
\$42,000 and under \$43,000 .....	.1	.4	5.2	5.0
\$43,000 and under \$44,000 .....	( <sup>9</sup> )	.4	5.2	5.7
\$44,000 and under \$45,000 .....	( <sup>9</sup> )	.2	3.3	5.2
\$45,000 and under \$46,000 .....	-	.4	2.5	8.3
\$46,000 and under \$47,000 .....	-	.2	2.6	5.0
\$47,000 and under \$48,000 .....	-	.1	1.8	3.3
\$48,000 and under \$49,000 .....	-	.1	1.1	6.3
\$49,000 and under \$50,000 .....	-	.1	1.2	3.9
\$50,000 and under \$51,000 .....	-	( <sup>9</sup> )	.9	2.7
\$51,000 and under \$52,000 .....	-	.1	.6	2.8
\$52,000 and under \$53,000 .....	-	.1	.6	2.7
\$53,000 and under \$54,000 .....	-	.1	.4	2.1
\$54,000 and under \$56,000 .....	-	-	1.5	4.0
\$56,000 and under \$58,000 .....	-	-	.1	2.4
\$58,000 and under \$60,000 .....	-	-	.2	1.6
\$60,000 and under \$62,000 .....	-	-	.1	1.3
\$62,000 and under \$64,000 .....	-	-	.1	1.1
\$64,000 and under \$66,000 .....	-	-	.1	.9
\$66,000 and over .....	-	-	( <sup>9</sup> )	2.1

See footnotes at end of table.

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii, March 1990)

Annual salary	Computer programmers		
	I	II	III
Number of employees .....	4,572	15,948	11,411
Average annual salary .....	\$27,861	\$30,584	\$34,425
Total .....	100.0	100.0	100.0
Under \$18,000 .....	2.0	.2	—
\$18,000 and under \$19,000 .....	2.4	.2	—
\$19,000 and under \$20,000 .....	6.3	.5	( <sup>2</sup> )
\$20,000 and under \$21,000 .....	2.3	.6	.1
\$21,000 and under \$22,000 .....	3.4	1.2	.1
\$22,000 and under \$23,000 .....	4.8	1.5	.2
\$23,000 and under \$24,000 .....	3.1	3.1	.4
\$24,000 and under \$25,000 .....	6.5	5.3	1.2
\$25,000 and under \$26,000 .....	5.5	4.3	1.7
\$26,000 and under \$27,000 .....	5.0	8.0	1.9
\$27,000 and under \$28,000 .....	7.5	8.0	3.5
\$28,000 and under \$29,000 .....	5.2	7.2	4.3
\$29,000 and under \$30,000 .....	4.7	7.2	5.2
\$30,000 and under \$31,000 .....	5.9	6.5	5.4
\$31,000 and under \$32,000 .....	13.8	6.0	7.9
\$32,000 and under \$33,000 .....	9.1	6.3	6.3
\$33,000 and under \$34,000 .....	4.0	7.9	9.2
\$34,000 and under \$35,000 .....	2.4	8.0	7.5
\$35,000 and under \$36,000 .....	1.6	5.4	8.7
\$36,000 and under \$37,000 .....	2.1	4.6	7.8
\$37,000 and under \$38,000 .....	.8	3.2	6.8
\$38,000 and under \$39,000 .....	.6	2.2	5.6
\$39,000 and under \$40,000 .....	.4	1.3	5.1
\$40,000 and under \$41,000 .....	.2	.8	3.9
\$41,000 and under \$42,000 .....	.2	.3	2.3
\$42,000 and under \$43,000 .....	.2	.2	1.5
\$43,000 and over .....	.2	.1	3.4

See footnotes at end of table.

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Systems analysts				
	I	II	III	IV	V
Number of employees .....	12,452	21,359	14,359	5,063	776
Average annual salary .....	\$34,883	\$40,838	\$48,651	\$57,512	\$69,520
Total .....	100.0	100.0	100.0	100.0	100.0
Under \$26,000 .....	2.8	( <sup>9</sup> )	-	-	-
\$26,000 and under \$27,000 .....	1.1	.1	-	-	-
\$27,000 and under \$28,000 .....	3.2	.1	-	-	-
\$28,000 and under \$29,000 .....	5.1	.3	-	-	-
\$29,000 and under \$30,000 .....	5.3	.7	-	-	-
\$30,000 and under \$31,000 .....	8.3	1.0	-	-	-
\$31,000 and under \$32,000 .....	9.0	1.6	( <sup>9</sup> )	-	-
\$32,000 and under \$33,000 .....	8.1	2.5	.1	-	-
\$33,000 and under \$34,000 .....	7.9	2.6	.1	-	-
\$34,000 and under \$35,000 .....	6.9	4.8	.2	-	-
\$35,000 and under \$36,000 .....	5.9	5.3	.4	-	-
\$36,000 and under \$37,000 .....	6.4	7.5	.7	-	-
\$37,000 and under \$38,000 .....	6.0	7.1	1.2	( <sup>9</sup> )	-
\$38,000 and under \$39,000 .....	3.6	7.1	1.7	.1	-
\$39,000 and under \$40,000 .....	4.4	7.5	2.6	.1	-
\$40,000 and under \$41,000 .....	2.8	8.1	3.1	.2	-
\$41,000 and under \$42,000 .....	1.2	5.9	3.8	.2	-
\$42,000 and under \$43,000 .....	1.6	6.2	4.7	.7	-
\$43,000 and under \$44,000 .....	1.8	5.5	5.4	.5	-
\$44,000 and under \$45,000 .....	1.6	5.1	6.0	1.0	-
\$45,000 and under \$46,000 .....	2.3	3.9	6.0	1.3	-
\$46,000 and under \$47,000 .....	1.2	3.3	6.3	1.7	-
\$47,000 and under \$48,000 .....	1.3	2.5	6.3	2.5	-
\$48,000 and under \$49,000 .....	.9	2.5	7.0	2.4	-
\$49,000 and under \$50,000 .....	.4	1.8	5.9	3.4	-
\$50,000 and under \$51,000 .....	.2	1.4	5.9	4.1	-
\$51,000 and under \$52,000 .....	.2	1.4	4.9	5.1	.5
\$52,000 and under \$53,000 .....	.1	1.3	5.2	5.1	2.1
\$53,000 and under \$54,000 .....	.1	.8	4.1	3.9	1.8
\$54,000 and under \$55,000 .....	.1	.7	3.3	6.3	2.1
\$55,000 and under \$56,000 .....	( <sup>9</sup> )	.2	2.5	7.3	1.9
\$56,000 and under \$57,000 .....	( <sup>9</sup> )	.3	2.4	6.4	2.6
\$57,000 and under \$58,000 .....	( <sup>9</sup> )	.2	2.1	5.0	2.6
\$58,000 and under \$59,000 .....	( <sup>9</sup> )	.1	1.8	5.4	4.1
\$59,000 and under \$60,000 .....	-	.1	1.2	3.6	3.2
\$60,000 and under \$62,000 .....	-	.2	1.7	8.0	6.1
\$62,000 and under \$64,000 .....	-	.1	1.0	7.4	3.2
\$64,000 and under \$66,000 .....	-	( <sup>9</sup> )	.8	5.3	4.6
\$66,000 and under \$68,000 .....	-	-	.5	5.0	8.8
\$68,000 and under \$70,000 .....	-	-	.6	2.4	6.3
\$70,000 and under \$72,000 .....	-	-	.1	1.4	7.9
\$72,000 and under \$74,000 .....	-	-	.1	1.6	7.7
\$74,000 and under \$76,000 .....	-	-	( <sup>9</sup> )	1.1	8.6
\$76,000 and under \$78,000 .....	-	-	( <sup>9</sup> )	.4	5.7
\$78,000 and under \$80,000 .....	-	-	-	.6	5.0
\$80,000 and under \$82,000 .....	-	-	-	.1	4.5
\$82,000 and under \$84,000 .....	-	-	-	.1	5.0
\$84,000 and under \$86,000 .....	-	-	-	.2	3.6
\$86,000 and under \$88,000 .....	-	-	-	-	.8
\$88,000 and under \$90,000 .....	-	-	-	-	.3
\$90,000 and under \$92,000 .....	-	-	-	-	1.0

See footnotes at end of table.

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii, March 1990)

Annual salary	Systems analyst managers			
	I	II	III	IV
Number of employees .....	2,368	1,892	809	92 <sup>2</sup>
Average annual salary .....	\$55,630	\$62,902	\$72,888	\$87,388
Total .....	100.0	100.0	100.0	100.0
Under \$42,000 .....	1.8	.1	-	-
\$42,000 and under \$43,000 .....	3.6	.5	-	-
\$43,000 and under \$44,000 .....	.8	.4	-	-
\$44,000 and under \$45,000 .....	1.4	.3	.4	-
\$45,000 and under \$46,000 .....	3.8	.3	-	-
\$46,000 and under \$47,000 .....	4.3	.7	-	-
\$47,000 and under \$48,000 .....	2.4	.7	-	-
\$48,000 and under \$49,000 .....	3.0	1.5	.2	-
\$49,000 and under \$50,000 .....	4.3	2.0	-	-
\$50,000 and under \$51,000 .....	3.4	2.0	.2	-
\$51,000 and under \$52,000 .....	5.4	2.5	.1	-
\$52,000 and under \$53,000 .....	4.9	2.2	.1	-
\$53,000 and under \$54,000 .....	4.1	2.3	.4	-
\$54,000 and under \$55,000 .....	3.8	3.8	.5	-
\$55,000 and under \$56,000 .....	4.5	2.6	1.7	-
\$56,000 and under \$57,000 .....	4.9	2.6	.5	-
\$57,000 and under \$58,000 .....	6.5	3.5	1.1	-
\$58,000 and under \$59,000 .....	2.5	3.0	2.7	-
\$59,000 and under \$60,000 .....	4.1	6.2	2.2	-
\$60,000 and under \$61,000 .....	6.2	7.3	2.7	-
\$61,000 and under \$62,000 .....	2.9	4.8	2.6	-
\$62,000 and under \$63,000 .....	2.3	6.9	3.5	-
\$63,000 and under \$64,000 .....	4.2	2.4	1.7	-
\$64,000 and under \$65,000 .....	3.4	4.9	3.8	-
\$65,000 and under \$66,000 .....	2.1	3.8	2.6	1.1
\$66,000 and under \$67,000 .....	.7	3.1	4.0	1.1
\$67,000 and under \$68,000 .....	4.6	3.4	3.1	1.1
\$68,000 and under \$69,000 .....	.8	2.8	5.8	-
\$69,000 and under \$70,000 .....	.9	4.0	4.0	1.1
\$70,000 and under \$71,000 .....	.1	2.6	6.1	1.1 <sup>2</sup>
\$71,000 and under \$72,000 .....	.7	2.4	2.5	-
\$72,000 and under \$73,000 .....	.6	2.3	4.1	-
\$73,000 and under \$74,000 .....	.1	2.2	3.1	1.1
\$74,000 and under \$76,000 .....	.7	2.2	5.9	4.3
\$76,000 and under \$78,000 .....	-	2.5	5.1	3.3
\$78,000 and under \$80,000 .....	-	1.2	5.7	10.9
\$80,000 and under \$82,000 .....	-	.9	3.2	8.7
\$82,000 and under \$84,000 .....	-	.4	3.2	6.5
\$84,000 and under \$86,000 .....	-	1.2	2.1	5.4
\$86,000 and under \$88,000 .....	-	.3	1.7	5.4
\$88,000 and under \$90,000 .....	-	1.2	3.5	7.6
\$90,000 and under \$92,000 .....	-	-	3.2	16.3
\$92,000 and under \$94,000 .....	-	-	4.6	6.5
\$94,000 and under \$96,000 .....	-	-	1.1	2.2
\$96,000 and under \$98,000 .....	-	-	.4	4.3
\$98,000 and under \$100,000 .....	-	-	.1	2.2
\$100,000 and under \$102,000 .....	-	-	.2	2.2
\$102,000 and under \$104,000 .....	-	-	.2	2.2
\$104,000 and under \$106,000 .....	-	-	-	2.2
\$106,000 and over .....	-	-	-	3.3

See footnotes at end of table.

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii, March 1990)

Annual salary	Chemists						
	I	II	III	IV	V	VI	VII
Number of employees .....	2,686	7,478	8,433	7,896	6,438	2,538	565
Average annual salary .....	\$28,798	\$33,191	\$40,863	\$49,494	\$59,448	\$73,114	\$85,676
Total .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under \$18,000 .....	1.9	-	-	-	-	-	-
\$18,000 and under \$19,000 .....	.4	-	-	-	-	-	-
\$19,000 and under \$20,000 .....	3.1	-	-	-	-	-	-
\$20,000 and under \$21,000 .....	.3	.1	-	-	-	-	-
\$21,000 and under \$22,000 .....	.6	-	-	-	-	-	-
\$22,000 and under \$23,000 .....	3.2	.5	-	-	-	-	-
\$23,000 and under \$24,000 .....	3.5	.6	-	-	-	-	-
\$24,000 and under \$25,000 .....	6.4	.7	-	-	-	-	-
\$25,000 and under \$26,000 .....	6.0	2.8	-	-	-	-	-
\$26,000 and under \$27,000 .....	10.1	2.3	-	-	-	-	-
\$27,000 and under \$28,000 .....	11.7	7.4	( <sup>1</sup> )	-	-	-	-
\$28,000 and under \$29,000 .....	10.3	6.8	.4	-	-	-	-
\$29,000 and under \$30,000 .....	9.2	5.9	.2	-	-	-	-
\$30,000 and under \$31,000 .....	7.3	4.5	1.0	( <sup>1</sup> )	-	-	-
\$31,000 and under \$32,000 .....	5.1	9.4	3.5	( <sup>1</sup> )	-	-	-
\$32,000 and under \$33,000 .....	5.7	7.4	2.1	-	-	-	-
\$33,000 and under \$34,000 .....	3.5	8.8	3.4	( <sup>1</sup> )	-	-	-
\$34,000 and under \$35,000 .....	2.9	9.0	4.3	.4	-	-	-
\$35,000 and under \$36,000 .....	2.2	9.0	4.9	.5	-	-	-
\$36,000 and under \$37,000 .....	1.6	7.8	5.7	1.0	-	-	-
\$37,000 and under \$38,000 .....	.5	4.8	6.9	.5	-	-	-
\$38,000 and under \$39,000 .....	.7	3.0	4.7	.9	-	-	-
\$39,000 and under \$40,000 .....	-	2.7	8.5	2.1	-	-	-
\$40,000 and under \$41,000 .....	.1	1.7	8.1	1.6	( <sup>1</sup> )	-	-
\$41,000 and under \$42,000 .....	( <sup>1</sup> )	1.4	5.4	4.0	-	-	-
\$42,000 and under \$43,000 .....	2.0	1.2	7.7	3.8	.6	-	-
\$43,000 and under \$44,000 .....	-	1.1	5.4	2.8	.6	-	-
\$44,000 and under \$45,000 .....	-	.4	5.7	7.3	.5	-	-
\$45,000 and under \$46,000 .....	1.1	.3	4.0	5.7	.6	-	-
\$46,000 and under \$47,000 .....	.2	.1	4.4	8.1	1.1	-	-
\$47,000 and under \$48,000 .....	.4	.2	2.7	5.0	.9	-	-
\$48,000 and under \$49,000 .....	-	.2	4.3	5.9	.9	-	-
\$49,000 and under \$50,000 .....	-	( <sup>1</sup> )	2.6	7.0	2.1	-	-
\$50,000 and under \$51,000 .....	-	( <sup>1</sup> )	1.3	4.6	1.4	-	-
\$51,000 and under \$52,000 .....	-	-	1.0	5.5	2.6	.1	-
\$52,000 and under \$53,000 .....	-	( <sup>1</sup> )	.7	5.1	5.5	.7	-
\$53,000 and under \$54,000 .....	-	-	.6	4.5	2.9	.3	-
\$54,000 and under \$55,000 .....	-	-	.3	3.7	3.8	.2	-
\$55,000 and under \$56,000 .....	-	-	.1	5.4	5.9	.7	-
\$56,000 and under \$57,000 .....	-	-	.2	2.2	5.1	.2	-
\$57,000 and under \$58,000 .....	-	-	.1	2.7	7.8	.6	-
\$58,000 and under \$59,000 .....	-	-	-	2.3	7.2	.5	-
\$59,000 and under \$60,000 .....	-	-	-	1.0	6.2	2.7	-
\$60,000 and under \$61,000 .....	-	-	-	2.8	6.0	1.3	-
\$61,000 and under \$62,000 .....	-	-	-	.7	4.4	1.5	-
\$62,000 and under \$63,000 .....	-	-	.1	.6	6.7	1.7	-
\$63,000 and under \$64,000 .....	-	-	-	.6	5.0	1.3	-
\$64,000 and under \$66,000 .....	-	-	-	.8	6.1	7.7	-
\$66,000 and under \$68,000 .....	-	-	-	.2	6.7	8.2	3.4
\$68,000 and under \$70,000 .....	-	-	-	.2	4.9	11.0	1.6
\$70,000 and under \$72,000 .....	-	-	-	.2	1.6	7.5	.5
\$72,000 and under \$74,000 .....	-	-	-	( <sup>1</sup> )	1.4	9.2	1.8
\$74,000 and under \$76,000 .....	-	-	-	( <sup>1</sup> )	.7	9.3	5.3
\$76,000 and under \$78,000 .....	-	-	-	( <sup>1</sup> )	.2	11.0	6.7
\$78,000 and under \$80,000 .....	-	-	-	-	.1	5.6	7.1
\$80,000 and under \$82,000 .....	-	-	-	( <sup>1</sup> )	.1	4.8	6.2

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii, March 1990)

Annual salary	Chemists						
	I	II	III	IV	V	VI	VII
\$82,000 and under \$84,000 .....	-	-	-	-	(0)	3.4	8.5
\$84,000 and under \$86,000 .....	-	-	-	-	0.1	3.1	13.3
\$86,000 and under \$88,000 .....	-	-	-	-	(0)	2.4	13.6
\$88,000 and under \$90,000 .....	-	-	-	-	.1	1.3	4.6
\$90,000 and under \$92,000 .....	-	-	-	-	(0)	1.5	6.9
\$92,000 and under \$94,000 .....	-	-	-	-	.1	.9	7.8
\$94,000 and under \$96,000 .....	-	-	-	-	.1	.4	1.4
\$96,000 and under \$98,000 .....	-	-	-	-	-	.2	3.0
\$98,000 and under \$100,000 .....	-	-	-	-	.1	.2	2.1
\$100,000 and under \$102,000 .....	-	-	-	-	-	.1	.4
\$102,000 and under \$104,000 .....	-	-	-	-	-	.2	1.4
\$104,000 and under \$106,000 .....	-	-	-	-	-	.2	.5
\$106,000 and under \$108,000 .....	-	-	-	-	-	-	-
\$108,000 and under \$110,000 .....	-	-	-	-	(0)	-	.4
\$110,000 and under \$112,000 .....	-	-	-	-	-	.1	1.1
\$112,000 and under \$114,000 .....	-	-	-	-	-	-	.7
\$114,000 and under \$116,000 .....	-	-	-	-	(0)	-	1.4
\$116,000 and over .....	-	-	-	-	-	-	.4

See footnotes at end of table.



**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Engineers							
	I	II	III	IV	V	VI	VII	VIII
Number of employees .....	26,427	59,692	113,889	134,983	86,458	40,757	10,284	1,839
Average annual salary .....	\$31,412	\$35,389	\$41,157	\$49,195	\$59,462	\$70,646	\$81,597	\$93,514
Total .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under \$23,000 .....	1.2	.1	( <sup>1</sup> )	( <sup>1</sup> )	-	-	-	-
\$23,000 and under \$24,000 .....	.2	( <sup>1</sup> )	( <sup>1</sup> )	-	-	-	-	-
\$24,000 and under \$25,000 .....	1.7	.3	( <sup>1</sup> )	-	-	-	-	-
\$25,000 and under \$26,000 .....	1.7	.3	( <sup>1</sup> )	-	-	-	-	-
\$26,000 and under \$27,000 .....	3.1	.5	( <sup>1</sup> )	( <sup>1</sup> )	-	-	-	-
\$27,000 and under \$28,000 .....	4.9	1.0	.1	( <sup>1</sup> )	-	-	-	-
\$28,000 and under \$29,000 .....	8.2	1.4	.2	-	-	-	-	-
\$29,000 and under \$30,000 .....	9.3	2.9	.4	( <sup>1</sup> )	-	-	-	-
\$30,000 and under \$31,000 .....	12.9	4.4	.6	( <sup>1</sup> )	-	-	-	-
\$31,000 and under \$32,000 .....	15.7	6.8	.8	( <sup>1</sup> )	-	-	-	-
\$32,000 and under \$33,000 .....	13.5	8.8	1.7	.1	-	-	-	-
\$33,000 and under \$34,000 .....	8.8	11.3	3.1	.2	( <sup>1</sup> )	-	-	-
\$34,000 and under \$35,000 .....	7.4	11.2	4.0	.3	( <sup>1</sup> )	-	-	-
\$35,000 and under \$36,000 .....	4.6	9.7	4.9	.5	( <sup>1</sup> )	-	-	-
\$36,000 and under \$37,000 .....	2.8	9.8	6.0	1.0	( <sup>1</sup> )	-	-	-
\$37,000 and under \$38,000 .....	1.6	8.5	7.5	1.3	( <sup>1</sup> )	-	-	-
\$38,000 and under \$39,000 .....	1.1	7.1	7.9	1.8	( <sup>1</sup> )	-	-	-
\$39,000 and under \$40,000 .....	.5	5.0	7.9	2.2	.1	-	-	-
\$40,000 and under \$41,000 .....	.4	4.1	7.7	2.6	.1	-	-	-
\$41,000 and under \$42,000 .....	.2	2.1	6.5	3.2	.2	-	-	-
\$42,000 and under \$43,000 .....	.1	1.5	6.4	4.2	.4	( <sup>1</sup> )	-	-
\$43,000 and under \$44,000 .....	( <sup>1</sup> )	1.1	5.9	4.6	.6	( <sup>1</sup> )	-	-
\$44,000 and under \$45,000 .....	.1	1.0	5.9	5.2	.7	( <sup>1</sup> )	-	-
\$45,000 and under \$46,000 .....	( <sup>1</sup> )	.3	5.7	5.4	.9	( <sup>1</sup> )	-	-
\$46,000 and under \$47,000 .....	-	.3	3.9	6.1	1.2	.1	-	-
\$47,000 and under \$48,000 .....	-	.2	2.8	5.7	1.6	.1	-	-
\$48,000 and under \$49,000 .....	-	.1	2.7	6.1	2.0	.2	-	-
\$49,000 and under \$50,000 .....	-	.1	2.1	6.6	2.4	.2	-	-
\$50,000 and under \$51,000 .....	-	.1	1.4	5.7	2.8	.3	( <sup>1</sup> )	-
\$51,000 and under \$52,000 .....	-	( <sup>1</sup> )	1.1	5.6	3.2	.4	-	-
\$52,000 and under \$53,000 .....	-	( <sup>1</sup> )	.8	5.1	3.8	.5	-	-
\$53,000 and under \$54,000 .....	-	( <sup>1</sup> )	.6	4.5	4.5	.6	( <sup>1</sup> )	-
\$54,000 and under \$55,000 .....	-	( <sup>1</sup> )	.5	3.9	4.6	.9	-	-
\$55,000 and under \$56,000 .....	-	( <sup>1</sup> )	.3	3.4	4.8	1.2	.1	-
\$56,000 and under \$58,000 .....	-	( <sup>1</sup> )	.3	5.2	11.0	3.0	.3	-
\$58,000 and under \$60,000 .....	-	-	.1	3.7	10.3	3.9	.6	-
\$60,000 and under \$62,000 .....	-	-	.1	2.4	10.0	5.6	.9	-
\$62,000 and under \$64,000 .....	-	-	( <sup>1</sup> )	1.4	8.6	6.8	1.5	.7
\$64,000 and under \$66,000 .....	-	-	( <sup>1</sup> )	.9	7.1	8.5	1.9	1.0
\$66,000 and under \$68,000 .....	-	-	( <sup>1</sup> )	.5	6.2	8.2	3.7	.9
\$68,000 and under \$70,000 .....	-	-	-	.3	4.2	8.8	4.5	2.4
\$70,000 and under \$72,000 .....	-	-	-	.1	2.7	9.2	4.9	1.4
\$72,000 and under \$74,000 .....	-	-	-	( <sup>1</sup> )	2.0	8.4	5.5	2.4
\$74,000 and under \$76,000 .....	-	-	-	( <sup>1</sup> )	1.3	7.3	8.1	2.7
\$76,000 and under \$78,000 .....	-	-	-	( <sup>1</sup> )	1.0	6.4	8.0	4.4
\$78,000 and under \$80,000 .....	-	-	-	( <sup>1</sup> )	.5	5.3	8.9	3.9
\$80,000 and under \$82,000 .....	-	-	-	( <sup>1</sup> )	.4	3.7	8.3	6.4
\$82,000 and under \$84,000 .....	-	-	-	-	.3	3.1	7.1	5.1
\$84,000 and under \$86,000 .....	-	-	-	-	.2	2.1	5.8	7.9
\$86,000 and under \$88,000 .....	-	-	-	( <sup>1</sup> )	.1	1.4	5.4	5.9
\$88,000 and under \$90,000 .....	-	-	-	-	.1	1.1	5.7	4.2
\$90,000 and under \$92,000 .....	-	-	-	-	( <sup>1</sup> )	.7	3.4	4.0
\$92,000 and under \$94,000 .....	-	-	-	-	( <sup>1</sup> )	.7	2.8	5.2
\$94,000 and under \$96,000 .....	-	-	-	-	( <sup>1</sup> )	.5	2.9	4.7
\$96,000 and under \$98,000 .....	-	-	-	-	( <sup>1</sup> )	.3	1.7	3.6
\$98,000 and under \$100,000 .....	-	-	-	-	-	.4	1.6	3.6

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Engineers							
	I	II	III	IV	V	VI	VII	VIII
\$100,000 and under \$102,000 .....	-	-	-	-	( <sup>o</sup> )	0.1	1.0	3.4
\$102,000 and under \$104,000 .....	-	-	-	-	-	.1	1.3	3.2
\$104,000 and under \$106,000 .....	-	-	-	-	( <sup>o</sup> )	( <sup>o</sup> )	1.1	2.6
\$106,000 and under \$108,000 .....	-	-	-	-	( <sup>o</sup> )	( <sup>o</sup> )	.7	1.6
\$108,000 and under \$110,000 .....	-	-	-	-	-	( <sup>o</sup> )	.5	2.4
\$110,000 and under \$112,000 .....	-	-	-	-	-	( <sup>o</sup> )	.7	1.3
\$112,000 and under \$114,000 .....	-	-	-	-	-	( <sup>o</sup> )	.3	1.4
\$114,000 and under \$116,000 .....	-	-	-	-	-	-	.3	1.8
\$116,000 and under \$118,000 .....	-	-	-	-	-	-	.1	1.5
\$118,000 and under \$120,000 .....	-	-	-	-	-	-	.3	1.6
\$120,000 and under \$122,000 .....	-	-	-	-	-	-	( <sup>o</sup> )	1.8
\$122,000 and under \$124,000 .....	-	-	-	-	-	-	.1	.8
\$124,000 and under \$126,000 .....	-	-	-	-	-	-	( <sup>o</sup> )	.8
\$126,000 and under \$128,000 .....	-	-	-	-	-	-	-	1.8
\$128,000 and under \$130,000 .....	-	-	-	-	-	-	-	.7
\$130,000 and over .....	-	-	-	-	-	-	( <sup>o</sup> )	3.0

See footnotes at end of table.

**Table 4. Earnings distribution: Professional and administrative occupations—Continued**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Registered nurses		
	I	II	III
Number of employees .....	2,153	3,873	86
Average annual salary .....	\$26,063	\$30,910	\$39,974
Total .....	100.0	100.0	100.0
Under \$19,000 .....	1.0	.1	-
\$19,000 and under \$20,000 .....	6.6	( <sup>2</sup> )	-
\$20,000 and under \$21,000 .....	6.6	.7	-
\$21,000 and under \$22,000 .....	4.3	1.4	-
\$22,000 and under \$23,000 .....	8.9	1.3	-
\$23,000 and under \$24,000 .....	7.4	2.9	-
\$24,000 and under \$25,000 .....	6.1	3.2	-
\$25,000 and under \$26,000 .....	11.8	3.5	-
\$26,000 and under \$27,000 .....	8.0	4.7	-
\$27,000 and under \$28,000 .....	5.0	6.8	-
\$28,000 and under \$29,000 .....	9.2	6.4	-
\$29,000 and under \$30,000 .....	8.1	12.5	-
\$30,000 and under \$31,000 .....	5.8	7.9	1.2
\$31,000 and under \$32,000 .....	3.0	10.2	4.7
\$32,000 and under \$33,000 .....	3.7	8.2	1.2
\$33,000 and under \$34,000 .....	1.3	6.7	1.2
\$34,000 and under \$35,000 .....	.9	7.3	12.8
\$35,000 and under \$36,000 .....	.4	4.4	7.0
\$36,000 and under \$37,000 .....	1.1	3.8	8.1
\$37,000 and under \$38,000 .....	.7	2.8	2.3
\$38,000 and under \$39,000 .....	( <sup>2</sup> )	1.2	3.5
\$39,000 and under \$40,000 .....	.1	2.0	4.7
\$40,000 and under \$41,000 .....	-	.6	14.0
\$41,000 and under \$42,000 .....	( <sup>2</sup> )	.5	5.8
\$42,000 and under \$43,000 .....	-	.3	1.2
\$43,000 and under \$44,000 .....	-	.1	10.5
\$44,000 and under \$45,000 .....	-	.3	-
\$45,000 and under \$46,000 .....	-	( <sup>2</sup> )	1.2
\$46,000 and under \$47,000 .....	-	-	15.1
\$47,000 and under \$48,000 .....	-	-	-
\$48,000 and under \$49,000 .....	-	-	1.2
\$49,000 and under \$50,000 .....	-	-	3.5
\$50,000 and over .....	-	.1	1.2

<sup>1</sup> For the scope of the survey see table A-1 in appendix A.

<sup>2</sup> Less than 0.05 percent.

NOTE: Because of rounding, sums of individual items may not equal 100. A dash indicates no data.

**Table 5. Earnings distribution: Technical support occupations**

(Percent distribution of employees in selected technical support occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii, March 1990)

Annual salary	Licensed practical nurses
	II
Number of employees .....	691
Average annual salary .....	\$19,826
Total .....	100.0
Under \$15,000 .....	.3
\$15,000 and under \$16,000 .....	7.1
\$16,000 and under \$17,000 .....	20.8
\$17,000 and under \$18,000 .....	7.1
\$18,000 and under \$19,000 .....	11.3
\$19,000 and under \$20,000 .....	3.8
\$20,000 and under \$21,000 .....	15.9
\$21,000 and under \$22,000 .....	9.8
\$22,000 and under \$23,000 .....	6.1
\$23,000 and under \$24,000 .....	2.7
\$24,000 and under \$25,000 .....	5.9
\$25,000 and under \$26,000 .....	5.8
\$26,000 and under \$27,000 .....	1.9
\$27,000 and under \$28,000 .....	1.2
\$28,000 and over .....	.3

See footnotes at end of table.

**Table 5. Earnings distribution: Technical support occupations—Continued**

(Percent distribution of employees in selected technical support occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii, March 1990)

Annual salary	Engineering technicians				
	I	II	III	IV	V
Number of employees .....	2,991	12,506	22,517	28,492	14,380
Average annual salary .....	\$19,674	\$22,581	\$26,868	\$32,245	\$37,036
Total .....	100.0	100.0	100.0	100.0	100.0
Under \$14,000 .....	1.5	.3	-	-	-
\$14,000 and under \$15,000 .....	4.1	.1	-	-	-
\$15,000 and under \$16,000 .....	3.1	.6	( <sup>1</sup> )	-	-
\$16,000 and under \$17,000 .....	5.2	1.5	( <sup>1</sup> )	-	-
\$17,000 and under \$18,000 .....	10.4	4.4	.2	( <sup>1</sup> )	-
\$18,000 and under \$19,000 .....	17.4	5.1	.6	( <sup>1</sup> )	-
\$19,000 and under \$20,000 .....	13.2	7.5	2.9	( <sup>1</sup> )	-
\$20,000 and under \$21,000 .....	16.6	13.4	2.4	.1	-
\$21,000 and under \$22,000 .....	11.6	13.3	4.9	.4	-
\$22,000 and under \$23,000 .....	5.0	13.6	5.4	.9	-
\$23,000 and under \$24,000 .....	3.8	11.1	8.7	1.6	( <sup>1</sup> )
\$24,000 and under \$25,000 .....	4.1	8.8	9.2	2.5	.1
\$25,000 and under \$26,000 .....	2.1	6.5	9.9	2.9	.1
\$26,000 and under \$27,000 .....	.6	4.8	9.8	3.8	.6
\$27,000 and under \$28,000 .....	.5	4.4	9.9	5.6	1.1
\$28,000 and under \$29,000 .....	.2	2.1	8.9	6.4	1.3
\$29,000 and under \$30,000 .....	.1	1.2	7.9	8.0	2.1
\$30,000 and under \$31,000 .....	( <sup>1</sup> )	.5	5.0	9.1	3.2
\$31,000 and under \$32,000 .....	-	.2	3.9	7.4	4.0
\$32,000 and under \$33,000 .....	-	.1	3.0	7.7	5.5
\$33,000 and under \$34,000 .....	-	( <sup>1</sup> )	2.2	9.5	7.1
\$34,000 and under \$35,000 .....	-	.1	1.2	6.0	11.7
\$35,000 and under \$36,000 .....	-	( <sup>1</sup> )	.8	6.7	7.6
\$36,000 and under \$37,000 .....	-	-	1.7	4.7	9.2
\$37,000 and under \$38,000 .....	-	( <sup>1</sup> )	.5	8.0	7.7
\$38,000 and under \$39,000 .....	-	( <sup>1</sup> )	.2	2.3	7.8
\$39,000 and under \$40,000 .....	-	-	.1	2.1	7.3
\$40,000 and under \$41,000 .....	-	( <sup>1</sup> )	( <sup>1</sup> )	1.2	5.6
\$41,000 and under \$42,000 .....	-	.1	.1	1.0	4.7
\$42,000 and under \$43,000 .....	-	( <sup>1</sup> )	( <sup>1</sup> )	.6	3.7
\$43,000 and under \$44,000 .....	-	.1	( <sup>1</sup> )	.4	2.5
\$44,000 and under \$45,000 .....	-	.1	( <sup>1</sup> )	.3	2.1
\$45,000 and under \$46,000 .....	-	-	( <sup>1</sup> )	.1	.9
\$46,000 and under \$47,000 .....	-	.1	.1	.1	1.2
\$47,000 and under \$48,000 .....	-	( <sup>1</sup> )	.1	( <sup>1</sup> )	.7
\$48,000 and under \$49,000 .....	-	-	.1	( <sup>1</sup> )	.4
\$49,000 and under \$50,000 .....	-	-	-	( <sup>1</sup> )	.5
\$50,000 and over .....	-	-	.1	.3	1.4

See footnotes at end of table.

**Table 5. Earnings distribution: Technical support occupations—Continued**

(Percent distribution of employees in selected technical support occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Drafters				
	I	II	III	IV	V
Number of employees .....	1,049	8,054	16,564	19,104	9,480
Average annual salary .....	\$14,382	\$18,146	\$22,516	\$27,959	\$34,158
Total .....	100.0	100.0	100.0	100.0	100.0
Under \$10,000 .....	3.0	-	-	-	-
\$10,000 and under \$11,000 .....	4.7	.2	-	-	-
\$11,000 and under \$12,000 .....	2.9	.3	-	-	-
\$12,000 and under \$13,000 .....	14.9	.6	-	-	-
\$13,000 and under \$14,000 .....	10.5	3.7	.1	-	-
\$14,000 and under \$15,000 .....	37.5	6.5	.6	-	-
\$15,000 and under \$16,000 .....	9.2	12.3	1.8	-	-
\$16,000 and under \$17,000 .....	10.2	9.7	3.9	-	-
\$17,000 and under \$18,000 .....	1.9	16.4	6.8	( <sup>1</sup> )	-
\$18,000 and under \$19,000 .....	1.4	15.0	4.6	.5	( <sup>1</sup> )
\$19,000 and under \$20,000 .....	1.0	9.9	9.4	1.7	-
\$20,000 and under \$21,000 .....	.7	16.4	12.0	2.3	( <sup>1</sup> )
\$21,000 and under \$22,000 .....	1.3	4.0	10.4	2.5	.1
\$22,000 and under \$23,000 .....	.2	2.3	13.3	2.9	.6
\$23,000 and under \$24,000 .....	-	1.1	8.2	4.8	.7
\$24,000 and under \$25,000 .....	.8	.5	7.2	9.1	.8
\$25,000 and under \$26,000 .....	-	.4	6.9	9.5	1.9
\$26,000 and under \$27,000 .....	-	.1	3.4	6.8	1.9
\$27,000 and under \$28,000 .....	-	.1	2.3	10.5	3.2
\$28,000 and under \$29,000 .....	-	.3	1.8	10.3	4.4
\$29,000 and under \$30,000 .....	-	.1	1.6	12.0	5.2
\$30,000 and under \$31,000 .....	-	.1	1.1	6.5	7.2
\$31,000 and under \$32,000 .....	-	( <sup>1</sup> )	1.0	5.1	8.4
\$32,000 and under \$33,000 .....	-	-	1.3	5.9	9.4
\$33,000 and under \$34,000 .....	-	( <sup>1</sup> )	.9	3.1	8.4
\$34,000 and under \$35,000 .....	-	( <sup>1</sup> )	.8	2.0	9.1
\$35,000 and under \$36,000 .....	-	-	.4	1.1	7.7
\$36,000 and under \$37,000 .....	-	-	( <sup>1</sup> )	1.8	5.2
\$37,000 and under \$38,000 .....	-	-	.2	.5	5.4
\$38,000 and under \$39,000 .....	-	-	( <sup>1</sup> )	.5	4.8
\$39,000 and under \$40,000 .....	-	-	.1	.2	3.5
\$40,000 and under \$41,000 .....	-	-	( <sup>1</sup> )	.2	2.7
\$41,000 and under \$42,000 .....	-	-	-	.1	2.5
\$42,000 and under \$43,000 .....	-	-	-	.1	1.6
\$43,000 and under \$44,000 .....	-	-	-	( <sup>1</sup> )	1.6
\$44,000 and over .....	-	-	-	( <sup>1</sup> )	3.7

See footnotes at end of table.

