

# White-Collar Pay: Private Service-Producing Industries, March 1989



U.S. Department of Labor  
Bureau of Labor Statistics  
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Bulletin 2347



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U.S. Department of Labor  
Elizabeth Dole, Secretary

Bureau of Labor Statistics  
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March 1990

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# Preface

This bulletin summarizes the results of the Bureau's March 1989 survey of white-collar pay in private service-producing industries. Service-producing industries include transportation, communications, and utilities; finance, insurance, and real estate; wholesale trade; retail trade; and services. The survey was referred to in previous years as the National Survey of Professional, Administrative, Technical, and Clerical Pay (PATC). The 1988 survey covered only the nonservice industries and the 1987 survey covered only the private services industries. Consequently, the results of the March 1989 survey cannot be compared directly with earlier survey data. Goods-producing industries (mining, construction, and manufacturing) will be surveyed in 1990. Thereafter, the survey rotation will be as follows—service-producing industries in odd-numbered years and goods-producing industries in even-numbered years. Detailed information on the survey changes in recent years may be found in appendix B.

The 1989 salary information, collected from establishments employing 50 workers or more, is representative of a broad spectrum of private service-producing industries throughout the United States, except Alaska and Hawaii.

In conducting this survey, the Bureau of Labor Statistics carries out its responsibility under the Federal Pay Comparability Act of 1970, which provides the basis for general 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 reports 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.

The Bureau selects a list of sample establishments and collects, edits, tabulates, and reports the data. The survey scope, 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 this 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 C) 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 D).

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 Office of Compensation and Working Conditions by C. Joseph Cooper and L. Jeffrey Johnson of the Division of Occupational Pay and Employee Benefit Levels. Computer programming and systems design were provided by the Division of Directly Collected Periodic Surveys. The Statistical Methods Group was responsible for the sample design, nonresponse adjustments, and other statistical procedures. Fieldwork for the survey was directed by the Bureau's Assistant Regional Commissioners for Operations.

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# White-Collar Pay: Private Service-Producing Industries, March 1989

## Summary

This survey of private service-producing industries developed average annual salaries for 108 of the 147 occupational work levels studied. These averages ranged from \$9,647 for nursing assistants performing routine duties (level I) to \$118,601 for the highest level of attorney studied (level VI). Even within similar occupational categories (such as professional, technical, or clerical), wage levels varied widely; for example, \$10,823 to \$21,223 for four levels of general clerks, \$14,357 to \$25,719 for four levels of personnel clerks/assistants; and \$22,073 for beginning accountants to \$68,252 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 higher than the average for all establishments covered by the survey. Among the industry divisions represented in the survey, public utilities usually reported the highest salaries while private educational services generally reported the lowest. Separate information on selected industries is provided in this bulletin where data are sufficient to warrant publication.

## Characteristics of the survey

This survey—the 30th in an annual series of white-collar pay studies—provides nationwide data for 25 occupations spanning 108 work level categories. Information was collected from establishments employing 50 workers or more throughout the United States, except Alaska and Hawaii. The following major industry groups were surveyed: Transportation, communications, and electric, gas, and sanitary services; wholesale trade; retail trade; finance, insurance, and real estate; and services. The results, however, cannot be compared with those from last year's survey, which was limited to private nonservice industries.<sup>1</sup> Surveys before 1987 covered private nonservice industries as well as a limited selection of service industries.

The survey occupations are divided into work levels based on duties and responsibilities. (See appendix C.) The number of work levels—designated by roman numerals, with "I"

the lowest—varies from occupation to occupation, as do the degree of difficulty and responsibility.<sup>2</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 160,000 establishments within the scope of the survey employed about 31.1 million workers; 44 percent were professional, administrative, technical, and clerical employees on full-time schedules. Of these white-collar workers, 15 percent, or approximately 2 million, were in occupations and work levels for which salary data were developed. The survey presents separate occupational pay data for metropolitan areas—where about nine-tenths of the white-collar workers covered by the study were employed—and for various establishment size groups based on employment.

## Employment

Employment varied widely among occupations in the survey, reflecting both actual differences in employment counts and differences in the range of duties and responsibilities covered by survey definitions. For example, there were 445,979 incumbents in the five levels of registered nurses accounting for 62 percent of the 720,395 professional employees studied; corporate attorneys, in contrast, numbered 13,090—a figure that does not include attorneys in legal firms.

The five levels of computer programmers and five levels of systems analysts had 88,139 and 102,381 employees, respectively. Systems analyst managers totaled 13,179. Altogether, computer occupations accounted for 78 percent of the 260,000 employees estimated to match the survey's administrative job descriptions. Other administrative jobs included personnel specialists, personnel supervisors/managers,

<sup>1</sup> For a description and results of the 1988 survey, see *National Survey of Professional, Technical, Administrative, and Clerical Pay, Nonservice Industries, March 1988*, Bulletin 2317 (Bureau of Labor Statistics, 1988).

<sup>2</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 D.

directors of personnel, and buyers.

Among the technical support occupations surveyed, nursing assistants accounted for nearly 60 percent of the 824,248 incumbents. Licensed practical nurses, computer operators, and medical machine operating technicians accounted for about 23 percent, 7 percent, and 5 percent, respectively. The other three technical support occupations studied—engineering technician, drafter, and photographer—each accounted for less than 3 percent of the total.

Of the three clerical occupations surveyed, general clerks accounted for over 90 percent of the 190,057 incumbents. Personnel clerks/assistants made up slightly over 6 percent of the clerical total, and purchasing clerks/assistants constituted the remaining 3 percent.

Many of the occupations studied were heavily concentrated in the services industries. For example, these industries employed not only virtually all of the registered nurses, licensed practical nurses, nursing assistants, and medical machine operating technicians, but also accounted for three-fourths of the engineering technicians, drafters, and photographers, and between one-half and two-thirds of the buyers, chemists, and engineers.

Auditors and attorneys were primarily employed in the finance sector. This sector also accounted for about one-third of the computer personnel studied. Public utilities employed between one-tenth and three-tenths of every occupation studied except for photographers.