**Table 5. Earnings distribution: Technical support occupations—Continued**

(Percent distribution of employees in selected technical support occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii, March 1990)

Annual salary	Computer operators			
	I	II	III	IV
Number of employees .....	2,079	11,859	9,779	2,830
Average annual salary .....	\$16,577	\$20,220	\$25,331	\$29,797
Total .....	100.0	100.0	100.0	100.0
Under \$11,000 .....	2.4	-	-	-
\$11,000 and under \$12,000 .....	1.7	.5	-	-
\$12,000 and under \$13,000 .....	5.0	.7	-	-
\$13,000 and under \$14,000 .....	8.6	.8	-	-
\$14,000 and under \$15,000 .....	13.5	1.9	.1	-
\$15,000 and under \$16,000 .....	16.6	4.4	-	-
\$16,000 and under \$17,000 .....	16.1	8.4	.3	-
\$17,000 and under \$18,000 .....	10.5	12.1	1.5	-
\$18,000 and under \$19,000 .....	8.3	12.2	1.7	-
\$19,000 and under \$20,000 .....	4.8	13.6	5.0	.1
\$20,000 and under \$21,000 .....	3.5	10.6	5.6	.1
\$21,000 and under \$22,000 .....	2.5	9.1	9.6	1.7
\$22,000 and under \$23,000 .....	2.0	6.5	10.0	1.9
\$23,000 and under \$24,000 .....	1.3	5.2	12.2	4.0
\$24,000 and under \$25,000 .....	.8	3.4	9.3	4.9
\$25,000 and under \$26,000 .....	1.0	3.5	7.8	8.3
\$26,000 and under \$27,000 .....	.8	2.6	7.2	8.6
\$27,000 and under \$28,000 .....	.3	1.5	6.8	9.2
\$28,000 and under \$29,000 .....	-	.6	6.2	9.8
\$29,000 and under \$30,000 .....	.2	1.2	2.8	9.4
\$30,000 and under \$31,000 .....	-	.5	3.0	9.4
\$31,000 and under \$32,000 .....	.1	.1	2.3	6.1
\$32,000 and under \$33,000 .....	-	.1	1.7	5.4
\$33,000 and under \$34,000 .....	-	.1	1.9	4.0
\$34,000 and under \$35,000 .....	-	.1	1.3	2.9
\$35,000 and under \$36,000 .....	-	( <sup>1</sup> )	.6	3.0
\$36,000 and under \$37,000 .....	-	( <sup>1</sup> )	.6	3.1
\$37,000 and under \$38,000 .....	-	.1	1.5	2.0
\$38,000 and under \$39,000 .....	-	( <sup>1</sup> )	.6	1.3
\$39,000 and under \$40,000 .....	-	.2	.2	1.4
\$40,000 and under \$41,000 .....	-	-	.4	1.1
\$41,000 and under \$42,000 .....	-	-	( <sup>1</sup> )	.8
\$42,000 and under \$43,000 .....	-	-	( <sup>1</sup> )	1.0
\$43,000 and over .....	-	-	-	.6

See footnotes at end of table.

**Table 5. Earnings distribution: Technical support occupations—Continued**

(Percent distribution of employees in selected technical support occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Photographers		
	II	III	IV
Number of employees .....	286	646	307
Average annual salary .....	\$25,940	\$30,186	\$36,242
Total .....	100.0	100.0	100.0
Under \$18,000 .....	.3	.2	-
\$18,000 and under \$19,000 .....	1.0	.3	-
\$19,000 and under \$20,000 .....	1.4	.6	-
\$20,000 and under \$21,000 .....	3.1	1.1	-
\$21,000 and under \$22,000 .....	3.5	1.7	-
\$22,000 and under \$23,000 .....	18.2	.6	-
\$23,000 and under \$24,000 .....	10.5	1.9	-
\$24,000 and under \$25,000 .....	7.0	3.1	-
\$25,000 and under \$26,000 .....	14.0	9.8	-
\$26,000 and under \$27,000 .....	3.8	3.9	.7
\$27,000 and under \$28,000 .....	6.3	5.7	1.3
\$28,000 and under \$29,000 .....	9.1	8.7	.7
\$29,000 and under \$30,000 .....	6.3	8.8	2.9
\$30,000 and under \$31,000 .....	4.2	10.8	9.4
\$31,000 and under \$32,000 .....	1.7	9.9	3.3
\$32,000 and under \$33,000 .....	4.9	9.1	3.3
\$33,000 and under \$34,000 .....	1.7	5.9	8.8
\$34,000 and under \$35,000 .....	2.1	5.4	9.8
\$35,000 and under \$36,000 .....	.3	3.7	6.5
\$36,000 and under \$37,000 .....	-	2.0	12.4
\$37,000 and under \$38,000 .....	-	2.8	6.8
\$38,000 and under \$39,000 .....	.3	.5	11.7
\$39,000 and under \$40,000 .....	-	3.1	5.9
\$40,000 and under \$41,000 .....	-	.3	3.3
\$41,000 and under \$42,000 .....	-	-	4.6
\$42,000 and under \$43,000 .....	-	-	2.9
\$43,000 and under \$44,000 .....	-	-	1.6
\$44,000 and under \$45,000 .....	-	-	1.3
\$45,000 and over .....	-	.2	2.9

<sup>1</sup> For the scope of the survey see table A-1 in appendix A.

<sup>2</sup> Less than 0.05 percent.

NOTE: Because of rounding, sums of individual items may not equal 100. A dash indicates no data.



**Table 6. Earnings distribution: Clerical occupations**

(Percent distribution of employees in selected clerical occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii, March 1990)

Annual salary	Accounting clerks			
	I	II	III	IV
Number of employees .....	7,077	61,468	31,994	11,172
Average annual salary .....	\$14,638	\$17,207	\$20,706	\$25,843
Total .....	100.0	100.0	100.0	100.0
Under \$9,000 .....	.4	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
\$9,000 and under \$10,000 .....	1.6	.2	-	-
\$10,000 and under \$11,000 .....	6.0	.9	-	-
\$11,000 and under \$12,000 .....	8.4	2.6	( <sup>1</sup> )	-
\$12,000 and under \$13,000 .....	14.7	4.9	.6	-
\$13,000 and under \$14,000 .....	21.0	7.4	1.6	( <sup>1</sup> )
\$14,000 and under \$15,000 .....	12.1	11.9	2.3	.3
\$15,000 and under \$16,000 .....	10.3	11.8	4.9	.4
\$16,000 and under \$17,000 .....	8.1	13.2	6.4	1.2
\$17,000 and under \$18,000 .....	4.8	10.6	8.6	.9
\$18,000 and under \$19,000 .....	3.3	9.7	10.7	2.5
\$19,000 and under \$20,000 .....	1.8	9.2	12.7	2.6
\$20,000 and under \$21,000 .....	3.3	6.3	10.6	4.7
\$21,000 and under \$22,000 .....	1.2	3.4	9.8	10.0
\$22,000 and under \$23,000 .....	.6	2.8	8.2	8.7
\$23,000 and under \$24,000 .....	.4	1.1	6.8	8.5
\$24,000 and under \$25,000 .....	1.3	1.1	4.7	8.5
\$25,000 and under \$26,000 .....	.2	.8	3.4	8.4
\$26,000 and under \$27,000 .....	.1	.5	2.0	8.1
\$27,000 and under \$28,000 .....	.1	.4	1.3	7.2
\$28,000 and under \$29,000 .....	-	.3	.8	6.3
\$29,000 and under \$30,000 .....	-	.1	1.2	3.2
\$30,000 and under \$31,000 .....	-	.1	1.3	3.3
\$31,000 and under \$32,000 .....	-	.1	.8	3.0
\$32,000 and under \$33,000 .....	-	( <sup>1</sup> )	.4	2.4
\$33,000 and under \$34,000 .....	.1	.4	.3	2.5
\$34,000 and under \$35,000 .....	-	( <sup>1</sup> )	.5	3.2
\$35,000 and under \$36,000 .....	-	-	.1	1.6
\$36,000 and over .....	-	( <sup>1</sup> )	( <sup>1</sup> )	2.4

See footnotes at end of table.

**Table 6. Earnings distribution: Clerical occupations—Continued**

(Percent distribution of employees in selected clerical occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	File clerks
	I
Number of employees .....	2,840
Average annual salary .....	\$12,905
Total .....	100.0
Under \$8,000 .....	( <sup>2</sup> )
\$8,000 and under \$ 9,000 .....	3.8
\$9,000 and under \$10,000 .....	9.7
\$10,000 and under \$11,000 .....	6.2
\$11,000 and under \$12,000 .....	19.8
\$12,000 and under \$13,000 .....	21.1
\$13,000 and under \$14,000 .....	13.0
\$14,000 and under \$15,000 .....	8.9
\$15,000 and under \$16,000 .....	7.6
\$16,000 and under \$17,000 .....	3.4
\$17,000 and under \$18,000 .....	2.1
\$18,000 and under \$19,000 .....	1.4
\$19,000 and under \$20,000 .....	1.0
\$20,000 and over .....	2.0

See footnotes at end of table.

**Table 6. Earnings distribution: Clerical occupations—Continued**

(Percent distribution of employees in selected clerical occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Messengers
Number of employees .....	3,217
Average annual salary .....	\$15,283
Total .....	100.0
Under \$10,000 .....	1.2
\$10,000 and under \$11,000 .....	5.6
\$11,000 and under \$12,000 .....	9.2
\$12,000 and under \$13,000 .....	12.5
\$13,000 and under \$14,000 .....	13.4
\$14,000 and under \$15,000 .....	13.8
\$15,000 and under \$16,000 .....	10.9
\$16,000 and under \$17,000 .....	8.4
\$17,000 and under \$18,000 .....	7.7
\$18,000 and under \$19,000 .....	3.3
\$19,000 and under \$20,000 .....	4.4
\$20,000 and under \$21,000 .....	3.9
\$21,000 and under \$22,000 .....	1.2
\$22,000 and over .....	4.5

See footnotes at end of table.

**Table 6. Earnings distribution: Clerical occupations—Continued**

(Percent distribution of employees in selected clerical occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Key entry operators	
	I	II
Number of employees .....	20,524	10,591
Average annual salary .....	\$16,141	\$18,925
Total .....	100.0	100.0
Under \$10,000 .....	1.1	-
\$10,000 and under \$11,000 .....	1.8	.1
\$11,000 and under \$12,000 .....	4.7	.8
\$12,000 and under \$13,000 .....	10.4	3.4
\$13,000 and under \$14,000 .....	13.1	5.5
\$14,000 and under \$15,000 .....	11.6	7.8
\$15,000 and under \$16,000 .....	10.5	4.7
\$16,000 and under \$17,000 .....	14.4	10.3
\$17,000 and under \$18,000 .....	9.9	9.6
\$18,000 and under \$19,000 .....	5.2	10.5
\$19,000 and under \$20,000 .....	3.1	12.6
\$20,000 and under \$21,000 .....	4.2	12.4
\$21,000 and under \$22,000 .....	2.7	4.9
\$22,000 and under \$23,000 .....	3.9	5.2
\$23,000 and under \$24,000 .....	1.1	3.0
\$24,000 and under \$25,000 .....	1.3	1.9
\$25,000 and under \$26,000 .....	.1	.9
\$26,000 and under \$27,000 .....	.1	1.1
\$27,000 and under \$28,000 .....	( <sup>2</sup> )	1.8
\$28,000 and under \$29,000 .....	( <sup>2</sup> )	1.9
\$29,000 and over .....	.8	1.8

See footnotes at end of table.

**Table 6. Earnings distribution: Clerical occupations—Continued**

(Percent distribution of employees in selected clerical occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii, March 1990)

Annual salary	Secretaries				
	I	II	III	IV	V
Number of employees .....	20,541	31,140	57,385	25,273	9,866
Average annual salary .....	\$19,850	\$22,081	\$24,683	\$28,266	\$32,830
Total .....	100.0	100.0	100.0	100.0	100.0
Under \$12,000 .....	.3	.1	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
\$12,000 and under \$13,000 .....	1.3	.1	( <sup>1</sup> )	( <sup>1</sup> )	-
\$13,000 and under \$14,000 .....	3.4	.6	.2	-	-
\$14,000 and under \$15,000 .....	6.4	1.1	.5	.1	( <sup>1</sup> )
\$15,000 and under \$16,000 .....	8.1	2.3	1.2	( <sup>1</sup> )	-
\$16,000 and under \$17,000 .....	10.0	3.0	1.0	.1	( <sup>1</sup> )
\$17,000 and under \$18,000 .....	11.7	6.4	2.4	.3	.2
\$18,000 and under \$19,000 .....	9.5	7.4	3.7	1.3	.2
\$19,000 and under \$20,000 .....	8.1	9.8	5.7	1.2	.3
\$20,000 and under \$21,000 .....	8.1	9.8	6.2	2.2	.5
\$21,000 and under \$22,000 .....	7.7	9.1	8.4	3.2	.5
\$22,000 and under \$23,000 .....	5.1	9.3	9.2	4.7	1.1
\$23,000 and under \$24,000 .....	5.5	9.7	9.3	5.6	3.3
\$24,000 and under \$25,000 .....	3.3	9.9	8.5	6.8	2.4
\$25,000 and under \$26,000 .....	1.9	8.0	8.3	6.9	3.4
\$26,000 and under \$27,000 .....	1.3	5.5	6.5	8.0	3.9
\$27,000 and under \$28,000 .....	.7	2.4	6.5	7.6	5.3
\$28,000 and under \$29,000 .....	.7	1.8	5.2	8.5	8.3
\$29,000 and under \$30,000 .....	.6	2.2	4.3	8.1	5.2
\$30,000 and under \$31,000 .....	1.6	.5	3.1	6.6	4.2
\$31,000 and under \$32,000 .....	1.9	.3	3.2	6.2	9.3
\$32,000 and under \$33,000 .....	2.5	.1	1.7	6.0	5.8
\$33,000 and under \$34,000 .....	( <sup>1</sup> )	.4	2.0	5.4	4.9
\$34,000 and under \$35,000 .....	.5	.1	1.0	4.8	5.2
\$35,000 and under \$36,000 .....	( <sup>1</sup> )	.1	.8	2.1	7.2
\$36,000 and under \$37,000 .....	-	( <sup>1</sup> )	.6	1.3	5.1
\$37,000 and under \$38,000 .....	-	( <sup>1</sup> )	.3	1.1	5.2
\$38,000 and under \$39,000 .....	-	-	.1	.7	3.2
\$39,000 and under \$40,000 .....	-	-	( <sup>1</sup> )	.6	3.1
\$40,000 and under \$41,000 .....	-	-	( <sup>1</sup> )	.2	2.8
\$41,000 and under \$42,000 .....	-	-	( <sup>1</sup> )	.1	2.0
\$42,000 and under \$43,000 .....	-	-	( <sup>1</sup> )	.1	2.1
\$43,000 and over .....	-	-	( <sup>1</sup> )	.2	5.2

See footnotes at end of table.

**Table 6. Earnings distribution: Clerical occupations—  
Continued**

(Percent distribution of employees in selected clerical occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Typists
	1
Number of employees .....	4,362
Average annual salary .....	\$16,276
Total .....	100.0
Under \$9,000 .....	( <sup>a</sup> )
\$9,000 and under \$10,000 .....	1.2
\$10,000 and under \$11,000 .....	2.1
\$11,000 and under \$12,000 .....	9.4
\$12,000 and under \$13,000 .....	11.2
\$13,000 and under \$14,000 .....	10.8
\$14,000 and under \$15,000 .....	14.0
\$15,000 and under \$16,000 .....	8.8
\$16,000 and under \$17,000 .....	9.4
\$17,000 and under \$18,000 .....	9.1
\$18,000 and under \$19,000 .....	4.2
\$19,000 and under \$20,000 .....	6.2
\$20,000 and under \$21,000 .....	3.8
\$21,000 and under \$22,000 .....	1.9
\$22,000 and under \$23,000 .....	.7
\$23,000 and under \$24,000 .....	.5
\$24,000 and under \$25,000 .....	.1
\$25,000 and under \$26,000 .....	.2
\$26,000 and under \$27,000 .....	-
\$27,000 and under \$28,000 .....	.1
\$28,000 and under \$29,000 .....	.1
\$29,000 and under \$30,000 .....	2.1
\$30,000 and under \$31,000 .....	4.1

See footnotes at end of table.

**Table 6. Earnings distribution: Clerical occupations—Continued**

(Percent distribution of employees in selected clerical occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	Personnel clerks/assistants			
	I	II	III	IV
Number of employees .....	1,207	3,218	2,718	1,133
Average annual salary .....	\$15,368	\$18,974	\$22,507	\$26,366
Total .....	100.0	100.0	100.0	100.0
Under \$11,000 .....	1.4	-	-	-
\$11,000 and under \$12,000 .....	4.9	-	-	-
\$12,000 and under \$13,000 .....	9.5	( <sup>1</sup> )	-	-
\$13,000 and under \$14,000 .....	10.5	.2	.1	-
\$14,000 and under \$15,000 .....	17.1	3.9	.1	-
\$15,000 and under \$16,000 .....	29.2	7.0	-	-
\$16,000 and under \$17,000 .....	9.0	15.4	1.3	-
\$17,000 and under \$18,000 .....	7.2	17.4	4.2	-
\$18,000 and under \$19,000 .....	2.9	15.8	4.5	1.2
\$19,000 and under \$20,000 .....	3.1	10.9	15.6	1.0
\$20,000 and under \$21,000 .....	2.7	8.7	13.5	2.8
\$21,000 and under \$22,000 .....	1.5	7.3	12.5	4.8
\$22,000 and under \$23,000 .....	.2	5.6	7.2	10.0
\$23,000 and under \$24,000 .....	.4	2.3	5.9	6.5
\$24,000 and under \$25,000 .....	.2	1.5	15.2	4.7
\$25,000 and under \$26,000 .....	-	.9	6.8	16.8
\$26,000 and under \$27,000 .....	-	1.1	5.6	7.8
\$27,000 and under \$28,000 .....	-	.6	2.9	15.0
\$28,000 and under \$29,000 .....	-	.4	2.5	12.8
\$29,000 and under \$30,000 .....	-	.2	.8	5.4
\$30,000 and under \$31,000 .....	-	.3	.7	2.6
\$31,000 and under \$32,000 .....	-	.2	.4	2.7
\$32,000 and under \$33,000 .....	-	.1	.2	1.3
\$33,000 and under \$34,000 .....	-	.1	.1	1.1
\$34,000 and under \$35,000 .....	-	-	( <sup>1</sup> )	1.1
\$35,000 and under \$36,000 .....	-	-	-	.6
\$36,000 and under \$37,000 .....	-	-	-	1.1
\$37,000 and over .....	-	-	( <sup>1</sup> )	.6

See footnotes at end of table.

**Table 6. Earnings distribution: Clerical occupations—Continued**

(Percent distribution of employees in selected clerical occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii, March 1990)

Annual salary	Purchasing clerks/assistants			
	I	II	III	IV
Number of employees .....	2,812	7,862	3,404	593
Average annual salary .....	\$15,784	\$19,025	\$24,641	\$32,552
Total .....	100.0	100.0	100.0	100.0
Under \$11,000 .....	.4	-	-	-
\$11,000 and under \$12,000 .....	2.5	-	-	-
\$12,000 and under \$13,000 .....	13.1	1.0	-	-
\$13,000 and under \$14,000 .....	8.2	2.1	-	-
\$14,000 and under \$15,000 .....	19.1	4.5	-	-
\$15,000 and under \$16,000 .....	19.5	6.9	.2	-
\$16,000 and under \$17,000 .....	12.9	12.0	.4	-
\$17,000 and under \$18,000 .....	4.9	14.5	1.4	-
\$18,000 and under \$19,000 .....	10.0	11.2	4.0	.5
\$19,000 and under \$20,000 .....	2.5	16.5	3.9	.5
\$20,000 and under \$21,000 .....	.8	10.6	8.5	1.0
\$21,000 and under \$22,000 .....	1.7	7.6	10.5	.5
\$22,000 and under \$23,000 .....	1.7	5.1	7.2	.8
\$23,000 and under \$24,000 .....	.8	1.8	8.8	.8
\$24,000 and under \$25,000 .....	1.0	1.6	10.8	4.4
\$25,000 and under \$26,000 .....	.4	1.3	12.1	4.4
\$26,000 and under \$27,000 .....	( <sup>9</sup> )	.9	8.1	6.2
\$27,000 and under \$28,000 .....	.3	.3	7.7	6.1
\$28,000 and under \$29,000 .....	( <sup>9</sup> )	.6	4.8	6.2
\$29,000 and under \$30,000 .....	-	.7	2.7	12.3
\$30,000 and under \$31,000 .....	( <sup>9</sup> )	.2	1.9	5.6
\$31,000 and under \$32,000 .....	.1	.2	2.6	5.2
\$32,000 and under \$33,000 .....	-	.2	1.4	8.3
\$33,000 and under \$34,000 .....	-	.1	.8	1.7
\$34,000 and under \$35,000 .....	-	( <sup>9</sup> )	.6	1.7
\$35,000 and under \$36,000 .....	-	( <sup>9</sup> )	.6	1.7
\$36,000 and under \$37,000 .....	-	-	.6	1.5
\$37,000 and under \$38,000 .....	-	-	.4	2.9
\$38,000 and under \$39,000 .....	-	( <sup>9</sup> )	.1	5.2
\$39,000 and under \$40,000 .....	-	-	-	6.1
\$40,000 and under \$41,000 .....	-	-	( <sup>9</sup> )	4.7
\$41,000 and under \$42,000 .....	-	-	( <sup>9</sup> )	3.5
\$42,000 and under \$43,000 .....	-	-	-	4.2
\$43,000 and under \$44,000 .....	-	-	-	2.2
\$44,000 and under \$45,000 .....	-	-	-	1.2
\$45,000 and over .....	-	-	-	.5

See footnotes at end of table.

**Table 6. Earnings distribution: Clerical occupations—Continued**

(Percent distribution of employees in selected clerical occupations by annual salary, private goods-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1990)

Annual salary	General clerks			
	I	II	III	IV
Number of employees .....	4,161	22,705	30,026	14,108
Average annual salary .....	\$11,522	\$15,027	\$18,368	\$22,312
Total .....	100.0	100.0	100.0	100.0
Under \$8,000 .....	.7	-	-	-
\$8,000 and under \$9,000 .....	19.1	-	-	-
\$9,000 and under \$10,000 .....	3.3	1.3	.8	-
\$10,000 and under \$11,000 .....	24.6	4.1	.1	-
\$11,000 and under \$12,000 .....	23.6	6.7	1.2	-
\$12,000 and under \$13,000 .....	6.4	14.3	2.5	( <sup>2</sup> )
\$13,000 and under \$14,000 .....	7.1	10.9	2.3	( <sup>2</sup> )
\$14,000 and under \$15,000 .....	4.9	15.7	5.6	.2
\$15,000 and under \$16,000 .....	5.4	18.9	10.0	.9
\$16,000 and under \$17,000 .....	2.1	12.8	15.8	4.7
\$17,000 and under \$18,000 .....	1.2	4.1	16.3	5.5
\$18,000 and under \$19,000 .....	.5	3.2	12.2	10.7
\$19,000 and under \$20,000 .....	.8	2.2	7.3	9.4
\$20,000 and under \$21,000 .....	.1	1.5	7.3	8.2
\$21,000 and under \$22,000 .....	.1	1.5	5.5	12.6
\$22,000 and under \$23,000 .....	( <sup>2</sup> )	.9	3.7	7.4
\$23,000 and under \$24,000 .....	( <sup>2</sup> )	.4	1.8	10.4
\$24,000 and under \$25,000 .....	( <sup>2</sup> )	.3	2.0	7.9
\$25,000 and under \$26,000 .....	-	.1	1.3	4.9
\$26,000 and under \$27,000 .....	-	.1	1.0	6.9
\$27,000 and under \$28,000 .....	-	.2	.9	2.3
\$28,000 and under \$29,000 .....	( <sup>2</sup> )	.1	.5	2.5
\$29,000 and under \$30,000 .....	-	.3	.3	1.6
\$30,000 and over .....	-	.5	1.6	3.8

<sup>1</sup> For the scope of the survey see table A-1 in appendix A.

<sup>2</sup> Less than 0.05 percent.

NOTE: Because of rounding, sums of individual items may not equal 100. A dash indicates no data.

**Table 7. Employment distribution by occupation and industry**

(Percent distribution of employees in selected professional, administrative, technical, and clerical occupations,<sup>1</sup> by industry division,<sup>2</sup> United States, except Alaska and Hawaii, March 1990)

Occupation	Percent of employees					
	All goods-producing industries	Mining	Construction	All manufacturing	Durable goods manufacturing	Nondurable goods manufacturing
<b>Professional and administrative</b>						
Accountants .....	100	8	5	87	56	30
Chief accountants .....	100	2	11	86	45	41
Auditors .....	100	8	( <sup>3</sup> )	92	53	39
Personnel specialists .....	100	3	1	96	63	33
Personnel supervisors/managers .....	100	3	2	95	62	33
Directors of personnel .....	100	5	2	93	60	33
Attorneys .....	100	17	4	80	47	32
Buyers .....	100	2	3	96	81	15
Computer programmers .....	100	3	2	95	62	33
Systems analysts .....	100	5	1	95	66	28
Systems analysts managers .....	100	6	1	93	53	39
Chemists .....	100	1	( <sup>3</sup> )	99	15	84
Engineers .....	100	3	4	93	83	11
Registered nurses .....	100	1	-	99	58	41
<b>Technical support</b>						
Licensed practical nurses .....	100	-	-	100	37	63
Engineering technicians .....	100	2	( <sup>3</sup> )	97	90	8
Drafters .....	100	2	7	91	83	8
Computer operators .....	100	4	1	95	62	34
Photographers .....	100	3	-	97	81	16
<b>Clerical</b>						
Accounting clerks .....	100	3	9	87	49	39
File clerks .....	100	1	10	90	53	37
Key entry operators .....	100	1	4	95	52	44
Messengers .....	100	2	3	95	30	65
Secretaries .....	100	3	3	93	58	35
Typists .....	100	( <sup>3</sup> )	7	93	54	38
Personnel clerks/assistants .....	100	3	3	94	56	38
Purchasing clerks/assistants .....	100	2	2	96	65	31
General clerks .....	100	8	8	84	55	29

<sup>1</sup> Each occupation is limited to the work levels shown in table 1.

<sup>2</sup> For the scope of the survey, see table A-1 in appendix A.

<sup>3</sup> Less than 0.5 percent.

NOTE: Because of rounding, sums of individual items may not equal totals. A dash indicates no data.



**Table 8. Average salaries in selected manufacturing industries**

(Average annual salary levels<sup>1</sup> for selected professional, administrative, technical, and clerical occupations in selected manufacturing industries, United States, except Alaska and Hawaii, March 1990)

Occupation and level <sup>2</sup>	All manufacturing industries	Durable Goods						Nondurable Goods	
		All durable goods	Fabricated metal products <sup>3</sup>	Industrial and commercial machinery	Electrical and electronic equipment	Transportation equipment	Measuring instruments and related products	All nondurable goods	Chemicals and allied products
<b>Accountants</b>									
I .....	\$24,459	\$24,443	-	\$23,757	\$25,041	\$25,948	\$23,698	\$24,486	\$26,428
II .....	29,084	29,145	\$ 29,003	29,071	28,437	30,793	28,033	28,970	30,184
III .....	35,666	35,582	34,422	35,673	35,212	36,927	34,806	35,836	37,704
IV .....	44,266	44,216	43,912	42,868	45,207	44,069	44,193	44,358	45,948
V .....	55,672	54,929	-	55,016	56,525	53,357	55,111	57,027	58,366
VI .....	70,462	67,844	-	-	-	-	-	-	-
<b>Chief accountants</b>									
II .....	56,021	57,018	-	-	-	-	-	-	-
III .....	72,080	70,729	-	-	-	-	-	-	-
<b>Auditors</b>									
I .....	28,504	-	-	-	-	-	-	-	-
II .....	30,646	30,590	-	-	-	-	-	30,724	-
III .....	38,429	37,894	-	-	-	-	-	39,056	-
IV .....	48,700	46,999	-	-	-	-	-	-	-
<b>Personnel specialists</b>									
I .....	25,892	26,206	-	-	-	-	-	-	-
II .....	28,069	28,445	-	27,809	26,862	30,871	29,205	27,322	32,492
III .....	34,698	34,903	31,280	34,272	33,657	38,406	35,600	34,305	37,325
IV .....	44,827	44,582	43,558	42,922	44,094	45,376	45,640	45,292	48,449
V .....	56,289	55,231	-	53,345	55,155	58,513	55,954	58,108	57,740
VI .....	69,816	69,062	-	-	-	-	-	-	-
<b>Personnel supervisors/managers</b>									
I .....	46,997	47,391	-	-	-	-	-	-	-
II .....	60,287	59,146	-	56,874	59,535	59,749	-	62,625	63,045
III .....	74,494	72,734	-	-	75,289	67,551	-	76,060	-
IV .....	90,822	93,373	-	-	-	-	-	-	-
<b>Directors of personnel</b>									
I .....	\$45,032	\$44,304	-	-	-	-	-	-	-
II .....	57,892	57,626	-	-	-	-	-	-	-
III .....	74,929	74,305	-	-	-	-	-	-	-
IV .....	97,411	93,581	-	-	-	-	-	75,877	-

See footnotes at end of table.

**Table 8. Average salaries in selected manufacturing industries —Continued**

(Average annual salary levels<sup>1</sup> for selected professional, administrative, technical, and clerical occupations in selected manufacturing industries, United States, except Alaska and Hawaii, March 1990)

Occupation and level <sup>2</sup>	All manufacturing industries	Durable Goods						Nondurable Goods		
		All durable goods	Fabricated metal products <sup>3</sup>	Industrial and commercial machinery	Electrical and electronic equipment	Transportation equipment	Measuring instruments and related products	All nondurable goods	Chemicals and allied products	
<b>Attorneys</b>										
.....	\$ 49,988	\$ 49,090	-	-	-	-	-	-	-	-
.....	61,020	58,710	-	-	-	-	-	-	-	-
.....	79,039	75,220	-	-	-	-	\$ 69,008	-	-	-
.....	96,847	91,518	-	-	-	-	-	-	-	-
.....	118,673	111,204	-	-	-	-	-	-	-	-
<b>Buyers</b>										
.....	23,864	23,581	-	\$ 22,574	\$ 23,047	25,465	25,465	-	\$ 24,268	-
.....	29,807	29,337	-	28,712	29,114	29,715	29,715	-	30,054	33,543
.....	38,515	37,876	-	36,141	37,328	39,037	39,037	-	38,341	41,761
.....	45,384	45,033	-	45,158	43,928	44,692	44,692	-	-	-
<b>Computer programmers</b>										
.....	27,869	28,112	-	-	25,194	26,494	26,494	-	24,961	-
.....	30,539	30,968	-	-	29,555	28,322	28,322	-	28,627	31,928
.....	34,300	33,843	-	33,013	34,918	33,964	33,964	-	33,411	36,069
.....	-	-	-	-	41,423	39,097	39,097	-	-	-
<b>Systems analysts</b>										
.....	34,581	33,205	-	32,306	34,380	33,375	33,375	-	34,075	36,539
.....	40,661	39,936	-	38,881	41,473	40,456	40,456	-	39,601	43,167
.....	48,364	48,106	-	47,387	49,602	49,120	49,120	-	47,885	49,381
.....	56,836	56,881	-	-	54,259	57,483	57,483	-	-	-
.....	69,215	-	-	-	-	-	-	-	-	-
<b>Systems analysts managers</b>										
.....	\$55,419	\$54,736	-	\$55,815	-	\$54,292	\$54,292	-	-	-
.....	62,289	60,468	-	-	60,990	59,603	59,603	-	-	-
.....	71,507	71,460	-	-	-	-	-	-	-	-
<b>Chemists</b>										
.....	28,809	-	-	-	-	-	-	-	-	29,308
.....	33,167	33,493	-	-	-	-	-	-	-	33,275
.....	40,864	39,577	-	-	-	-	-	-	-	41,490
.....	49,447	48,909	-	-	-	-	-	-	-	49,423
.....	59,396	59,686	-	-	-	-	-	-	-	59,353
.....	73,087	-	-	-	-	-	-	-	-	70,228
.....	85,430	-	-	-	-	-	-	-	-	83,905

See footnotes at end of table.

**Table 8. Average salaries in selected manufacturing industries—Continued**

(Average annual salary levels<sup>1</sup> for selected professional, administrative, technical, and clerical occupations in selected manufacturing industries, United States, except Alaska and Hawaii, March 1990)

Occupation and level <sup>2</sup>	All manufacturing industries	Durable Goods						Nondurable Goods			
		All durable goods	Fabricated metal products <sup>3</sup>	Industrial and commercial machinery	Electrical and electronic equipment	Transportation equipment	Measuring instruments and related products	All nondurable goods	Chemicals and allied products		
<b>Engineers</b>											
I .....	\$31,298	\$ 30,955	-	\$ 31,127	\$ 30,928	\$ 30,833	\$ 31,586	\$ 33,550	\$ 33,484		
II .....	35,280	35,138	\$ 34,282	35,376	35,236	34,936	35,772	36,390	37,360		
III .....	40,911	40,693	39,618	40,875	41,107	40,311	40,965	43,219	43,952		
IV .....	48,602	48,195	46,306	48,259	48,171	47,955	49,256	51,366	51,502		
V .....	58,777	58,407	-	59,229	57,928	58,246	59,279	62,102	61,584		
VI .....	70,118	69,639	-	71,555	69,061	68,632	71,047	74,362	71,506		
VII .....	80,845	79,719	-	84,697	79,038	78,316	81,677	88,666	-		
VIII .....	91,649	90,385	-	-	-	86,155	-	-	-		
<b>Registered nurses</b>											
I .....	26,035	25,690	-	27,474	26,021	-	-	26,476	-		
II .....	30,881	30,977	-	30,087	30,162	32,523	32,778	30,735	33,312		
<b>Licensed practical nurses</b>											
II .....	19,826	20,650	-	-	-	-	-	-	-		
<b>Engineering technicians</b>											
I .....	19,490	19,471	-	-	19,276	-	-	-	-		
II .....	\$22,412	\$22,364	-	\$22,063	\$22,308	\$22,306	\$22,634	-	-		
III .....	26,702	26,715	-	26,292	26,703	26,262	26,924	-	-		
IV .....	32,113	32,165	-	31,865	31,054	33,258	31,894	-	-		
V .....	36,833	36,803	-	-	35,205	37,408	-	-	-		
<b>Drafters</b>											
I .....	14,167	14,086	-	-	-	-	-	-	-		
II .....	17,815	17,737	-	17,180	17,723	18,157	18,142	-	-		
III .....	22,354	22,108	-	21,526	22,361	22,018	22,772	-	-		
IV .....	27,753	27,496	22,569	26,985	27,553	27,670	28,344	25,499	27,286		
V .....	34,022	33,953	27,455	34,250	33,076	35,035	33,146	29,696	31,511		
<b>Computer operators</b>											
I .....	16,462	16,376	-	16,019	16,302	-	-	-	-		
II .....	20,154	20,429	20,139	20,403	20,942	21,389	21,096	19,752	21,387		
III .....	25,330	25,202	23,534	24,336	25,031	27,666	25,372	25,612	27,275		
IV .....	29,481	29,667	-	-	28,755	32,643	-	28,928	-		
<b>Photographers</b>											
II .....	25,796	25,597	-	-	-	29,151	-	-	-		
III .....	30,267	30,204	-	-	-	-	-	-	-		
IV .....	36,242	36,034	-	-	-	-	-	-	-		

See footnotes at end of table.

**Table 8. Average salaries in selected manufacturing industries —Continued**

(Average annual salary levels<sup>1</sup> for selected professional, administrative, technical, and clerical occupations in selected manufacturing industries, United States, except Alaska and Hawaii, March 1990)

Occupation and level <sup>2</sup>	All manufacturing industries	Durable Goods					Nondurable Goods		
		All durable goods	Fabricated metal products <sup>3</sup>	Industrial and commercial machinery	Electrical and electronic equipment	Transportation equipment	Measuring instruments and related products	All nondurable goods	Chemicals and allied products
Accounting clerks									
I .....	\$14,751	\$14,475	-	\$15,436	-	-	\$15,009	-	-
II .....	17,152	16,878	\$17,120	17,209	\$15,861	-	17,507	-	-
III .....	20,690	20,740	-	20,223	19,541	\$21,415	20,633	\$22,359	-
IV .....	25,715	25,752	-	26,091	28,875	25,729	25,648	26,931	-
File clerks									
I .....	12,986	13,285	-	-	-	-	-	-	-
Key entry operators									
I .....	\$16,104	\$15,852	-	-	-	-	\$16,390	-	-
II .....	18,649	18,934	-	20,141	-	19,072	18,870	20,281	-
Messengers									
I .....	15,311	16,919	-	-	-	-	14,565	15,097	-
Secretaries									
I .....	19,857	-	17,967	24,176	20,235	20,684	18,872	21,235	-
II .....	22,031	21,852	20,322	21,300	21,949	-	22,300	23,596	-
III .....	24,643	24,654	24,124	24,563	26,695	25,163	24,622	25,674	-
IV .....	28,173	28,180	29,605	27,193	28,428	28,327	28,156	30,057	-
V .....	32,729	33,880	36,187	33,220	35,345	33,692	31,514	-	-
Typists									
I .....	-	15,495	-	14,964	-	-	-	-	-
Personnel clerks/assistants									
I .....	15,090	15,260	-	-	-	-	-	-	-
II .....	18,936	18,804	-	19,554	17,644	-	19,091	-	-
III .....	22,372	22,328	23,385	23,290	21,479	-	22,450	-	-
IV .....	26,297	25,588	-	-	-	-	27,449	-	-
Purchasing clerks/assistants									
I .....	15,792	15,665	-	15,615	-	-	-	-	-
II .....	18,965	18,587	17,895	19,250	18,201	19,688	19,703	21,726	-
III .....	24,552	24,208	22,296	24,275	26,487	-	25,149	25,915	-
IV .....	32,440	-	-	-	-	-	-	-	-

See footnotes at end of table.

**Table 8. Average salaries in selected manufacturing industries —Continued**

(Average annual salary levels<sup>1</sup> for selected professional, administrative, technical, and clerical occupations in selected manufacturing industries, United States, except Alaska and Hawaii, March 1990)

Occupation and level <sup>2</sup>	All manufacturing industries	Durable Goods						Nondurable Goods		
		All durable goods	Fabricated metal products <sup>3</sup>	Industrial and commercial machinery	Electrical and electronic equipment	Transportation equipment	Measuring instruments and related products	All nondurable goods	Chemicals and allied products	
I ..... General clerks	-	\$ 12,221	-	-	-	-	-	-	-	-
II .....	\$ 14,904	15,210	-	\$ 14,308	\$ 15,085	\$ 16,685	\$ 15,575	\$ 14,354	-	-
III .....	18,203	18,618	-	16,914	18,667	20,286	17,466	17,418	-	-
IV .....	21,789	21,650	-	-	21,720	21,481	-	22,167	\$ 17,990	-

<sup>1</sup> Mean monthly salaries are computed for each job by totaling the earnings of all workers and dividing by the number of workers.

<sup>2</sup> Occupational definitions appear in appendix D.

<sup>3</sup> This table includes all 2-digit industries in the 1987 Standard Industrial Classification Manual for which 15 or more occupational levels meet publication criteria.

NOTE: Dashes indicate no data or that data do not meet publication criteria.

**Table 9. Average weekly hours by occupation and industry**

(Average standard weekly hours<sup>1</sup> for employees in selected professional, administrative, technical, and clerical occupations<sup>2</sup> by industry division,<sup>3</sup> United States, except Alaska and Hawaii, March 1990)

Occupation	All goods-producing industries	Mining	Construction	All manufacturing	Durable goods manufacturing	Nondurable goods manufacturing
<b>Professional and administrative</b>						
Accountants .....	40.0	40.0	40.0	40.0	40.0	39.5
Chief accountants .....	40.0	-	-	40.0	40.0	40.0
Auditors .....	39.5	-	-	39.5	39.5	39.0
Personnel specialists .....	40.0	40.0	-	40.0	40.0	39.5
Personnel supervisors/managers .....	40.0	-	-	40.0	40.0	39.5
Directors of personnel .....	40.0	-	-	40.0	40.0	39.5
Attorneys .....	39.5	40.0	-	39.5	40.0	39.0
Buyers .....	40.0	40.0	-	40.0	40.0	39.5
Computer programmers .....	40.0	40.0	-	40.0	40.0	39.5
Systems analysts .....	40.0	40.0	-	40.0	40.0	39.5
Systems analysts managers .....	39.5	-	-	39.5	40.0	39.0
Chemists .....	39.5	-	-	39.5	40.0	39.5
Engineers .....	40.0	40.0	40.0	40.0	40.0	40.0
Registered nurses .....	40.0	-	-	40.0	40.0	40.0
<b>Technical support</b>						
Licensed practical nurses .....	40.0	-	-	40.0	-	40.0
Engineering technicians .....	40.0	-	-	40.0	40.0	40.0
Drafters .....	40.0	40.0	-	40.0	40.0	40.0
Computer operators .....	40.0	40.0	-	40.0	40.0	39.5
Photographers .....	40.0	-	-	40.0	-	39.5
<b>Clerical</b>						
Accounting clerks .....	40.0	40.0	40.0	40.0	40.0	40.0
File clerks .....	40.0	-	-	40.0	40.0	40.0
Key entry operators .....	40.0	-	-	40.0	40.0	40.0
Messengers .....	40.0	-	-	40.0	40.0	40.0
Secretaries .....	40.0	40.0	-	40.0	40.0	40.0
Typists .....	40.0	-	-	39.5	40.0	39.5
Personnel clerks/assistants .....	40.0	-	-	40.0	40.0	39.5
Purchasing clerks/assistants .....	40.0	-	-	40.0	40.0	39.5
General clerks .....	40.0	40.0	-	40.0	40.0	40.0

<sup>1</sup> Based on the standard workweek for which employees receive their regular straight-time salary. If standard hours were not available, the standard hours applicable for a majority of the office work force in the establishment were used. The average for each job category was rounded to the nearest half-hour.

<sup>2</sup> Each occupation includes the work levels shown in table 1.

<sup>3</sup> For the scope of the study, see table A-1 in Appendix A.

NOTE: A dash indicates that no workers were found in the occupation-industry designation or that data do not meet publication criteria.

# Appendix A. Scope and Method of Survey

## Scope

The survey covered establishments<sup>1</sup> in the United States, except Alaska and Hawaii, employing at least 50 workers<sup>2</sup> in the mining, construction, and manufacturing industries. (See table A-1.)

Table A-1 shows the estimated number of establishments and employees within the scope of the survey (the universe) and the number within the sample actually studied for each major industry division. Separate estimates are presented for establishments located in metropolitan areas,<sup>3</sup> and for three employment size groupings (under 1,000, 1,000-2,499, and 2,500 workers and over).

Establishments which had 50 employees during the reference period of the information used in compiling the survey universe were included even if they employed fewer than 50 workers at the time of the survey. Establishments found to be outside of the industrial scope of the survey at the time of data collection were excluded.

## Sampling frame

The list of establishments (the sampling frame) from which the sample was selected was developed using data from the most recently available (usually March 1988) unemployment insurance reports for the 48 contiguous States and the District of Columbia. The portion of the sampling frame consisting of establishments employing at least 100 or 250 workers (depending on the industry) was checked for accuracy and completeness, and updating procedures were employed when necessary (including use of results of other BLS programs). Establishments known to be missing were added; out-of-business and out-of-

<sup>1</sup> For this survey, an establishment is an economic unit which produces goods, a central administrative office, or an auxiliary unit providing support services to a company. In manufacturing industries, the establishment is usually at a single physical location. In nonmanufacturing industries, all locations of an individual company in a Metropolitan Statistical Area (MSA) or Primary Metropolitan Statistical Area (PMSA) or nonmetropolitan county are usually considered an establishment.

<sup>2</sup> See appendix B for details on the expansion of the survey begun in 1986.

<sup>3</sup> Metropolitan area data relate to all 327 MSA's and PMSA's within the contiguous 48 States as defined by the U.S. Office of Management and Budget through October 1984.

scope establishments were removed; some units were combined or split to meet the establishment/collection unit definitions; and, for some, address, employment, type of industry, or other information was corrected.

This type of review and refinement was not practical for the large number of small units in the sampling frame (units having fewer than 100 or 250 employees). Instead, the small units selected for the sample were checked prior to data collection to verify location, employment, and industry.

## Survey design

The design for a survey of this nature includes classifying individual establishments into homogeneous groups or strata, determining the size of the sample for each stratum, and selecting the sample of establishments for each stratum.<sup>4</sup>

Establishments within the scope of the 1990 survey were stratified by industry group and by total employment.

The sample size in a stratum was proportionate to the expected number of employees (based on previous surveys) to be matched in professional, administrative, technical, and clerical occupations. Using this allocation method, the larger the expected number of employees in all surveyed occupations for all establishments in a stratum, the larger the sample in that stratum. Also, an upward adjustment was made to the sample size in those strata expected to have specific occupations with relatively high sampling errors in previous surveys. (See the section below on reliability of estimates for a discussion of sampling errors.)

For the small firms, the estimated number of occupational matches in each size class was derived from information on the expected incidence of workers matched in the larger size classes, and an appropriate sample was selected. Supplementary samples were prepared and designated for collection for those strata where the out-of-business and out-of-scope rates were unusually high.

<sup>4</sup> In 1990, a sample was selected systematically to maximize the probability of retaining establishments that had been selected for the 1988 survey. This method is a modification of the method introduced by Nathan Keyfitz in 1951 in his paper titled "Sampling with Probabilities Proportionate to Size: Adjusting for Changes in the Probabilities," *Journal of the American Statistical Association*, No. 46, pp. 105-09.

## Data collection

Data for the survey are obtained primarily by personal visits of the Bureau's field economists to a nationwide sample of establishments. Collection for the 1990 survey was from November 1989 through May 1990 and reflects an average reference month of March 1990.

Employees are classified by occupation and work level using job descriptions (appendix D) prepared jointly by the Bureau of Labor Statistics and the Office of Personnel Management. Descriptions are designed to reflect duties and responsibilities of employees in private industry and to be translatable to specific General Schedule grades applying to Federal employees (appendix E). Thus, definitions of some occupations and work levels are limited to specific elements which can be classified uniformly among establishments. In comparing the actual duties and responsibilities of employees with those enumerated in job descriptions, the Bureau's field economists, with the assistance of company officials, make extensive use of company position descriptions, organization charts, and other personnel records. Salaries reported for survey occupations are those paid to full-time employees for standard work schedules, i.e., the straight-time salary corresponding to the employee's normal work schedule excluding overtime hours and premium pay for work on weekends, holidays, and late shifts. Excluded are performance bonuses and lump-sum payments of the type negotiated in the auto and aerospace industries,<sup>5</sup> as well as profit-sharing payments, attendance bonuses, Christmas or year-end bonuses, and other nonproduction bonuses. Pay increases (but not bonuses) under cost-of-living allowance clauses and incentive payments, however, are included.

## Survey nonresponse

In the March 1990 survey, salary data were not available from 14.2 percent of the sample establishments (representing 2,244,752 employees in the total universe covered by the survey). An additional 4.9 percent of the sample establishments (representing 913,612 employees) were either out of business or outside the scope of the survey.

If data are not provided by a sample member, the weights of responding sample establishments are increased to adjust for the missing data. The weights for

<sup>5</sup> For a discussion of such payments, see Joan Borum and others, "Collective Bargaining in 1987: Local, Regional Issues To Set Tone" and George Ruben, "Labor-Management Scene in 1986: Industrial Woes Continue," *Monthly Labor Review*, January 1987, pp. 23-48.

establishments which are out of business or outside the scope of the survey are changed to zero.

Some sampled companies have a policy of not disclosing salary data for certain employees. No adjustments are made to salary estimates for the survey as a result of these missing data. In all but four of the professional, administrative, technical, and clerical work levels published in this bulletin, the proportion of employees for whom salary data were not available was less than 3 percent. The four were director of personnel I (4.5 percent), director of personnel II (3.6 percent), director of personnel III (6.0 percent), and director of personnel IV (7.1 percent).

## Survey estimation methods

*Data conversion.* Salary data are collected from company records in the most readily available form, i.e., weekly, biweekly, semimonthly, monthly, or annually. Before initial tabulations, all salary data are converted to a monthly basis. The factors used to convert the salary data are as follows:

<i>Payroll basis</i>	<i>Conversion factor</i>
Weekly .....	4.3333
Biweekly .....	2.1665
Semimonthly .....	2.0000
Monthly .....	1.0000
Annually .....	0.0833

Factors which reflect the normal work schedules for the month are used to convert hourly rates to a monthly basis.

*Employment.* Occupational employment data published in this bulletin are estimated totals for all establishments within the scope of the survey and are not limited to establishments actually studied. An occupational employment estimate is derived by multiplying the full-time employment in the occupation in each sample establishment by the establishment weight and summing these results. (See section on limitations below.)

*Salary averages.* The mean salary (average wage rate) for a specific occupational level is obtained by dividing total wages for that level by the corresponding total employment. All salary averages in the tables are rounded to the nearest dollar. For all annual salary calculations, individual monthly salaries (to the nearest one-tenth cent) are multiplied by 12 before performing the necessary data aggregation.



## Limitations

Survey occupations are limited to employees meeting the specific criteria in each job definition and are not intended to include all employees in each field of work.<sup>6</sup> Employees whose salary data are not available, as well as those for whom there is no satisfactory basis for classification by work level, are not taken into account in the estimates. For these reasons, and because of differences in occupational structure among establishments, estimates of occupational employment obtained from the sample of establishments studied indicate only the relative importance of occupations and levels as defined for the survey. These limitations affecting the employment estimates do not materially affect the accuracy of the earnings data.

## Reliability of estimates

The statistics in this bulletin are estimates derived from a sample survey. There are two types of errors possible in an estimate based on a sample survey—sampling and non-sampling.

*Sampling errors* occur because observations come only from a sample, not the entire population. The particular sample used in this survey is one of a number of all possible samples of the same size that could have been selected using the same sample design. Estimates derived from the different samples would differ from each other.

A measure of the variation among these differing estimates is called the standard error or sampling error.<sup>7</sup> It indicates the precision with which an estimate from a particular sample approximates the average result of all possible samples. The relative standard error is the standard error divided by the estimate. The smaller the relative standard error, the greater the reliability of the estimate.

Estimates of relative standard errors for the 1990 survey vary among the occupational work levels depending on such factors as the frequency with which the job occurs, the dispersion of salaries for the job, and the survey design. For the 111 publishable work levels, the distribution of 1 relative standard error was as follows:

<sup>6</sup> Engineers, for example, include employees engaged in engineering work within a band of eight levels, starting with inexperienced engineering graduates and excluding only those within certain fields of specialization or in positions above those covered by level VIII. In contrast, occupations such as directors of personnel include only those with responsibility for a specific program and with duties and responsibilities as indicated for each of the more limited number of work levels selected for study.

<sup>7</sup> A replication technique with 15 random groups was used to obtain estimates of relative standard errors for the 1990 survey.

## Relative standard error

## Number of occupational work levels

Less than 1 percent .....	52
1 and under 2 percent .....	48
2 and under 3 percent .....	8
3 and under 4 percent .....	3

In general, a sample estimate  $\pm 1$  standard error will contain the "true value" in 68 percent of all samples,  $\pm 2$  standard errors in 95 percent, and  $\pm 3$  standard errors in 99 percent. The Bureau evaluated the reliability of its estimates of average salaries in this survey based partly on the value of 2 relative standard errors. For example, the 95-percent confidence interval for accountants I is from \$24,229 to \$25,217 (annual average \$24,723 plus or minus 2 relative standard errors or 2.0 percent).

Nonsampling errors can come from many sources, such as inability to obtain information from some establishments; definitional difficulties; inability of respondents to provide correct information; mistakes in recording or coding the data obtained; and other errors of collection, response, coverage, and estimation of missing data. Although not specifically measured, the survey's nonsampling errors are expected to be minimal due to the high response rate and the extensive and continuous training of field representatives, careful screening of data at several levels of review, annual evaluation of the suitability of job definitions, and thorough field testing of new or revised job definitions.

To measure and better control nonsampling errors that occur during data collection, a quality control procedure was added to the survey in 1983 and repeated in the following years.<sup>8</sup> The procedure, job match validation (JMV), is designed to identify the frequency, reasons for, and sources of incorrect decisions made by Bureau field representatives in matching company jobs to survey occupations. Once identified, the problems are discussed promptly with the field representatives while the data are still being collected. Subsequently, the JMV results are tallied, reported to BLS staff, and become the basis for remedial action at annual training conferences.

The 1990 JMV process focused on the method of collection; 50 percent of the units collected by telephone and 20 percent of those collected by personal visit were candidates for JMV. Approximately 10 percent of the 4,777 sampled job match decisions checked with respondents were subsequently changed by the survey reviewers.

<sup>8</sup> For a more detailed description of the process, see *National Survey of Professional, Administrative, Technical, and Clerical Pay, March 1983*, Bulletin 2181 (Bureau of Labor Statistics, 1983), p. 35.

**Table A-1. Number of establishments and workers within scope of survey and number studied, by industry division, United States, except Alaska and Hawaii, March 1990**

Industry division <sup>1</sup>	Within scope of survey			Actually studied			
	Number of establishments	Workers in establishments		Number of establishments	Workers in establishments		
		Total	Professional and administrative		Clerical and technical support	Total	Professional and administrative
<b>United States</b>							
All private goods-producing industries .....	73,847	16,397,600	3,332,943	1,932,485	3,599,343	1,169,162	554,553
Mining .....	2,194	375,343	102,723	45,735	63,424	27,014	12,681
Construction .....	11,262	1,117,437	146,781	122,013	20,673	4,071	2,672
Manufacturing .....	60,391	14,904,820	3,083,439	1,764,737	3,515,246	1,136,077	539,200
Durable goods .....	32,372	8,923,804	2,089,717	1,103,270	2,948,145	976,888	446,095
Non-durable goods .....	28,019	5,981,016	993,722	661,467	567,101	161,189	93,105
<b>Metropolitan areas<sup>2</sup></b>							
All private goods-producing industries .....	58,712	12,860,621	2,928,430	1,672,677	3,250,665	1,108,384	516,612
<b>Establishments employing:</b>							
Under 1,000 workers .....	71,969	11,314,053	1,742,368	1,160,132	544,559	113,690	69,929
1,000-2,499 workers .....	1,459	2,062,979	547,470	307,319	521,188	159,939	86,750
2,500 workers or more .....	419	3,020,568	1,043,105	465,034	2,553,596	895,533	397,874

<sup>1</sup> As defined in the 1987 edition of the *Standard Industrial Classification Manual*, U.S. Office of Management and Budget.

<sup>2</sup> Metropolitan Statistical Areas and Primary Metropolitan Statistical Areas, as defined by the U.S. Office of Management and Budget through October 1984.

# Appendix B. Changes in Survey Scope and Occupational Coverage

## Changes in survey scope

The March 1990 survey reflects changes introduced in 1986 to broaden the coverage of the survey to more industries and to smaller establishments. This was made possible by conducting the survey in two segments on a biennial cycle; the service-producing industries in 1989 (and subsequent odd-numbered years) and the goods-producing industries in 1990 (and subsequent even-numbered years). Rotating the industries in different years allows BLS to obtain a broader survey coverage while staying within resource constraints.

The rotation process began in 1989 with the service-producing industries (transportation, communications, and public utilities; finance, insurance, and real estate; wholesale trade; retail trade; and services) and continued in 1990 with the goods-producing industries (mining, construction, and manufacturing). Table B-1 presents the estimated number of establishments and workers within the combined scope of the 1989 and 1990 surveys, which included all private industries except farms and households, and the number actually studied.

Beginning in 1986, the survey gradually increased its coverage. Between 1986 and 1989, the survey broadened its scope to establishments with 50 employees or more to include all private sector industries. The 1990 survey represents the completion of the first 2-year cycle planned for surveying private industry establishments.

The survey changes were part of a proposal by the President's Cabinet Council on Management and Administration to expand the survey to major segments of the labor force not covered previously and to use this additional information to broaden the base of the Federal pay comparability process.

Subsequently, Congress requested that the Bureau of Labor Statistics submit a plan for the implementation of a

new national broad-based survey of white-collar pay and benefits that would continue to meet the needs of the President's Pay Agent in the comparability process but also provide additional information for other users of such data. BLS presented its plan to Congress in August 1987. BLS is developing the new survey by expanding and integrating three of its ongoing programs: The White-Collar Pay Survey (formerly called the National Survey of Professional, Administrative, Technical, and Clerical Pay); the Employee Benefits Survey; and the Employment Cost Index. The White-Collar Pay Survey expansion described above was undertaken in response to this request from Congress.

## Changes in occupational coverage

Two jobs in the administrative field were introduced into the survey in 1989 and surveyed for the first time in goods-producing industries in 1990. A six-level personnel specialist job describes duties ranging from trainees whose assignments provide experience in applying personnel management principles, procedures, and techniques, to experts who evaluate the personnel management programs of large, complex organizations. The five-level personnel supervisor/manager job describes duties ranging from first-line supervisors of moderately complex personnel areas to managers of complex personnel functions. The personnel specialist series replaces the job analyst occupation surveyed in prior years.

The drafter definition was modified in 1990 to include computer-assisted drafters.

To conserve resources and reduce respondent burden, data for six clerical occupations in selected goods-producing industries were collected largely as part of the Bureau's Area Wage Survey program. The six clerical occupations were accounting clerk, file clerk, key entry operator, messenger, secretary, and typist.

**Table B-1. Number of establishments and workers within scope of survey and number studied, by industry division, United States, except Alaska and Hawaii, March 1989 and March 1990 combined**

Industry division	Within scope of survey			Actually studied				
	Number of establishments	Workers in establishments		Number of establishments	Workers in establishments			
		Total	Professional and administrative		Clerical and technical support	Total	Professional and administrative	Clerical and technical support
All industries <sup>1</sup> .....	233,742	47,495,611	10,207,074	8,611,740	6,624	8,640,452	2,658,073	1,923,151
Goods-producing <sup>2</sup> .....	73,847	16,397,600	3,332,943	1,932,485	2,418	3,599,343	1,169,162	554,553
Mining .....	2,194	375,343	102,723	45,795	103	63,424	27,014	12,681
Construction .....	11,262	1,117,437	146,781	122,013	88	20,673	4,071	2,672
Manufacturing .....	60,391	14,904,820	3,088,439	1,764,737	2,227	3,515,246	1,138,077	539,200
Durable goods .....	32,372	8,923,804	2,089,717	1,103,270	1,506	2,948,145	976,888	446,095
Nondurable goods .....	28,019	5,981,016	988,722	661,467	721	567,101	161,189	93,105
Service-producing <sup>3</sup> .....	159,895	31,098,011	6,874,131	6,679,255	4,206	5,041,109	1,488,911	1,368,598
Transportation, communications, electric, gas, and sanitary services .....	10,411	3,601,034	833,208	778,246	305	1,462,105	377,992	366,531
Wholesale trade .....	16,494	1,953,873	543,485	430,191	262	163,237	83,823	54,219
Retail trade .....	52,614	8,931,561	1,029,475	831,670	430	594,194	66,109	85,591
Finance, insurance, and real estate .....	17,403	3,863,944	1,413,858	1,876,154	626	757,879	309,853	376,150
All services industries <sup>4</sup> .....	62,973	12,747,599	3,054,105	2,762,994	2,583	2,063,694	651,134	486,107
Business services .....	15,973	3,093,205	610,415	529,607	518	291,910	116,130	66,039
Health services .....	17,572	4,859,765	1,187,243	1,374,873	1,057	978,467	278,292	257,214
Nursing homes .....	9,238	1,093,506	125,950	365,037	397	71,471	8,188	24,385
Hospitals .....	4,332	3,106,136	904,974	791,071	547	845,163	256,841	209,351
Engineering, architectural, research <sup>5</sup> .....	3,399	599,493	312,816	164,090	316	174,014	88,737	44,079

<sup>1</sup> Establishments with total employment at or above the 50-worker minimum.

<sup>2</sup> As defined in the 1987 edition of the *Standard Industrial Classification Manual*, U.S. Office of Management and Budget. The number of establishments and workers relate to March 1990.

<sup>3</sup> As defined in the 1972 edition of the *Standard Industrial Classification Manual*, U.S. Office of Management and Budget. The number of establishments and workers relate to March 1989.

<sup>4</sup> Includes services industries in addition to those shown separately.

<sup>5</sup> Includes engineering, architectural, and surveying services and noncommercial educational, scientific, and research organizations.

of Management and Budget. The number of establishments and workers relate to March 1989.

<sup>4</sup> Includes services industries in addition to those shown separately.

<sup>5</sup> Includes engineering, architectural, and surveying services and noncommercial educational, scientific, and research organizations.

## Appendix C. Estimated Average Salaries— All Private Industries

Table C-1 presents the occupational employment and salary data developed from the combined 1989 and 1990 surveys. BLS delivered these combined data to the President's Pay Agent (the Secretary of Labor and the Directors of the Office of Personnel Management and the Office of Management and Budget), who used the information in the Federal pay comparability process for white-collar workers.

To develop the table C-1 estimates, 1989 occupational

earnings in health care industries were updated 7.0 percent to March 1990 by using the health care industry component for white-collar occupations less sales occupations of the Bureau's Employment Cost Index. Occupational earnings in all other service-producing industries were updated 4.2 percent to March 1990 by using the service-producing industries component for white-collar occupations less sales occupations of the Bureau's Employment Cost Index.

**Table C-1. Average salaries: All private industries**

(Employment and average salaries in private nonfarm industries, excluding households, for selected professional, administrative, technical, and clerical occupations, United States, except Alaska and Hawaii, updated March 1989 and March 1990 combined)<sup>1</sup>

Occupation and level <sup>2</sup>	Number of employees <sup>3</sup>	Annual mean salaries <sup>4</sup>	Annual median salaries <sup>4</sup>	Middle range <sup>4</sup>	
				First quartile	Third quartile
<b>Accountants</b>					
I .....	20,172	\$23,842	\$23,730	\$21,343	\$26,040
II .....	47,114	28,200	27,581	25,282	30,553
III .....	58,678	35,489	34,997	31,551	38,580
IV .....	32,322	45,095	44,640	40,984	48,540
V .....	9,669	56,871	55,620	50,980	61,895
VI .....	2,035	72,440	71,273	65,932	78,696
<b>Chief accountants</b>					
I .....	1,320	44,593	43,040	39,984	47,913
II .....	2,011	57,257	57,287	52,082	62,975
III .....	1,014	73,267	71,160	69,968	78,119
IV .....	176	100,736	101,100	86,256	114,509
<b>Auditors</b>					
I .....	1,430	25,393	24,600	23,444	27,289
II .....	3,419	30,135	29,409	27,660	31,987
III .....	3,974	37,589	36,585	33,070	40,413
IV .....	1,953	46,344	45,673	41,663	50,333
<b>Public accountants</b>					
I .....	11,988	26,399	26,050	24,998	27,821
II .....	12,739	28,661	28,123	26,560	30,727
III .....	12,754	32,708	31,935	29,373	35,206
IV .....	4,875	42,235	40,684	36,976	47,496
<b>Personnel specialists</b>					
I .....	3,277	24,552	23,327	21,076	26,489
II .....	18,140	27,259	26,201	23,956	29,530
III .....	31,123	34,308	33,986	30,347	37,509
IV .....	20,027	44,612	43,971	39,984	48,954
V .....	5,632	56,453	55,204	50,725	61,800
VI .....	501	70,506	68,874	62,376	77,400
<b>Personnel supervisors/managers</b>					
I .....	2,958	46,504	46,350	42,283	51,016
II .....	4,310	58,658	57,977	52,600	63,537
III .....	2,090	75,600	74,970	66,738	83,040
IV .....	440	93,324	89,807	82,247	101,915
<b>Directors of personnel</b>					
I .....	1,791	44,236	44,420	40,659	47,981
II .....	3,435	56,840	56,862	50,479	62,495
III .....	1,700	74,760	72,911	67,473	79,726
IV .....	426	98,039	96,261	86,139	106,278
<b>Attorneys</b>					
I .....	1,707	38,587	36,455	33,591	43,226
II .....	4,083	46,053	44,806	40,893	49,680
III .....	5,051	59,087	57,287	52,547	64,578
IV .....	4,255	78,561	78,119	69,572	85,591
V .....	2,074	96,178	93,780	85,410	104,200
VI .....	561	120,967	119,952	108,672	134,946
<b>Buyers</b>					
I .....	7,077	24,022	23,956	21,441	26,090
II .....	22,558	29,854	29,257	26,589	32,515
III .....	20,678	38,854	38,385	34,645	42,595
IV .....	5,381	46,209	45,282	40,687	50,080

See footnotes at end of table.

**Table C-1. Average salaries: All private industries—continued**

(Employment and average salaries in private nonfarm industries, excluding households, for selected professional, administrative, technical, and clerical occupations, United States, except Alaska and Hawaii, updated March 1989 and March 1990 combined)<sup>1</sup>

Occupation and level <sup>2</sup>	Number of employees <sup>3</sup>	Annual mean salaries <sup>4</sup>	Annual median salaries <sup>5</sup>	Middle range <sup>6</sup>	
				First quartile	Third quartile
<b>Computer programmers</b>					
I .....	15,609	\$25,044	\$24,836	\$21,352	\$27,870
II .....	44,584	28,962	28,444	25,998	31,972
III .....	44,169	33,780	33,480	30,341	36,900
IV .....	21,253	40,833	40,513	37,308	44,427
<b>Systems analysts</b>					
I .....	35,525	33,833	33,187	30,510	36,600
II .....	66,392	40,203	39,768	36,400	43,694
III .....	41,293	47,958	47,581	43,619	52,000
IV .....	11,442	56,727	56,055	51,454	61,296
V .....	1,738	68,811	68,656	62,495	75,165
<b>Systems analysts managers</b>					
I .....	7,971	52,930	52,079	47,392	57,808
II .....	7,977	59,926	59,444	54,396	64,578
III .....	2,300	71,842	70,434	64,620	77,504
IV .....	192	84,367	83,693	77,111	90,936
<b>Chemists</b>					
I .....	4,414	26,109	26,100	21,352	29,488
II .....	9,809	32,168	31,987	28,390	35,296
III .....	10,126	40,385	40,080	36,412	44,100
IV .....	8,810	49,065	48,570	44,700	53,484
V .....	6,824	59,518	59,100	55,313	63,575
VI .....	2,708	72,835	72,480	67,003	77,700
VII .....	691	85,395	84,540	78,119	90,720
<b>Engineers</b>					
I .....	34,036	31,224	31,247	29,170	33,060
II .....	75,020	35,398	35,076	32,787	37,776
III .....	143,626	41,287	40,849	37,560	44,639
IV .....	170,170	49,365	48,996	44,764	53,487
V .....	111,518	59,444	58,848	54,011	64,209
VI .....	49,656	70,332	69,840	63,972	75,970
VII .....	12,694	80,998	79,686	73,685	87,300
VIII .....	2,679	91,392	89,080	80,555	99,910
<b>Registered nurses</b>					
I .....	20,564	26,212	25,592	23,189	28,988
II .....	394,662	30,413	30,043	26,794	33,470
II Specialists .....	21,624	34,342	33,982	30,422	38,500
III .....	14,315	43,414	40,888	35,963	49,200
IV .....	926	44,513	41,905	38,767	49,538
<b>Licensed practical nurses</b>					
I .....	13,797	17,112	16,691	14,688	18,938
II .....	173,564	19,760	19,376	17,025	22,032
III .....	4,434	24,267	24,057	21,920	26,594
<b>Nursing assistants</b>					
I .....	64,173	10,275	9,925	8,345	11,703
II .....	393,474	12,204	11,684	9,458	14,243
III .....	30,958	15,525	15,200	13,152	17,892
IV .....	2,234	19,340	18,664	17,268	21,631
<b>Medical machine technicians</b>					
I .....	8,804	17,724	17,752	14,974	20,029
II .....	16,089	22,930	22,922	20,407	25,214
III .....	17,204	27,586	27,373	24,791	30,155
IV .....	279	34,040	33,559	30,399	36,720

See footnotes at end of table.

**Table C-1. Average salaries: All private industries—continued**

(Employment and average salaries in private nonfarm industries, excluding households, for selected professional, administrative, technical, and clerical occupations, United States, except Alaska and Hawaii, updated March 1989 and March 1990 combined)<sup>1</sup>

Occupation and level <sup>2</sup>	Number of employees <sup>3</sup>	Annual mean salaries <sup>4</sup>	Annual median salaries <sup>4</sup>	Middle range <sup>4</sup>	
				First quartile	Third quartile
<b>Civil engineering technicians</b>					
II .....	3,212	\$21,164	\$20,832	\$18,963	\$22,756
III .....	3,498	27,134	26,006	23,400	30,471
IV .....	2,887	32,247	32,010	28,607	35,699
<b>Engineering technicians</b>					
I .....	4,053	19,560	19,500	17,672	21,216
II .....	15,305	22,710	22,394	20,503	24,720
III .....	26,668	27,192	26,847	24,126	29,596
IV .....	35,033	32,698	32,454	29,274	35,880
V .....	18,661	37,287	36,624	34,140	39,960
<b>Drafters</b>					
I .....	1,750	14,397	14,372	13,003	15,170
II .....	13,180	19,152	18,552	16,380	20,992
III .....	23,532	22,859	22,566	20,018	24,990
IV .....	24,224	28,385	28,200	25,290	30,988
V .....	12,313	34,900	34,581	31,440	38,134
<b>Computer operators</b>					
I .....	10,414	15,677	15,599	13,653	17,224
II .....	40,772	19,839	19,343	17,493	21,873
III .....	27,679	24,727	24,381	21,977	26,873
IV .....	6,656	29,029	28,466	26,040	31,261
V .....	1,029	33,390	33,396	30,072	36,502
<b>Photographers</b>					
II .....	961	24,189	23,669	21,515	26,772
III .....	1,076	29,550	29,222	26,040	32,841
IV .....	496	35,877	35,872	33,805	38,262
<b>Accounting clerks</b>					
I .....	27,660	13,984	13,400	11,714	15,668
II .....	166,303	16,929	16,443	14,465	18,730
III .....	85,745	20,213	19,790	17,570	22,217
IV .....	29,081	24,279	23,382	21,568	26,674
<b>File clerks</b>					
I .....	28,203	12,372	12,017	10,728	13,437
II .....	15,251	14,652	14,101	12,433	16,255
III .....	2,185	18,052	17,768	15,313	20,365
<b>Key entry operators</b>					
I .....	90,661	14,945	14,440	12,396	16,639
II .....	34,445	18,756	18,430	15,760	20,808
<b>Messengers</b>					
.....	17,445	13,805	13,391	11,773	15,216
<b>Secretaries</b>					
I .....	65,402	18,810	18,217	15,745	21,220
II .....	88,018	21,175	20,894	18,469	23,690
III .....	137,578	23,893	23,562	20,685	26,819
IV .....	62,709	27,542	27,305	23,977	30,832
V .....	19,966	32,317	31,857	27,824	36,674
<b>Typists</b>					
I .....	19,226	14,921	14,312	12,529	16,254
II .....	10,908	18,974	17,714	14,975	22,689

See footnotes at end of table.



**Table C-1. Average salaries: All private industries—continued**

(Employment and average salaries in private nonfarm industries, excluding households, for selected professional, administrative, technical, and clerical occupations, United States, except Alaska and Hawaii, updated March 1989 and March 1990 combined)<sup>1</sup>

Occupation and level <sup>2</sup>	Number of employees <sup>3</sup>	Annual mean salaries <sup>4</sup>	Annual median salaries <sup>4</sup>	Middle range <sup>4</sup>	
				First quartile	Third quartile
<b>Personnel clerks/assistants</b>					
I .....	3,575	\$15,153	\$14,933	\$13,332	\$16,576
II .....	8,453	18,579	18,071	16,493	20,272
III .....	5,763	22,119	21,587	19,790	24,408
IV .....	2,110	26,643	26,640	23,856	28,732
<b>Purchasing clerks/assistants</b>					
I .....	4,747	15,867	15,578	14,082	16,936
II .....	10,813	19,063	18,900	16,951	20,528
III .....	4,580	24,656	24,758	21,940	26,880
IV .....	702	33,138	32,110	28,613	38,285
<b>General clerks</b>					
I .....	19,270	11,357	10,971	10,294	12,407
II .....	84,344	14,411	14,061	12,479	15,600
III .....	96,411	18,152	17,474	15,474	20,588
IV .....	43,345	22,195	22,332	18,989	24,930

<sup>1</sup> This table combines the results of the March 1990 survey in the goods-producing industries with those of the March 1989 survey in service-producing industries. Before combining the survey findings, results of the 1989 survey were updated by adding unpublished March 1989-March 1990 percent increases in wages and salaries in appropriate Employment Cost Index (ECI) components. A 7.0-percent increase was applied to 1989 earnings in health care industries (based on the ECI health care component for white-collar occupations, less sales occupations). A 4.2-percent increase was applied to earnings in all other service-producing industries (based on the ECI component for white-collar occupations, less sales occupations, in service-producing industries other than health care).

Additionally, to conserve resources and reduce respondent burden, the Bureau's Area Wage Survey (AWS) program was used as the major source of 1990 data for six clerical occupations—Accounting Clerk, File Clerk, Key Entry Operator, Messenger, Secretary, and Typist. For these occupations, collection of data in the 1990 White-Collar Pay survey in goods producing industries was limited to establishments outside the scope of the AWS program. In some instances, however, it was necessary to update 1989 Area Wage Survey findings by applying ECI

percentage increase factors as described above.

<sup>2</sup> Occupational definitions appear in appendix D.

<sup>3</sup> Occupational employment estimates relate to the total in all establishments within the scope of the survey and not to the number actually surveyed. For further explanation, see appendix A.

<sup>4</sup> Excludes premium pay for overtime and for work on weekends, holidays, and late shifts. Also excluded are performance bonuses and lump-sum payments of the type negotiated in the auto and aerospace industries, as well as profit-sharing payments, attendance bonuses, Christmas or year-end bonuses, and other nonproduction bonuses. Pay increases—but not bonuses—under cost-of-living allowance clauses, and incentive payments, however, are included.

The mean is computed for each job by totaling the earnings of all workers and dividing by the number of workers. The median designates position; one-half of the workers receive the same as or more and one-half receive the same as or less than the rate shown. The middle range is defined by two rates of pay; one-fourth of the workers earn the same as or less than the lower of these rates and one-fourth earn the same as or more than the higher rate.

# Appendix D. Occupational Definitions

The primary purpose of preparing job definitions for the Bureau's wage surveys is to assist its field staff in classifying into appropriate occupations, or levels within occupations, workers who are employed under a variety of payroll titles and different work arrangements from establishment to establishment and from area to area. This permits the grouping of occupational wage rates representing comparable job content.

To secure comparability of job content, some occupations and work levels are defined to include only those workers meeting specific criteria as to training, job functions, and responsibilities. Because of this emphasis on interestablishment and interarea comparability of occupational content, the Bureau's occupational definitions may differ significantly from those in use in individual establishments or those prepared for other purposes.

## PROFESSIONAL AND ADMINISTRATIVE OCCUPATIONS

### ACCOUNTANTS

Performs professional operating or cost accounting work requiring knowledge of the theory and practice of recording, classifying, examining, and analyzing the data and records of financial transactions. The work generally requires a bachelor's degree in accounting or, in rare instances, equivalent experience and education combined. Positions covered by this definition are characterized by the inclusion of work that is analytical, creative, evaluative, and advisory in nature. The work *draws* upon and *requires* a thorough knowledge of the fundamental doctrines, theories, principles, and terminology of accountancy, and often entails some understanding of such related fields as business law, statistics, and general management. (See also chief accountant.)

Professional responsibilities in accountant positions above levels I and II include duties such as:

- Analyzing the effects of transactions upon account relationships;
- Evaluating alternative means of treating transactions;
- Planning the manner in which account structures should be developed or modified;
- Assuring the adequacy of the accounting system as the basis for reporting to management;
- Considering the need for new or changed controls;
- Projecting accounting data to show the effects of proposed plans on capital investments, income, cash position, and overall financial condition;
- Interpreting the meaning of accounting records, reports, and statements;
- Advising operating officials on accounting matters; and
- Recommending improvements, adaptations, or revisions in the accounting system and procedures.

Accountant I and II positions provide opportunity to develop ability to perform professional duties such as those enumerated above.

*In addition* to such professional work, most accountants are responsible for assuring the proper recording and documentation of transactions in the accounts. They, therefore, frequently direct nonprofessional personnel in the day-to-day maintenance of books of accounts, the accumulation of cost or other comparable data, the preparation of standard reports and statements, and similar work. (Positions involving such supervisory work but not including professional duties as described above are not included in this description.)

*Excluded* are accountants whose *principal or sole* duties consist of designing or improving accounting systems or other nonoperating staff work, e.g., budget analysis, financial analysis, financial forecasting, tax advising, etc. (The criteria that follow for distinguishing among the several levels of work are inappropriate for such jobs.) Note, however, that professional accountant positions with responsibility for recording or reporting accounting data relative to taxes are included, as are other operating or cost accountants whose work includes, but is not limited to, improvement of the accounting system.

Some accountants use electronic data processing equipment to process, record, and report accounting data. In some such cases, the machine unit is a subordinate segment of the accounting system; in others, it is a separate entity or is attached to some other organization. In either instance, provided that the primary responsibility of the position is professional accounting work of the type otherwise included, the use of data processing equipment of any type does not of itself exclude a position from the accountant description nor does it change its level.

## Accountants I

*General characteristics.* At this beginning professional level, the accountant learns to apply the principles, theories, and concepts of accounting to a specific system. The position is distinguishable from nonprofessional positions by the variety of assignments; rate and scope of development expected; and the existence, implicit or explicit, of a planned training program designed to give the entering accountant practical experience. (Terminal positions are excluded.)

*Direction received.* Works under close supervision of an experienced accountant whose guidance is directed primarily to the development of the trainee's professional ability and to the evaluation of advancement potential. Limits of assignments are clearly defined, methods of procedure are specified, and kinds of items to be noted and referred to supervisor are identified.

*Typical duties and responsibilities.* Performs a variety of accounting tasks such as: Examining a variety of financial statements for completeness, internal accuracy, and conformance with uniform accounting classifications or other specific accounting requirements; reconciling reports and financial data with financial statements already on file, and pointing out apparent inconsistencies or errors; carrying out assigned steps in an accounting analysis, such as computing standard ratios; assembling and summarizing accounting literature on a given subject; preparing relatively simple financial statements not involving problems of analysis or presentation; and preparing charts, tables, and other exhibits to be used in reports. In addition, may perform some nonprofessional tasks for training purposes.

*Responsibility for the direction of others.* Usually none.

## Accountants II

*General characteristics.* At this level, the accountant makes practical application of technical accounting practices and concepts beyond the mere application of detailed rules and instructions. Initial assignments are designed to expand practical experience and to develop professional judgment in the application of basic accounting techniques to simple problems. Is expected to be competent in the application of standard procedures and requirements to routine transactions, to raise questions about unusual or questionable items, and to suggest solutions.