### Average salaries, March 1989

Reflecting the wide range of duties and responsibilities covered by the survey occupations, average annual salaries ranged from \$9,647 for nursing assistants I to \$118,601 for the top level of attorneys (table 1). Despite such wide differences, salary averages for professional jobs of equivalent work levels often fell within a relatively narrow band. For example, annual averages for the following equivalent work levels fell within a range of \$8,500: Accountant VI (\$68,252), chief accountant III (\$72,156), attorney IV (\$74,547), personnel supervisor/manager III (\$72,632), director of personnel III (\$71,414), and engineer VI (\$66,118). The following paragraphs summarize findings for selected occupations studied.<sup>3</sup>

Annual salaries of *accountants* ranged from \$22,073 for beginning professional accountants (level I) to \$68,252 for specialists in complex accounting systems (level VI). Salaries for the most numerous group (level III) averaged \$33,404 a year.

Salaries for the four levels of *chief accountants* are

<sup>3</sup> For the following occupational work levels surveyed, insufficient data were obtained to warrant publication: Chief accountant I and V; personnel specialist VI; personnel supervisor/manager V; director of personnel V; chemist I, II, and VI-VIII; computer systems analyst supervisor/manager IV; civil engineering technician I-V; drafter I; computer operator VI; photographer I and V; personnel clerk/assistant V; and purchasing clerk/assistant IV.

determined by the degree of authority and responsibility, the technical complexity of the accounting system, and, to a lesser degree, the size of the professional staff (usually fewer than 10 accountants at level II to as many as 40 accountants at level IV). Chief accountants who administer either a stable accounting system with complete authority or responsibility or administer a moderately complex accounting system within prescribed authority (level II) averaged \$55,196 a year. At level IV, those who have authority to establish and maintain an accounting program, subject to general policy guidelines, for a company with numerous and varied accounting functions and work processes averaged \$93,321 annually.

Employment of accountants and chief accountants was concentrated in the services and finance, insurance, and real estate industry divisions. Each division had about one-third of the incumbents. Public utilities and trade each had about one-sixth.

*Auditors* at the trainee level (level I) averaged \$23,664 a year, and those at level IV, who conduct complex financial audits, averaged \$43,384. The finance, insurance, and real estate division employed nearly two-thirds of the auditors, while public utilities employed about one-fifth.

*Public accountants* at the entry level, who receive practical experience in applying the principles, theories, and concepts of accounting and auditing (level I), averaged \$25,335 annually. The highest level of public accountants (level IV) direct the fieldwork for large or complex audits and averaged \$40,532 a year. This occupation is found only in public accounting firms, which are a part of the services industry group.

*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 \$36,365 a year. Attorneys in the top level surveyed (VI), who work at the highest degrees of difficulty and responsibility, averaged \$118,601. 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. Finance, insurance, and real estate firms employed three-fifths of the attorneys, while services and public utilities each employed about one-sixth.

*Buyers*, who purchase "off-the-shelf" and readily available items and services from local sources (level I) averaged \$23,013 a year. Buyers IV, who purchase highly complex and technical items, or materials that are custom designed and manufactured, averaged \$46,058.

*Computer programmer* trainees (level I) averaged \$22,903 a year. Those at level V, who are either team leaders, staff specialists, or consultants responsible for unusually complex programming problems, averaged \$46,400 annually.

*Computer systems analysts* who work independently on routine problems (level I) averaged \$31,893 a year. Systems analysts V, the highest nonsupervisory level studied, averaged \$65,488 a year. At this level, analysts are senior personnel responsible for the development and maintenance of large and very complex computer systems.

*Systems analyst supervisors/managers* at level I had salaries

averaging \$49,665 a year. Those at the top level for which data could be published (III), who direct a staff of 15 to 30 employees through at least two subordinate levels of supervisors, averaged \$68,393. 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 were published for three personnel occupations in 1989: *directors of personnel* and two newly surveyed personnel classifications, *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, employment and placement functions, and 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. Annual salaries for directors of personnel averaged from \$41,229 for level I to \$95,012 for level IV.

Salaries for personnel supervisors/managers started at \$43,844 for first-line supervisors of moderately complex personnel areas (level I) and ranged upward to \$92,049 for higher level managers of complex personnel functions (level IV). Salaries for personnel specialists ranged from \$22,229 for trainees at level I to \$53,816 for experts at level V, who participate in developing personnel policies and procedures.

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 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 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 for *chemists* ranged from \$36,469 for level III to \$58,228 for level V. (Salary data for chemists I, II, VI, VII, and VIII could not be presented due primarily to the small number of incumbents and the wide variations in chemists' salaries among the industries surveyed.)

Annual salaries for *engineers* ranged from \$29,340 for level I to \$83,248 for level VIII. Level IV engineers, the largest group in the profession and representing employees performing complex, conventional engineering, averaged \$48,003.

Employment of chemists and engineers was concentrated in the services industries, where two-thirds of the incumbents were found. Most of the balance were employed by public utilities.

*Registered nurses* (RN's) provide professional health care in hospitals, nursing homes, other residential care facilities,

medical clinics, employer health units, schools, and private homes. Registered nurses providing standard patient care (level I) were paid an average of \$24,605; those developing complex nursing procedures and serving as consultants in difficult patient care environments (level IV) averaged \$41,662.

Most of the registered nurses surveyed were found in level II, where salaries averaged 28,434 a year. Registered nurse II specialists, a survey classification introduced in 1989, averaged \$32,105; these employees have more training and certification than other level II nurses, and work in difficult nursing areas.

Average annual salaries were published for three levels of *licensed practical nurses*. Level I workers provide standard nursing care requiring some latitude for independent judgment and initiative to perform recurring duties and averaged \$16,027 a year. Level II, where nine-tenths of the licensed practical nurses were found, averaged \$18,481 annually. At this level, licensed practical nurses provide nursing care requiring an understanding of diseases and illnesses and use judgment in applying guidelines to specific situations. Level III nurses either provide nursing care for patients in various stages of dependency, set priorities and deadlines for patient care, and modify nursing care as necessary prior to notifying the supervisor or are assigned to a selected group of critically ill patients; they averaged \$22,755 a year.