*Direction received.* Work is reviewed to verify general accuracy and coverage of unusual problems, and to insure conformance with required procedures and special instructions.

*Typical duties and responsibilities.* Performs a variety of accounting tasks, e.g., prepares routine working papers,

schedules, exhibits, and summaries indicating the extent of the examination and presenting and supporting findings and recommendations. Examines a variety of accounting documents to verify accuracy of computations and to ascertain that all transactions are properly supported, are in accordance with pertinent policies and procedures, and are classified and recorded according to acceptable accounting standards.

*Responsibility for the direction of others.* Usually none, although sometimes responsible for supervision of a few clerks.

## Accountants III

*General characteristics.* The accountant at this level applies well-established accounting principles, theories, concepts, and practices to moderately difficult problems. Receives detailed instructions concerning the overall accounting system and its objectives, the policies and procedures under which it is operated, and the nature of changes in the system or its operation. Characteristically, the accounting system or assigned segment is stable and well established (i.e., the basic chart of accounts, classifications, the nature of the cost accounting system, the report requirements, and the procedures are changed infrequently).

Depending upon the work load involved, the accountant may have such assignments as supervision of the *day-to-day* operation of: (a) the entire system of a relatively small organization; (b) a major segment (e.g., general accounting, cost accounting, financial statements and reports) of a somewhat larger system; or (c) in a complex system, may be assigned to a relatively narrow and specialized segment dealing with some problem, function, or portion of work which is appropriate for this level.

*Direction received.* A higher level professional accountant normally is available to furnish advice and assistance as needed. Work is reviewed for technical accuracy, adequacy of professional judgment, and compliance with instructions through spot checks, appraisal of results, subsequent processing, analysis of reports and statements, and other appropriate means.

*Typical duties and responsibilities.* The primary responsibility of most positions at this level is to assure that the assigned day-to-day operations are carried out in accordance with established accounting principles, policies, and objectives. The accountant performs such professional work as: Developing nonstandard reports and statements (e.g., those containing cash forecasts reflecting the interrelations of accounting, cost budgeting, or comparable information); interpreting and pointing out trends or deviations from standards; projecting data into the future; predicting the effects of changes in operating programs; or identifying management informational needs, and refining account structures or reports accordingly.

Within the limits of delegated responsibility, makes day-to-day decisions concerning the accounting treatment of financial

transactions. Is expected to recommend solutions to moderately difficult problems and propose changes in the accounting system for approval at higher levels. Such recommendations are derived from personal knowledge of the application of well-established principles and practices.

*Responsibility for the direction of others.* In most instances, is responsible for supervision of a subordinate nonprofessional staff; may coordinate the work of lower level professional accountants.

#### **Accountants IV**

*General characteristics.* At this level, the accountant applies well-established accounting principles, theories, concepts, and practices to a wide variety of difficult problems. Receives instructions concerning the objectives and operation of the overall accounting system. Compared with level III, the accounting system or assigned segment is more complex, i.e., (a) is relatively unstable, (b) must adjust to new or changing operational environments, (c) is substantially larger or (d) is complicated by the need to provide and coordinate separate or specialized accounting treatment and reporting (e.g., cost accounting using standard cost, process cost, and job order techniques) for different internal operations or divisions.

Depending upon the work load and degree of coordination involved, the accountant IV may have such assignments as the supervision of the day-to-day operation of: (a) an entire accounting system which has a few relatively stable accounting segments; (b) a major segment (e.g., general accounting, cost accounting, or financial statements and reports) of an accounting system serving a larger and more complex organization; or (c) in a complex system, may be assigned to a relatively narrow and specialized segment dealing with some problem, function, or portion of work which is of the level of difficulty characteristic of this level.

*Direction received.* A higher level accountant normally is available to furnish advice and assistance as needed. Work is reviewed by spot checks and appraisal of results for adequacy of professional judgment, compliance with instructions, and overall accuracy and quality.

*Typical duties and responsibilities.* As at level III, a primary characteristic of most positions at this level is the responsibility of operating an accounting system or major segment of a system in the intended manner.

The accountant IV exercises professional judgment in making frequent, appropriate recommendations for: New accounts; revisions in the account structure; new types of ledgers; revisions in the reporting system or subsidiary records; changes in instructions regarding the use of accounts, new or refined account classifications or definitions; etc. Also makes day-to-day decisions concerning the accounting treatment of financial transactions and is

expected to recommend solutions to complex problems beyond incumbent's scope of responsibility.

*Responsibility for the direction of others.* Accounting staff supervised, if any, may include professional accountants.

#### **Accountants V**

*General characteristics.* The accountant V applies accounting principles, theories, concepts, and practices to the solution of problems for which no clear precedent exists or performs work which is of greater than average responsibility due to the nature or magnitude of the assigned work. Responsibilities at this level, in contrast to accountants at level IV, extend beyond accounting system maintenance to the solution of more complex technical and managerial problems. Work of accountants V is more directly concerned with what the accounting system (or segment) should be, what operating policies and procedures should be established or revised, and what is the managerial as well as the accounting meaning of the data included in the reports and statements for which they are responsible. Typically, this level of work approaches chief accountant positions in terms of the nature of the concern for the accounting system and its operations, but not in terms of the breadth or scope of responsibility.

Examples of assignments characteristic of this level are supervision of the *day-to-day operation* of: (a) an entire accounting system which has a few relatively complex accounting segments; (b) a major segment of a larger and more complex accounting system; (c) an entire accounting system (or major segment) that is relatively stable and conventional when the work includes significant responsibility for accounting system design and development; or (d) in a complex system, may be assigned to a relatively narrow and specialized segment dealing with some problem, function, or portion of work which is itself of the level of difficulty characteristic of this level.

*Direction received.* An accountant of higher level normally is available to furnish advice and assistance as needed. Work is reviewed for adequacy of professional judgment, compliance with instructions, and overall quality.

*Typical duties and responsibilities.* The accountant V performs such professional work as: Participating in the development and coordinating the implementation of new or revised accounting systems, and initiating necessary instructions and procedures; assuring that accounting reporting systems and procedures are in compliance with established administrative policies, regulations, and acceptable accounting practices; providing technical advice and services to operating managers, interpreting accounting reports and statements, and identifying problem areas; and evaluating complete assignments for conformance with applicable policies, regulations, and tax laws.

*Responsibility for the direction of others.* Accounting staff supervised generally includes professional accountants.

## Accountants VI

*General characteristics.* At this level, the accountant applies accounting principles, theories, concepts, and practices to specialized, unique, or nonrecurring complex problems (e.g., implementation of specialized automated accounting systems). The work is substantially more difficult and of greater responsibility than level V because of the unusual nature, magnitude, importance, or overall impact of the work on the accounting program.

At this level, the accounting system or segment is usually complex, i.e., (a) is generally unstable, (b) must adjust to the frequent changing needs of the organization, or (c) is complicated by the need to provide specialized or individualized reports.

Examples of assignments at this level are the supervision of the day-to-day operation of: (a) a large and complex accounting system; or (b) a major segment (e.g., general accounting, property accounting, etc.) of an unusually complex accounting system requiring technical expertise in a particular accounting field (e.g., cost accounting, tax accounting, etc.).

*Direction received.* A higher level professional accountant is normally available to furnish advice as needed. Work is reviewed for adequacy of professional judgment, compliance with instructions and policies, and overall quality.

*Typical duties and responsibilities.* Accountants at this level are delegated complete responsibility from higher authority to establish and implement new or revised accounting policies and procedures. Typically, accountants VI participate in decisionmaking sessions with operating managers who have policymaking authority for their subordinate organizations or establishments; recommend management actions or alternatives which can be taken when accounting data disclose unfavorable trends, situations, or deviations; and assist management officials in applying financial data and information to the solution of administrative and operating problems.

*Responsibility for the direction of others.* Accounting staff supervised generally includes professional accountants.

**NOTE:** Excluded are accountants above level VI whose principal function is to direct, manage, or administer an accounting program; that is, they are primarily concerned with the administrative, budgetary, and policy matters of the program rather than the actual supervision of the day-to-day operations of an accounting program. This type of work requires extensive managerial ability as well as superior professional competence in order to cope with the technical

accounting and management problems encountered. Typically, this level of work involves responsibility for more than one accounting activity (e.g., cost accounting, sales accounting, etc.).

## CHIEF ACCOUNTANTS

As the top technical expert in accounting, is *responsible for* the overall direction of an entire accounting program. The minimum accounting program includes: (1) general accounting (assets, liabilities, income, expense, and capital accounts, usually including responsibility for profit and loss and/or balance sheet statements); and (2) at least one other *major* accounting activity, typically tax accounting, cost accounting, property accounting, or sales accounting. It may also include such other activities as payroll and timekeeping, and mechanical or electronic data processing operations which are an adjunct of the accounting system. (Responsibility for an internal audit program is typically *not* included.)

The responsibilities of the chief accountant include *all* of the following:

1. On own responsibility, developing, adapting, or revising an accounting system to meet the needs of the organization;
2. Supervising, either directly or through subordinate supervisors, the operation of the system with full management responsibility for the quality and quantity of work performed, training and development of subordinates, work scheduling and review, coordination with other parts of the organization served, etc.; and
3. Providing directly, or through an official such as a comptroller, advisory services to the top management officials of the organization served as to:
  - a. The status of financial resources and the financial trends or results of operations as revealed by accounting data, and selecting a manner of presentation that is meaningful to management; and
  - b. Methods of improving operations as suggested by an expert knowledge of accounting, e.g., proposals for improving cost control, property management, credit and collection, tax reduction, or similar programs.

*Excluded* are positions with responsibility for the accounting program if they also include (as a major part of the job) responsibility for budgeting; work measurement; organization, methods, and procedures studies; or similar nonaccounting functions. (Positions of such breadth are sometimes titled comptroller, budget and accounting manager, financial manager, etc.)

Some positions responsible for supervising general accounting and one or more other major accounting activities but which do *not* fully meet *all* of the responsibilities of a chief accountant specified above may be covered by the descriptions for accountant.

Chief accountant jobs which meet the characteristics described are classified by level of work according to (a) authority and responsibility, and (b) technical complexity, using table D - 1.

### Authority and Responsibility

*AR-1.* The accounting system (i.e., accounts, procedures, and reports to be used) has been prescribed in considerable detail by higher levels in the organization. The chief accountant has final, unreviewed authority within the prescribed system, to expand it to fit the particular needs of the organization served, e.g., in the following or comparable ways:

Providing greater detail in accounts and reports or financial statements;

Establishing additional accounting controls, accounts, subaccounts, and subsidiary records; and

Providing special or interim reports and statements needed by the manager responsible for the day-to-day operations of the organization served.

This degree of authority is typically found at a subordinate establishment (e.g., plant, regional office, etc.).

*AR-2.* The basic accounting system is prescribed in broad outline rather than in specific detail. While certain major financial reports, overall accounts, and general policies are required by the basic system, the chief accountant has broad latitude and *authority* to decide the specific methods, procedures, accounts, reports, etc., to be used within the organizational segment served. Approval must be secured from higher levels only for those changes which would basically affect the broad requirements prescribed by such higher levels. Typical responsibilities include:

Evaluating and taking final action on recommendations proposed by subordinate establishments for changes in aspects of the accounting system or activities not prescribed by higher authority;

Extending cost accounting operations to areas not previously covered;

Instituting new cost accounting procedures;

Expanding the utilization of computers within the accounting process; and

Preparing accounting reports and statements reflecting the events and progress of the entire organization for which incumbent is responsible, often consolidating data submitted by subordinate segments.

This degree of authority is most typically found at intermediate organizational levels such as a division, subsidiary, State, or agency headquarters. It is also found in some headquarters situations where the authority of the chief accountant is less extensive than is described in AR-3.

*AR-3.* Has complete responsibility for establishing and maintaining the framework for the basic accounting system used in the overall organization (e.g., company, State government) subject only to general policy guidance and control from a higher level official responsible for general financial management. Typical responsibilities include:

*Determining the basic characteristics* of the accounting system and the specific accounts to be used;

*Devising and preparing accounting reports and statements* required to meet management's needs for data;

*Establishing basic accounting policies, interpretations, and procedures;*

*Reviewing and taking action* on proposed revisions to the company's accounting system suggested by subordinate units; and

*Taking final action* on all technical accounting matters.

Characteristically, participates extensively in broad management processes by providing accounting advice, interpretations, or recommendations based on data accumulated in the accounting system and on professional judgment and experience.

### Technical Complexity

*TC-1.* The organization which the accounting program serves has relatively few functions, products, work processes, etc., and these tend to be stable and unchanging. The accounting system operates in accordance with well-established principles and practices or those of equivalent difficulty which are typical of that industry.

*TC-2.* The organization which the accounting program serves has a relatively large number of functions, products, work processes, etc., which require substantial and frequent adaptations of the basic system to meet management needs (e.g., adoption of new accounts, subaccounts, and subsidiary records; revision of instructions for the use of accounts; improvement or expansion of methods for accumulating and reporting cost data in connection with new or changed work processes).

*TC-3.* The organization which the accounting program serves puts a *heavy demand on the accounting organization for specialized and extensive adaptation* of the basic system to meet management needs. Such demands arise because the functions, products, work processes, etc., of the organization are very numerous, diverse, unique, or specialized, or there are other comparable complexities. Consequently, the accounting system, to a considerable degree, is developed well beyond established principles and accounting practices in order to:

Provide for the solution of problems for which no clear precedents exist; or

**Table D-1. Criteria for matching chief accountants by level**

Level	Authority and responsibility <sup>1</sup>	Technical complexity <sup>1</sup>	Subordinate professional accounting staff
I	AR-1	TC-1	Only one or two professional accountants, who do not exceed the accountant III job definition.
II	AR-1	TC-2	About 5 to 10 professional accountants, with at least one or two matching accountant IV job definition.
	or		
	AR-2	TC-1	About 5 to 10 professional accountants. Most of these match the accountant III job definition, but one or two may match the accountant IV job definition.
III	or		
	AR-3	TC-1	Only one or two professional accountants, who do not exceed the accountant IV job definition.
	AR-1	TC-3	About 15 to 20 professional accountants. At least one or two match the accountant V job definition.
IV	or		
	AR-2	TC-2	About 15 to 20 professional accountants. Many of these match the accountant IV job definition, but some may match the accountant V job definition.
	or		
V	AR-3	TC-1	About 5 to 10 professional accountants. Most of these match the accountant III job definition, but one or two may match as high as accountant V.
	AR-2	TC-3	About 25 to 40 professional accountants. Many of these match the accountant V job definition, but several may exceed that level.
	or		
	AR-3	TC-2	About 15 to 20 professional accountants. Most of these match the accountant IV job definition, but several may match the accountant V and one or two may exceed that level.
	AR-3	TC-3	About 25 to 40 professional accountants. Many of these match the accountant V job definition, but several may exceed that level.

<sup>1</sup> AR-1,-2, and -3 and TC-1,-2, and -3 are explained in the preceding pages.

Provide for the development or extension of accounting theories and practices to deal with problems to which these theories and practices have not previously been applied.

**Subordinate Staff**

In table C-1, the number of professional accountants supervised is recognized to be a relatively crude criterion for distinguishing between various levels. It is to be considered less important in the matching process than the other criteria. In addition to the staff of professional accountants in the system for which the chief accountant is responsible, there are clerical, machine operation, bookkeeping, and related personnel.

**AUDITORS**

Performs professional auditing work requiring a bachelor's degree in accounting or, in rare instances, equivalent experience and education combined. Audits the financial

records and practices of either an entire organization (e.g., company, government), or of its divisions or other components to appraise systematically and verify the accounting accuracy of records and reports and to assure the consistent application of accepted accounting principles. Evaluates the adequacy of the accounting system and internal financial controls. Makes appropriate recommendations for improvement as necessary. To the extent determined necessary, examines the transactions entering into the balance sheet, and the transactions entering into income, expense, and cost accounts. Determines:

1. The existence of recorded assets (including the observation of the taking of physical inventories) and the all-inclusiveness of recorded liabilities.
2. The accuracy of financial statements or reports and the fairness of presentation of facts therein.
3. The propriety or legality of transactions.
4. The degree of compliance with established policies and procedures concerning financial transactions.

*Excluded* from this definition are:

- a. Auditors primarily examining or reporting on the financial management of internal operations. These auditors evaluate such matters as: (1) the operation's degree of compliance with the principles of sound financial management; and (2) the effectiveness of management and operating controls;
- b. Auditors assigned to audit programs which are confined on a relatively permanent basis to repetitive examination of a limited area of operations and accounting processes, e.g., accounts payable and receivable; payroll; physical inventory; and branch offices which do not have complete accounting systems. This does not preclude positions responsible for performing a segment of an audit (i.e., examining individual items on a balance sheet, rather than the entire balance sheet), *as long as the work directly relates to the financial audit program*; and
- c. Electronic data processing (EDP) auditors. These positions require an extensive knowledge of computer systems, programming, etc.

## **Auditors I**

*General characteristics.* As a trainee auditor at the entering professional level, performs a variety of routine assignments. Typically, the trainee is rotated through a variety of tasks under a planned training program designed to provide practical experience in applying the principles, theories, and concepts of accounting and auditing to specific situations. (Terminal positions are excluded.)

*Direction received.* Works under close supervision of an experienced auditor whose guidance is directed primarily to the development of the trainee's professional ability and to the evaluation of advancement potential. Limits of assignments are clearly defined, methods of procedure are specified, and kinds of items to be noted and referred to supervisor are identified.

*Typical duties and responsibilities.* Assists in making audits by performing such tasks as: Verifying the accuracy of the balances in various records; examining a variety of types of documents and vouchers for accuracy of computations; checking transactions to assure they are properly documented and have been recorded in accordance with correct accounting classifications; verifying the count of inventories; preparing detailed statements, schedules, and standard audit working papers; counting cash and other assets; and preparing simple reconciliations and similar functions.

## **Auditors II**

*General characteristics.* At this level, the professional auditor serves as a junior member of audit team, independently performing selected portions of the audit which are limited in scope and complexity. Auditors at this level typically have

acquired knowledge of overall operations, policies, and procedures.

*Direction received.* Detailed instructions are furnished and the work is reviewed to the extent necessary to verify its general accuracy and coverage of unusual problems, and to insure conformance with required procedures and special instructions. Any technical problems not covered by instructions are brought to the attention of a superior.

*Typical duties and responsibilities.* Applies knowledge of *accounting theory* and audit practices to a variety of relatively simple professional problems in audit assignments, including such tasks as: The verification of reports against source accounts and records to determine their reliability; reconciliation of bank and other accounts and verifying the detail of recorded transactions; detailed examinations of cash receipts and disbursement vouchers, payroll records, requisitions, work orders, receiving reports, and other accounting documents to ascertain that transactions are properly supported and are recorded correctly from an accounting or regulatory standpoint; or preparing working papers, schedules, and summaries.

## **Auditors III**

*General characteristics.* Work at this level consists of the audit of operations and accounting processes that are relatively stable, well established, and typical of the industry. The audits primarily involve the collection and analysis of readily available findings; there is previous audit experience that is directly applicable; the audit reports are normally prepared in a prescribed format using a standard method of presentation; and few, if any, major problems are anticipated. The work performed requires the *application* of substantial knowledge of accounting principles and practices, e.g., bases for distinguishing among capital maintenance and operating expenses; accruing reserves for taxes; and other accounting considerations of an equivalent nature.

*Direction received.* Work is normally within an established audit program, and supervision is provided by a higher level auditor who outlines and discusses assignments. Work is spot checked in progress. Completed assignments are reviewed for adequacy of coverage, soundness of judgment, compliance with professional standards, and adherence to policies.

*Typical duties and responsibilities.* The auditor examines transactions and verifies accounts; observes and evaluates accounting procedures and internal controls; and prepares audit working papers and submits an audit report in the required pattern containing recommendations for needed changes or improvements. Usually is responsible for selecting



the detailed audit methods to follow, choosing the audit sample and its size, determining the extent to which discrepancies need to be investigated, and deciding the depth of analyses required to support reported findings and conclusions.

Examples of assignments involving work at this level:

1. As a team leader or working alone, independently conducts audits of the complete accounts and related operations of smaller or less complex organizations (e.g., involving a centralized accounting system with few or no subordinate, subsidiary, or branch accounting records) or of comparable segments of larger organizations.
2. As a member of an audit team, independently accomplishes varied audit assignments with the characteristics described above, typically major segments of complete audits, or assignments otherwise limited in scope, of larger and more complex organizations (e.g., complex in that the accounting system entails cost, inventory, and comparable specialized systems integrated with the general accounting system).

Illustrative of such assignments are the audit and initial review of the accounting treatment and validity of reporting of overhead expenses in a large manufacturing or maintenance organization (e.g., major repair yard of a railroad); or the checking, verification, and balancing of all accounts receivable and accounts payable; or the analysis and verification of assets and reserves; or the inspection and evaluation of accounting controls and procedures.

#### **Auditors IV**

*General characteristics.* Auditors at this level are experienced professionals who apply a thorough knowledge of accounting principles and theory in connection with a variety of audits. Work at this level is characterized by the audit of organizations and accounting processes which are complex and difficult because of such factors as: Presence of new or changed programs and accounting systems; existence of major specialized accounting functions (e.g., cost accounting, inventory accounting, sales accounting) in addition to general accounting; need to consider extensive and complicated regulatory requirements; lack of or difficulty in obtaining information; and other similar factors. Typically, a variety of different assignments are encountered over a period of time, e.g., 1 year. The audit reports prepared are comprehensive, explain irregularities, cite rules and regulations violated, recommend remedial actions, and contain analyses of items of special importance or interest to management.

*Direction received.* Within an established audit program, has responsibility for independently planning and executing audits. Unusually difficult problems are discussed with the supervisor who also reviews completed assignments for adherence to principles and standards and the soundness of conclusions.

*Typical duties and responsibilities.* Auditors at this level have full responsibility for planning the audit, including determination of the aspects to emphasize, methods to be used, development of nonstandard or specialized audit aids, such as questionnaires, etc., where previous audit experience and plans are of limited applicability.

Included in the scope of work that characterizes this level are such functions as: Evaluation of methods used for determining depreciation rates of equipment; evaluation of assets where original costs are unknown; evaluation of the reliability of accounting and reporting systems; analysis of cost accounting systems and cost reports to evaluate the basis for cost and price setting; and evaluation of accounting procurement and supply management records, controls, and procedures; and many others.

Examples of assignments involving work at this level:

1. As a team leader or working alone, independently plans and conducts audits of the complete accounts and related operations of relatively large and complex organizations (e.g., complex in that the accounting system entails cost, inventory, and comparable specialized accounting systems integrated with the general accounting system) or of company branch, subsidiary, or affiliated organizations which are individually of comparable size and complexity.
2. As a member of an audit team, independently plans and accomplishes audit assignments that constitute major segments of audits of very large and complex organizations, for example, those with financial responsibilities so great as to involve specialized subordinate, subsidiary, or affiliate accounting systems that are complete in themselves.

*NOTE:* Excluded from level IV are auditors who, as team leaders or working alone, conduct complete audits of very large and complex organizations, for example, those with financial responsibilities so great as to involve specialized subordinate, subsidiary, or affiliate accounting systems that are complete in themselves; or are team members assigned to major segments of audits of even larger or more complex organizations. Also excluded are auditors primarily responsible for overseeing multiple concurrent audits.

#### **PUBLIC ACCOUNTANTS**

Performs professional auditing work in a public accounting firm. Work requires at least a bachelor's degree in accounting. Participates in or conducts audits to ascertain the fairness of financial representations made by client companies. May also assist the client in improving accounting procedures and operations.

Examines financial reports, accounting records, and related documents and practices of clients. Determines whether all important matters have been disclosed and whether procedures are consistent and conform to acceptable practices. Samples and tests transactions, internal controls, and other elements of the accounting system(s) as needed to render the accounting firm's final written opinion.

*Excluded* are positions which do not require full professional accounting training. Also excluded are specialist positions in tax or management advisory services.

### **Public Accountants I**

*General characteristics.* As an entry level public accountant, serves as a junior member of an audit team. Receives classroom and on-the-job training to provide practical experience in applying the principles, theories, and concepts of accounting and auditing to specific situations. (Positions held by trainee public accountants with advanced degrees, such as MBA's, are excluded at this level.)

*Direction received.* Complete instructions are furnished and work is reviewed to verify its accuracy, conformance with required procedures and instructions, and usefulness in facilitating the accountant's professional growth. Any technical problems not covered by instructions are brought to the attention of a superior.

*Typical duties and responsibilities.* Carries out basic audit tests and procedures, such as: Verifying reports against source accounts and records; reconciling bank and other accounts; and examining cash receipts and disbursements, payroll records, requisitions, receiving reports, and other accounting documents in detail to ascertain that transactions are properly supported and recorded. Prepares selected portions of audit working papers.

### **Public Accountants II**

*General characteristics.* At this level, the public accountant carries out routine audit functions and detail work with relative independence. Serves as a member of an audit team on assignments planned to provide exposure to a variety of client organizations and audit situations. Specific assignments depend upon the difficulty and complexity of the audit and whether the client has been previously audited by the firm. On moderately complex audits where there is previous audit experience by the firm, accomplishes complete segments of the audit (i.e., functional work areas such as cash, receivables, etc.). When assigned to more complicated audits, carries out activities similar to public accountant I.

*Direction received.* Works under the supervision of a higher level public accountant who provides instructions and continuing direction as necessary. Work is spot checked in progress and reviewed upon completion to determine the adequacy of procedures, soundness of judgment, compliance with professional standards, and adherence to clearly established methods and techniques. All interpretations are subject to close professional review.

*Typical duties and responsibilities.* Carries out a variety of sampling and testing procedures in accordance with the

prescribed audit program, including the examination of transactions and verification of accounts, the analysis and evaluation of accounting practices and internal controls, and other detail work. Prepares a share of the audit working papers and participates in drafting reports. In moderately complex audits, may assist in selecting appropriate tests, samples, and methods commonly applied by the firm and may serve as primary assistant to the accountant in charge. In more complicated audits, concentrates on detail work. Occasionally may be in charge of small, uncomplicated audits which require only one or two other subordinate accountants. Personal contacts usually involve only the exchange of factual technical information and are usually limited to the client's operating accounting staff and department heads.

### **Public Accountants III**

*General characteristics.* At this level, the public accountant is in charge of a complete audit and may lead a team of several subordinates. Audits are usually accomplished one at a time and are typically carried out at a single location. The firms audited are typically moderately complex, and there is usually previous audit experience by the firm. The audit conforms to standard procedural guidelines, but is often tailored to fit the client's business activities. Routine procedures and techniques are sometimes inadequate and require adaptation. Necessary data are not always readily available. When assigned to more difficult and complex audits (see level IV), the accountant may run the audit of a major component or serve as the primary assistant to the accountant in charge.

*Direction received.* Works under the general supervision of a higher level public accountant who oversees the operation of the audit. Work is performed independently, applying generally accepted accounting principles and auditing standards, but assistance on difficult technical matters is available. Work may be checked occasionally during progress for appropriateness and adherence to time requirements, but routine analyses, methods, techniques, and procedures applied at the work site are expected to be correct.

*Typical duties and responsibilities.* Is responsible for carrying out the technical features of the audit, leading team members and personally performing the most difficult work. Carries out field work in accordance with the general format prescribed in the audit program, but selects specific methods and types and sizes of samples and tests. Assigns work to team members, furnishes guidance, and adjusts work loads to accommodate daily priorities. Thoroughly reviews work performed for technical accuracy and adequacy. Resolves anticipated problems within established guidelines and priorities but refers problems of unusual difficulty to superiors for discussion and advice. Drafts financial statements, final reports, management letters, and other closing memoranda. Discusses significant recommendations with superiors and

may serve as technical resource at "closing" meetings with clients. Personal contacts are usually with chief accountants and assistant controllers of medium-size companies and divisions of large corporations to explain and interpret policies and procedures governing the audit process.

#### **Public Accountants IV**

*General characteristics.* At this level, the public accountant directs field work including difficult audits—e.g., those involving initial audits of new clients, acquisitions, or stock registration—and may oversee a large audit team split between several locations. The audit team usually includes one or more level III public accountants who handle major components of the audit. The audits are complex and clients typically include those engaged in projects which span accounting periods; highly regulated industries which have various external reporting requirements; publicly held corporations; or businesses with very high dollar or transaction volume. Clients are frequently large with a variety of operations which may have different accounting systems. Guidelines may be general or lacking and audit programs are intricate, often requiring extensive tailoring to meet atypical or novel situations.

*Direction received.* Works under general supervision. The supervisor sets overall objectives and resource limits but relies on the accountant to fully plan and direct all technical phases of the audit. Issues not covered by guidelines or known precedents are discussed with the supervisor, but the accountant's recommended approaches and courses of action are normally approved. Work is reviewed for soundness of approach, completeness, and conformance with established policies of the firm.

*Typical duties and responsibilities.* Is responsible for carrying out the operational and technical features of the audit, directing the work of team members, and personally performing the most difficult work. Often participates in the development of the audit scope, and drafts complicated audit programs with a large number of concurrently executed phases. Independently develops audit steps and detailed procedures, deviating from traditional methods to the extent required. Makes program adjustments as necessary once an audit has begun; selects specific methods, types and sizes of samples, the extent to which discrepancies need to be investigated, and the depth of required analyses. Resolves most operational difficulties and unanticipated problems.

Assigns work to team members; reviews work for appropriateness, conformance to time requirements, and adherence to generally accepted accounting principles and auditing standards. Consolidates working papers, draft reports, and findings; and prepares financial statements, management letters, and other closing memoranda for management approval. Participates in "closing" meetings as a technical resource and may be called upon to sell or

defend controversial and critical observations and recommendations. Personal contacts are extensive and typically include top executives of smaller clients and mid-to upper-level financial and management officers of large corporations, e.g., assistant controllers and controllers. Such contacts involve coordinating and advising on work efforts and resolving operating problems.

*NOTE:* Excluded from this level are public accountants who direct field work associated with the complete range of audits undertaken by the firm, who lead the largest and most difficult audits, and who frequently oversee teams performing concurrent audits. This type of work requires extensive knowledge of one or more industries to make subjective determinations on questions of tax, law, accounting, and business practices. Audits may be complicated by such factors as: The size and diversity of the client organizations (e.g., multinational corporations and conglomerates with a large number of separate and distinct subsidiaries); accounting issues where precedents are lacking or in conflict; and, in some cases, clients who are encountering substantial financial difficulties. They perform most work without technical supervision and completed audits are reviewed mainly for propriety of recommendations and conformance with general policies of the firm. Also excluded are public accountants whose principal function is to manage, rather than perform, accounting work, and the equity owners of the firm who have final approval authority.

#### **PERSONNEL SPECIALISTS**

Plans, administers, advises on, or performs professional work in *one or more* personnel specialties, such as:

*Job analysis/evaluation:* Analyzing, evaluating, and defining occupations or positions based on duties, responsibilities, and qualification requirements in order to establish or maintain a framework for equitable compensation.

*Salary and benefit administration:* Analyzing and evaluating compensation practices, participating in compensation surveys, and recommending pay and benefit adjustments.

*Recruitment and placement:* Recruiting applicants through various sources (e.g., schools, colleges, employment agencies, newspapers, professional societies); evaluating applicants using qualification ratings, test scores, interviews, and reference checks; and recommending applicant placement.

*Employee development:* Planning, evaluating, and administering employee training and development programs to achieve both organizational goals and personnel management objectives.

*Employee relations and services:* Providing guidance, advice, and assistance on such matters as employee services and benefits; management-employee communications; performance appraisals; grievances and appeals; equal employment opportunity; and employee conduct and discipline.

*Equal employment opportunity:* Planning, evaluating, and administering equal opportunity provisions.

*Labor relations:* Advising and assisting management on a

variety of labor relations matters, and negotiating and administering labor agreements on behalf of management.

*In addition to* the technical responsibilities described in levels I through VI, personnel specialists may also *manage personnel functions* and supervise subordinate staff. At levels I and II, the subordinate staff typically consists of clerks and paraprofessionals; level III may coordinate the work of lower level specialists; and levels IV and above may supervise subordinate specialists. Positions which are *primarily supervisory*, rather than technical, in nature (i.e., they are not readily matchable to the level-to-level distinctions in this definition) should be matched to the personnel supervisor/manager definition.

This broad, generic occupation includes specialists: (1) working in personnel *operations*; (2) reviewing and evaluating the quality of personnel programs; and (3) developing and revising personnel programs and procedures.

*Excluded are:*

- a. Positions matched to the personnel director or personnel supervisor/manager definition;
- b. Clerical and paraprofessional positions;
- c. Labor relations specialists who negotiate with labor unions as the *principal* representative of their *overall* organization;
- d. Specialists with matchable titles (e.g., labor relations specialist, equal opportunity specialist) who are *not* part of the establishment's personnel program;
- e. Specialists in other occupations (e.g., nursing, organizational development, payroll, safety and health, security, and training), *even if* these positions are part of the establishment's personnel program;
- f. Positions not requiring: (1) 3 years of administrative, technical, or substantive clerical experience; (2) a bachelor's degree in any field; or (3) any equivalent combination of experience and education yielding basic skills in problem analysis and communication; and
- g. Positions employed by personnel supply service establishments (S.I.C. 736).

#### *Classification by level*

Establishment positions which meet the above criteria are matched at one of six levels. Primary leveling concepts are presented for each of the three options: (1) operations, (2) program evaluation, and (3) program development. These leveling concepts take precedent over typical duties and responsibilities in determining the level of a match. Job duties that are "moderately complex" in one establishment may be "procedural" in another establishment.

#### **Personnel Specialists I (operations only)**

As a trainee, receives classroom and/or on-the-job training in the principles, procedures, and regulations of the personnel program and in the programs, policies, and objectives of the

employing organization. Assignments provide experience in applying personnel management principles, procedures, and techniques, while performing a variety of uncomplicated tasks under close supervision.

#### **Personnel Specialists II**

*Operations.* Performs standard procedural duties which require the use of personnel management principles and techniques to identify and analyze personnel problems. Provides limited advice to management, such as informing departmental supervisors of typical duty patterns which comprise an occupational level or of types of candidates available for a type of particular job. Receives specific instructions with each new assignment.

*Program evaluation and development.* Assists higher level specialists in preliminary phases of evaluation or development. Receives increasingly difficult assignments under close supervisory guidance and review.

*Typical duties include:* Analyzing and evaluating nonexempt jobs using standard procedures; participating in recruitment or compensation surveys for nonexempt jobs; rating applicants using established guidelines; explaining established policies, procedures, or regulations to employees or management; and performing limited tasks to assist higher level specialists in employee development, employee relations, and labor relations programs.

#### **Personnel Specialists III**

*Operations.* Performs moderately complex assignments following established policies and guidelines. Work requires experience both in a personnel specialty and in the organization serviced. Advises management on the solution to personnel problems of limited scope for which there are precedents. Renders advice concerning own specialty, but discusses impact on other personnel areas. Works independently under specified objectives; closer supervision is provided for complex assignments, precedent-setting actions, and actions that affect either other functional areas or key working relationships.

*Program evaluation and development.* Assists higher level specialists or managers by studying less complex aspects of personnel programs (e.g., merit promotions, incentive awards), resolving problems of average difficulty, and reporting findings to be included in evaluation reports.

*Typical duties include:* Analyzing, evaluating, and defining both exempt and nonexempt jobs in various occupational groups using established procedures; participating in surveys of broad compensation areas; recruiting and screening applicants for both exempt and nonexempt jobs, checking references and recommending placement; assisting in identifying training needs and arranging training, initiating personnel actions or awards, and interpreting established personnel policy, regulations, and precedents; or participating in, preparing for, and conducting labor negotiations.

## Personnel Specialists IV

*Operations.* Applies to three different work situations. In situation (1), specialists use technical knowledge, skills, and judgment to solve complex technical problems. Advisory services to management are similar to those described at level III. Situation (2) combines typical level III operating skills with comprehensive management advisory services. Advisory services require high technical skills, along with broad personnel knowledge, to solve problems from a total personnel management perspective. In situations (1) and (2), specialists plan and complete work following established program goals and objectives. Their judgments and recommendations are relied upon for management decisions. Situation (3) applies to specialists who are *solely* responsible for performing moderately complex assignments (as described in level III) and for rendering *final decisions* on assigned personnel matters under general administrative supervision. Responsibilities include planning and scheduling work and coordinating and integrating program(s) with other personnel, management, and operational activities.

*Program evaluation.* Conducts on-site review of personnel actions in several organizational units, determines factual basis for personnel actions, evaluates actions for consistency with established guidelines, and reports significant findings.

*Program development.* Independently develops supplemental guidelines for existing procedures.

*Typical duties include:* Analyzing, evaluating, and defining difficult exempt jobs, i.e., those in research and development, administration, law, and computer science; planning and conducting broad compensation surveys and recommending pay and benefit adjustments; developing training plans and procedures for an organizational segment; participating in complex employee-management relations issues such as controversies, poor morale, and high turnover; or developing plans and procedures for labor negotiations in a moderately complex organization.

## Personnel Specialists V

*Operations.* Applies to two different work situations. In situation (1), specialists solve unusually complex and unprecedented problems which require creative solutions. In situation (2), specialists are assigned complex technical problems (as described in level IV, situation (1)) combined with responsibility for providing comprehensive advice to management. Management advisory services are complicated by jobs and organizations that are complex, new, or dynamic, and by the abstract nature of the work processes. Supervision and guidance relate largely to program goals and time schedules. Specialists are authorized to make decisions for their organizations and consult with their supervisors concerning unusual problems and developments.

*Program evaluation.* Independently evaluates personnel programs to determine the degree to which they are achieving goals and objectives, ascertaining weaknesses in programs and guidelines, and making recommendations for improvements. Conclusions are reported to top management.

*Program development.* Applies expertise in modifying procedures and guidelines. Projects are usually narrow in scope, i.e., limited to an occupational field or to a specific program area. May have full technical responsibility for personnel projects, studies, policies, or programs that are less complex than described at level VI.

*Typical duties include:* Participating in the development of personnel policies and procedures; analyzing, evaluating, and defining unusually difficult jobs, e.g., those in emerging occupations which lack applicable guidelines, or in organizations so complex and dynamic that it is difficult to determine the extent of a position's responsibility; recruiting candidates for one-of-a-kind jobs; participating in employee-management relations where the underlying issues are difficult to identify; planning and administering a comprehensive employee development program; or performing labor relations assignments for a large conglomerate.

## Personnel Specialists VI

*Program evaluation.* Applies to three different work situations. In situation (1), specialists evaluate the personnel management program of large, complex organizations. Such evaluations require broad understanding and sensitivity both to the interrelationships between different personnel programs and to complex organizational and management relationships. In situation (2), specialists provide advice to management in improving personnel programs in unusually complex organizations. Such expertise extends beyond knowledge of guidelines, precedents, and technical principles into areas of program management and administration. In situation (3), specialists serve as evaluation experts assigned to uniquely difficult and sensitive personnel problems, e.g., solutions are unusually controversial; specialists are required to persuade and motivate key officials to change major personnel policies or procedures; or problems include serious complaints where information is vague.

*Program development.* Specialists have full technical responsibility for unusually complex personnel projects, studies, policies, or programs. The scope and impact of these assignments are broad and are of considerable importance to organizational management.

Supervision received is essentially administrative, with assignments given in terms of broad general objectives and limits.

## PERSONNEL SUPERVISOR/MANAGERS

Supervises three or more personnel specialists and/or clerks and paraprofessionals. Although the work is supervisory in nature, it requires substantial knowledge of personnel policies, procedures, and practices.

*Excluded are:*

- a. Positions matched as directors of personnel or personnel specialists;
- b. Labor relations positions which are primarily responsible for negotiating with labor unions as the principal representative of their overall organization;

- c. Supervisory positions having both a base level below personnel specialist III *and* requiring technical expertise *below* personnel specialist IV; and
- d. Positions also having significant responsibility for functional areas beyond personnel (e.g., payroll, purchasing, or administration).

### Classification by Level

Supervisory jobs are matched at one of five levels according to two factors: a) base level of work supervised, and b) level of supervision. Table D-2 indicates the level of the supervisor for each combination of factors.

### Base Level of Work

Conceptually, the base level of work is the highest level of *nonsupervisory* work under the direct or indirect supervision of the supervisor/manager which (when added to the nonsupervisory levels above it) represents at least 25 percent of the total nonsupervisory, nonclerical staff and at least *two* of the full-time positions supervised.

Nonsupervisory, nonclerical work is determined by: 1) arraying the positions by level of difficulty; 2) determining the number of workers in each position; and 3) counting down from the highest level (if necessary) until at least 25 percent of the total nonsupervisory, nonclerical staff are represented.

Establishment supervisory positions matched in the personnel specialist series should be counted as "non-supervisory" in computing the base level for personnel supervisor/manager matches.

Due to the unique nature of this occupational series, the mechanics of the base level concept are sometimes not applicable in determining the appropriate job level of a personnel supervisor/manager. See *Anomalies in Matching Personnel Supervisors/Managers* at the end of this definition.

### Level of Supervision

Supervisors and managers are matched at one of the three LS levels below which best describes their supervisory responsibility.

**LS-1.** Plans, coordinates, and evaluates the work of a small staff, normally not more than 10 personnel specialists, paraprofessionals, and clerks; estimates staffing needs for personnel unit and schedules, assigns, and reviews work to meet completion date; interviews candidates for own unit and recommends hires, promotions, or reassignments; and resolves complaints, referring group grievances and more serious unresolved complaints to higher level supervisors; may reprimand employees.

**LS-2.** Directs a sizable staff (normally 10-20 employees), typically divided into sub-units controlled by subordinate supervisors; advises higher level management on work problems of own unit and the impact on broader programs; collaborates with heads of other units to negotiate and/or coordinate work changes; makes decisions on work or training problems presented by subordinate supervisors; evaluates subordinate supervisors and reviews their evaluations of their employees; selects nonsupervisors (higher level approval

**Table D-2. Criteria for matching personnel supervisors/managers**

Base level of nonsupervisory job (s) matched in the personnel specialist definition	Supervisor/manager level		
	Level of supervisor		
	LS-1	LS-2	LS-3
III	I	II	III
IV	II	III	IV
V	III	IV	V
VI	IV	V	Exclude

is virtually assured) and recommends supervisory selections; and hears group grievances and serious or unresolved complaints. May shift resources among projects and perform long-range budget planning.

**NOTE:** In *rare instances*, supervisory positions responsible for directing a sizable staff (e.g., 10-20 professional employees) may not have subordinate supervisors, but *have all other LS-2 responsibilities*. Such positions are matched to LS-2.

**LS3.** Directs two subordinate supervisory levels, and the work force managed typically includes substantially more than 20 employees. Makes major decisions and recommendations (listed below) which have a direct, important, and substantial effect on own organization and work. Performs *at least three* of the following:

- Decides what programs and projects should be initiated, dropped, expanded, or curtailed;
- Determines long-range plans in response to program changes, evaluates programs goals, and redefines objectives;
- Determines changes to be made in organizational structure, delegation of authority, coordination of units, etc;
- Decides what compromises to make in program operations in view of public relations implications and need for support from various groups;
- Decides on the means to substantially reduce program operating costs without impairing overall operations; justifies major equipment expenditures; and
- Resolves differences between key subordinate officials; decides, or significantly affects final decisions, on personnel actions for subordinate supervisors and other key subordinates.

### Anomalies in Matching Personnel Supervisors/Managers

- a. *Base level artificially low.* The leanness of subordinate staff often combines with the appropriate LS level to produce a level of supervisor/manager which is below the supervisor/manager's level of technical expertise, as measured by the personnel specialist definition. In these instances, the level of the supervisor/manager is raised to correlate to the equivalent level of personnel specialist (see table D-3).
- b. *Relationship between supervisor/manager and director of personnel.* Personnel supervisor/managers are matched *below* the equivalent level of the personnel director to whom they report (see table D-3).
- c. *Matching assistant directors of personnel.* In rare instances,

establishment pay for an assistant director of personnel is based on the *director's* pay, rather than *either the level and size of subordinate staff or the assistant director's technical expertise*. In these instances, the assistant director usually was matched to the supervisor/manager definition, one level below the equivalent level of the director of personnel (see table C-3).

## DIRECTORS OF PERSONNEL

Directs a personnel management program for an organization or segment of an organization. Serves top management officials as the *definitive* source of advice and assistance on personnel management matters and problems generally; is typically consulted on the personnel implications of planned changes in management policy or programs, the effects on the organization of economic or market trends, product or production method changes, changes in legislation, etc.; represents management in contacts with other organizations, dealing primarily with personnel management matters.

Typically, the director of personnel for an *overall organization* reports to a policymaking official in charge of administration and personnel management activities or to an officer of similar level. However, in industries such as health care, banking, and retail trade, where precedents exist for most personnel policies and procedures, the director of personnel may report directly to the chief operating officer. Below the headquarters level, the director of personnel typically reports to a management official *responsible* for operating an organizational segment.

The personnel management program *must include* significant responsibility for *all three* of the following functions:

1. *Administering a job evaluation system*; i.e., a system in which there are established procedures by which jobs are analyzed and evaluated on the basis of their duties, responsibilities, and qualification requirements in order to provide a foundation for equitable compensation. Such a system may include: The use of job evaluation factors; the preparation of formal job descriptions; and such related functions as wage and salary surveys and merit rating system administration. The job evaluation system(s) must cover a substantial portion of the jobs in the organization.
2. *Employment and placement function*; i.e., recruiting actively for at least some kinds of workers through a variety of sources (e.g., schools or colleges, employment agencies, professional societies); evaluating applicants against demands of particular jobs by use of such techniques as job analysis, interviews,

written tests of aptitude, knowledge or skill, reference checks, and experience evaluations; and recommending selections and job placements to management.

3. *Employee relations and service function*; i.e., functions designed to maintain employee morale and productivity at a high level, e.g., administering a formal or informal grievance procedure; identifying and recommending solutions for personnel problems such as absenteeism, high turnover, and low productivity; administering suggestion, retirement pension, insurance, and merit rating programs; or overseeing cafeteria operations, recreational programs, and health and safety programs.

In addition, positions covered by this definition may, but do not necessarily, include responsibilities in the following areas:

- a. *Employee training and development*;
- b. *Labor relations activities* which are confined mainly to the administration, interpretation, and application of those aspects of labor union contracts that are essentially of the type described under (3) above. May also participate in bargaining of a subordinate nature, e.g., to negotiate detailed settlement of such matters as specific rates, job classifications, work rules, or hiring and layoff procedures, within the broad terms of a general agreement reached at higher levels, or to supply advice and information on technical points to the organization's principal representative;
- c. Equal Employment Opportunity (EEO); or
- d. *Reporting under the Occupational Safety and Health ACT (OSHA)*.

*Excluded are:*

- a. Positions in which responsibility for actual contract negotiation with labor unions as the principal representative of the organization is a significant aspect of the job, i.e., a responsibility which serves as a primary basis for *qualification requirements or compensation*;
- b. Positions servicing less than 250 full-time equivalent (FTE) employees;
- c. Positions participating in the management and formulation of policy for the overall organization in addition to directing its personnel program; and
- d. Positions responsible for directing a personnel program but which do *not* fully meet *all* of the responsibilities of a director of personnel. These positions should be matched to either the personnel specialist or personnel supervisor/manager definition.

**Table D-3. Level equivalents of personnel professional occupations**

Personnel specialist	Personnel supervisor/manager	Director of personnel
I II III IV V VI	I II III IV V	I II III IV V

Director of personnel jobs which meet the above definition are classified by level of work (see table D-4).

## ATTORNEYS

Performs consultation and advisory work and carries out the legal processes necessary to effect the rights, privileges, and obligations of the organization. The work performed requires completion of law school with an L.L.B. degree (or

**Table D-4. Criteria for matching directors of personnel by level**

Number of employees in work force serviced (FTE)	"Operations level" personnel program <sup>1</sup>		"Development level" personnel program <sup>2</sup>	
	"Type A" organization serviced <sup>3</sup>	"Type B" organization serviced <sup>4</sup>	"Type A" organization serviced <sup>3</sup>	"Type B" organization serviced <sup>4</sup>
250-750 .....	I	II	II	III
1,000-5,000 .....	II	III	III	IV
6,000-12,000 .....	III	IV	IV	V
15,000-25,000 .....	IV	V	V	-

<sup>1</sup> "Operations level" personnel program—director of personnel servicing an organizational segment where the basic personnel program policies, plans, and objectives are established at a higher organizational level (e.g., headquarters). The personnel director's responsibility is to put these into operation in such a manner as to most effectively serve local management needs.

<sup>2</sup> Development level" personnel program—either:

- Director of personnel servicing an overall organization (with or without subordinate segments) where the personnel director plays an important role in establishment of basic personnel policies, plans, and objectives subject to policy direction and control from policymaking officials. In industries where precedents exist for most personnel policies and procedures, developmental authority is generally reserved for the top personnel official in an organization.

OR

- Director of personnel servicing an intermediate organization below the headquarters level, e.g., a division or subsidiary, to which a relatively complete delegation of personnel program planning and development responsibility is made. In this situation, only basic policy direction is given by the parent organization and local officials. The director of personnel has essentially the same degree of latitude and responsibility for establishment of basic personnel policies, plans, and objectives as described above in paragraph (a).

<sup>3</sup> "Type A" organization serviced—most jobs serviced do not present particularly difficult or unusual recruitment, job evaluation, or training problems because the jobs consist of relatively easy-to-understand work processes, and an adequate labor supply is available. These conditions are most likely to be found in organizations in which the work force and organizational structure are relatively stable.

<sup>4</sup> "Type B" organization serviced—a substantial proportion of the jobs present difficult recruitment, job evaluation, or training problems because the jobs: Consist of hard-to-understand work processes (e.g., professional, scientific, administrative, or technical); have hard-to-match skill requirements; are in new or emerging occupations; or are extremely hard to fill. These conditions are most likely to be found in organizations in which the work force, organizational structure, work processes or function, etc., are complicated or unstable.

NOTE: There are gaps between the elements used to determine job levels. These gaps have been provided purposely to allow room for judgment. For example, an "operations" position which services 850 employees is matched at level II if the organization serviced falls slightly below type B. However, the same position is matched at level I if the organization serviced clearly fits type A.

the equivalent) and admission to the bar. Responsibilities or functions include one or more of the following or comparable duties:

Preparing and reviewing various legal instruments and documents, such as contracts, leases, licenses, purchases, sales, real estate, etc.;

Acting as agent of the organization in its transactions;

Examining material (e.g., advertisements, publications, etc.) for legal implications; advising officials of proposed legislation which might affect the organization;

Applying for patents, copyrights, or registration of the organization's products, processes, devices, and trademarks; advising whether to initiate or defend lawsuits;

Conducting pretrial preparations; defending the organization in lawsuits; and

Advising officials on tax matters, government regulations, and/or legal rights.

Excluded from this definition are:

Patent work which requires professional training in addition to legal training (typically, a degree in engineering or in a science);

Claims examining, claims investigating, or similar work for which professional legal training and bar membership are not essential;

Attorneys, frequently titled "general counsel" or "attorney general" (and their immediate full associates or deputies), who are responsible for participating in the management and formulation of policy for the overall organization in addition to directing its legal work (the duties and responsibilities of such positions exceed level VI as described below);

Attorneys in legal firms; and,

Attorneys primarily responsible for: Prosecuting defendants; drafting legislation; defending the general public (e.g., public defenders, student attorneys); and planning and producing legal publications.

Attorney jobs which meet the above definitions are classified in accordance with table D-5.

## Difficulty

**D-1.** Legal questions are characterized by: Facts that are well established; clearly applicable legal precedents; and matters not of substantial importance to the organization. (Usually relatively limited sums of money, e.g., a few thousand dollars, are involved.)

Examples of D-1 work are:

- Legal investigation, negotiation, and research preparatory to defending the organization in potential or actual lawsuits involving alleged negligence where the facts can be firmly established and there are precedent cases directly applicable to the situation;
- Searching case reports, legal documents, periodicals, textbooks, and other legal references, and preparing draft opinions on employee compensation or benefit questions where there is a substantial amount of clearly applicable statutory, regulatory, and case material; and
- Drawing up contracts and other legal documents in connection with real property transactions requiring the development of detailed information but not involving serious questions regarding titles to property or other major factual or legal issues.

**D-2.** Legal work is regularly difficult by reason of one or more of the following: The absence of clear and directly applicable legal precedents; the different possible interpretations that can be placed on the facts, the laws, or the precedents involved; the substantial importance of the legal matters to the organization (e.g., sums as large as \$100,000 are generally directly or indirectly involved); or the matter is being strongly pressed or contested in formal proceedings or in negotiations by the individuals, corporations, or government agencies involved.



**Table D-5. Criteria for matching attorneys by level**

Level	Difficulty level of legal work	Responsibility level of job	Experience required
I	This is the entry level. The duties and responsibilities after initial orientation and training are those described in D-1 and R-1.		Completion of law school with an L.L.B. or J.D. degree plus admission to the bar.
II	D-1	R-2	Sufficient professional experience (at least 1 year, usually more) at the D-1 level to assure competence as an attorney.
	D-2	R-1	
III	D-2	R-2	At least 1 year, usually more, of professional experience at the D-2 level.
IV	D-2	R-3	Extensive professional experience at the D-2 or higher level.
	D-3	R-2	
V	D-2	R-4	Extensive professional experience at the D-3 or R-3 levels.
	D-3	R-3	
VI	D-3	R-4	Extensive professional experience at the D-3 and R-3 levels.

NOTE: D-1, -2, -3, and R-1, -2, -3, and -4 are in the text.

**Examples of D-2 work are:**

- a. Advising on the legal implications of advertising representations when the facts supporting the representations and the applicable precedent cases are subject to different interpretations;
- b. Reviewing and advising on the implications of new or revised laws affecting the organization;
- c. Presenting the organization's defense in court in a negligence lawsuit which is strongly pressed by counsel for an organized group; and
- d. Providing legal counsel on tax questions complicated by the absence of precedent decisions that are directly applicable to the organization's situation.

area including parts or all of several States;

- c. Preparing and presenting a case before an appellate court where the case is highly important to the future operation of the organization and is vigorously contested by very distinguished (e.g., having a broad regional or national reputation) legal talent;
- d. Serving as the principal counsel to the officers and staff of an insurance company on the legal problems in the sale, underwriting, and administration of group contracts involving nationwide or multistate coverages and laws; and
- e. Performing the principal legal work in nonroutine, major revision of a company's charter or in effectuating new major financing steps.

**D-3.** Legal work is typically complex and difficult because of one or more of the following: The questions are unique and require a high order of original and creative legal endeavor for their solution; the questions require extensive research and analysis and the obtaining and evaluation of expert testimony regarding controversial issues in a scientific, financial, corporate organization, engineering, or other highly technical area; the legal matter is of critical importance to the organization and is being vigorously pressed or contested (e.g., sums such as \$1 million or more are generally directly or indirectly involved.)

**Examples of D-3 work are:**

- a. Advising on the legal aspects and implications of Federal antitrust laws to projected greatly expanded marketing operations involving joint ventures with several other organizations;
- b. Planning legal strategy and representing a utility company in rate or government franchise cases involving a geographic

**Responsibility**

**R-1.** Responsibility for final action is usually limited to matters covered by legal precedents and in which little deviation from standard practice is involved. Any decisions or actions having a significant bearing on the organization's business are reviewed. Is given guidance in the initial stages of assignment, e.g., in planning and organizing legal research studies. Assignments are then carried out with moderate independence, although guidance is generally available and is sought from time to time on problem points.

**R-2.** Usually works independently in investigating the facts, searching legal precedents, defining the legal and factual issues, drafting the necessary legal documents, and developing conclusions and recommendations. Decisions having an important bearing on the organization's business are reviewed. Receives information from supervisor regarding unusual circumstances or important policy

considerations pertaining to a legal problem. If trials are involved, may receive guidance from a supervisor regarding presentation, line of approach, possible line of opposition to be encountered, etc. In the case of nonroutine written presentations, the final product is reviewed carefully, but primarily for overall soundness of legal reasoning and consistency with organization policy. Some, but not all, attorneys make assignments to one or more lower level attorneys, aides, or clerks.

R-3. Carries out assignments independently and makes final legal determinations in matters of substantial importance to the organization. Such determinations are subject to review only for consistency with organization policy, possible precedent effect, and overall effectiveness. To carry out assignments, deals regularly with officers of the organization and top level management officials and confers or negotiates regularly with senior attorneys and officials in other organizations on various aspects of assigned work. Receives little or no preliminary instruction on legal problems and a minimum of technical legal supervision. May assign and review work of a few attorneys, but this is not a primary responsibility.

R-4. Carries out assignments which entail independently planning investigations and negotiations on legal problems of the highest importance to the organization and developing completed briefs, opinions, contracts, or other legal products. To carry out assignments, represents the organization at conferences, hearings, or trials, and personally confers and negotiates with top attorneys and top-ranking officials in other organizations. On various aspects of assigned work, may give advice directly and personally to organization officials and top level managers, or (in extremely large and complex organizations) may work through a higher level attorney in advising officials. Generally receives no preliminary instructions on legal problems. On matters requiring the concentrated efforts of several attorneys or other specialists, is responsible for directing, coordinating, and reviewing the work of the attorneys involved.

OR

As a primary responsibility, directs the work of a staff of attorneys, one, but usually more, of whom regularly performs either D-3 or R-3 legal work. With respect to the work directed, gives advice directly to organization officials and top managers, or (in extremely large and complex organizations) may give such advice through counsel. Receives guidance as to organization policy but not technical supervision or assistance except when requesting advice from or briefing by a higher level attorney on the overall approach to the most difficult, novel, or important legal questions.

## BUYERS

Purchases materials, supplies, equipment, and services

(e.g., utilities, maintenance, and repair). In some instances, items are of types that must be specially designed, produced, or modified by the vendor in accordance with drawings or engineering specifications.

Solicits bids, analyzes quotations received, and selects or recommends suppliers. May interview prospective vendors. Purchases items and services at the most favorable price consistent with quality, quantity, specification requirements, and other factors. Prepares or supervises preparation of purchase orders from requisitions. May expedite delivery and visit vendors' offices and plants.

Normally, purchases are unreviewed when they are consistent with past experience and are in conformance with established rules and policies. Proposed purchase transactions that deviate from the usual or from past experience in terms of prices, quality of items, quantities, etc., or that may set precedents for future purchases, are reviewed by higher authority prior to final action.

In addition to work described above, some (but not all) buyers direct the work of one or a few clerks who perform routine aspects of the work. As a secondary and subsidiary duty, some buyers may also sell or dispose of surplus, salvage, or used materials, equipment, or supplies.

*NOTE:* Some buyers are responsible for the purchasing of a variety of items and materials. When the variety includes items and work described at more than one of the following levels, the position is to equal the highest level that characterizes at least a substantial portion of the buyer's time.

*Excluded are:*

- a. Buyers of items for direct sale, either wholesale or retail;
- b. Brokers and dealers buying for clients or for investment purposes;
- c. Positions that specifically require professional education and qualifications in a physical science or in engineering (e.g., chemist, mechanical engineer);
- d. Buyers who specialize in purchasing a single or a few related items of highly variable quality such as raw cotton or wool, tobacco, cattle, or leather for shoe uppers, etc. Expert personal knowledge of the item is required to judge the relative value of the goods offered, and to decide the quantity, quality, and price of each purchase in terms of its probable effect on the organization's profit and competitive status;
- e. Buyers whose principal responsibility is the supervision of a purchasing program;
- f. Persons predominantly concerned with contract or subcontract administration;
- g. Persons whose major duties consist of ordering, reordering, or requisitioning items under existing contracts;
- h. Positions restricted to clerical functions or to purchase expediting work; and
- i. Positions not requiring: 1) 3 years of administrative, technical, or substantive clerical experience; 2) a bachelor's degree in any field; or 3) any equivalent combination of experience and education yielding basic skills in problem analysis and communication.

## Buyers I

Purchases "off-the-shelf" types of readily available, commonly used materials, supplies, tools, furniture, services, etc.

Transactions usually involve local retailers, wholesalers, jobbers, and manufacturers' sales representatives.

Quantities purchased are generally small amounts, e.g., those available from local sources.

*Examples* of items purchased include: Common stationery and office supplies; standard types of office furniture and fixtures; standard nuts, bolts, and screws; janitorial and common building maintenance supplies; or common utility services or office machine repair services.

## Buyers II

Purchases "off-the-shelf" types of standard, generally available technical items, materials, and services. Transactions may involve occasional modification of standard and commonly used items, materials, and services, and include a few stipulations about unusual packing, marking, shipping, etc.

Transactions usually involve dealing directly with manufacturers, distributors, jobbers, etc.

Quantities of items and materials purchased may be relatively large, particularly in the case of contracts for continuing supply over a period of time.

May be responsible for locating or promoting possible new sources of supply. Usually is expected to keep abreast of market trends, changes in business practices in the assigned markets, new or altered types of materials entering the market, etc.

*Examples* of items purchased include: Standard industrial types of handtools, gloves, and safety equipment; standard electronic parts, components, and component test instruments; electric motors; gasoline service station equipment; PBX or other specialized telephone services; special purpose printing services; custodial services for a large building; and routine purchases of common raw materials such as standard grades and sizes of steel bars, rods, and angles.

Also included at this level are buyers of materials of the types described for buyer I when the quantities purchased are so large that local sources of supply are generally inadequate and the buyer must deal directly with manufacturers on a broader-than-local scale.

## Buyers III

Purchases items, materials, or services of a technical and specialized nature. The items, while of a common general type, are usually made, altered, or customized to meet the user's specific needs and specifications.

Transactions usually require dealing with manufacturers. The number of potential vendors is likely to be small and

price differentials often reflect important factors (quality, delivery dates and places, etc.) that are difficult to evaluate.

The quantities purchased of any item or service may be large.

Many of the purchases involve one or more such complications as: Specifications that detail, in technical terms, the required physical, chemical, electrical, or other comparable properties; special testing prior to acceptance; grouping of items for lot bidding and awards; specialized processing, packing, or packaging requirements; export packs; overseas port differentials; etc.

Is expected to keep abreast of market and product developments. May be required to locate new sources of supply.

Some positions may involve *assisting* in the training or supervision of lower level buyers or clerks.

*Examples* of items purchased include: Castings; special extruded shapes of normal size and material; special formula paints; electric motors of special shape or speeds; production equipment; special packaging of items; raw materials in substantial quantities or with special characteristics; and protective services where security presents an especially significant problem.

## Buyers IV

Purchases highly complex and technical items, materials, or services, usually those specially designed and manufactured exclusively for the purchaser.

Transactions require dealing with manufacturers and often involve persuading potential vendors to undertake the manufacture of custom-designed items according to complex and rigid specifications.

Quantities of items and materials purchased are often large in order to satisfy the requirements for an entire large organization for an extended period of time. Complex schedules of delivery are often involved. Buyer determines appropriate quantities to be contracted for at any given period of time.

Transactions are often complicated by the presence of one or more such matters as inclusion of: Requirements for spare parts, preproduction samples and testing, or technical literature; or patent and royalty provisions.

Keeps abreast of market and product developments. Develops new sources of supply.

In addition to the work described above, a few positions may also require supervision of a few lower level buyers or clerks. (No position is included in this level *solely* because supervisory duties are performed.)

*Examples* of items purchased include: Special-purpose high-cost machine tools and production facilities; specialized condensers, boilers, and turbines; raw materials of critically important characteristics or quality; and parts, subassemblies, components, etc., specially designed and made to order (e.g., communications equipment for installation in aircraft being manufactured; component assemblies for missiles and

rockets; and motor vehicle frames).

*NOTE: Buyers above level IV* make purchases in such unusually large quantities that they can affect the market price of a commodity or produce other significant effects on the industry or trade concerned. Others may purchase items of either 1) extraordinary technical complexity, e.g., involving the outermost limits of science or engineering, or 2) unusually high individual or unit value. Such buyers often persuade suppliers to expand their plants or convert facilities to the production of new items or services. These types of buying functions are often performed by program managers or company officials who have primary responsibilities other than buying.

## COMPUTER PROGRAMMERS

Performs programming services for establishments or for outside organizations who may contract for services. Converts specifications (precise descriptions) about business or scientific problems into a sequence of detailed instructions to solve problems by electronic data processing (EDP) equipment, i.e., digital computers. Draws program flow charts to describe the processing of data and develops the precise steps and processing logic which, when entered into the computer in coded language (COBOL, FORTRAN, or other programming language), cause the manipulation of data to achieve desired results. Tests and corrects programs and prepares instructions for operators who control the computer during runs. Modifies programs to increase operating efficiency or to respond to changes in work processes; maintains records to document program development and revisions.

At levels I, II, and III, computer programmers *may also perform* programming analysis such as: Gathering facts from users to define their business or scientific problems and to investigate the feasibility of solving problems through new or modified computer programs; developing specifications for data inputs, flow, actions, decisions, and outputs; and participating on a continuing basis in the overall program planning along with other EDP personnel and users.

In contrast, at levels IV and V, some programming analysis must be performed as part of the programming assignment. The analysis duties are identified in a separate paragraph at levels I, II, III, and IV, and are part of each alternative described at level V. However, the systems requirements are defined by systems analysts or scientists.

*Excluded are:*

- a. Positions which require a bachelor's degree in a specific scientific field (other than computer science), such as an engineering, mathematics, physics, or chemistry degree; however, positions are potential matches where the required degree may be from any of several possible scientific fields;
- b. Positions responsible for developing and modifying computer systems;
- c. Computer programmers who perform level IV or V duties but

who perform no programming analysis;

- d. Workers who primarily analyze and evaluate problems concerning computer equipment or its selection or utilization;
- e. Computer systems programmers or analysts who primarily write programs or analyze problems concerning the system software, e.g., operating systems, compilers, assemblers, system utility routines, etc., which provide basic services for the use of all programs and provide for the scheduling of the execution of programs; however, positions matching this definition may develop a "total package" which includes not only writing programs to process data but also selecting the computer equipment and system software required;
- f. Employees who have significant responsibility for the management or supervision of workers (e.g., systems analysts) whose positions are *not* covered in this definition; or employees with significant responsibility for *other functions* such as computer operations, data entry, system software, etc.; and
- g. Positions *not* requiring: 1) 3 years of administrative, technical, or *substantive* clerical experience; 2) a bachelor's degree in any field; or 3) any equivalent combination of experience and education yielding basic skills in problem analysis and communication.

Positions are classified into levels based on the following definitions.

### Computer Programmers I

At this trainee level, assignments are usually planned to develop basic programming skills because incumbents are typically inexperienced in applying such skills on the job. Assists higher level staff by performing elementary programming tasks which concern limited and simple data items and steps which closely follow patterns of previous work done in the organization, e.g., drawing flow charts, writing operator instructions, or coding and testing routines to accumulate counts, tallies, or summaries. May perform routine programming assignments (as described in level II) under close supervision.

In addition, as training and to assist higher level staff, *may perform* elementary factfinding concerning a specified work process, e.g., a file of clerical records which is treated as a unit (invoices, requisitions, or purchase orders, etc.); reports findings to higher level staff.

Receives classroom and/or on-the-job training in computer programming concepts, methods, and techniques and in the basic requirements of the subject matter area. May receive training in elementary factfinding. Detailed, step-by-step instructions are given for each task and any deviation must be authorized by a supervisor. Work is closely monitored in progress and reviewed in detail upon completion.

### Computer Programmers II

At this level, initial assignments are designed to develop competence in applying established programming procedures to routine problems. Performs routine programming assignments

that do not require skilled background experience but do require knowledge of established programming procedures and data processing requirements. Works according to clear-cut and complete specifications. The data are refined and the format of the final product is very similar to that of the input or is well defined when significantly different, i.e., there are few, if any, problems with interrelating varied records and outputs.

Maintains and modifies routine programs. Makes approved changes by amending program flow charts, developing detailed processing logic, and coding changes. Tests and documents modifications and writes operator instructions. May write routine new programs using prescribed specifications; may confer with EDP personnel to clarify procedures, processing logic, etc.

In addition, and as continued training, may evaluate simple interrelationships in the immediate programming area, e.g., whether a contemplated change in one part of a simple program would cause unwanted results in a related part; confers with user representatives to gain an understanding of the situation sufficient to formulate the needed change; and implements the change upon approval of the supervisor or higher level staff. The incumbent is provided with charts, narrative descriptions of the functions performed, an approved statement of the product desired (e.g., a change in a local establishment report), and the inputs, outputs, and record formats.

Reviews objectives and assignment details with higher level staff to insure thorough understanding; uses judgment in selecting among authorized procedures and seeks assistance when guidelines are inadequate, significant deviations are proposed, or when unanticipated problems arise. Work is usually monitored in progress; all work is reviewed upon completion for accuracy and compliance with standards.

### **Computer Programmers III**

As a fully qualified computer programmer, applies standard programming procedures and detailed knowledge of pertinent subject matter (e.g., work processes, governing rules, clerical procedures, etc.) in a programming area such as: A recordkeeping operation (supply, personnel and payroll, inventory, purchasing, insurance payments, depositor accounts, etc.); a well-defined statistical or scientific problem; or other standardized operation or problem. Works according to approved statements of requirements and detailed specifications. While the data are clear cut, related, and equally available, there may be substantial interrelationships of a variety of records, and several varied sequences of formats are usually produced. The programs developed or modified typically are linked to several other programs in that the output of one becomes the input for another. Recognizes probable interactions of other related programs with the assigned program(s) and is familiar with related system software and computer equipment. Solves conventional programming problems. (In

small organizations, may maintain programs which concern or combine several operations, i.e., users, or develop programs where there is one primary user and the others give input.)

Performs such duties as: Develops, modifies, and maintains assigned programs; designs and implements modifications to the interrelation of files and records within programs in consultation with higher level staff; monitors the operation of assigned programs and responds to problems by diagnosing and correcting errors in logic and coding; and implements and/or maintains assigned portions of a scientific programming project, applying established scientific programming techniques to well-defined mathematical, statistical, engineering, or other scientific problems usually requiring the translation of mathematical notation into processing logic and code. (Scientific programming includes assignments such as: Using predetermined physical laws expressed in mathematical terms to relate one set of data to another; the routine storage and retrieval of field test data; and using procedures for real-time command and control, scientific data reduction, signal processing, or similar areas.) Tests and documents work and writes and maintains operator instructions for assigned programs. Confers with other EDP personnel to obtain or provide factual data.

In addition, may carry out factfinding and programming analysis of a single activity or routine problem, applying established procedures where the nature of the program, feasibility, computer equipment, and programming language have already been decided. May analyze present performance of the program and take action to correct deficiencies based on discussion with the user and consultation with and approval of the supervisor or higher level staff. May assist in the review and analysis of detailed program specifications and in program design to meet changes in work processes.

Works independently under specified objectives; applies judgment in devising program logic and in selecting and adapting standard programming procedures; resolves problems and deviations according to established practices; and obtains advice where precedents are unclear or not available. Completed work is reviewed for conformance to standards, timeliness, and efficiency. May guide or instruct lower level programmers; may supervise technicians and others who assist in specific assignments.

OR

Works on complex programs (as described in level IV) under close direction of higher level staff or supervisor. May assist higher level staff by independently performing moderately complex tasks assigned, and performing complex tasks under close supervision.

### **Computer Programmers IV**

Applies expertise in programming procedures to complex programs; recommends the redesign of programs,

investigates and analyzes feasibility and program requirements, and develops programming specifications. Assigned programs typically affect a broad multiuser computer system which meets the data processing needs of a broad area (e.g., manufacturing, logistics planning, finance management, human resources, or material management) or a computer system for a project in engineering, research, accounting, statistics, etc. Plans the full range of programming actions to produce several interrelated but different products from numerous and diverse data elements which are usually from different sources; solves difficult programming problems. Uses knowledge of pertinent system software, computer equipment, work processes, regulations, and management practices.

Performs such duties as: Develops, modifies, and maintains complex programs; designs and implements the interrelations of files and records within programs which will effectively fit into the overall design of the project; working with problems or concepts, develops programs for the solution to major scientific computational problems requiring the analysis and development of logical or mathematic descriptions of functions to be programmed; and develops occasional special programs, e.g., a critical path analysis program to assist in managing a special project. Tests, documents, and writes operating instructions for all work. Confers with other EDP personnel to secure information, investigate and resolve problems, and coordinate work efforts.

In addition, performs such programming analysis as: Investigating the feasibility of alternative program design approaches to determine the best balanced solution, e.g., one that will best satisfy immediate user needs, facilitate subsequent modification, and conserve resources; on typical maintenance projects and smaller scale, limited new projects, assisting user personnel in defining problems or needs and determining work organization, the necessary files and records, and their interrelation with the program; or on large or more complicated projects, participating as a team member along with other EDP personnel and users and having responsibility for a portion of the project.

Works independently under overall objectives and direction, apprising the supervisor about progress and unusual complications. Modifies and adapts precedent solutions and proven approaches. Guidelines include constraints imposed by the related programs with which the incumbent's programs must be meshed. Completed work is reviewed for timeliness, compatibility with other work, and effectiveness in meeting requirements. May function as team leader or supervise a few lower level programmers or technicians on assigned work.

### **Computer Programmers V**

At level V, workers are typically either supervisors, team leaders, staff specialists, or consultants. Some programming analysis is included as a part of the programming assignment. Supervision and review are similar to level IV.

*Typical duties and responsibilities* include one or more of the following:

1. *In a supervisory capacity*, plans, develops, coordinates, and directs a large and important programming project (finance, manufacturing, sales/marketing, human resources, or other broad area) or a number of small programming projects with complex features. A substantial portion of the work supervised (usually 2 to 3 workers) is comparable to that described for level IV. Supervises, coordinates, and reviews the work of a small staff, normally not more than 15 programmers and technicians; estimates personnel needs and schedules, assigns and reviews work to meet completion date. These day-to-day supervisors evaluate performance, resolve complaints, and make recommendations on hiring and firing. They do not make final decisions on curtailing projects, reorganizing, or reallocating resources.
2. *As team leader, staff specialist, or consultant*, defines complex scientific problems (e.g., computational) or other highly complex programming problems (e.g., generating overall forecasts, projections, or other new data fields widely different from the source data or untried at the scale proposed) and directs the development of computer programs for their solution; or designs improvements in complex programs where existing precedents provide little guidance, such as an interrelated group of mathematical/statistical programs which support health insurance, natural resources, marketing trends, or other research activities. In conjunction with users (scientists or specialists), defines major problems in the subject-matter area. Contacts coworkers and user personnel at various locations to plan and coordinate project and gather data; devises ways to obtain data not previously available; and arbitrates differences between various program users when conflicting requirements arise. May perform simulation studies to determine effects of changes in computer equipment or system software or may assess the feasibility and soundness of proposed programming projects which are novel and complex. Typically develops programming techniques and procedures where few precedents exist. May be assisted on projects by other programmers or technicians.

### **COMPUTER SYSTEMS ANALYSTS**

Analyzes business or scientific problems for resolution through electronic data processing. Gathers information from users, defines work problems, and, if feasible, designs a system of computer programs and procedures to resolve the problems. Develops complete specifications to enable computer programmers to prepare required programs; analyzes subject-matter operations to be automated; specifies number and types of records, files, and documents to be used and outputs to be produced; prepares work diagrams and data flow charts; coordinates tests of the system and participates in trial runs of new and revised systems; and recommends computer equipment changes to obtain more effective operations. May also write the computer programs.

*Excluded are:*

- a. Trainees who receive detailed directives and work plans, select authorized procedures for use in specific situations, and seek assistance for deviations and problems;

- b. Positions which require a bachelor's degree in a specific scientific field (other than computer science), such as an engineering, mathematics, physics, or chemistry degree; however, positions are potential matches where the required degree may be from any of several possible scientific fields;
- c. Computer programmers who write computer programs and solve user problems not requiring systems modification;
- d. Workers who primarily analyze and evaluate problems concerning *computer equipment* or its selection or utilization; and
- e. Computer systems programmers or analysts who primarily write programs or analyze problems concerning the system software, e.g., operating systems, compilers, assemblers, system utility routines, etc., which provide basic services for the use of all programs and provide for the scheduling or the execution of programs; however, positions matching this definition may develop a "total package" which includes not only analyzing work problems to be processed but also selecting the computer equipment and system software required.

Positions are classified into levels on the basis of the following definitions.

### Computer Systems Analysts I

At this level, initial assignments are designed to expand practical experience in applying systems analysis techniques and procedures. Provides *several phases* of the required systems analysis where the nature of the system is predetermined. Uses established factfinding approaches, knowledge of pertinent work processes and procedures, and familiarity with related computer programming practices, system software, and computer equipment.

Carries out factfinding and analysis as assigned, usually of a single activity or a routine problem; applies established procedures where the nature of the system, feasibility, computer equipment, and programming language have already been decided; may assist a higher level systems analyst by preparing the detailed specifications required by computer programmers from information developed by the higher level analyst; may research routine user problems and solve them by modifying the existing system when the solutions follow clear precedents. When cost and deadline estimates are required, results receive close review.

The supervisor defines objectives, priorities, and deadlines. Incumbents work independently, adapt guides to specific situations, resolve problems and deviations according to established practices, and obtain advice where precedents are unclear or not available. Completed work is reviewed for conformance to requirements, timeliness, and efficiency. May supervise technicians and others who assist in specific assignments.

### Computer Systems Analysts II

Applies systems analysis and design skills in an area such as a recordkeeping or scientific operation. A system of

several varied sequences or formats is usually developed, e.g., develops systems for maintaining depositor accounts in a bank, maintaining accounts receivable in a retail establishment, maintaining inventory accounts in a manufacturing or wholesale establishment, or processing a limited problem in a scientific project. Requires competence in most phases of system analysis and knowledge of pertinent system software and computer equipment and of the work processes, applicable regulations, workload, and practices of the assigned subject-matter area. Recognizes probable interactions of related computer systems and predicts impact of a change in assigned system.

Reviews proposals which consist of objectives, scope, and user expectations; gathers facts, analyzes data, and prepares a project synopsis which compares alternatives in terms of cost, time, availability of equipment and personnel, and recommends a course of action; and upon approval of synopsis, prepares specifications for development of computer programs. Determines and resolves data processing problems and coordinates the work with programmers, users, etc.; orients user personnel on new or changed procedures. May conduct special projects such as data element and code standardization throughout a broad system, working under specific objectives and bringing to the attention of the supervisor any unusual problems or controversies.

Works independently under overall project objectives and requirements; appraises supervisor about progress and unusual complications. Guidelines usually include existing systems and the constraints imposed by related systems with which the incumbent's work must be meshed. Adapts design approaches successfully used in precedent systems. Completed work is reviewed for timeliness, compatibility with other work, and effectiveness in meeting requirements. May provide functional direction to lower level assistants on assigned work.