*Nursing assistants* provide personal and nursing care to patients in hospitals, nursing homes, residential care facilities, clinics, homes, and community health organizations. Nursing assistants at level I perform simple personal care and housekeeping tasks requiring no previous training and averaged \$9,647 a year. Level II, the largest group surveyed, averaged \$11,420. The top level (IV) apply advanced patient or resident care principles, procedures, and techniques requiring considerable training and experience; these workers averaged \$18,088 a year.

Annual average salaries for *medical machine operating technicians* ranged from \$16,568 at level I to \$31,817 at level IV. These technicians operate and monitor medical machines, equipment, or instruments as part of the examination or treatment of patients in hospitals, clinics, or other medical establishments.

*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. They normally use electrical, electronic, or mechanical components or equipment. Technicians involved in production or maintenance work are excluded. Engineering technicians at level I perform simple, routine tasks under close supervision or from detailed procedures; they averaged \$18,462 a year. Engineering technicians V averaged \$36,594. They plan and conduct complex projects under general guidelines supplied by a supervisor or professional engineer. Salaries for intermediate levels III and IV, containing a majority of the technicians surveyed, averaged \$27,781 and \$33,274, respectively.

Just over three-fifths of the engineering technicians were

<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 1989, the average (mean) earnings would be as follows: Systems analyst I—\$32,098; II—\$38,603; III—\$46,602; IV—\$55,426; and V—\$67,267.

employed in research and development laboratories, commercial testing laboratories, and engineering, architectural, and surveying services; most of the remainder were in public utilities and mining. The ratio of technicians to engineers was about 1 to 6 in all service-producing industries.

*Drafters* who prepare simple, easily visualized drawings from sketches or marked-up prints averaged \$19,896 a year, while those who work closely with designers preparing drawings of unusual, complex, or original designs (level V) averaged \$35,853. Drafters who primarily use computers to transmit and duplicate designs were not surveyed.

*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 \$14,807 a year. Level II, the largest group surveyed, averaged \$18,837, and the top level publishable (V) averaged \$31,612.

The average annual salary for level II *photographers*, who take photographs which involve limited problems of speed, motion, color contrast, or lighting, was \$22,289. Photographers at level IV, who use special-purpose cameras under technically demanding conditions, averaged \$33,857. The services industries employed 86 percent of the photographers covered by the survey, while trade and public utilities employed 8 and 4 percent, respectively.

Among the 11 levels of the three clerical occupations for which salary data are published (personnel clerks/assistants, purchasing clerks/assistants, and general clerks), average yearly salaries ranged from \$10,823 for general clerks I to \$25,719 for personnel clerks/assistants IV, the highest of a four-level series.<sup>5</sup> Averages for four of the clerical levels exceeded \$20,000; four ranged from \$15,000 to \$20,000; and three fell below \$15,000.

*Personnel clerks/assistants* who perform routine tasks requiring a knowledge of personnel rules and procedures (level I) averaged \$14,357 a year. Level IV assistants, who provide support such as interviewing and recommending placement for well-defined occupations, averaged \$25,719.

Level I *purchasing clerks/assistants* follow well-established and clear-cut procedures to prepare and process purchasing documents; their yearly average salary was \$15,263. The average was \$23,625 for level III assistants, who review and prepare purchase documents for specialized items or expedite the purchases by making recommendations for action based on simple analyses of the facts at hand.

*General clerks* perform a combination of clerical tasks to support office, business, or administrative operations. Level I general clerks follow detailed procedures in performing simple and repetitive tasks; they averaged \$10,823 annually. Level IV clerks, who use subject matter knowledge and judgment to complete various nonroutine assignments, averaged

\$21,223 a year. Level II and III clerks, the most populous levels, averaged \$13,555 and \$17,283 a year, respectively.

### Salary levels in metropolitan areas

For most occupational levels, average salaries in metropolitan areas<sup>6</sup> (table 2) were slightly higher than the national averages (table 1). In only 16 cases, however, did such differences exceed 1 percent.

Over nine-tenths of the employees within the scope of the survey were located in metropolitan areas. The proportions varied, however, among the occupations studied. For example, the proportion ranged from 98 percent or more of the auditors, public accountants, attorneys, systems analysts, systems analyst managers, and photographers to about 75 percent of the licensed practical nurses. In 91 of the 108 work levels providing publishable data by type of area, at least 90 percent of the workers were in metropolitan areas.

### Salary levels by establishment size

Table 3 compares average annual salaries for 74 work levels across three establishment size groupings—50 to 999 employees, 1,000 to 2,499 employees, and 2,500 employees or more. These comparisons show that average salaries were usually highest in the largest size category and lowest in the smallest. In most professional and administrative positions, those recently hired in training positions typically averaged 10 to 20 percent more in the largest size group than in the smallest. Auditors were the only exception: recent hires commonly averaged 2 to 4 percent more in the largest companies than in the smallest. The corresponding pay advantage for fully experienced professionals usually amounted to 5 percent or less. Among the three clerical occupations published, the pay differential in large establishments fell between 26 percent for general clerks III and -1 percent for personnel clerks/assistants IV.

The largest employment size category (establishments with 2,500 employees or more) accounted for nearly two-fifths of all employees in the 74 work levels shown in table 3. The proportions ranged from one-tenth or less of directors of personnel II and purchasing assistants I to two-thirds of buyers IV. Large establishments employed at least half of the incumbents in several professional and administrative jobs studied, including the highest levels of programmers, systems analysts, and engineers.

### 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

<sup>5</sup> Salary data for six clerical occupations were not published in 1989. For more information on survey changes, see appendix B. Also see John D. Morton, "BLS Prepares to Broaden Scope of its White-Collar Pay Survey", *Monthly Labor Review*, March 1987, pp. 3-7.