OR

Works on a segment of a complex data processing scheme or broad system, as described for computer systems analyst, level III. Works independently on routine assignments and receives instructions and guidance on complex assignments. Work is reviewed for accuracy of judgment, compliance with instructions, and to insure proper alignment with the overall system.

### Computer Systems Analysts III

Applies systems analysis and design techniques to complex computer systems in a *broad* area such as manufacturing; finance management; engineering, accounting, or statistics; logistics planning; material management, etc. Usually, there are multiple users of the system; however, there may be complex one-user systems, e.g., for engineering or research projects. Requires competence in all phases of systems analysis techniques, concepts, and methods and knowledge

of available system software, computer equipment, and the regulations, structure, techniques, and management practices of one or more subject-matter areas. Since *input data usually come from diverse sources*, is responsible for recognizing probable conflicts and integrating diverse data elements and sources. Produces innovative solutions for a variety of complex problems.

Maintains and modifies complex systems or develops new subsystems such as an integrated production scheduling, inventory control, cost analysis, or sales analysis record in which every item of each type is automatically processed through the full system of records. Guides users in formulating requirements; advises on alternatives and on the implications of new or revised data processing systems; analyzes resulting user project proposals, identifies omissions and errors in requirements, and conducts feasibility studies; recommends optimum approach and develops system design for approved projects. Interprets information and informally arbitrates between system users when conflicts exist. May serve as lead analyst in a design subgroup, directing and integrating the work of one or two lower level analysts, each responsible for several programs.

Supervision and nature of review are similar to level II; existing systems provide precedents for the operation of new subsystems.

#### **Computer Systems Analysts IV**

Applies expert systems analysis and design techniques to complex *system development* in a specialized design area and/or resolves unique or unyielding problems in existing complex systems by *applying new technology*. Work requires a broad knowledge of data sources and flow, interactions of existing complex systems in the organization, and the capabilities and limitations of the systems software and computer equipment. Objectives and overall requirements are defined in the organization's EDP policies and standards; the primary constraints typically are those imposed by the need for compatibility with existing systems or processes. Supervision and nature of review are similar to levels II and III.

*Typical duties and responsibilities* include one or more of the following:

1. As team or project leader, provides systems design in a *specialized and highly complex design area*, e.g., interrelated business statistics and/or projections, scientific systems, mathematical models, or similar unprecedented computer systems. *Establishes the framework of new computer systems* from feasibility studies to postimplementation evaluation. Devises new sources of data and develops new approaches and techniques for use by others. May serve as technical authority for a design area. At least one or two team members perform work at level III; one or two team members may also perform work as a level IV staff specialist or consultant as described below.
2. As staff specialist or consultant, with expertise in a specialty area (e.g., data security, telecommunications, systems analysis

techniques, EDP standards development, etc.), plans and conducts analyses of unique or unyielding problems in a broad system. Identifies problems and specific issues in assigned area and prepares overall project recommendations from an EDP standpoint including feasible advancements in EDP technology; upon acceptance, determines a design strategy that anticipates directions of change; designs and monitors necessary testing and implementation plans. Performs work such as: Studies broad areas of projected work processes which cut across the organization's established EDP systems; conducts continuing review of computer technological developments applicable to system design and prepares long-range forecasts; develops EDP standards where new and improved approaches are needed; or develops recommendations for a management information system where new concepts are required.

#### **Computer Systems Analysts V**

*As a top technical expert, develops broad unprecedented computer systems and/or conducts critical studies central to the success of large organizations having extensive technical or highly diversified computer requirements.* Considers such requirements as broad organization policy and the diverse user needs of several organizational levels and locations. Works under general administrative direction.

*Typical duties and responsibilities* include one or more of the following:

1. As team or project leader, guides the development of broad unprecedented computer systems. The information requirements are complex and voluminous. Devises completely new ways to locate and develop data sources; establishes new factors and criteria for making subject-matter decisions. Coordinates factfinding, analysis, and design of the system and applies the most recent developments in data processing technology and computer equipment. Guidelines consist of state-of-the-art technology and general organizational policy. *At least one team member performs work at level IV.*
2. As staff specialist or consultant, is a recognized leader and authority in a large organization (as defined above). Performs at least two of the following: a) has overall responsibility for evaluating the significance of technological advancement and developing EDP standards where new and improved approaches are needed, e.g., programming techniques; b) conceives and plans exploratory investigations critical to the overall organization where useful precedents do not exist and new concepts are required, e.g., develops recommendations regarding a comprehensive management information system; or c) evaluates existing EDP organizational policy for effectiveness, devising and formulating changes in the organization's position on broad policy issues. May be assisted on individual projects by other analysts.

#### **COMPUTER SYSTEMS ANALYST SUPERVISORS/MANAGERS**

Supervises three or more employees, two of whom perform systems analysis. Work requires substantial and recurring use of systems analysis skills in directing staff. May also supervise programmers and related clerical and technical support personnel.



**Excluded are:**

- a. Positions also having significant responsibility for the management or supervision of functional areas (e.g., system software development, data entry, or computer operations) *not* related to the computer systems analyst and computer programmer definitions;
- b. Supervisory positions having base levels below computer systems analyst II or computer programmer IV; and
- c. Managers who supervise two or more subordinates performing at computer systems analyst supervisor/manager level IV.

**Classification by Level**

Supervisory jobs are matched at 1 of 4 levels according to two factors: a) base level of work supervised, and b) level of supervision. Table D-6 indicates the level of the supervisor for each combination of factors.

**Base Level of Work**

The base level of work is the highest level of *nonsupervisory* work under the direct or indirect supervision of the supervisor/manager which (when added to the nonsupervisory levels above it) represents at least 25 percent of the total nonsupervisory, nonclerical staff and at least two of the full-time positions supervised.

The base level of nonsupervisory, nonclerical work is determined by: 1) arraying the positions by level of difficulty; 2) determining the number of workers in each position; and 3) counting down from the highest level (if necessary) until at least 25 percent of the total nonsupervisory, nonclerical staff are represented.

**Level of Supervision**

Supervisors and managers should be matched at 1 of the 3 *LS* levels below which best describes their supervisory responsibility.

**LS-1.** Plans, coordinates, and evaluates the work of a small staff, normally not more than 15 programmers, systems analysts, and technicians; estimates personnel needs and schedules, assigns, and reviews work to meet completion date; interviews candidates for own unit and recommends

hires, promotions, or reassignments; resolves complaints and refers group grievances and more serious unresolved complaints to higher level supervisors; may reprimand employees.

**LS-2.** Directs a sizable staff (normally 15-30 employees), typically divided into subunits controlled by subordinate supervisors; advises higher level management on work problems of own unit and the impact on broader programs; collaborates with heads of other units to negotiate and/or coordinate work changes; makes decisions on work or training problems presented by subordinate supervisors; evaluates subordinate supervisors and reviews their evaluations of other employees; selects nonsupervisors (higher level approval is virtually assured) and recommends supervisory selections; hears group grievances and serious or unresolved complaints. May shift resources among projects and perform long-range budget planning.

*NOTE:* In rare instances, supervisory positions responsible for directing a sizable staff (e.g., 20-30 employees) may not have subordinate supervisors but *have all other LS-2 responsibilities*. Such positions are matched to LS-2.

**LS-3.** Directs two subordinate supervisory levels and the work force managed typically includes substantially more than 30 employees. Makes major decisions and recommendations (listed below) which have a direct, important, and substantial effect on own organization and work. Performs *at least three* of the following:

- Decides what programs and projects should be initiated, dropped, expanded, or curtailed;
- Determines long range plans in response to program changes, evaluates program goals, and redefines objectives;
- Determines changes to be made in organizational structure, delegation of authority, coordination of units, etc.;
- Decides what compromises to make in operations in view of public relations implications and need for support from various groups;
- Decides on the means to substantially reduce operating costs without impairing overall operations; justifies major equipment expenditures; and
- Resolves differences between key subordinate officials; decides, or significantly affects final decisions, on personnel actions for supervisors and other key officials.

**Table D-6 . Criteria for matching computer systems analyst supervisors/managers**

Base level of nonsupervisory job(s)		Level of supervisor		
Matched in the computer programmer definition	Matched in the computer systems analyst definition	LS-1	LS-2	LS-3
IV	II	I	II	III
V	III	II	III	IV
-	IV	III	IV	Exclude
-	V	IV	Exclude	Exclude

**CHEMISTS**

Performs professional work in research, development, interpretation, and analysis to determine the composition, molecular structure, and properties of substances; to develop or investigate new materials and processes; and to investigate the transformation which substances undergo. Work typically requires a B.S. degree in chemistry or, in rare instances, equivalent experience and education combined.

## Chemists I

*General characteristics.* At this beginning professional level, performs assignments designed to develop professional capabilities and to provide experience in applying the knowledge of chemistry to the job. May also receive formal classroom or seminar-type training. (Terminal positions are excluded.)

*Direction received.* Works under close supervision. Receives specific and detailed instructions as to required tasks and results expected. Work is checked during progress, and is reviewed for accuracy upon completion.

*Typical duties and responsibilities.* Performs a variety of routine tasks that are planned to provide experience and familiarization with the chemistry staff, methods, practices, and programs of the employer. The work includes a variety of routine qualitative and quantitative analyses; physical tests to determine properties such as viscosity, tensile strength, and melting point; and assisting more experienced chemists to gain additional knowledge through personal observation and discussion.

*Responsibility for the direction of others.* Usually none.

## Chemists II

*General characteristics.* Performs routine chemical work requiring selection and application of general and specialized methods, techniques, and instruments commonly used in the laboratory, and the ability to carry out instructions when less common or proposed methods or procedures are necessary. Requires work experience acquired in an entry level position, or appropriate graduate level study. For training and developmental purposes, assignments may include work that is typical of a higher level.

*Direction received.* Supervisor establishes the nature and extent of analysis required, specifies methods and criteria on new type of assignments, and reviews work for thoroughness of application of methods and accuracy of results.

*Typical duties and responsibilities.* Carries out a wide variety of standardized methods, tests, and procedures. In accordance with specific instructions, may carry out proposed and less common ones. Is expected to detect problems in using standardized procedures because of the condition of the sample, difficulties with the equipment, etc. Recommends modifications of procedures, e.g., extending or curtailing the analysis or using alternative procedures, based on knowledge of the problem and pertinent available literature. Conducts specified phases of research projects as an assistant to an experienced chemist.

*Responsibility for the direction of others.* May be assisted by a few aides or technicians.

## Chemists III

*General characteristics.* Performs a broad range of chemical tests and procedures utilized in the laboratory, using judgment in the independent evaluation, selection, and adaptation of standard methods and techniques. May carry through a complete series of tests on a product in its different process stages. Some assignments require a specialized knowledge of one or two common categories of related substances. Performance at this level requires developmental experience in a professional position, or equivalent graduate level education.

*Direction received.* On routine work, supervision is very general. Assistance is furnished on unusual problems, and work is reviewed for application of sound professional judgment.

*Typical duties and responsibilities.* In accordance with instructions as to the nature of the problem, selects standard methods, tests, or procedures; when necessary, develops or works out alternative or modified methods with supervisor's concurrence. Assists in research by analyzing samples or testing new procedures that require specialized training because a) standard methods are inapplicable, b) analytical findings must be interpreted in terms of compliance or noncompliance with standards, or c) specialized and advanced equipment and techniques must be adapted.

*Responsibility for the direction of others.* May supervise or coordinate the work of a few technicians or aides, and be assisted by lower level chemists.

## Chemists IV

*General characteristics.* As a fully competent chemist in all conventional aspects of the subject matter or the functional areas of the assignments, plans and conducts work requiring a) mastery of specialized techniques or ingenuity in selecting and evaluating approaches to unforeseen or novel problems, and b) ability to apply a research approach to the solution of a wide variety of problems and to assimilate the details and significance of chemical and physical analyses, procedures, and tests. Requires sufficient professional experience to assure competence as a fully trained worker; or, for positions primarily of a research nature, completion of all requirements for a doctoral degree may be substituted for experience.

*Direction received.* Independently performs most assignments with instructions as to the general results expected. Receives technical guidance on unusual or complex problems and supervisory approval on proposed plans for projects.

*Typical duties and responsibilities.* Conducts laboratory assignments requiring the determination and evaluation of

alternative procedures and the sequence of performing them. Performs complex, exacting, or unusual analytical assignments requiring specialized knowledge of techniques or products. Interprets results, prepares reports, and may provide technical advice in specialized area.

*Responsibility for the direction of others.* May supervise a small staff of chemists and technicians.

## Chemists V

*General characteristics.* Participates in planning laboratory programs on the basis of specialized knowledge of problems and methods and probable value of results. May serve as an expert in a narrow specialty (e.g., class of chemical compounds, or a class of products), making recommendations and conclusions which serve as the basis for undertaking or rejecting important projects. Development of the knowledge and expertise required for this level of work usually reflects progressive experience through chemist IV.

*Direction received.* Supervision and guidance relates largely to overall objectives, critical issues, new concepts, and policy matters. Consults with supervisor concerning unusual problems and developments.

*Typical duties and responsibilities* include one or both of the following:

1. In a supervisory capacity, plans, organizes, and directs assigned laboratory programs. Independently defines scope and critical elements of the projects and selects approaches to be taken. A substantial portion of the work supervised is comparable to that described for chemist IV.
2. As individual researcher or worker, carries out projects requiring development of new or highly modified scientific techniques and procedures, extensive knowledge of specialty, and knowledge of related scientific fields.

*Responsibility for the direction of others.* Supervises, coordinates, and reviews the work of a small staff of chemists and technicians engaged in varied research and development projects, or a larger group performing routine analytical work. Estimates personnel needs and schedules and assigns work to meet completion date. Or, as individual researcher or worker, may be assisted on projects by other chemists or technicians.

## Chemists VI

*General characteristics.* Performs work requiring leadership and expert knowledge in a specialized field, product, or process. Formulates and conducts a systematic attack on a problem area of considerable scope and complexity which must be approached through a series of complete and conceptually related studies, or a number of projects of lesser scope. The problems are complex because they are difficult to define

and require unconventional or novel approaches or have other difficult features. Maintains liaison with individuals and units within and outside the organization with responsibility for acting independently on technical matters pertaining to the field. Work at this level usually requires extensive progressive experience including work comparable to chemist V.

*Direction received.* Supervision received is essentially administrative, with assignments given in terms of broad general objectives and limits.

*Typical duties and responsibilities* include one or both of the following:

1. In a supervisory capacity, a) plans, develops, coordinates, and directs a number of large and important projects or a project of major scope and importance, or b) is responsible for the entire chemical program of a company or government agency when the program is of limited complexity and scope. Activities supervised are of such a scope that they require a few (three to five) subordinate supervisors or team leaders with at least one in a position comparable to level V.
2. As individual researcher or worker, determines, conceives, plans, and conducts projects of major importance to the employer. Applies a high degree of originality and ingenuity in adapting techniques into original combinations and configurations. As a specialist, may serve as a consultant to other chemists.

*Responsibility for the direction of others.* Plans, organizes, and supervises the work of a staff of chemists and technicians. Evaluates progress of the staff and results obtained, and recommends major changes to achieve overall objectives. Or, as individual worker or researcher, may be assisted on individual projects by other chemists or technicians.

## Chemists VII

*General characteristics.* Makes decisions and recommendations that are recognized as authoritative and have an important impact on extensive chemical activities. Initiates and maintains extensive contacts with key chemists and officials of other organizations requiring skill in persuasion and negotiation of critical issues. At this level, individuals will have demonstrated creativity, foresight, and mature judgment in anticipating and solving unprecedented chemical problems, determining program objectives and requirements, organizing programs and projects, and developing standards and guides for diverse chemical activities.

*Direction received.* Receives general administrative direction.

*Typical duties and responsibilities* include one or both of the following:

1. In a supervisory capacity, is responsible for a) an important segment of a chemical program of a company or government agency with extensive and diversified scientific requirements, or b) the entire chemical program of a company or agency

where the program is more limited in scope. The overall chemical program contains critical problems the solution of which requires major technological advances and opens the way for extensive related development. Makes authoritative technical recommendations concerning the scientific objectives and levels of work which will be most profitable in the light of program requirements and scientific and industrial trends and developments. Recommends facilities, personnel, and funds required.

2. As individual researcher and consultant, selects problems for research to further program objectives. Conceives and plans investigations in which the phenomena and principles are not adequately understood, and where few or contradictory scientific precedents or results are available for reference. Outstanding creativity and mature judgment are required to devise hypotheses and techniques of experimentation and to interpret results. As a leader and authority in a broad area of specialization, or in a narrow but intensely specialized one, advises the head of a large laboratory or officials of the organization on complex aspects of extremely broad and important programs. Has responsibility for exploring, evaluating, and justifying proposed and current programs and projects and furnishing advice on unusually complex and novel problems in the specialty field. Typically will have contributed innovations (e.g., techniques, products, procedures) which are regarded as significant advances in the field.

*Responsibility for the direction of others.* Directs several subordinate supervisors or team leaders, some of whom are in positions comparable to chemist VI; or, as individual researcher and consultant, may be assisted on individual projects by other chemists and technicians.

### Chemists VIII

*General characteristics.* Makes decisions and recommendations that are authoritative and have a far-reaching impact on extensive chemical and related activities of the company or government agency. Negotiates critical and controversial issues with top level chemists and officers of other organizations. Individuals at this level have demonstrated a high degree of creativity, foresight, and mature judgment in planning, organizing, and guiding extensive chemical programs and activities of outstanding novelty and importance.

*Direction received.* Receives general administrative direction.

*Typical duties and responsibilities* include one or both of the following:

1. In a supervisory capacity, is responsible for a) the entire chemical program of a company or government agency which is of moderate scope, or b) an important segment of a chemical program of a company or agency with very extensive and highly diversified scientific requirements, where programs are of such complexity and scope that they are of critical importance to overall operations and include problems of extraordinary difficulty that have resisted solution. Decides the kind and extent of chemical programs needed to accomplish company or agency objectives, chooses scientific approaches, plans and organizes facilities and programs, and interprets results.

2. As individual researcher and consultant, formulates and guides the attack on problems of exceptional difficulty and marked importance to the company, industry, or government. Problems are characterized by the lack of scientific precedents and source material, or the lack of success of prior research and analysis so that their solution would represent an advance of great significance and importance. Performs advisory and consulting services as a recognized authority for broad program areas of considerable novelty and importance. Has made contributions such as new products or techniques, development of processes, etc., which are regarded as major advances in the field.

*Responsibility for the direction of others.* Supervises several subordinate supervisors or team leaders some of whose positions are comparable to chemist VII, or individual researchers some of whose positions are comparable to chemist VII and sometimes chemist VIII. As an individual researcher and consultant, may be assisted on individual projects by other chemists or technicians.

*NOTE:* Individuals in charge of a chemical program may match any of several of the survey job levels, depending on the program's size and complexity. *Excluded* from the definitions are: 1) chemists in charge of programs so extensive and complex (e.g., consisting of highly diversified or unusually novel products and procedures) that one or more subordinate supervisory chemists are performing at level VIII; 2) individuals whose decisions have direct and substantial effect on setting policy for the organization (included, however, are supervisors deciding the "kind and extent of chemical programs" within broad guidelines set at higher levels); and 3) individual researchers and consultants who are recognized as national and/or international authorities and scientific leaders in very broad areas of scientific interest and investigation.

### ENGINEERS

Performs professional work in research, development, design, testing, analysis, production, construction, maintenance, operation, planning, survey, estimating, application, or standardization of engineering facilities, systems, structures, processes, equipment, devices, or materials, requiring knowledge of the science and art by which materials, natural resources, and power are made useful. Work typically requires a B.S. degree in engineering or, in rare instances, equivalent education and experience combined. (*Excluded* are: Safety engineers, industrial engineers, quality control engineers, sales engineers, and engineers whose primary responsibility is to be in charge of nonprofessional maintenance work.)

#### Engineers I

*General characteristics.* At this beginning professional level, performs assignments designed to develop professional work knowledge and abilities. May also receive formal classroom or seminar-type training. (Terminal positions are excluded.)

*Direction received.* Works under close supervision. Receives specific and detailed instructions as to required tasks and results expected. Work is checked during progress and is reviewed for accuracy upon completion.

*Typical duties and responsibilities.* Performs a variety of routine tasks that are planned to provide experience and familiarization with the engineering staff, methods, practices, and programs of the employer.

*Responsibility for the direction of others.* Usually none.

## Engineers II

*General characteristics.* Performs routine engineering work requiring application of standard techniques, procedures, and criteria in carrying out a sequence of related engineering tasks. Limited exercise of judgment is required on details of work and in making preliminary selections and adaptations of engineering alternatives. Requires work experience acquired in an entry level position, or appropriate graduate level study. For training and developmental purposes, assignments may include some work that is typical of a higher level.

*Direction received.* Supervisor screens assignments for unusual or difficult problems and selects techniques and procedures to be applied on nonroutine work. Receives close supervision on new aspects of assignments.

*Typical duties and responsibilities.* Using prescribed methods, performs specific and limited portions of a broader assignment of an experienced engineer. Applies standard practices and techniques in specific situations, adjusts and correlates data, recognizes discrepancies in results, and follows operations through a series of related detailed steps or processes.

*Responsibility for the direction of others.* May be assisted by a few aides or technicians.

## Engineers III

*General characteristics.* Independently evaluates, selects, and applies standard engineering techniques, procedures, and criteria, using judgment in making minor adaptations and modifications. Assignments have clear and specified objectives and require the investigation of a limited number of variables. Performance at this level requires developmental experience in a professional position, or equivalent graduate level education.

*Direction received.* Receives instructions on specific assignment objectives, complex features, and possible solutions. Assistance is furnished on unusual problems, and work is reviewed for application of sound professional judgment.

*Typical duties and responsibilities.* Performs work which involves conventional types of plans, investigations, surveys, structures, or equipment with relatively few complex features for which there are precedents. Assignments usually include one or more of the following: Equipment design and development, test of materials, preparation of specifications, process study, research investigations, report preparation, and other activities of limited scope requiring knowledge of principles and techniques commonly employed in the specific narrow area of assignments.

*Responsibility for the direction of others.* May supervise or coordinate the work of drafters, technicians, and others who assist in specific assignments.

## Engineers IV

*General characteristics.* As a fully competent engineer in all conventional aspects of the subject matter or the functional area of the assignments, plans and conducts work requiring judgment in the independent evaluation, selection, and substantial adaptation and modification of standard techniques, procedures, and criteria. Devises new approaches to problems encountered. Requires sufficient professional experience to assure competence as a fully trained worker; or, for positions primarily of a research nature, completion of all requirements for a doctoral degree may be substituted for experience.

*Direction received.* Independently performs most assignments with instructions as to the general results expected. Receives technical guidance on unusual or complex problems and supervisory approval on proposed plans for projects.

*Typical duties and responsibilities.* Plans, schedules, conducts, or coordinates detailed phases of the engineering work in a part of a major project or in a total project of moderate scope. Performs work which involves conventional engineering practice but may include a variety of complex features such as conflicting design requirements, unsuitability of standard materials, and difficult coordination requirements. Work requires a broad knowledge of precedents in the specialty area and a good knowledge of principles and practices of related specialties.

*Responsibility for the direction of others.* May supervise a few engineers or technicians on assigned work.

## Engineers V

*General characteristics.* Applies intensive and diversified knowledge of engineering principles and practices in broad areas of assignments and related fields. Makes decisions independently on engineering problems and methods and represents the organization in conferences to resolve

important questions and to plan and coordinate work. Requires the use of advanced techniques and the modification and extension of theories, precepts, and practices of the field and related sciences and disciplines. The knowledge and expertise required for this level of work usually result from progressive experience, including work comparable to engineer IV.

*Direction received.* Supervision and guidance relate largely to overall objectives, critical issues, new concepts, and policy matters. Consults with supervisor concerning unusual problems and developments.

*Typical duties and responsibilities* include one or more of the following:

1. In a supervisory capacity, plans, develops, coordinates, and directs a large and important engineering project or a number of small projects with many complex features. A substantial portion of the work supervised is comparable to that described for engineer IV.
2. As individual researcher or worker, carries out complex or novel assignments requiring the development of new or improved techniques and procedures. Work is expected to result in the development of new or refined equipment, materials, processes, products, and/or scientific methods.
3. As staff specialist, develops and evaluates plans and criteria for a variety of projects and activities to be carried out by others. Assesses the feasibility and soundness of proposed engineering evaluation tests, products, or equipment when necessary data are insufficient or confirmation by testing is advisable. Usually performs as a staff advisor and consultant in a technical specialty, a type of facility or equipment, or a program function.

*Responsibility for the direction of others.* Supervises, coordinates, and reviews the work of a small staff of engineers and technicians; estimates personnel needs and schedules and assigns work to meet completion date. Or, as individual researcher or staff specialist, may be assisted on projects by other engineers or technicians.

## Engineers VI

*General characteristics.* Has full technical responsibility for interpreting, organizing, executing, and coordinating assignments. Plans and develops engineering projects concerned with unique or controversial problems which have an important effect on major programs. This involves exploration of subject area, definition of scope and selection of problems for investigation, and development of novel concepts and approaches. Maintains liaison with individuals and units within or outside the organization with responsibility for acting independently on technical matters pertaining to the field. Work at this level usually requires extensive progressive experience including work comparable to engineer V.

*Direction received.* Supervision received is essentially administrative, with assignments given in terms of broad general objectives and limits.

*Typical duties and responsibilities* include one or more of the following:

1. In a supervisory capacity, a) plans, develops, coordinates, and directs a number of large and important projects or a project of major scope and importance; or b) is responsible for the entire engineering program of a company or government agency when the program is of limited complexity and scope. Extent of responsibilities generally requires a few (three to five) subordinate supervisors or team leaders with at least one in a position comparable to level V.
2. As individual researcher or worker, conceives, plans, and conducts research in problem areas of considerable scope and complexity. The problems must be approached through a series of complete and conceptually related studies, be difficult to define, require unconventional or novel approaches, and require sophisticated research techniques. Available guides and precedents contain critical gaps, are only partially related to the problem, or may be largely lacking due to the novel character of the project. At this level, the individual researcher generally will have contributed inventions, new designs, or techniques which are of material significance in the solution of important problems.
3. As a staff specialist, serves as the technical specialist for the organization in the application of advanced theories, concepts, principles, and processes for an assigned area of responsibility (i.e., subject matter, function, type of facility or equipment, or product). Keeps abreast of new scientific methods and developments affecting the organization for the purpose of recommending changes in emphasis of programs or new programs warranted by such developments.

*Responsibility for the direction of others.* Plans, organizes, and supervises the work of a staff of engineers and technicians. Evaluates progress of the staff and results obtained, and recommends major changes to achieve overall objectives. Or, as individual researcher or staff specialist, may be assisted on individual projects by other engineers or technicians.

## Engineers VII

*General characteristics.* Makes decisions and recommendations that are recognized as authoritative and have an important impact on extensive engineering activities. Initiates and maintains extensive contacts with key engineers and officials of other organizations, requiring skill in persuasion and negotiation of critical issues. At this level, individuals will have demonstrated creativity, foresight, and mature engineering judgment in anticipating and solving unprecedented engineering problems, determining program objectives and requirements, organizing programs and projects, and developing standards and guides for diverse engineering activities.

*Direction received.* Receives general administrative direction.

*Typical duties and responsibilities* include one or both of the following:

1. In a supervisory capacity, is responsible for a) an important segment of the engineering program of a company or

government agency with extensive and diversified engineering requirements, or b) the entire engineering program of a company or agency when it is more limited in scope. The overall engineering program contains critical problems the solution of which requires major technological advances and opens the way for extensive related development. Extent of responsibilities generally requires several subordinate organizational segments or teams. Recommends facilities, personnel, and funds required to carry out programs which are directly related to and directed toward fulfillment of overall objectives.

2. As individual researcher and consultant, is a recognized leader and authority in the company or government agency in a broad area of specialization or in a narrow but intensely specialized field. Selects research problems to further program objectives. Conceives and plans investigations of broad areas of considerable novelty and importance, for which engineering precedents are lacking in areas critical to the overall engineering program. Is consulted extensively by associates and others, with a high degree of reliance placed on incumbent's scientific interpretations and advice. Typically, will have contributed inventions, new designs, or techniques which are regarded as major advances in the field.

*Responsibility for the direction of others.* Directs several subordinate supervisors or team leaders, some of whom are in positions comparable to engineer VI; or as individual researcher and consultant, may be assisted on individual projects by other engineers and technicians.

## Engineers VIII

*General characteristics.* Makes decisions and recommendations that are recognized as authoritative and have a far-reaching impact on extensive engineering and related activities of the company or government agency. Negotiates critical and controversial issues with top level engineers and officers of other organizations. Individuals at this level demonstrate a high degree of creativity, foresight, and mature judgment in planning, organizing, and guiding extensive engineering programs and activities of outstanding novelty and importance.

*Direction received.* Receives general administrative direction.

*Typical duties and responsibilities* include one or both of the following:

1. In supervisory capacity, is responsible for a) an important segment of a very extensive and highly diversified engineering program of a company or government agency, or b) the entire engineering program of a company or agency when the program is of moderate scope. The programs are of such complexity and scope that they are of critical importance to overall objectives, include problems of extraordinary difficulty that often have resisted solution, and consist of several segments requiring subordinate supervisors. Decides the kind and extent of engineering and related programs needed to accomplish the objectives of the company or agency, chooses scientific approaches, plans and organizes facilities and programs, and interprets results.
2. As individual researcher and consultant, formulates and guides

the attack on problems of exceptional difficulty and marked importance to the company, industry, or government. Problems are characterized by their lack of scientific precedents and source material, or lack of success of prior research and analysis so that their solution would represent an advance of great significance and importance. Performs advisory and consulting work as a recognized authority for broad program areas or in an intensely specialized area of considerable novelty and importance.

*Responsibility for the direction of others.* Supervises several subordinate supervisors or team leaders, some of whose positions are comparable to engineer VII, or individual researchers, some of whose positions are comparable to engineer VII and sometimes engineer VIII. As an individual researcher and consultant, may be assisted on individual projects by other engineers or technicians.

*NOTE:* Individuals in charge of an engineering program may match any of several of the survey job levels, depending on the program's size and complexity. *Excluded* from the definition are: 1) engineers in charge of programs so extensive and complex (e.g., consisting of research and development on a variety of complex products or systems with numerous novel components) that one or more subordinate supervisory engineers are performing at level VIII; 2) individuals whose decisions have direct and substantial effect on setting policy for the organization (included, however, are supervisors deciding the "kind and extent of engineering and related programs" within broad guidelines set at higher levels); and 3) individual researchers and consultants who are recognized as national and/or international authorities and scientific leaders in very broad areas of scientific interest and investigation.

## REGISTERED NURSES (RN)

Provides professional nursing care to patients in hospitals, nursing homes, clinics, health units, private residences, and community health organizations. Assists physicians with treatment; assesses patient health problems and needs; develops and implements nursing care plans; maintains medical records; and assists patients in complying with prescribed medical regimen. May specialize, e.g., operating room nurse, psychiatric nurse, nurse anesthetist, industrial nurse, nurse practitioner, and clinical nurse specialist. May supervise licensed practical nurses and nursing assistants.

*Excluded* are:

- a. Nurse midwives;
- b. Nursing instructors, researchers, and consultants *who do not provide nursing care to patients*;
- c. Nursing supervisors and managers, e.g., head nurses, nursing coordinators, directors of nursing;
- d. RN's in nursing homes who perform the same duties as the

LPN's but who are hired primarily to meet State certification requirements for nursing homes; and

- e. RN trainees primarily performing such entry level nursing care as: Recording case histories; measuring temperature, pulse, respiration, height, weight, and blood pressure; and testing vision and hearing.

### Registered Nurses I

Provides comprehensive general nursing care to patients whose conditions and treatment are normally uncomplicated. Follows established procedures, standing orders, and doctor's instructions. Uses judgment in selecting guidelines appropriate to changing patient conditions. Routine duties are performed independently; variations from established routines are performed under specific instructions. Typical assignments include:

*Staff.* Prepares hospital or nursing home patients for tests, examinations, or treatment; assists in responding to emergencies; records vital signs and effects of medication and treatment in patient charts; and administers prescribed medications and intravenous feedings.

*Operating room.* Assists in surgical procedures by preparing patients for less complex operations (e.g., appendectomies); sterilizes instruments and other supplies; handles instruments; and assists in operating room, recovery room, and intensive care ward.

*Psychiatric.* Provides routine nursing care to psychiatric patients. May observe and record patient behavior.

*Health unit/clinic.* Administers immunizations, inoculations, allergy treatments, and medications in a clinic or employer health unit; performs first aid for minor burns, cuts, bruises, and sprains; obtains patient histories; and keeps records, writes reports, and maintains supplies and equipment.

### Registered Nurses II

Plans and provides comprehensive nursing care in accordance with professional nursing standards. Uses judgment in assessing patient conditions, interprets guidelines, and modifies patient care as necessary. Recognizes and determines proper action for medical emergencies, e.g., calls physician or takes preplanned emergency measures. Typical assignments include:

*Staff.* In addition to the duties described at level I, usually performs more complex procedures, such as: administering blood transfusions; managing nasal-pharyngeal, gastric suction, and other drainage tubes; using special equipment such as ventilator devices, resuscitators, and hypothermic units; or closely monitoring postoperative and seriously ill patients.

*Operating room.* Provides nursing service for surgical operations, including those involving complex and extensive surgical procedures. Confers with surgeons concerning instruments, sutures, prosthesis, and special equipment; cares for physical and psychological needs of patients; assists in the care and handling of supplies and equipment; assures accurate care and handling of specimens; and assumes responsibility for aseptic technique maintenance and adequacy of supplies during surgery.

*Psychiatric.* Provides comprehensive nursing care for psychiatric patients. In addition to observing patients, evaluates and records

significant behavior and reaction patterns and participates in group therapy sessions.

*Health unit/clinical.* Provides a range of nursing services, including preventive health care counseling. Coordinates health care needs and makes referrals to medical specialists; assesses and treats minor health problems; administers emergency treatment; performs limited portions of physical examinations; manages the stable phases of common chronic illnesses; and provides individual and family counseling.

*Community Health.* Provides a broad range of nursing services including adult and child health care, chronic and communicable disease control, health teaching, counseling, referrals, and followup.

### Registered Nurses II Specialists

Plans and provides highly specialized patient care in a difficult specialty area, such as intensive care or critical care. In comparison with registered nurse II, pay typically reflects advanced specialized training, experience, and certification. May assist higher level nurses in developing, evaluating, and revising nursing plans. May provide advice to lower level nursing staff in area of specialty.

### Registered Nurses III

Plans and performs specialized and advanced nursing assignments of considerable difficulty. Uses expertise in assessing patient conditions and develops nursing plans which serve as a role model for others. Evaluation and observation skills are relied upon by physicians in developing and modifying treatment. Work extends beyond patient care to the evaluation of concepts, procedures, and program effectiveness. Typical assignments include:

*Specialist.* Provides specialized hospital nursing care to patients having illnesses and injuries that require adaptation of established nursing procedures. Renders expertise in caring for patients who are seriously ill, are not responding to normal treatment, have undergone unique surgical operations, or are receiving infrequently used medication. Duties may require knowledge of special drugs or the ability to provide pulmonary ventilation.

*Anesthetist.* Recommends, administers, and manages anesthesia for a broad range of surgical procedures.

*Psychiatric specialist.* Provides nursing expertise on an interdisciplinary treatment team which defines policies and develops total care programs for psychiatric patients.

*Practitioner.* Provides primary health care and nursing services in clinics, schools, employer health units, or community health organizations. Assesses, diagnoses, and treats minor illnesses and manages chronic health problems. Other services may include: Providing primary care for trauma cases, including suturing; planning and conducting a clinic, school, or employer health program; or studying and appraising community health services.

### Registered Nurses IV

Plans, researches, develops, and implements new or modified techniques, methods, practices, and approaches in



nursing care. Acts as consultant in area of specialization and is considered an expert or leader within specialty area. Consults with supervisor to develop decisions and coordinates with other medical staff and community. Typical assignments include:

*Specialist/consultant.* Provides expert and complex hospital nursing and health care to a specialized group of patients. Develops and monitors the implementation of new nursing techniques, policies, procedures, and programs; instructs nursing and medical staff in specialty; represents the specialty to outside

organizations; and evaluates, interprets, and integrates research findings into nursing practices.

*Practitioner.* Serves as primary health advisor in clinics and community health organizations and provides full range of health care services. Manages clinic and is responsible for formulating nursing and health care standards and policies, including developing and teaching new techniques or practices and establishing or revising criteria for care. Collaborates with physician in planning, evaluating, coordinating, and revising program and determines conditions, resources, and policies essential to delivery of health care services.

## TECHNICAL SUPPORT OCCUPATIONS

### LICENSED PRACTICAL NURSES (LPN)

LPN's are licensed to provide practical or vocational nursing care to patients in hospitals, nursing homes, clinics, health units, homes, and community health organizations. They typically work under the supervision of a registered nurse or physician, and may supervise unlicensed nursing assistants.

#### Licensed Practical Nurses I

Provides standard nursing care requiring some latitude for independent judgment and initiative to perform recurring duties. Supervisor provides additional instructions for unusual or difficult tasks. Deviations from specific guidelines must be authorized by the supervisor. Typical assignments include:

*Hospitals/nursing homes.* As part of a nursing team, assists patients in attending to their personal hygiene; measures and labels routine specimens; records vital signs; provides routine treatments such as compresses, enemas, sterile dressings, and sitz baths; prepares and administers commonly prescribed medications; observes and reports on patient conditions; and teaches patient self-care, repeating instructions previously provided by professional staff.

*Mental health/resident care.* As part of a nursing team, makes rounds of assigned area to count patients; observes patients for changes in behavior and checks for cleanliness; encourages patients to participate in recreational activities; maintains standard records of patients and medications; and administers first aid.

*Clinics/community health organizations.* Performs routine nursing procedures such as taking and recording height, weight, measurements, and vital signs. Performs vision, hearing, urine, and tuberculin skin tests; records test results. Administers medications and immunizations under supervision of an RN; observes, records, and reports signs of illness or changes in patient condition; and assists physician with physical examinations. May provide routine nursing care to the sick at home, reinforcing physician's instructions, checking medication and eating and sleeping habits, and inquiring about additional problems.

diseases and illnesses sufficient to enhance communication with physicians, registered nurses, and patients. Follows general instructions in addition to established policies, practices, and procedures. Uses judgment to vary sequence of procedures based on patient's condition and previous instructions. Supervisory approval for requested deviations is given routinely. Guidance is provided for unusual occurrences.

*Hospitals/nursing homes.* As a responsible member of a nursing team, cares for patients in various stages of dependency (e.g., ranging from those receiving general medical care to a selected few who are critically ill). Provides appropriate verbal and written information for patient care plans. In addition to the tasks described at level I, assignments may include more complex duties such as: Catheterizing, irrigating, or suctioning patients; observing and reporting on subtle changes in a patient's condition; monitoring and maintaining intravenous fluids; and assisting in resuscitation procedures.

*Mental health/resident care.* Provides input into nursing team conferences by interpreting patient nursing care needs and responses to therapy. In addition to the tasks described at level I, serves as a role model by performing and teaching self-care; participates in therapy sessions by promoting self-care and self-worth; and records progress in treatment plans.

*Clinics/community health organizations.* In addition to the duties described at level I, uses experience and judgment to perform more complex procedures such as: Screening patients for health problems such as hypertension and diabetes, using judgment in deciding to refer patients to RN or physician; providing patient counseling and implementing therapeutic approaches specified in the patient's treatment plan; coordinating selected clinic operations; giving irrigations and catheterizations; suctioning tracheotomies and conducting electrocardiograms; or recertifying applicants for supplemental food programs when test results indicate nutritional deficiencies.

*Employer health units.* Uses judgment to perform moderately complex procedures such as: Treating employees for minor illnesses and work-related injuries and referring difficult cases to RN or physician; observing reactions to drugs and treatments and reporting irregularities; assisting physicians with examinations and treatments; and maintaining records of occupational illnesses and injuries as required by Federal and State regulations.

#### Licensed Practical Nurses III

This level applies to two different work situations. In situation 1), LPN's provide nursing care for patients in

#### Licensed Practical Nurses II

Provides nursing care requiring an understanding of

various stages of dependency, setting priorities and deadlines for patient care, and modifying nursing care as necessary prior to notifying the supervisor. In situation 2), LPN's are assigned to a selected group of critically ill patients, e.g., in hospital intensive care or coronary care units. These assignments require LPN's to immediately recognize and respond to serious situations, sometimes prior to notifying an RN. However, their overall independence and authority are more limited than those described in situation 1, and supervisory approval is required for proposed deviations from established guidelines.

*Hospitals.* Under direct supervision of an RN, provides nursing care to critically ill patients in such areas as intensive care or coronary care. Duties, while similar to the more complex responsibilities described at level II, are performed under stressful conditions requiring special techniques and procedures in reacting to life-threatening situations and in providing basic patient care. Evaluates appropriateness of planned treatment, given the patient's condition, and proposes modifications to RN.

*Mental health/resident care/nursing homes.* Duties are similar to those described at level II. However, these LPN's are authorized to adapt, if necessary, nursing care methods and procedures to meet changing patient needs.

*Excluded* are LPN's above level III. Such positions not only provide difficult nursing care to a selected group of critically ill patients, but also set priorities and deadlines for patient care, and modify nursing care prior to notifying the supervisor.

## **NURSING ASSISTANTS**

Provides personal and nursing care to patients in hospitals, nursing homes, resident care facilities, clinics, homes, and community health organizations. Duties include maintaining patient hygiene and supporting doctors and nurses in diagnostic procedures, technical treatments, patient charting, and patient teaching. Work does not require State licensure. Supervisory positions are excluded.

### **Nursing Assistants I**

Performs simple personal care and housekeeping tasks requiring no previous training. Typical tasks include: Bathing, dressing, feeding, lifting, escorting, and transporting patients; collecting laundry carts and food trays; taking and recording temperatures; and changing bed linen and cleaning patient's room. Follows detailed and specific instructions.

### **Nursing Assistants II**

In addition to providing personal care, performs common nursing procedures such as: Observing and reporting on patient conditions; taking and recording vital signs; collecting and labeling specimens; sterilizing equipment; listening to and encouraging patients; giving sitz baths and enemas;

applying and changing compresses and nonsterile dressings; checking and replenishing supplies; securing admission data from patients; and assisting in controlling aggressive or disruptive behavior. Follows specific instructions; matters not covered are verified with the supervisor.

*NOTE:* Positions receiving additional pay for performing the above duties and responsibilities in *forensic* units of mental health institutions are matched at level III. Workers in such positions must regularly use skill in influencing and communicating with patients who display abusive or resistant behavior.

### **Nursing Assistants III**

Performs a variety of common nursing procedures as described at level II. Work requires prior experience or training to perform these procedures, with some latitude for exercising independent initiative or limited judgment. May also: Perform several procedures sequentially; chart patient care; administer prescribed medication and simple treatments; teach patient self-care; and lead lower level nursing assistants.

*NOTE:* Positions receiving additional pay for performing the above duties and responsibilities in *forensic* units of mental health institutions are matched at level IV. (See *NOTE* for level II.)

### **Nursing Assistants IV**

Applies advanced patient or resident care principles, procedures, and techniques which require considerable training and experience. In addition to the work described at level III, typical duties include: Assisting professional staff in planning and evaluating patient or resident care; recognizing subtle changes in patient's condition and behavior and varying nursing care accordingly; catheterizing, irrigating, and suctioning patients; monitoring intravenous fluids and alerting registered nurse when system needs attention; and performing minor operative and diagnostic procedures in a clinic. Supervisor describes limitations or priorities of work.

*Excluded* are nursing assistants above level IV. Workers in these excluded positions typically participate (rather than assist) in planning and modifying patient or resident care; function as co-therapists in mental health therapy sessions; or coordinate treatment activities with patients, families, and faculty staff. *Also excluded* are positions receiving additional pay for performing level IV duties and responsibilities in *forensic* units of mental health institutions. (See *NOTE* for level II.)

## **MEDICAL MACHINE OPERATING TECHNICIANS**

Operates and monitors medical machines, equipment, or instruments as part of the examination or treatment of patients in hospitals, clinics, or other medical establishments.

Work is subordinate to the work of physicians or other professional employees. Work involves medical machines, equipment, or instruments used in:

Cardiac catheterization;  
Electrocardiography (EKG);  
Electroencephalography (EEG);  
Pumping and oxygenating the blood during open-heart surgery, or in treating patients with obstructed pulmonary or coronary arteries or serious heart trouble;  
Hemodialysis;  
Controlling the pressure in a hyperbaric-oxygen chamber;  
Inhalation/respiratory therapy;  
Pulmonary function testing;  
Ultrasonography (sonography) or thermography.

*Excluded are:*

- a. Diagnostic and therapeutic radiologic technologists;
- b. Laboratory technicians, medical technicians, and medical technologists; and
- c. Medical machine aides or trainees performing tasks that are preparatory or auxiliary to the complete examination and treatment of patients under close supervision.

### **Medical Machine Operating Technicians I**

Performs standard examinations or treatments requiring little deviation from instructions or procedures. Assignments require skill in performing either 1) delicate measurements or machine adjustments, or 2) repetitive observations requiring subtle determinations. Works with patients who are generally cooperative.

### **Medical Machine Operating Technicians II**

Performs examinations or treatments that require adapting techniques and procedures to individual assignments. Uses judgment to:

Vary test or treatment procedures according to patient's condition and to assess adequacy of results obtained under difficult circumstances (e.g., patient is too sick to cooperate);

Recognize when common test results or patient reactions indicate the need for either additional tests to pinpoint abnormalities or for consultation with a physician regarding changes to prescribed treatments; or

Perform procedures not covered by detailed instructions or that require variations to meet special needs outlined by a physician.

Frequently works with patients who are critically ill and require special procedures and handling. Recognizes adverse responses and initiates emergency procedures, such as cardiopulmonary resuscitation. Supervisor outlines general work objectives, priorities, and results expected. Work is reviewed for overall adequacy and compliance with general instructions.

### **Medical Machine Operating Technicians III**

Performs complex examinations or treatments using a

variety of established procedures that require a high degree of judgment and skill to:

Carry out many delicate and exacting steps and subtle discriminations, and to evaluate test results and patient responses to either determine appropriate machine adjustments or to select the methods and techniques that will produce the most effective results; and/or

Act as a team member in long, extensive, complex procedures that require alertness and precision to coordinate actions with others, and to make rapid and accurate observations or adjustments in accordance with precedents, in response to either physician demands or changes in patient's condition.

Supervisor provides few preliminary instructions; work is spotchecked. Technician requests assistance only when established procedures and techniques prove inadequate. Trains others to perform standard procedures.

### **Medical Machine Operating Technicians IV**

Performs complex examinations or treatments that regularly require innovative and adaptive approaches. Performs complex and relatively new procedures or operates equipment for which accepted practices have not been established. Work requires extensive training and experience to:

Make decisions, in the absence of definitive instructions or directly related precedents, to remedy difficulties or to improve the accuracy of techniques in order to obtain unusually precise measurements or adjustments; and

Make precise discriminations in evaluating either patient reactions or data from monitoring equipment, and take appropriate actions, without instructions, to control or compensate for adverse reactions.

Participates in planning medical or experimental procedures involving new techniques. May train others in performing such techniques. Receives general guidance in anticipating possible problems. Supervisor usually relies on technician's judgment.

### **CIVIL ENGINEERING OR SURVEY TECHNICIANS/ CONSTRUCTION INSPECTORS**

Provides semiprofessional support to engineers or related professionals engaged in the planning, design, management, or supervision of the construction (or alteration) of such structures as buildings, streets and highways, airports, sanitary systems, or flood control systems. Applies knowledge of the methods, equipment, and techniques of several of the following support functions:

*Data compilation and analysis/design and specification*—gathering, tabulating, and/or analyzing hydrologic and meteorologic information, quantities of materials required, traffic patterns, or other engineering data; or preparing project site layouts and specifications;

*Testing*—measuring the physical characteristics of soil, rock, concrete or other construction materials to determine methods and quantities required or to comply with safety and quality standards;

*Surveying*—measuring or determining distances, elevations, areas, angles, land boundaries or other features of the earth's surface; or

*Construction inspection*—performing onsite inspection of construction projects to determine conformance with contract specifications and building codes.

*Excluded* are building inspectors and construction, maintenance, and craft workers; chemical or other physical science technicians; engineers required to apply professional rather than technical knowledge of engineering to their work; and technicians not primarily concerned with civil or construction engineering.

*Also excluded* are technicians:

Below level I whose work is limited to very simple and routine tasks, such as identifying, weighing, and marking easy-to-identify items or recording simple instrument readings at specified intervals; and

Above level V who perform work of broad scope and complexity either by planning and accomplishing a complete project or by serving as an expert in a narrow aspect of a particular engineering field.

Positions are classified into levels on the basis of the following definitions.

### **Civil Engineering or Survey Technicians/ Construction Inspectors I**

Performs simple, routine tasks under close supervision or from detailed procedures. Work is checked in progress and on completion. Performs a variety of such typical duties as:

*Data compilation*—compiles engineering data from tests, drawings, specifications, or field notes; performs arithmetic computations by substituting values in specified formulas; plots data and draws simple curves and graphs.

*Testing*—conducts simple or repetitive tests on soils, concrete, and aggregates; e.g., sieve analysis, slump tests, and moisture content determination.

*Surveying*—performs routine and established functions such as holding range poles or rods where special procedures are required or directing the placement of surveyor's chain or tape and selecting measurement points.

*Construction inspection*—makes simple measurements and observations; may make preliminary recommendations concerning the acceptance of materials or workmanship in clear-cut situations.

### **Civil Engineering or Survey Technicians/ Construction Inspectors II**

Performs standard or prescribed assignments involving a sequence of related operations. Follows standard work methods and receives detailed instructions on unfamiliar assignments. Technical adequacy of routine work is assessed upon completion; nonroutine work is reviewed in progress. Performs a variety of such typical duties as:

*Data compilation and analysis*—compiles and examines a variety

of data required by engineers for project planning (e.g., hydrologic and sedimentation data; earthwork quantities), applying simple algebraic or geometric formulas.

*Testing*—conducts a variety of standard tests on soils, concrete, and aggregates, e.g., determines the liquid and plastic limits of soils or the flexural and compressive strength, air content, and elasticity of concrete. Examines test results and explains unusual findings.

*Surveying*—applies specialized knowledge, skills, or judgment to a varied and complex sequence of standard operations, e.g., surveys small land areas using rod, tape, and hand level to estimate volume to be excavated; or records data requiring numerous calculations.

*Construction inspection*—applies a variety of techniques in inspecting less complex projects, e.g., the quality, quantity, and placement of gravel for road construction; excavations, and concrete footings for structures. Determines compliance with plans and specifications. May assist in inspecting more complex projects.

### **Civil Engineering or Survey Technicians/ Construction Inspectors III**

Performs assignments which include nonstandard applications, analyses, or tests; or the use of complex instruments. Selects or adapts standard procedures using fully applicable precedents. Receives initial instructions, requirements, and advice as needed; performs recurring work independently. Work is reviewed for technical adequacy and conformance with instructions. Performs a variety of such typical duties as:

*Data compilation and analysis*—applies knowledge and judgment in selecting sources, evaluating data and adapting methods, e.g., computes, from file notes, quantities of materials required for roads which include retaining walls and culverts; plots profiles, cross sections and drainage areas for a small earthwork dam.

*Testing*—conducts tests for which established procedures and equipment require either adaptation or the construction of auxiliary devices. Uses judgment to interpret precise test results.

*Surveying*—uses a variety of complex instruments to measure angles and elevations, applying judgment and skill in selecting and describing field information. Assignments include: Recording complete and detailed descriptive data and providing sketches of relief, drainage, and culture; or running short traverse lines from specified points along unobstructed routes.

*Construction inspection*—independently inspects standard procedures, items, or operations of limited difficulty, e.g., slope, embankment, grading, moisture content, earthwork compaction, concrete forms, reinforcing rods, or simple batching and placement of concrete on road construction.

### **Civil Engineering or Survey Technicians/ Construction Inspectors IV**

Plans and performs nonroutine assignments of substantial variety and complexity. Selects appropriate guidelines to resolve problems which are not fully covered by precedents. Performs recurring work independently, receiving technical advice as needed. Performs a variety of such typical duties as:

*Design and specification*—prepares site layouts for projects

from such information as design criteria, soil conditions, existing buildings, topography, and survey data; makes preliminary cost estimates from established unit prices.

*Testing*—conducts tests which require the selection and substantial modification of equipment and procedures. Recognizes and interprets subtle, i.e., fluctuating, test reactions.

*Surveying*—makes exacting measurements under difficult conditions, e.g., leads detached observing unit on surveys involving unusually heavy urban, rail, or highway traffic; serves as party chief on conventional construction, property, topographical, hydrographic, or geodetic surveys. Excluded are party chiefs responsible for unusually difficult or complex surveys.

*Construction inspection*—performs inspections for a variety of complete projects of limited size and complexity or a phase of a larger project, e.g., conventional one- or two-story concrete and steel buildings; park and forest road construction limited to clearing, grading, and drainage. Interprets plans and specifications, resolves differences between plans and specifications, and approves minor deviations in methods which conform to established precedents.

### **Civil Engineering or Survey Technicians/ Construction Inspectors V**

Performs nonroutine and complex assignments involving responsibility for planning and conducting a complete project of limited scope or a portion of a larger, more complex project. Selects and adapts techniques, designs, or layouts. Reviews, analyzes, and interprets the technical work of others. Completed work is reviewed for technical adequacy. Performs a variety of such typical duties as:

*Design and specification*—prepares plans and specifications for major projects such as roads and airport runways, or electrical distribution systems. Applies established engineering practice; selects and adapts precedents to meet specific requirements.

*Testing*—modifies established testing programs, analyzing specifications, drawings, and other data to determine the tests required; adapts test equipment and procedures; analyzes and evaluates test data and writes evaluative reports of findings and recommendations.

*Construction inspection*—inspects projects of unusual difficulty and complexity, e.g., large multistory hospitals or laboratories which include sophisticated electrical and mechanical equipment; airport runways for jet aircraft with exacting requirements. Independently interprets plans and specifications to resolve complex construction problems.

### **ENGINEERING TECHNICIANS**

To be covered by these definitions, employees must meet all of the following criteria:

1. Provides semiprofessional technical support for engineers working in such areas as research, design, development, testing, or manufacturing process improvement.
2. Work pertains to electrical, electronic, or mechanical components or equipment.
3. Required to have some practical knowledge of science or

engineering; some positions may also require a practical knowledge of mathematics or computer science.

*Excludes* production or maintenance workers, quality control technicians or testers, modelmakers or other craftworkers, chemical or other nonengineering technicians, civil engineering technicians, drafters, designers, and engineers (who are required to apply a professional knowledge of engineering theory and principles to their duties, unlike higher level engineering technicians who may perform the same duties using only practical skills and knowledge).

*Also excludes* engineering technicians:

- a. Below level I who are limited to simple tasks such as: Measuring items or regular shapes with a caliper and computing cross-sectional areas; identifying, weighing, and marking easy-to-identify items; or recording simple instrument readings at specified intervals; and
- b. Above level V who perform work of broad scope and complexity either by planning and accomplishing a complete project or by serving as an expert in a narrow aspect of a particular field of engineering.

### **Engineering Technicians I**

Performs simple routine tasks under close supervision or from detailed procedures. Work is checked in progress or on completion. Performs at this level one or a combination of such typical duties as:

Assembles or installs equipment or parts requiring simple wiring, soldering, or connecting.

Performs simple or routine tasks or tests such as tensile or hardness tests; operates and adjusts simple test equipment; records test data.

Gathers and maintains specified records of engineering data such as tests, drawings, etc.; performs computations by substituting numbers in specified formulas; plots data and draws simple curves and graphs.

### **Engineering Technicians II**

Performs standardized or prescribed assignments involving a sequence of related operations. Follows standard work methods on recurring assignments but receives explicit instructions on unfamiliar assignments; technical adequacy of routine work is reviewed on completion; nonroutine work may also be reviewed in progress. Performs at this level one or a combination of such typical duties as:

Assembles or constructs simple or standard equipment or parts; may service or repair simple instruments or equipment.

Conducts a variety of standardized tests; may prepare test specimens; sets up and operates standard test equipment; records test data, pointing out deviations resulting from equipment malfunction or observational errors.

Extracts engineering data from various prescribed but nonstandardized sources; processes the data following well-defined methods including elementary algebra and geometry; presents the data in prescribed form.

### Engineering Technicians III

Performs assignments that are not completely standardized or prescribed. Selects or adapts standard procedures or equipment, using fully applicable precedents. Receives initial instructions, equipment requirements, and advice from supervisor or engineer as needed; performs recurring work independently; work is reviewed for technical adequacy or conformity with instructions. Performs at this level one or a combination of such typical duties as:

Constructs components, subunits, or simple models or adapts standard equipment. May troubleshoot and correct malfunctions.

Conducts various tests or experiments which may require minor modifications in test setups or procedures as well as subjective judgments in measurement; selects, sets up, and operates standard test equipment and records test data.

Extracts and compiles a variety of engineering data from field notes, manuals, lab reports, etc.; processes data, identifying errors or inconsistencies; selects methods of data presentation.

### Engineering Technicians IV

Performs nonroutine assignments of substantial variety and complexity, using precedents which are not fully applicable. May also plan such assignments. Receives technical advice from supervisor or engineer; work is reviewed for technical adequacy (or conformity with instructions). May be assisted by lower level technicians and have frequent contact with professionals and others within the establishment. Performs at this level one or a combination of such typical duties as:

Works on limited segment of development project; constructs experimental or prototype models to meet engineering requirements; conducts tests or experiments and redesigns as necessary; and records and evaluates data and reports findings.

Conducts tests or experiments requiring selection and adaptation or modification of a wide variety of critical test equipment and test procedures; sets up and operates equipment; records data, measures and records problems of significant complexity that sometimes require resolution at a higher level; and analyzes data and prepares test reports.

Extracts and analyzes a variety of engineering data; applies conventional engineering practices to develop or prepare schematics, designs, specifications, parts lists, or makes recommendations regarding these items. May review designs or specifications for adequacy.

### Engineering Technicians V

Performs nonroutine and complex assignments involving responsibility for planning and conducting a complete project of relatively limited scope or a portion of a larger and more diverse project. Selects and adapts plans, techniques, designs, or layouts. Contacts personnel in related activities to resolve problems and coordinate the work; reviews, analyzes, and integrates the technical work of others. Supervisor or professional engineer outlines objectives, requirements, and design approaches; completed work is reviewed for technical adequacy and satisfaction of requirements. May train and

be assisted by lower level technicians. Performs at this level one or a combination of such typical duties as:

Designs, develops, and constructs major units, devices, or equipment; conducts tests or experiments; analyzes results and redesigns or modifies equipment to improve performance; and reports results.

Plans or assists in planning tests to evaluate equipment performance. Determines test requirements, equipment modification, and test procedures; conducts tests, analyzes and evaluates data, and prepares reports on findings and recommendations.

Reviews and analyzes a variety of engineering data to determine requirements to meet engineering objectives; may calculate design data; and prepares layouts, detailed specifications, parts lists, estimates, procedures, etc. May check and analyze drawings or equipment to determine adequacy of drawings and design.

### DRAFTERS

Performs drafting work requiring knowledge and skill in drafting methods, procedures, and techniques. Prepares drawings of structures, facilities, land profiles, water systems, mechanical and electrical equipment, pipelines, duct systems, and similar equipment, systems, and assemblies. Drawings are used to communicate engineering ideas, designs, and information. Uses recognized systems of symbols, legends, shadings, and lines having specific meanings in drawings.

*Excluded are:*

- a. Designers using technical knowledge and judgment to conceive, plan, or modify designs;
- b. Illustrators or graphic artists using artistic ability to prepare illustrations;
- c. Office drafters preparing charts, diagrams, and room arrangements to depict statistical and administrative data;
- d. Cartographers preparing maps and charts primarily using a technical knowledge of cartography;
- e. Computer-assisted drafters who are not matchable to the level-to-level distinctions below; and
- f. Supervisors

Positions are classified into levels based on the following definitions.

#### Drafters I

Working under close supervision, traces or copies finished drawings, making clearly indicated revisions in notes and dimensions. Uses appropriate templates to draw curved lines. Assignments are designed to develop increasing skill in various drafting techniques. Work is spot checked during progress and reviewed upon completion.

*NOTE: Excludes* drafters receiving instruction in the elementary methods and techniques of drafting and learning to use and care for equipment. Workers in these excluded positions typically trace and copy simple drawings having straight lines and few details; prepare border lines and title boxes for drawing sheets; and prepare basic title headings by tracing or using lettering kits.

## Drafters II

Prepares drawings of simple, easily visualized structures, systems, parts or equipment from sketches or marked-up prints. Selects appropriate templates or uses a compass and other equipment needed to complete assignments. Drawings fit familiar patterns and present few technical problems. Supervisor provides detailed instructions on new assignments, gives guidance when questions arise, and reviews completed work for accuracy. Typical assignments include:

From marked-up prints, revises the original drawings of a plumbing system by increasing pipe diameters.

From sketches, draws building floor plans, determining size, spacing, and arrangement of freehand lettering according to scale.

Draws simple land profiles from predetermined structural dimensions and reduced survey notes. Traces river basin maps and enters symbols to denote stream sampling locations, municipal and industrial waste discharges, and water supplies.

## Drafters III

Prepares various drawings of such units as construction projects or parts and assemblies, including various views, sectional profiles, irregular or reverse curves, hidden lines, and small or intricate details. Work requires use of most of the conventional drafting techniques and a working knowledge of the terms and procedures of the occupation. Makes arithmetic computations using standard formulas. Familiar or recurring work is assigned in general terms. Unfamiliar assignments include information on methods, procedures, sources of information, and precedents to follow. Simple revisions to existing drawings may be assigned with a verbal explanation of the desired results. More complex revisions are produced from sketches or specifications which clearly depict the desired product. Typical assignments include:

From a layout and manual references, prepares several views of a simple gear system. Obtains dimensions and tolerances from manuals and by measuring the layout.

Draws base and elevation views, sections, and details of new bridges or other structures; revises complete sets of roadway drawings for highway construction projects; or prepares block maps, indicating water and sewage line locations.

Prepares and revises detail and design drawings for such projects as the construction and installation of electrical or electronic equipment, plant wiring, and the manufacture and assembly of printed circuit boards. Drawings typically include details of mountings, frames, guards, or other accessories; conduit layouts; or wiring diagrams indicating transformer sizes, conduit locations and mountings.

## Drafters IV

Prepares complete sets of complex drawings which include multiple views, detail drawings, and assembly drawings. Drawings include complex design features that require considerable drafting skill to visualize and portray. Assignments regularly require the use of mathematical formulas to draw land

contours or to compute weights, center of gravity, load capacities, dimensions, quantities of material, etc. Works from sketches, models, and verbal information supplied by an engineer, architect, or designer to determine the most appropriate views, detail drawings, and supplementary information needed to complete assignments. Selects required information from precedents, manufacturers' catalogs, and technical guides. Independently resolves most of the problems encountered. Supervisor or design originator may suggest methods of approach or provide advice on unusually difficult problems. Typical assignments include:

From layouts or sketches, prepares complete sets of drawings of test equipment to be manufactured. Several cross-sectional and subassembly drawings are required. From information supplied by the design originator and from technical handbooks and manuals, describes dimensions, tolerances, fits, fabrication techniques, and standard parts to use in manufacturing the equipment.

From electronic schematics, information as to maximum size, and manuals giving dimensions of standard parts, determines the arrangement and prepares drawings of printed circuit boards.

From precedents, drafting standards, and established practices, prepares final construction drawings for floodgates, navigation locks, dams, bridges, culverts, levees, channel excavations, dikes, and berms; prepares boring profiles, typical cross-sections, and land profiles; and delineates related topographical details as required.

Prepares final drawings for street paving and widening or for water and sewer lines having complex trunk lines; reduces field notes and calculates true grades. From engineering designs, lays out plan, profile, and detail appurtenances required; notifies supervisor of conflicting details in design.

*NOTE: Excludes drafters performing work of similar difficulty to that described at this level but who provide support for a variety of organizations which have widely differing functions or requirements.*

## Drafters V

Works closely with design originators, preparing drawings of *unusual, complex, or original designs which require a high degree of precision*. Performs unusually difficult assignments requiring considerable initiative, resourcefulness, and drafting expertise. Assures that anticipated problems in manufacture, assembly, installation, and operation are resolved by the drawings produced. Exercises independent judgment in selecting and interpreting data based on a knowledge of the design intent. Although working primarily as a drafter, may occasionally interpret general designs prepared by others to complete minor details. May provide advice and guidance to lower level drafters or serve as coordinator and planner for large and complex drafting projects.

## COMPUTER OPERATORS

Monitors and operates the control console of either a mainframe digital computer or a group of minicomputers, in accordance with operating instructions, to process data. Work

is characterized by the following:

- Studies operating instructions to determine equipment setup needed;
- Loads equipment with required items (tapes, cards, paper, etc.);
- Switches necessary auxiliary equipment into system;
- Starts and operates control console;
- Diagnoses and corrects equipment malfunctions;
- Reviews error messages and makes corrections during operation or refers problems;
- Maintains operating record.

May test run new or modified programs and *assist* in modifying systems or programs. Included within the scope of this definition are fully qualified computer operators, trainees working to become fully qualified operators, and lead operators providing *technical* assistance to lower level positions.

*Excluded* are:

- a. Workers operating small computer systems where there is little or no opportunity for operator intervention in program processing and few requirements to correct equipment malfunctions;
- b. Peripheral equipment operators and remote terminal or computer operators who do not run the *control console* of either a mainframe digital computer or a group of minicomputers; and
- c. Workers using the computer for scientific, technical, or mathematical work when a knowledge of the subject matter is required.

### Computer Operators I

Receives on-the-job training in operating the control console (sometimes augmented by classroom training). Works under close personal supervision and is provided detailed written or oral guidance before and during assignments. As instructed, resolves common operating problems. May serve as an assistant operator working under close supervision or performing a portion of a more senior operator's work.

### Computer Operators II

Processes scheduled routines which present few difficult operating problems (e.g., infrequent or easily resolved error conditions). In response to computer output instructions or error conditions, applies standard operating or corrective procedure. Refers problems which do not respond to preplanned procedure. May serve as an assistant operator, working under general supervision.

### Computer Operators III

Processes a range of scheduled routines. In addition to operating the system and resolving common error conditions, diagnoses and acts on machine stoppage and error conditions not fully covered by existing procedures and guidelines (e.g., resetting switches and other controls or making mechanical adjustments to maintain or restore equipment operations). In response to computer output instructions or error conditions,

may deviate from standard procedures if standard procedures do not provide a solution. Refers problems which do not respond to corrective procedures.

### Computer Operators IV

Adapts to a variety of nonstandard problems which require extensive operator intervention (e.g., frequent introduction of new programs, applications, or procedures). In response to computer output instructions or error conditions, chooses or devises a course of action from among several alternatives and alters or deviates from standard procedures if standard procedures do not provide a solution (e.g., reassigning equipment in order to work around faulty equipment or transfer channels); then refers problems. Typically, completed work is submitted to users without supervisory review.

### Computer Operators V

Resolves a variety of difficult operating problems (e.g., making unusual equipment connections and rarely used equipment and channel configurations to direct processing through or around problems in equipment, circuits, or channels or reviewing test run requirements and developing unusual system configurations that will allow test programs to process without interfering with ongoing job requirements). In response to computer output instructions and error conditions or to avoid loss of information or to conserve computer time, operator deviates from standard procedures. Such actions may materially alter the computer unit's production plans. May spend considerable time away from the control station providing technical assistance to lower level operators and assisting programmers, systems analysts, and subject matter specialists in resolving problems.

### Computer Operators VI

In addition to level V responsibilities, uses a knowledge of program language, computer features, and software systems to assist in: (1) maintaining, modifying, and developing operating systems or programs; (2) developing operating instructions and techniques to cover problem situations; and (3) switching to emergency backup procedures.

## PHOTOGRAPHERS

Takes pictures requiring a knowledge of photographic techniques, equipment, and processes. Typically, some familiarity with the organization's activities (e.g., scientific, engineering, industrial, technical, retail, commercial, etc.) and some artistic ability are needed at the higher levels. Depending on the objectives of the assignment, photographers use standard equipment (including simple still, graphic, and motion picture cameras, video and television hand cameras, and similar commonly used equipment) and/or use special-purpose equipment (including specialized still and graphic cameras, motion picture production, television studio, and high-speed cameras and equipment). At the higher levels, a complex accessory system



of equipment *may* be used, as needed, with sound or lighting systems, generators, timing or measurement control mechanisms, or improvised stages or environments, etc. Work of photographers at all levels is reviewed for quality and acceptability. Photographers may also develop, process, and edit film or tape, may serve as a lead photographer to lower level workers, or may perform work described at lower levels as needed.

*Excluded* are:

- a. Workers who have no training or experience in photography techniques, equipment, and processes;
- b. Workers who operate reproduction, offset, or copying machines, motion picture projectors, or machines to match, cut, or splice negatives;
- c. Workers who *primarily* develop, process, print, or edit photographic film or tape; or develop, maintain, or repair photographic equipment;
- d. Workers who *primarily* direct the sequences, actions, photography, sound, and editing of motion pictures for television writers and editors; and
- e. Photographers taking pictures for *commercial* newspaper or magazine publishers, television stations, or movie producers.

Positions are matched to the appropriate level based on the difficulty of, and responsibility for, the photography performed, including the subject-matter knowledge and artistry required to fulfill the assignment. While the equipment may be an indication of the level of difficulty, photographers at the higher levels may use standard equipment, as needed.

### **Photographers I**

Takes routine pictures in situations where several shots can be taken. Uses standard still cameras for pictures lacking complications, such as speed, motion, color contrast, or lighting. Photographs are taken for identification, employee publications, information, or publicity purposes. Workers must be able to focus, center, and provide simple flash-type lighting for an uncomplicated photograph.

Typical subjects are employees who are photographed for identification, award ceremonies, interviews, banquets, or meetings; or external views of machinery, supplies, equipment, buildings, damaged shipments, or other subjects photographed to record conditions. Assignments are usually performed without direct guidance due to the clear and simple nature of the desired photograph.

### **Photographers II**

Uses standard still cameras, commonly available lighting equipment, and related techniques to take photographs which involve limited problems of speed, motion, color contrast, or lighting. Typically, the subjects photographed are similar to those at level I, but the technical aspects require more skill. Based on clear-cut objectives, determines shutter speeds, lens settings and filters, camera angles, exposure times, and type of film. Requires familiarity with the situation gained from

similar past experience to arrange for specific emphasis, balanced lighting, and correction for distortion, etc., as needed. May use 16mm or 35mm motion picture cameras for simple shots such as moving equipment or individuals at work or meetings, where available or simple artificial lighting is used.

Ordinarily, there is opportunity for repeated shots or for retakes if the original exposure is unsatisfactory. Consults with supervisor or more experienced photographers when problems are anticipated.

### **Photographers III**

Selects from a range of standard photographic equipment for assignments demanding exact renditions, normally without opportunity for later retakes, when there are specific problems or uncertainties concerning lighting, exposure time, color, artistry, etc. Discusses technical requirements with operating officials or supervisor and customizes treatment for each situation according to a detailed request. Varies camera processes and techniques and uses the setting and background to produce esthetic, as well as accurate and informative, pictures. Typically, standard equipment is used at this level although "specialized" photography is usually performed; may use some special-purpose equipment under closer supervision.

In typical assignments, photographs: Drawings, charts, maps, textiles, etc., requiring accurate computation of reduction ratios and exposure times and precise equipment adjustments; tissue specimens in fine detail and exact color when color and condition of the tissue may deteriorate rapidly; medical or surgical procedures or conditions which normally cannot be recaptured; machine or motor parts to show wear or corrosion in minute wires or gears; specialized real estate, goods, and products for catalogs or listings where salability is enhanced by the photography; work, construction sites, or patrons in prescribed detail to substantiate legal claims, contracts, etc; artistic or technical design layouts requiring precise equipment settings; fixed objects on the ground or air-to-air objects which must be captured quickly and require directing the pilot to get the correct angle of approach.

Works independently; solves most problems through consultations with more experienced photographers, if available, or through reference sources.

### **Photographers IV**

Uses special-purpose cameras and related equipment for assignments in which the photographer usually makes all the technical decisions, although the objective of the pictures is determined by operating officials. Conceives and plans the technical photographic effects desired by operating officials and discusses modifications and improvements to their original ideas in light of the potential and limits of the equipment. Improvises photographic methods and techniques

or selects and alters secondary photographic features (e.g., scenes, backgrounds, colors, lighting). Many assignments afford only one opportunity to photograph the subject. Typical examples of equipment used at this level include ultra-high-speed, motion picture production, studio television, and animation cameras, specialized still and graphic cameras, electronic timing and triggering devices, etc.

Some assignments are characterized by extremes in light values and the use of complicated equipment. Sets up precise photographic measurement and control equipment; uses high-speed color photography, synchronized stroboscopic (interval) light sources, and/or timed electronic triggering; operates equipment from a remote point; or arranges and uses cameras operating at several thousand frames per second. In other assignments, selects and sets up motion picture or television cameras and accessories and shoots a part of a production or a sequence of scenes, or takes special scenes to be used for background or special effects in the production.

Works under guidelines and requirements of the subject-matter area to be photographed. Consults with supervisors only when dealing with highly unusual problems or altering existing equipment.

#### **Photographers V**

As a top technical expert, exercises imagination and creative ability in response to photography situations requiring novel and unprecedented treatment. Typically

performs *one or more of the following* assignments: (1) develops and adapts photographic equipment or processes to meet new and unprecedented situations, e.g., works with engineers and physicists to develop and modify equipment for use in extreme conditions such as excessive heat or cold, radiation, high altitude, underwater, wind and pressure tunnels, or explosions; (2) plans and organizes the overall technical photographic coverage for a variety of events and developments in phases of a scientific, industrial, medical, or research project; or (3) creates desired illusions or emotional effects by developing trick or special effects photography for novel situations requiring a high degree of ingenuity and imaginative camera work to heighten, simulate, or alter reality.

Independently develops, plans, and organizes the overall technical photographic aspects of assignments in collaboration with operating officials who are responsible for project substance. Uses imagination and creative ability to implement objectives within the capabilities and limitations of cameras and equipment. May exercise limited control over the substance of events to be photographed by staging actions, suggesting behavior of the principals, and rehearsing activities before photographs are taken.

*Note:* Excluded are photographers above level V who independently plan the objectives, scope, and substance of photography for projects in addition to planning overall technical photographic coverage.

## **CLERICAL OCCUPATIONS**

### **ACCOUNTING CLERKS**

Performs one or more accounting tasks, such as posting to registers and ledgers; balancing and reconciling accounts; verifying the internal consistency, completeness, and mathematical accuracy of accounting documents; assigning prescribed accounting distribution codes; examining and verifying the clerical accuracy of various types of reports, lists, calculations, postings, etc.; preparing journal vouchers; or making entries or adjustments to accounts.

Levels I and II require a basic knowledge of routine clerical methods and office practices and procedures as they relate to the clerical processing and recording of transactions and accounting information. Levels III and IV require a knowledge and understanding of the established and standardized bookkeeping and accounting procedures and techniques used in an accounting system, or a segment of an accounting system, where there are few variations in the types of transactions handled. In addition, some jobs at each level may require a basic knowledge and understanding of the terminology, codes, and processes used in an automated accounting system.

#### **Accounting Clerks I**

Performs very simple and routine accounting clerical operations, for example, recognizing and comparing easily identified numbers and codes on similar and repetitive accounting documents, verifying mathematical accuracy, and identifying discrepancies and bringing them to the supervisor's attention. Supervisor gives clear and detailed instructions for specific assignments. Employee refers to supervisor all matters not covered by instructions. Work is closely controlled and reviewed in detail for accuracy, adequacy, and adherence to instructions.

#### **Accounting Clerks II**

Performs one or more routine accounting clerical operations, such as: Examining, verifying, and correcting accounting transactions to ensure completeness and accuracy of data and proper identification of accounts, and checking that expenditures will not exceed obligations in specified accounts; totaling, balancing, and reconciling collection vouchers; posting data to transaction sheets where employee

identifies proper accounts and items to be posted; and coding documents in accordance with a chart (listing) of accounts. Employee follows specific and detailed accounting procedures. Completed work is reviewed for accuracy and compliance with procedures.

### **Accounting Clerks III**

Uses a knowledge of double-entry bookkeeping in performing one or more of the following: Posts actions to journals, identifying subsidiary accounts affected and debit and credit entries to be made and assigning proper codes; reviews computer printouts against manually maintained journals, detecting and correcting erroneous postings, and preparing documents to adjust accounting classifications and other data; or reviews lists of transactions rejected by an automated system, determining reasons for rejections, and preparing necessary correcting material. On routine assignments, employee selects and applies established procedures and techniques. Detailed instructions are provided for difficult or unusual assignments. Completed work and methods used are reviewed for technical accuracy.

### **Accounting Clerks IV**

Maintains journals or subsidiary ledgers of an accounting system and balances and reconciles accounts. Typical duties include one or both of the following: Reviews invoices and statements (verifying information, ensuring sufficient funds have been obligated, and if questionable, resolving with the submitting unit, determining accounts involved, coding transactions, and processing material through data processing for application in the accounting system); and/or analyzes and reconciles computer printouts with operating unit reports (contacting units and researching causes of discrepancies, and taking action to ensure that accounts balance). Employee resolves problems in recurring assignments in accordance with previous training and experience. Supervisor provides suggestions for handling unusual or nonrecurring transactions. Conformance with requirements and technical soundness of completed work are reviewed by the supervisor or are controlled by mechanisms built into the accounting system.

*NOTE:* Excluded from level IV are positions responsible for maintaining either a general ledger or a general ledger in combination with subsidiary accounts.

### **FILE CLERKS**

Files, classifies, and retrieves material in an established filing system. May perform clerical and manual tasks required to maintain files. Positions are classified into levels on the basis of the following definitions.

#### **File Clerks I**

Performs routine filing of material that has already been

classified or which is easily classified in a simple serial classification system (e.g., alphabetical, chronological, or numerical). As requested, locates readily available material in files and forwards material; may fill out withdrawal charge. May perform simple clerical and manual tasks required to maintain and service files.

#### **File Clerks II**

Sorts, codes, and files unclassified material by simple (subject-matter) headings or partly classified material by finer subheadings. Prepares simple related index and cross-reference aids. As requested, locates clearly identified material in files and forwards material. May perform related clerical tasks required to maintain and service files.