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



twice the lowest salaries. As illustrated in charts 1 to 3, pay differences 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 between the mean and the median was less than 1 percent for 30 of the 108 published work levels, from 1 to 4 percent for 68 levels, and from over

4 to 10 percent in the other 10 levels.

The degree of salary dispersion tended to be larger for clerical occupations than for professional, administrative, or technical occupations. These 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 over three-fourths of the 108 publishable work levels, the degree of dispersion ranged from 15 to 25 percent. The majority of work levels with dispersions of 25 percent and over were in technical support and 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 4); and geographic salary differences, especially for clerical

<sup>7</sup> For an analysis of rate range 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 1989**

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 .....	108	7	46	38	10	7
<b>Professional and administrative</b>						
Accountants .....	6	1	4	1	-	-
Auditors .....	4	1	2	1	-	-
Chief accountants .....	3	1	1	-	1	-
Public accountants .....	4	1	2	-	1	-
Attorneys .....	6	-	2	4	-	-
Buyer .....	4	-	4	2	-	-
Computer programmers .....	5	-	3	2	-	-
Systems analysts .....	5	-	5	-	-	-
Systems analyst managers .....	3	-	3	-	-	-
Personnel specialist .....	5	-	2	3	-	-
Personnel supervisors/managers .....	4	-	1	2	-	1
Directors of personnel .....	4	-	1	1	1	-
Chemists .....	3	-	1	2	-	-
Engineers .....	8	1	7	-	-	-
Registered nurses .....	5	-	-	3	1	1
<b>Technical support</b>						
Licensed practical nurses .....	3	-	1	-	2	-
Nursing assistants .....	4	-	-	1	-	3
Medical machine operating technicians .....	4	-	1	2	1	-
Engineering technicians .....	5	-	1	2	2	-
Drafters .....	4	-	2	1	-	1
Computer operators .....	5	-	2	3	-	-
Photographers .....	3	1	-	2	-	-
<b>Clerical</b>						
Personnel clerks/assistants .....	4	-	-	4	-	-
Purchasing clerks/assistants .....	3	-	2	1	-	-
General clerks .....	4	-	1	1	1	1

<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.

employees.<sup>9</sup> Clerical employees usually are recruited locally, while professional and administrative employees generally are recruited on a broad regional or national basis.

### Pay differences by industry

Pay levels varied among major industry divisions (table 8). For most occupations studied, salaries were highest in public utilities. The lowest salaries were generally found in wholesale and retail trade; finance, insurance, and real estate; and services industries. The difference between the highest and lowest paying industry division typically amounted to between 5 and 11 percent.

Pay also varied within an industry division, as illustrated in table 9. Where comparisons were possible, occupations in business services and in engineering, architectural, and research services generally averaged more than their

<sup>9</sup> For an analysis of interarea pay differentials in clerical salaries, see *Wage Differences Among Metropolitan Areas, 1988*, Summary 89-4 (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.

counterparts in health services. In addition, pay for hospital occupations was generally slightly above the average for health services as a whole.

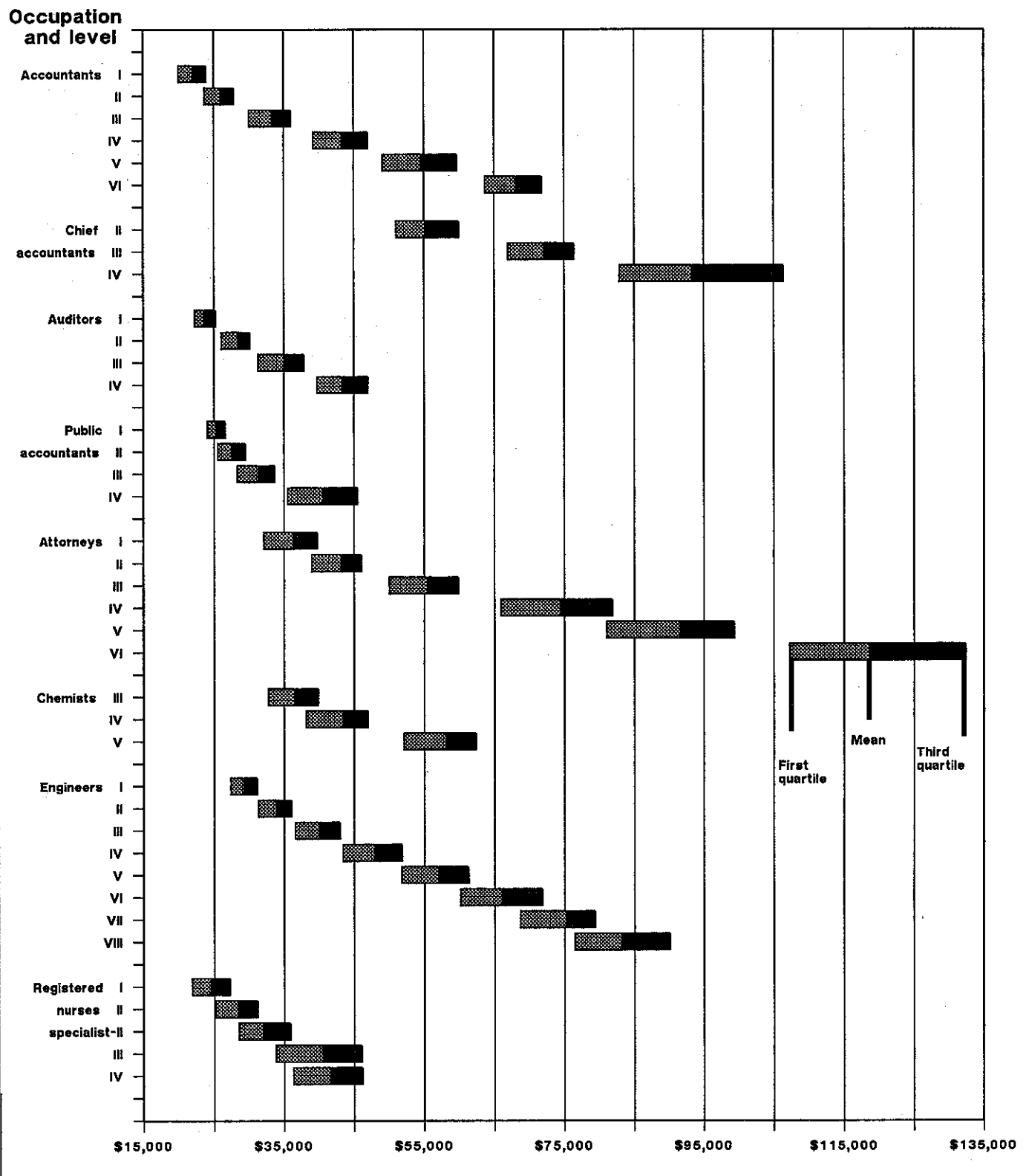
### Average standard weekly hours

Standard weekly hours, the base for regular straight-time salary, were 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 10 for occupations studied by major industry division. Average weekly hours were lower in finance, insurance, and real estate (38 to 40 hours for most occupations) than in other industries (39 to 40 hours). 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, 1988*, Bulletin 3045-62 (Bureau of Labor Statistics, 1989).

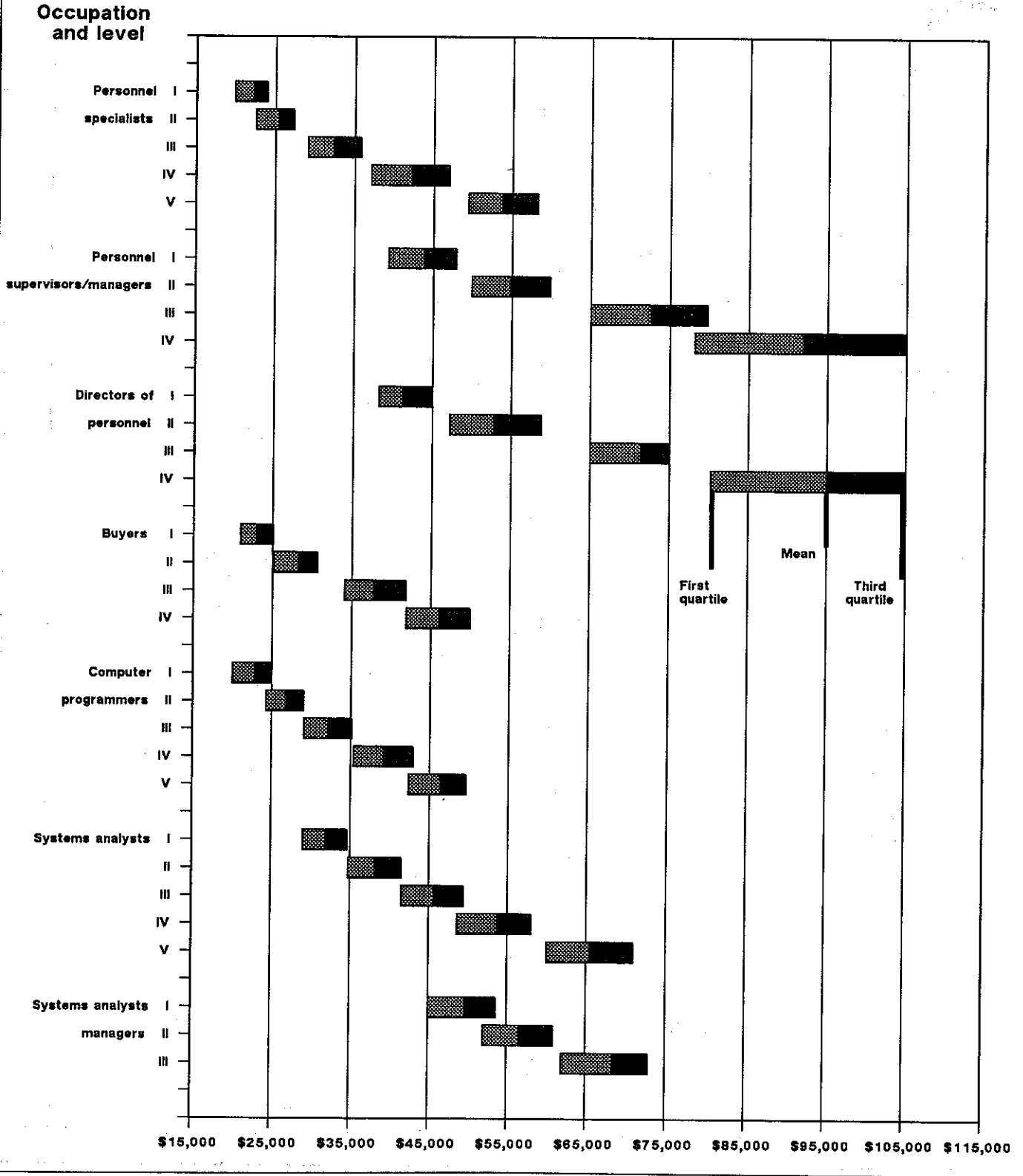
# Chart 1. Salaries in professional occupations, March 1989