#### **File Clerks III**

Classifies and indexes file material such as correspondence, reports, technical documents, etc., in an established filing system containing a number of varied subject matter files. May also file this material. May also keep records of various types in conjunction with the files. May lead a small group of lower level file clerks.

### **KEY ENTRY OPERATORS**

Operates keyboard-controlled data entry device such as keypunch machine or key-operated magnetic tape or disc encoder to transcribe data into a form suitable for computer processing. Work requires skill in operating an alphanumeric keyboard and an understanding of transcribing procedures and relevant data entry equipment.

Positions are classified into levels on the basis of the following definitions.

#### **Key Entry Operators I**

Work is routine and repetitive. Under close supervision or following specific procedures or detailed instructions, works from various standardized source documents which have been coded and require little or no selecting, coding, or interpreting of data to be entered. Refers to supervisor problems arising from erroneous items, codes, or missing information.

#### **Key Entry Operators II**

Work requires the application of experience and judgment in selecting procedures to be followed and in searching for, interpreting, selecting, or coding items to be entered from a variety of source documents. On occasion, may also perform routine work as described for level I.

*NOTE:* Excluded are operators above level II using the key entry controls to access, read, and evaluate the substance

of specific records to take substantive actions, or to make entries requiring a similar level of knowledge.

## MESSENGERS

Performs various routine duties such as running errands, operating minor office machines such as sealers or mailers, opening mail, distributing mail on a regularly scheduled route, and other minor clerical work. May deliver mail that requires some special handling, e.g., mail that is insured, registered, or marked for special delivery.

*Excluded* are positions which include any of the following as *significant* duties:

- a. Operating motor vehicles;
- b. Delivering valuables or security-classified mail when the work requires a continuing knowledge of special procedures for handling such items;
- c. Weighing mail, determining postage, or recording and controlling registered, insured, and certified mail in the mail room;
- d. Making deliveries to unfamiliar or widely separated buildings or points which are not part of an established route; or
- e. Directing other workers.

## SECRETARIES

Provides principal secretarial support in an office, usually to one individual, and, in some cases, also to the subordinate staff of that individual. Maintains a close and highly responsive relationship to the day-to-day activities of the supervisor and staff. Works fairly independently receiving a minimum of detailed supervision and guidance. Performs varied clerical and secretarial duties requiring a knowledge of office routine and an understanding of the organization, programs, and procedures related to the work of the office.

*Exclusions.* Not all positions titled "secretary" possess the above characteristics. Examples of positions which are excluded from the definition are as follows:

- a. Clerks or secretaries working under the direction of secretaries or administrative assistants as described in e;
- b. Stenographers not fully performing secretarial duties;
- c. Stenographers or secretaries assigned to two or more professional, technical, or managerial persons of equivalent rank;
- d. Assistants or secretaries performing any kind of technical work, e.g., personnel, accounting, or legal work;
- e. Administrative assistants or supervisors performing duties which are more difficult or more responsible than the secretarial work described in LR-1 through LR-4;
- f. Secretaries receiving additional pay primarily for maintaining confidentiality of payroll records or other sensitive information;
- g. Secretaries performing routine receptionist, typing, and filing duties following detailed instructions and guidelines; these

duties are less responsible than those described in LR-1 below; and

- h. Trainees.

## Classification by Level

Secretary jobs which meet the required characteristics are matched at one of five levels according to two factors: (a) level of the secretary's supervisor within the overall organizational structure, and (b) level of the secretary's responsibility. Table D-7 indicates the level of the secretary for each combination of factors.

## Level of Secretary's Supervisor (LS)

Secretaries should be matched at one of the three LS levels below best describing the organization of the secretary's supervisor.

*LS-1.* Organizational structure is not complex and internal procedures and administrative controls are simple and informal; supervisor directs staff through face-to-face meetings.

*LS-2.* Organizational structure is complex and is divided into *subordinate groups that usually differ from each other as to subject matter, function etc.*; supervisor usually directs staff through intermediate supervisors; and internal procedures and administrative controls are formal. An entire organization (e.g., division, subsidiary, or parent organization) may contain a variety of subordinate groups which meet the LS-2 definition. Therefore, it is not unusual for one LS-2 supervisor to report to another LS-2 supervisor.

The presence of subordinate supervisors does not by itself mean LS-2 applies, e.g., a clerical processing organization divided into several units, each performing very similar work, is placed in LS-1.

In smaller organizations or industries such as retail trade, with relatively few organizational levels, the supervisor may have an impact on the policies and major programs of the entire organization, and may deal with important outside contacts, as described in LS-3.

*LS-3.* Organizational structure is divided into two or more subordinate supervisory levels (of which at least one is a managerial level) with several subdivisions at each level.

Table D-7. Criteria for matching secretaries by level

Level of secretary's supervisor	Level of secretary's responsibility			
	LR-1	LR-2	LR-3	LR-4
LS-1	I	II	III	IV
LS-2	I	III	IV	V
LS-3	I	IV	V	V

Executive's program(s) are usually interlocked on a direct and continuing basis with other major organizational segments, requiring constant attention to extensive formal coordination, clearances, and procedural controls. Executive typically has: Financial decisionmaking authority for assigned program(s); considerable impact on the entire organization's financial position or public image; and responsibility for, or has staff specialists in, such areas as personnel and administration for assigned organization. Executive plays an important role in determining the policies and major programs of the entire organization, and spends considerable time dealing with outside parties actively interested in assigned program(s) and current or controversial issues.

### Level of Secretary's Responsibility (LR)

This factor evaluates the nature of the work relationship between the secretary and the supervisor or staff, and the extent to which the secretary is expected to exercise initiative and judgment. Secretaries should be matched at the level best describing their level of responsibility. When the position's duties span more than one LR level, the introductory paragraph at the beginning of each LR level should be used to determine which of the levels best matches the position. (Typically, secretaries performing at the higher levels of responsibility also perform duties described at the lower levels.)

**LR-1.** Carries out *recurring* office procedures independently. Selects the guideline or reference which fits the specific case. Supervisor provides specific instructions on new assignments and checks completed work for accuracy. Performs varied duties including or comparable to the following:

- a. Responds to routine telephone requests which have standard answers; refers calls and visitors to appropriate staff. Controls mail and assures timely staff response; may send form letters.
- b. As instructed, maintains supervisor's calendar, makes appointments, and arranges for meeting rooms.
- c. Reviews materials prepared for supervisor's approval for typographical accuracy and proper format.
- d. Maintains recurring internal reports, such as: Time and leave records, office equipment listings, correspondence controls, training plans, etc.
- e. Requisitions supplies, printing, maintenance, or other services. Types, takes and transcribes dictation, and establishes and maintains office files.

**LR-2.** Handles differing situations, problems, and deviations in the work of the office according to the supervisor's general instructions, priorities, duties, policies; and program goals. Supervisor may assist secretary with special assignments. Duties include or are comparable to the following:

- a. Screens telephone calls, visitors, and incoming correspondence; personally responds to requests for information concerning office procedures; determines which requests should be handled by the supervisor, appropriate staff

member, or other offices. May prepare and sign routine, nontechnical correspondence in own or supervisor's name.

- b. Schedules tentative appointments without prior clearance. Makes arrangements for conferences and meetings and assembles established background materials, as directed. May attend meetings and record and report on the proceedings.
- c. Reviews outgoing materials and correspondence for internal consistency and conformance with supervisor's procedures; assures that proper clearances have been obtained, when needed.
- d. Collects information from the files or staff for routine inquiries on office program(s) or periodic reports. Refers nonroutine requests to supervisor or staff.
- e. Explains to subordinate staff supervisor's requirements concerning office procedures. Coordinates personnel and administrative forms for the office and forwards for processing.

**LR-3.** Uses greater judgment and initiative to determine the approach or action to take in nonroutine situations. Interprets and adapts guidelines, including unwritten policies, precedents, and practices, which are not always completely applicable to changing situations. Duties include or are comparable to the following:

- a. Based on a knowledge of the supervisor's views, composes correspondence on own initiative about administrative matters and general office policies for supervisor's approval.
- b. Anticipates and prepares materials needed by the supervisor for conferences, correspondence, appointments, meetings, telephone calls, etc., and informs supervisor on matters to be considered.
- c. Reads publications, regulations, and directives and takes action or refers those that are important to the supervisor and staff.
- d. Prepares special or one-time reports, summaries, or replies to inquiries, selecting relevant information from a variety of sources such as reports, documents, correspondence, other offices, etc., under general direction.
- e. Advises secretaries in subordinate offices on new procedures; requests information needed from the subordinate office(s) for periodic or special conferences, reports, inquiries, etc. Shifts clerical staff to accommodate work load needs.

**LR-4.** Handles a wide variety of situations and conflicts involving the clerical or administrative functions of the office which often cannot be brought to the attention of the executive. The executive sets the overall objectives of the work. Secretary may participate in developing the work deadlines. Duties include or are comparable to the following:

- a. Composes correspondence requiring some understanding of technical matters; may sign for executive when technical or policy content has been authorized.
- b. Notes commitments made by executive during meetings and arranges for staff implementation. On own initiative, arranges for staff member to represent organization at conferences and meetings, establishes appointment priorities, or reschedules or refuses appointments or invitations.
- c. Reads outgoing correspondence for executive's approval and alerts writers to any conflict with the file or departure from

policies or executive's viewpoints; gives advice to resolve the problems.

- d. Summarizes the content of incoming materials, specially gathered information, or meetings to assist executive; coordinates the new information with background office sources; draws attention to important parts or conflicts.
- e. In the executive's absence, ensures that requests for action or information are relayed to the appropriate staff member; as needed, interprets request and helps implement action; makes sure that information is furnished in timely manner; decides whether executive should be notified of important or emergency matters.

*Excludes* secretaries performing any of the following duties:

- a. Acts as office manager for the executive's organization, e.g., determines when new procedures are needed for changing situations and devises and implements alternatives; revises or clarifies procedures to eliminate conflict or duplication; identifies and resolves various problems that affect the orderly flow of work in transactions with parties outside the organization.
- b. Prepares agenda for conferences; explains discussion topics to participants; drafts introductions and develops background information and prepares outlines for executive or staff member(s) to use in writing speeches.
- c. Advises individuals outside the organization on the executive's views on major policies or current issues facing the organization; contacts or responds to contacts from high-ranking outside officials (e.g., city or State officials, Members of Congress, presidents of national unions or large national or international firms, etc.) in unique situations. These officials may be relatively inaccessible, and each contact typically must be handled differently, using judgment and discretion.

## TYPISTS

Uses a manual, electric, or automatic typewriter to type various materials. Included are automatic typewriters that are used only to record text and update and reproduce previously typed items from magnetic cards or tape. May include typing of stencils, mats, or similar materials for use in duplicating processes. May do clerical work involving little special training, such as keeping simple records, filing records and reports, or sorting and distributing incoming mail.

Excluded from this definition is work that involves:

- a. Typing directly from spoken material that has been recorded on discs, cylinders, belts, tapes, or other similar media;
- b. The use of varitype machines, composing equipment, or automatic equipment in preparing material for printing; and
- c. Familiarity with specialized terminology in various keyboard commands to manipulate or edit the recorded text to accomplish revisions, or to perform tasks such as extracting and listing items from the text, or transmitting text to other terminals, or using sort commands to have the machine reorder material. Typically requires the use of automatic equipment which may be either computer linked or have a programmable memory so that material can be organized in regularly used

formats or preformed paragraphs which can then be coded and stored for future use in letters or documents.

## Typists I

Performs *one or more of the following*: Copy typing from rough or clear drafts; routine typing of forms, insurance policies, etc; setting up simple standard tabulations; or copying more complex tables already set up and spaced properly.

## Typists II

Performs *one or more of the following*: Typing material in final form when it involves combining material from several sources; or responsibility for correct spelling, syllabication, punctuation, etc., of technical or unusual words or foreign language materials; or planning layout and typing of complicated statistical tables to maintain uniformity and balance in spacing. May type routine form letters, varying details to suit circumstances.

## PERSONNEL CLERKS/ASSISTANTS (Employment)

Personnel clerks/assistants (employment) provide clerical and technical support to personnel professionals or managers in internal matters relating to recruiting, hiring, transfer, change in pay status, and termination of employees. At the lower levels, clerks/assistants primarily provide basic information to current and prospective employees, maintain personnel records and information listings, and prepare and process papers on personnel actions (hires, transfers, changes in pay, etc.). At the higher levels, clerks/assistants (often titled personnel assistants or specialists) may perform limited aspects of a personnel professional's work, e.g., interviewing candidates, recommending placements, and preparing personnel reports. Final decisions on personnel actions are made by personnel professionals or managers. Some clerks/assistants may perform a limited amount of work in other specialties, such as benefits, compensation, or employee relations. Typing may be required at any level.

*Excluded* are:

- a. Workers who primarily compute and process payrolls or compute and/or respond to questions on benefits or retirement claims;
- b. Workers who receive additional pay primarily for maintaining and safeguarding personnel record files;
- c. Workers whose duties do not require a knowledge of personnel rules and procedures, such as receptionists, messengers, typists, or stenographers;
- d. Workers in positions requiring a bachelor's degree; and
- e. Workers who are primarily compensated for duties outside the employment specialty, such as benefits, compensation, or employee relations.

Positions are classified into levels on the basis of the following definitions. The work described is essentially at

a responsible clerical level at the low levels and progresses to a staff assistant or technician level. At level III, which is transitional, both types of work are described. Jobs which match either type of work described at level III, or which are combinations of the two, can be matched.

### **Personnel Clerks/Assistants (Employment) I**

Performs routine tasks which require a knowledge of personnel procedures and rules, such as: Providing simple employment information and appropriate lists and forms to applicants or employees on types of jobs being filled, procedures to follow, and where to obtain additional information; ensuring that the proper forms are completed for name changes, locator information, applications, etc., and reviewing completed forms for signatures and proper entries; or maintaining personnel records, contacting appropriate sources to secure any missing items, and posting items such as dates of promotion, transfer, and hire, or rates of pay or personal data. (If this information is computerized, skill in coding or entering information may be needed as a minor duty.) May answer outside inquiries for simple factual information, such as verification of dates of employment in response to telephone credit checks on employees. Some receptionist or other clerical duties may be performed. May be assigned work to provide training for a higher level position.

Detailed rules and procedures are available for all assignments. Guidance and assistance on unusual questions are available at all times. Work is spot checked, often on a daily basis.

### **Personnel Clerks/Assistants (Employment) II**

Examines and/or processes personnel action documents using experience in applying personnel procedures and policies. Ensures that information is complete and consistent and determines whether further discussion with applicants or employees is needed or whether personnel information must be checked against additional files or listings. Selects appropriate precedents, rules, or procedures from a number of alternatives. Responds to varied questions from applicants, employees, or managers for readily available information which can be obtained from file material or manuals; responses require skill to secure cooperation in correcting improperly completed personnel documents or to explain regulations and procedures. May provide information to managers on availability of applicants and status of hiring actions; may verify employment dates and places supplied on job applications; may maintain personnel records; and may administer typing and stenography tests.

Completes routine assignments independently. Detailed guidance is available for situations which deviate from established precedents. Clerks/assistants are relied upon to alert higher level clerks/assistants or supervisor to such situations. Work may be spot checked periodically.

### **Personnel Clerks/Assistants (Employment) III**

#### **Type A**

Serves as a clerical expert in independently processing the most complicated types of personnel actions, e.g., temporary employment, rehires, and dismissals and in providing information when it is necessary to consolidate data from a number of sources, often with short deadlines. Screens applications for obvious rejections. Resolves conflicts in computer listings or other sources of employee information. Locates lost documents or reconstructs information using a number of sources. May check references of applicants when information in addition to dates and places of past work is needed, and judgment is required to ask appropriate routine followup questions. May provide guidance to lower level clerks. Supervisory review is similar to level II.

*AND/OR*

#### **Type B**

Performs routine personnel assignments beyond the clerical level, such as: Orienting new employees to programs, facilities, rules on time and attendance, and leave policies; computing basic statistical information for reports on manpower profiles, EEO progress and accomplishments, hiring activities, attendance and leave profiles, turnover, etc.; and screening applicants for well-defined positions, rejecting those who do not qualify for available openings for clear-cut reasons, referring others to appropriate employment interviewer. Guidance is provided on possible sources of information, methods of work, and types of reports needed. Completed written work receives close technical review from higher level personnel office employees; other work may be checked occasionally.

### **Personnel Clerks/Assistants (Employment) IV**

Performs work in support of personnel professionals which requires a good working knowledge of personnel procedures, guides, and precedents. In representative assignments: Interviews applicants, obtains references, and recommends placement of applicants in a few well-defined occupations (trades or clerical) within a stable organization or unit; conducts postplacement or exit interviews to identify job adjustment problems or reasons for leaving the organization; performs routine statistical analyses related to manpower, EEO, hiring, or other employment concerns, e.g., compares one set of data to another set as instructed; and requisitions applicants through employment agencies for clerical or blue-collar jobs. At this level, assistants typically have a range of personal contacts within and outside the organization and with applicants, and must be tactful and articulate. May perform some clerical work in addition to the above duties. Supervisor reviews completed work against stated objectives.

## Personnel Clerks/Assistants (Employment) V

Workers at this level perform duties similar to level IV, but are responsible for more complicated cases and work with greater independence. Performs limited aspects of professional personnel work dealing with a variety of occupations common to the organization which are clearcut and stable in employment requirements. Typical duties include: Researching recruitment sources, such as employment agencies or State manpower offices, and advising managers on the availability of candidates in common occupations; screening and selecting employees for a few routine, nonpermanent jobs, such as summer employment; or answering inquiries on a controversial issue, such as a hiring or promotion freeze. These duties often require considerable skill and diplomacy in communications. Other typical duties may include: Surveying managers for future hiring requirements; developing newspaper vacancy announcements or explaining job requirements to employment agencies for administrative or professional positions; or reviewing the effect of organizationwide personnel procedural changes on local employment programs (e.g., automation of records, new affirmative action goals). May incidentally perform some clerical duties. Supervisory review is similar to level IV.

## PURCHASING CLERKS/ASSISTANTS

Provides clerical or technical support to buyers or contract specialists who deal with suppliers, vendors, contractors, etc., *outside* the organization to purchase goods, materials, equipment, services, etc. Clerks/assistants at level I prepare and process purchase documents, such as purchase orders, invitations to bid, contracts, and supporting papers. Clerks/assistants at level II also examine, review, verify, and control these documents to assure accuracy, correctness, and correct processing. Clerks/assistants at levels III and IV may also expedite purchases already made, by contacting vendors and analyzing and recommending reactions to supplier problems related to delivery, availability of goods, or any other part of the purchase agreement. Clerks/assistants at level IV may also develop technical information for buyers, e.g., comparative information on materials sought.

All assignments require a practical knowledge of internal purchasing procedures and operations. Assignments above level I require experience in applying regulations, guidelines, or manuals to specific transactions. Clerks/assistants may type purchasing documents or perform work described at lower levels, as needed. Final decisions on purchasing transactions are made by buyers, contract specialists, or supervisors.

*Excluded* are:

- a. Typists, file clerks, general clerks, secretaries, receptionists, and trainees not required to have a knowledge of internal purchasing procedures and operations;

- b. Workers who process or expedite the purchase of items for direct sale, either wholesale or retail;
- c. Workers who as a primary duty: Maintain a filing system or listing to monitor inventory levels; reorder items by phone under ongoing contracts; or receive and disburse supplies and materials for use in the organization;
- d. Production expeditors or controllers who primarily ensure the timely arrival and coordination of purchased materials with assembly line or production schedules and requirements;
- e. Purchasing expeditors who only check on the status of purchases already made and who do not analyze the facts at hand and do not make recommendations for either extension of delivery dates or for other similar modifications to the purchase agreement, as described at level III, b;
- f. Positions which require a technical knowledge of equipment characteristics and parts, production control, or manufacturing methods and procedures;
- g. Positions requiring a bachelor's degree; and
- h. Buyers.

Positions are classified into levels based on the following definitions according to the complexity of the work, the condition of the purchase, and the amount of supervision.

## Purchasing Clerks/Assistants I

Following well-established and clear-cut procedures and instructions, *prepares* and *processes* documents such as purchase orders, invitations to bid, contracts, and supporting papers. Enters such prescribed information as quantities, model numbers, addresses and prices, *after* a higher level employee screens the requisition for completeness and accuracy. Posts data from requisitions to internal controls. Work requires a knowledge of proper terminology (including spelling and abbreviations) and some judgment in selecting the appropriate procedure or precedent for each transaction. Contacts are usually limited to the supervisor and the immediate work unit. Receives step-by-step instruction on *new* assignments. Refers questions to supervisor, who may spot check work on a daily basis.

## Purchasing Clerks/Assistants II

According to detailed procedures or regulations, *examines* documents such as requisitions, purchase orders, invitations to bid, contracts, and supporting papers. Reviews purchase requisitions to determine that correct item descriptions, prices, quantities, discount terms, shipping instructions, and/or delivery terms have been included and selects appropriate purchase phrases and forms from prescribed lists or files. Obtains any missing or corrected information and prepares purchase orders for supervisory approval. Contacts are usually within the organization to verify or correct factual information. May contact vendors for information about purchases already made and may reorder items under routine and existing purchase arrangements where few, if any,



questions arise. Receives detailed instructions on new assignments. Refers questions to supervisor, who may spot check work on a daily basis.

Clerks or assistants at this level examine documents for orders of standard goods, supplies, equipment or services, and/or for orders of specialized items when the complexity of the item does not affect the assistant's work, i.e., the assistant is *not* required to use considerable judgment to find a previous transaction to use as a guideline, as described at level III, a.

### Purchasing Clerks/Assistants III

Assistants at this level perform assignments described in paragraphs a or b, or a combination of the two.

- a. Reviews and prepares purchase documents for specialized items, such as items with optional features or technical equipment requiring precise specifications. Since the transactions usually require special purchasing conditions, e.g., multiple deliveries, provision of spare parts, or renegotiation terms, considerable judgment is needed to find previous transactions to use as guidelines; as required, adapts phrases or clauses in guideline transactions that apply to the purchase at hand. May review purchasing documents prepared by lower level clerks or by personnel in other organization units to detect processing discrepancies or to clarify documents. May advise employees on how to prepare requisitions for items to be ordered.
- b. Expedites purchases by *making recommendations for action* based on simple analyses of the facts at hand, organization guidelines, and the background of the purchase; contacts suppliers to obtain information on deliveries or on contracts; based on clear-cut guidelines for each type of purchase and previous performance of suppliers, availability of item, or impact of delay, recommends extension of delivery date or other similar modifications. May decide to refer problems to production, packaging, or other organization specialists. May reorder standard items under a variety of existing purchase agreements where judgment is needed to ask further questions and to followup and coordinate transactions.

Expeditors at this level facilitate purchases of standard goods, supplies, equipment, or services, and/or purchases of specialized items when the complexity of the item does *not* affect the assistant's work, i.e., the assistant does not coordinate requests for minor deviations from contract specifications, etc., as described at level IV, b.

Clerks or assistants at this level coordinate information with buyers and outside suppliers and keep others informed of the progress of transactions. Major changes in regulations and procedures are explained by the supervisor. Unusual situations are referred to the supervisor who also spot checks completed work for adequacy.

### Purchasing Clerks/Assistants IV

Assistants at this level have a good understanding of purchase circumstances for specialized items—what to buy, where to buy, and under what terms buyers negotiate and

make purchases. They perform assignments described in paragraphs a, b, or c, or a combination of any of these.

- a. Reviews and prepares purchase documents for highly specialized items where few precedent transactions exist that can be used as guidelines and where provisions such as fixed-price contracts with escalation, price redetermination, or cost incentives clauses are needed. Complicated provisions for progress payments, for testing and evaluating ordered items, or for meeting production schedules may also exist. As necessary, drafts special clauses, terms, or requirements for unusual purchases. Provides authoritative information to others on purchasing procedures and assures that documents and transactions agree with basic procurement policies.
- b. Expedites purchases of specialized items when the complexity of the items *does* affect the assistant's work (see level III, b.). Investigates supplier problems and coordinates requests for minor deviations from the contract specifications with specialists, buyers, suppliers, and users. Recommends revisions to contracts or purchase agreements, if needed, based upon organization requirements. May reorder technical and specialized items within existing purchase contracts which contain special purchasing conditions. Questions which arise are handled similarly to those in level III, b.
- c. Furnishes technical support to buyers or contract specialists, using a detailed knowledge of internal purchasing transactions and procedures, e.g., analyzes bids for contracts to determine the possible number and interest of bidders for *standard* commodities and services; assembles contracts and drafts special clauses, terms, or requirements for unprecedented purchases, e.g., for specially designed equipment or for complex one-time transactions; gathers and summarizes information on the availability of special equipment and the ability of suppliers to meet the organization's needs.

Assistants at this level seek guidance on highly unusual problems but are expected to propose solutions for supervisory approval. Instructions are provided on new procurement policies. Supervisory review is similar to level III; drafts of special clauses, etc., are reviewed in detail.

*NOTE:* Positions above level IV are *excluded*.

Workers in such positions either (1) *negotiate* agreements with contractors on minor changes in the terms of established contracts; or (2) *analyze* and make recommendations about proposals concerning *specialized* equipment, about the solvency performance of supplying firms, or about clerical processing methods needed to fit new purchasing policies.

### GENERAL CLERKS

Performs a *combination of clerical tasks* to support office, business, or administrative operations, such as: maintaining records; receiving, preparing, or verifying documents; searching for and compiling information and data; responding to routine requests with standard answers (by phone, in person, or by correspondence). The work requires a basic knowledge of proper office procedures. Workers at levels I, II, and III follow prescribed procedures or steps to process paperwork; they may perform other routine office support

work, (e.g., typing, filing, or operating a keyboard-controlled data entry device to transcribe data into a form suitable for data processing). Workers at level IV are also required to make decisions about the adequacy and content of transactions handled in addition to following proper procedures.

Clerical work is controlled (e.g., through spot checks, complete review, or subsequent processing) for both quantity and quality. Supervisors (or other employees) are available to assist and advise clerks on difficult problems and to approve their suggestions for significant deviations from existing instructions.

*Excluded* from this definition are: Workers whose pay is *primarily* based on the performance of a *single* clerical duty such as typing, stenography, office machine operation, or filing; and other workers, such as secretaries, messengers, receptionists, or public information specialists who perform general clerical tasks incidental to their primary duties.

### **General Clerks I**

Follows a few clearly detailed procedures in performing simple repetitive tasks in the same sequence, such as filing precoded documents in a chronological file or operating office equipment, e.g., mimeograph, photocopy, addressograph, or mailing machine.

### **General Clerks II**

Follows a number of specific procedures in completing several repetitive clerical steps performed in a prescribed or slightly varied sequence, such as coding and filing documents in an extensive alphabetical file, simple posting to individual accounts, opening mail, running mail through metering machines, and calculating and posting charges to departmental accounts. Little or no subject-matter knowledge is required, but the clerk needs to choose the proper procedure for each task.

### **General Clerks III**

Work requires a familiarity with the terminology of the office unit. Selects appropriate methods from a wide variety of procedures or makes simple adaptations and interpretations of a limited number of substantive guides and manuals. The clerical steps often vary in type or sequence, depending on the task. Recognized problems are referred to others.

Typical duties include a combination of the following: Maintaining time and material records, taking inventory of equipment and supplies, answering questions on departmental services and functions, operating a variety of office machines, posting to various books, balancing a restricted group of accounts to controlling accounts, and assisting in preparation of budgetary requests. May oversee work of lower level clerks.

### **General Clerks IV**

Uses some subject-matter knowledge and judgment to complete assignments consisting of numerous steps that vary in nature and sequence. Selects from alternative methods and refers problems not solvable by adapting or interpreting substantive guides, manuals, or procedures.

Typical duties include: Assisting in a variety of administrative matters; maintaining a wide variety of financial or other records; verifying statistical reports for accuracy and completeness; and handling and adjusting complaints. May also direct lower level clerks.

Positions above level IV are *excluded*. Such positions (which may include supervisory responsibility over lower level clerks) require workers to use a thorough knowledge of an office's work and routine to: 1) choose among widely varying methods and procedures to process complex transactions; and 2) select or devise steps necessary to complete assignments. Typical jobs covered by this exclusion include administrative assistants, clerical supervisors, and office managers.

# **Appendix E. Comparisons of Salaries in Private Industry with Those of Federal Government Employees Under the General Schedule**

The White-Collar Pay survey is designed to provide a basis for comparing salaries under the General Schedule classification and pay system with salaries in private enterprise. To assure collection of pay data for work levels equivalent to the General Schedule grade levels, the Office of Personnel Management (OPM), in cooperation

with the Bureau of Labor Statistics, prepares the occupational work level definitions used in the survey. Definitions are developed by OPM according to standards established for each grade level. Table E-1 shows the surveyed jobs grouped by work levels equivalent to General Schedule grade levels.

**Table E-1. Comparison of average annual salaries in private industry with salary rates for Federal employees under the General Schedule, March 1990**

Occupation and level surveyed by BLS <sup>1</sup>	Average annual salary in private industry <sup>2</sup>	Salary rates for Federal employees under the General Schedule <sup>3</sup>										
		Grade <sup>4</sup>	Average <sup>5</sup>	Step <sup>6</sup>								
				1	2	3	4	5	6	7	8	9
Nursing assistants I .....	\$10,275	GS 1	\$10,947	\$10,995	\$11,286	\$11,637	\$11,990	\$12,197	\$12,544	\$12,893	\$12,910	\$13,232
File clerks I .....	12,372											
Messengers .....	13,805											
General clerks I .....	11,357											
Nursing assistants II .....	12,204	GS 2	12,564	12,180	12,574	12,910	13,053	13,437	13,821	14,205	14,589	14,973
Drafters I .....	14,397											
Accounting clerks I .....	13,984											
File clerks II .....	14,652											
Key entry operators I .....	14,945											
Typists I .....	14,921											
General clerks II .....	14,411											
Licensed practical nurses I .....	17,112	GS 3	14,284	13,415	13,848	14,281	14,714	15,147	15,580	16,013	16,446	16,879
Nursing assistants III .....	15,525											
Engineering technicians I .....	19,560											
Drafters II .....	19,152											
Accounting clerks II .....	16,929											
File clerk III .....	18,052											
Key entry operators II .....	18,756											
Typists II .....	18,974											
Personnel clerks/assistants I .....	15,153											
Purchasing clerks/assistants I .....	15,867											
General clerks III .....	18,152											
Licensed practical nurses II .....	19,760	GS 4	16,453	15,059	15,545	16,031	16,517	17,003	17,489	17,975	18,461	18,947
Nursing assistants IV .....	19,340											
Medical machine technicians I .....	17,724											
Civil engineering technicians II .....	21,164											
Engineering technicians II .....	22,710											
Drafters III .....	22,859											
Computer operators I .....	15,677											
Accounting clerks III .....	20,213											
Secretaries I .....	18,810											
Personnel clerks/assistants II .....	18,579											
Purchasing clerks/assistants II .....	19,063											
General clerks IV .....	22,195											
Accountants I .....	23,842	GS 5	18,699	16,849	17,393	17,937	18,481	19,025	19,569	20,113	20,657	21,201
Auditors I .....	25,393											
Personnel specialists I .....	24,552											
Buyers I .....	24,022											
Computer programmers I .....	25,044											
Chemists I .....	26,109											
Engineers I .....	31,224											
Licensed practical nurses III .....	24,267											
Medical machine technicians II .....	22,930											
Civil engineering technicians III .....	27,134											
Engineering technicians III .....	27,192											
Drafters IV .....	26,385											

See footnotes at end of table.

**Table E-1. Comparison of average annual salaries in private industry with salary rates for Federal employees under the General Schedule, March 1990 —Continued**

Occupation and level surveyed by BLS <sup>1</sup>	Average annual salary in private industry <sup>2</sup>	Salary rates for Federal employees under the General Schedule <sup>3</sup>																		
		Grade <sup>4</sup>	Average <sup>5</sup>	Step <sup>6</sup>								10								
				1	2	3	4	5	6	7	8		9							
Computer operators II .....	\$19,839																			
Photographers II .....	24,189																			
Accounting clerks IV .....	24,279																			
Secretaries II .....	21,175																			
Personnel clerks/assistants III .....	22,119																			
Purchasing clerks/assistants III .....	24,656																			
Medical machine technicians III .....	27,586	GS 6	\$21,075	\$18,174	\$18,780	\$19,386	\$19,992	\$20,598	\$21,204	\$21,810	\$22,416	\$23,022	\$23,628							
Computer operators III .....	24,727																			
Secretaries III .....	23,893																			
Personnel clerks/assistants IV .....	26,643																			
Purchasing clerks/assistants IV .....	33,138																			
Accountants II .....	28,200	GS 7	23,005	20,195	20,868	21,541	22,214	22,887	23,560	24,233	24,906	25,579	26,252							
Auditors II .....	30,135																			
Public accountants I .....	26,399																			
Personnel specialists II .....	27,259																			
Buyers II .....	29,854																			
Computer programmers II .....	28,962																			
Chemists II .....	32,168																			
Engineers II .....	35,398																			
Registered nurses I .....	26,212																			
Medical machine technicians IV .....	34,040																			
Civil engineering technicians IV .....	32,247																			
Engineering technicians IV .....	32,698																			
Drafters V .....	34,900																			
Computer operators IV .....	29,029																			
Photographers III .....	29,550																			
Secretaries IV .....	27,542																			
Secretaries V .....	32,317	GS 8	26,160	22,367	23,113	23,859	24,605	25,351	26,097	26,843	27,589	28,335	29,081							
Computer operators V .....	33,390																			
Accountants III .....	35,489																			
Auditors III .....	37,589																			
Public accountants II .....	28,661																			
Personnel specialists III .....	34,308																			
Attorneys I .....	38,587																			
Buyers III .....	38,854																			
Computer programmers III .....	33,780																			
Systems analysts I .....	33,833																			
Chemists III .....	40,385																			
Engineers III .....	41,287																			
Registered nurses II .....	30,413																			
Registered nurses II specialists <sup>7</sup> .....	34,342																			
Engineering technicians V .....	37,287																			
Photographers IV .....	35,877																			
Accountants IV .....	45,095	GS 11	33,812	29,891	30,887	31,883	32,879	33,875	34,871	35,867	36,863	37,859	38,855							
Chief accountants I .....	44,593																			

See footnotes at end of table.

**Table E-1. Comparison of average annual salaries in private industry with salary rates for Federal employees under the General Schedule, March 1990 ---Continued**

Occupation and level surveyed by BLS <sup>1</sup>	Average annual salary in private industry <sup>2</sup>	Salary rates for Federal employees under the General Schedule <sup>3</sup>													
		Grade <sup>4</sup>	Average <sup>5</sup>	1	2	3	4	5	6	7	8	9	10		
Auditors IV .....	\$46,344														
Public accountants III .....	32,708														
Personnel specialists IV .....	44,612														
Personnel supervisors/managers I .....	46,504														
Directors of personnel I .....	44,236														
Attorneys II .....	46,053														
Buyers IV .....	46,209														
Computer programmers IV .....	40,833														
Systems analysts II .....	40,203														
Chemists IV .....	49,065														
Engineers IV .....	49,385														
Registered nurses III .....	43,414														
Accountants V .....	56,871	GS 12	\$40,601	\$35,825	\$37,019	\$38,213	\$39,407	\$40,601	\$41,795	\$42,989	\$44,183	\$45,377	\$46,571		
Chief accountants II .....	57,257														
Public accountants IV .....	42,235														
Personnel specialists V .....	56,453														
Personnel supervisors/managers II .....	58,658														
Directors of personnel II .....	56,840														
Attorneys III .....	59,087														
Systems analysts III .....	47,958														
Systems analysts managers I .....	52,330														
Chemists V .....	59,518														
Engineers V .....	59,444														
Registered nurses IV .....	44,513														
Accountants VI .....	72,440	GS 13	49,003	42,601	44,021	45,441	46,861	48,281	49,701	51,121	52,541	53,961	55,381		
Chief accountants III .....	73,267														
Personnel specialists VI .....	70,506														
Personnel supervisors/managers III .....	75,600														
Directors of personnel III .....	74,760														
Attorneys IV .....	78,561														
Systems analysts IV .....	56,727														
Systems analysts managers II .....	59,926														
Chemists VI .....	72,835														
Engineers VI .....	70,332														

See footnotes at end of table.

**Table E-1. Comparison of average annual salaries in private industry with salary rates for Federal employees under the General Schedule, March 1990 —Continued**

Occupation and level surveyed by BLS <sup>1</sup>	Average annual salary in private industry <sup>2</sup>	Salary rates for Federal employees under the General Schedule <sup>3</sup>											
		Grade <sup>4</sup>	Average <sup>5</sup>	1	2	3	4	5	6	7	8	9	10
Chief accountants IV .....	\$100,736	GS 14	\$58,363	\$50,342	\$52,020	\$53,698	\$55,376	\$57,054	\$58,732	\$60,410	\$62,088	\$63,766	\$65,444
Personnel supervisors/managers IV .....	93,324												
Directors of personnel IV .....	98,039												
Attorneys V .....	96,178												
Systems analysts V .....	68,811												
Systems analysts managers III .....	71,842												
Chemists VII .....	85,395												
Engineers VII .....	80,998												
Attorneys VI .....	120,967	GS 15	70,316	59,216	61,190	63,164	65,138	67,112	69,086	71,060	73,034	75,008	76,982
Systems analysts managers IV .....	84,367												
Engineers VIII .....	91,392												

<sup>1</sup> For definitions, see appendix D.  
<sup>2</sup> Survey findings as summarized in table C-1 of this bulletin. For scope of 1989 and 1990 surveys, see appendix B.  
<sup>3</sup> General schedule rates in effect in March 1990, the reference date of the Bureau survey.  
<sup>4</sup> Corresponding grades in the General Schedule were supplied by the Office of Personnel Management.  
<sup>5</sup> Mean salary of all General Schedule employees in each grade as of March 31, 1990. Not limited to Federal employees in occupations surveyed by BLS.  
<sup>6</sup> Section 5335 of title 5 of the U.S. Code provides for within-grade increases on condition that the employee's work is of an acceptable level of competence as defined by the head of the agency. For employees who meet this condition, the service requirements are 52 calendar weeks for each advancement to salary rates 2, 3, and 4; 104 weeks for advancement to salary rates 5, 6, and 7; and 156 weeks for each advancement to salary rates 8, 9, and 10. Section 5336 provides that an additional within-grade increase may be granted within any 52-week period in recognition of high quality performance above that ordinarily found in the type of position concerned.  
<sup>7</sup> Originally stated as a GS-10 occupation, but analyzed to be a GS-9 level by the Office of Personnel Management.

NOTE: Under Section 5303 of title 5 of the U.S. Code, higher minimum rates (but not exceeding the maximum salary rate prescribed in the General Schedule for the grade or level) and a corresponding new salary range may be established for positions or occupations under certain conditions. The conditions include a finding that the Government's recruitment or retention of well-qualified persons is significantly handicapped because the salary rates in private industry are substantially above the salary rates of the statutory pay schedules. As of March 1990, special higher salary rates were authorized for professional engineers at the entry grades (GS-5 and GS-7), and at GS-9 through GS-12. In addition, special rates were authorized for petroleum engineers at GS-5 through GS-13. Information on special salary rates, including the occupations and the areas to which they apply, may be obtained from the Office of Personnel Management, Washington, D.C. 20415, or its regional offices.