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



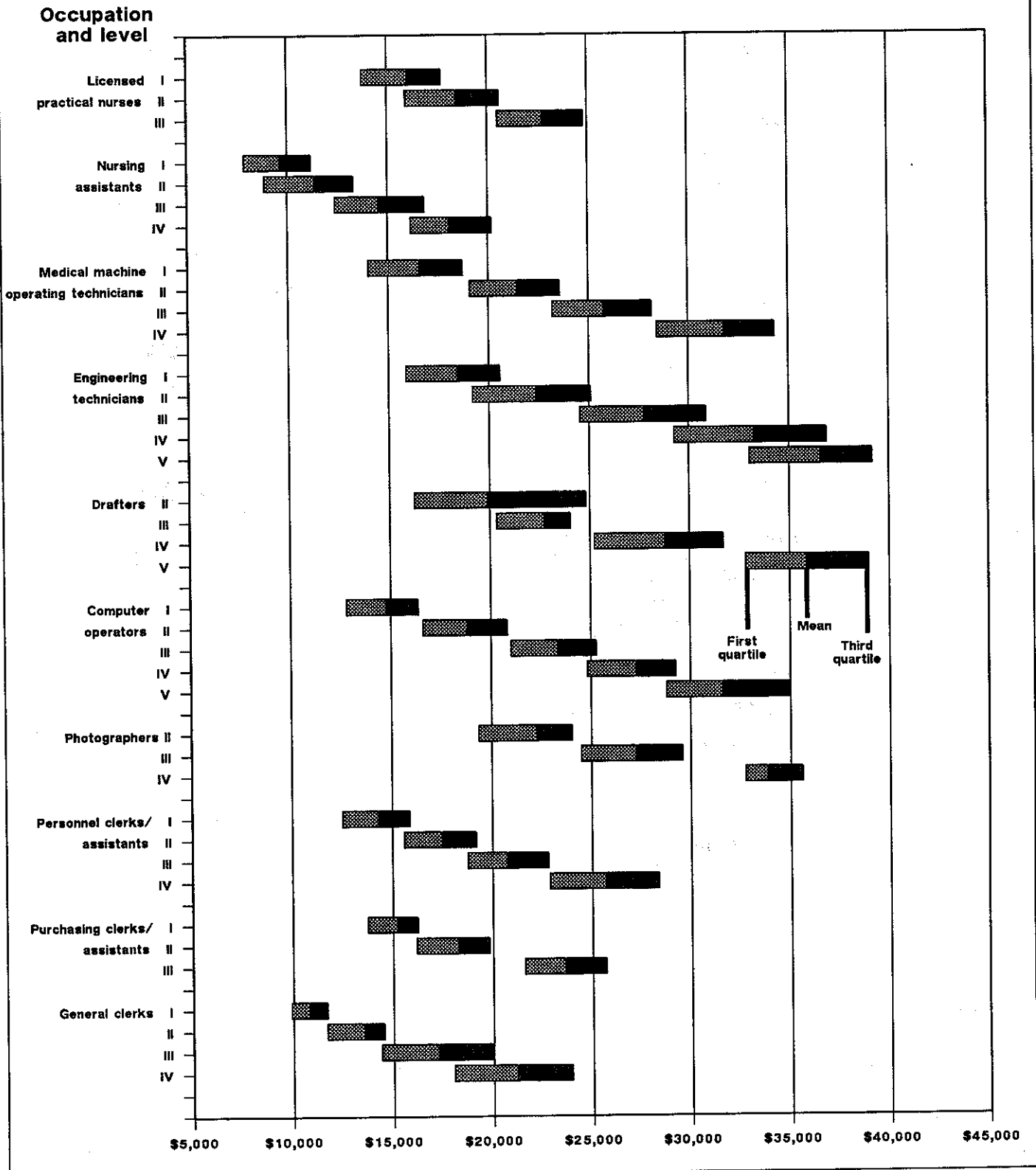
# Chart 2. Salaries in administrative occupations, March 1989

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

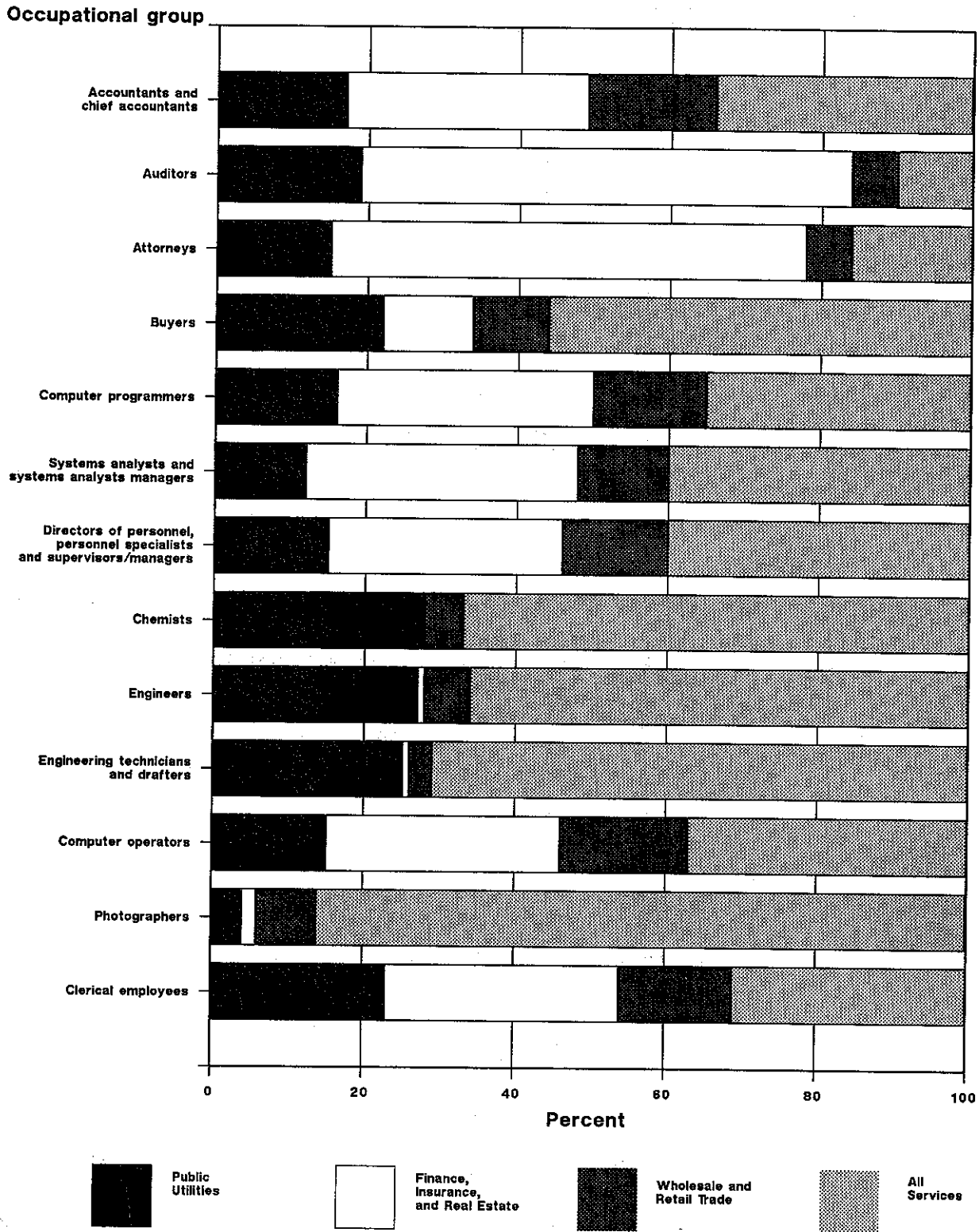


# Chart 3. Salaries in technical and clerical occupations, March 1989

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



**Chart 4. Relative employment in selected occupational groups by industry division, March 1989**



**Table 1. Average salaries—United States**

(Employment and average salaries in private service-producing industries for selected professional, administrative, technical, and clerical occupations, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

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 .....	10,638	\$1,839	\$1,833	\$1,666	\$2,000	\$22,073	\$21,991	\$19,992	\$24,000
II .....	24,945	2,169	2,141	1,969	2,335	26,031	25,690	23,630	28,020
III .....	28,520	2,784	2,749	2,499	3,015	33,404	32,987	29,988	36,180
IV .....	13,935	3,609	3,553	3,265	3,915	43,304	42,637	39,184	46,981
V .....	3,572	4,552	4,517	4,082	4,979	54,627	54,203	48,980	59,754
VI .....	686	5,688	5,482	5,306	5,998	68,252	65,782	63,674	71,971
<b>Chief Accountants</b>									
II .....	914	4,600	4,582	4,248	5,000	55,196	54,978	50,980	60,000
III .....	383	6,013	5,956	5,581	6,372	72,156	71,471	66,972	76,469
IV .....	92	7,777	7,497	6,898	8,871	93,321	89,964	82,779	106,457
<b>Auditors</b>									
I .....	1,165	1,972	1,916	1,846	2,107	23,664	22,991	22,151	25,290
II .....	1,995	2,377	2,338	2,167	2,515	28,519	28,056	25,998	30,182
III .....	2,690	2,922	2,875	2,600	3,165	35,059	34,500	31,200	37,985
IV .....	1,372	3,615	3,531	3,309	3,915	43,384	42,368	39,708	46,981
<b>Public accountants</b>									
I .....	11,988	2,111	2,083	1,999	2,225	25,335	25,000	23,990	26,700
II .....	12,739	2,292	2,249	2,124	2,457	27,505	26,989	25,490	29,488
III .....	12,754	2,616	2,554	2,349	2,816	31,390	30,648	28,189	33,786
IV .....	4,875	3,378	3,254	2,957	3,798	40,532	39,044	35,486	45,582
<b>Personnel Specialists</b>									
I .....	1,876	1,852	1,807	1,649	2,001	22,229	21,685	19,792	24,017
II .....	10,706	2,116	2,069	1,874	2,279	25,395	24,830	22,491	27,350
III .....	16,016	2,700	2,666	2,416	2,987	32,395	31,987	28,988	35,843
IV .....	8,635	3,518	3,458	3,090	3,915	42,214	41,493	37,085	46,981
V .....	1,694	4,485	4,415	4,116	4,855	53,816	52,979	49,396	58,260
<b>Personnel Supervisors/Managers</b>									
I .....	1,400	3,654	3,600	3,273	4,000	43,844	43,200	39,278	47,995
II .....	2,098	4,564	4,571	4,150	4,998	54,771	54,856	49,800	59,976
III .....	648	6,053	5,952	5,415	6,649	72,632	71,426	64,985	79,789
IV .....	88	7,671	6,985	6,504	8,746	92,049	83,816	78,045	104,956
<b>Directors of Personnel</b>									
I .....	867	3,436	3,415	3,182	3,749	41,229	40,984	38,185	44,982
II .....	1,792	4,409	4,457	3,929	4,911	52,906	53,479	47,148	58,926
III .....	795	5,951	5,833	5,416	6,248	71,414	69,992	64,992	74,970
IV .....	166	7,918	7,682	6,677	8,750	95,012	92,182	80,128	104,997
<b>Attorneys</b>									
I .....	1,574	3,030	2,880	2,667	3,321	36,365	34,565	32,000	39,849
II .....	3,467	3,603	3,449	3,240	3,843	43,239	41,383	38,884	46,110
III .....	3,710	4,620	4,573	4,164	4,998	55,440	54,878	49,972	59,976
IV .....	2,958	6,212	6,164	5,489	6,824	74,547	73,970	65,874	81,894
V .....	1,195	7,634	7,496	6,747	8,288	91,607	89,953	80,968	99,460
VI .....	186	9,883	9,770	8,931	11,038	118,601	117,240	107,177	132,451
<b>Buyers</b>									
I .....	2,290	1,918	1,894	1,744	2,099	23,013	22,733	20,923	25,190
II .....	4,940	2,356	2,340	2,083	2,565	28,266	28,078	25,000	30,781
III .....	2,878	3,154	3,149	2,832	3,498	37,849	37,785	33,986	41,976
IV .....	702	3,838	3,792	3,488	4,168	46,058	45,500	41,860	50,020

See footnotes at end of table.

**Table 1. Average salaries—United States—Continued**

(Employment and average salaries in private service-producing industries for selected professional, administrative, technical, and clerical occupations, United States, except Alaska and Hawaii, March 1989)

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 programmers</b>									
I .....	11,037	\$1,909	\$1,916	\$1,666	\$2,084	\$22,903	\$22,991	\$19,992	\$25,008
II .....	28,636	2,242	2,218	2,016	2,424	26,901	26,611	24,190	29,088
III .....	32,758	2,681	2,656	2,416	2,929	32,172	31,872	28,988	35,151
IV .....	12,664	3,266	3,249	2,936	3,584	39,196	38,984	35,238	43,011
V .....	3,044	3,867	3,859	3,524	4,141	46,400	46,302	42,283	49,689
<b>Systems analysts</b>									
I .....	23,073	2,658	2,624	2,416	2,890	31,893	31,487	28,992	34,681
II .....	45,093	3,188	3,165	2,889	3,466	38,256	37,985	34,666	41,597
III .....	26,934	3,804	3,785	3,450	4,125	45,650	45,420	41,400	49,500
IV .....	6,379	4,485	4,422	4,045	4,841	53,823	53,062	48,538	58,092
V .....	962	5,457	5,408	4,998	5,914	65,488	64,895	59,976	70,972
<b>Systems Analysts Managers</b>									
I .....	5,603	4,139	4,037	3,749	4,475	49,665	48,444	44,982	53,700
II .....	6,085	4,717	4,665	4,323	5,083	56,605	55,978	51,879	60,994
III .....	1,491	5,699	5,584	5,156	6,078	68,393	67,008	61,875	72,931
<b>Chemists</b>									
III .....	1,693	3,039	2,934	2,725	3,325	36,469	35,212	32,700	39,900
IV .....	914	3,627	3,499	3,172	3,922	43,526	41,983	38,061	47,067
V .....	386	4,852	4,728	4,332	5,198	58,228	56,731	51,979	62,375
<b>Engineers</b>									
I .....	7,609	2,445	2,434	2,276	2,608	29,340	29,208	27,309	31,302
II .....	15,328	2,834	2,800	2,600	3,014	34,005	33,600	31,198	36,174
III .....	29,737	3,342	3,323	3,040	3,588	40,098	39,881	36,485	43,053
IV .....	35,187	4,000	3,950	3,618	4,325	48,003	47,400	43,416	51,900
V .....	25,060	4,749	4,665	4,300	5,113	56,989	55,978	51,600	61,355
VI .....	8,899	5,510	5,416	5,000	5,991	66,118	64,995	60,000	71,887
VII .....	2,410	6,273	6,205	5,720	6,622	75,280	74,458	68,635	79,468
VIII .....	840	6,937	6,950	6,361	7,515	83,248	83,394	76,330	90,183
<b>Registered nurses</b>									
I .....	18,411	2,050	1,993	1,820	2,276	24,605	23,918	21,838	27,308
II .....	390,789	2,369	2,342	2,087	2,608	28,434	28,099	25,041	31,295
II Specialists .....	21,624	2,675	2,647	2,369	2,998	32,105	31,759	28,431	35,981
III .....	14,229	3,388	3,193	2,808	3,844	40,651	38,311	33,693	46,131
IV .....	926	3,472	3,264	3,022	3,858	41,662	39,163	36,267	46,297
<b>Licensed practical nurses</b>									
I .....	13,630	1,336	1,300	1,144	1,478	16,027	15,599	13,727	17,741
II .....	172,873	1,540	1,511	1,326	1,718	18,481	18,136	15,911	20,611
III .....	4,421	1,896	1,893	1,708	2,071	22,755	22,712	20,493	24,854
<b>Nursing assistants</b>									
I .....	64,173	804	773	650	936	9,647	9,281	7,799	11,231
II .....	393,474	952	910	737	1,109	11,420	10,919	8,839	13,311
III .....	30,958	1,213	1,194	1,031	1,406	14,562	14,330	12,375	16,868
IV .....	2,234	1,507	1,454	1,345	1,685	18,088	17,443	16,139	20,216
<b>Medical machine technicians</b>									
I .....	8,804	1,381	1,383	1,166	1,560	16,568	16,591	13,994	18,719
II .....	16,089	1,786	1,785	1,589	1,965	21,432	21,422	19,072	23,579
III .....	17,204	2,149	2,133	1,931	2,350	25,790	25,592	23,169	28,203
IV .....	279	2,651	2,614	2,368	2,860	31,817	31,364	28,411	34,317

See footnotes at end of table.



**Table 1. Average salaries—United States—Continued**

(Employment and average salaries in private service-producing industries for selected professional, administrative, technical, and clerical occupations, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

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>Engineering technicians</b>									
I .....	1,062	\$1,538	\$1,477	\$1,322	\$1,716	\$18,462	\$17,720	\$15,869	\$20,590
II .....	2,799	1,862	1,837	1,596	2,094	22,347	22,046	19,155	25,126
III .....	4,151	2,315	2,262	2,042	2,574	27,781	27,139	24,501	30,886
IV .....	6,541	2,773	2,715	2,438	3,074	33,274	32,580	29,254	36,886
V .....	4,281	3,049	2,957	2,749	3,267	36,594	35,486	32,987	39,205
<b>Drafters</b>									
II .....	5,126	1,658	1,647	1,352	2,069	19,896	19,758	16,223	24,828
III .....	6,968	1,893	1,911	1,690	2,006	22,717	22,930	20,278	24,074
IV .....	5,120	2,397	2,366	2,100	2,644	28,766	28,390	25,200	31,731
V .....	2,833	2,988	2,990	2,730	3,250	35,853	35,877	32,757	38,997
<b>Computer operators</b>									
I .....	8,335	1,234	1,229	1,066	1,365	14,807	14,746	12,795	16,379
II .....	28,913	1,570	1,533	1,383	1,738	18,837	18,393	16,593	20,850
III .....	17,900	1,948	1,941	1,749	2,107	23,377	23,293	20,986	25,290
IV .....	3,826	2,274	2,239	2,067	2,439	27,284	26,867	24,806	29,274
V .....	560	2,634	2,669	2,398	2,919	31,612	32,030	28,782	35,031
<b>Photographers</b>									
II .....	675	1,857	1,837	1,610	2,003	22,289	22,046	19,322	24,038
III .....	430	2,272	2,155	2,038	2,467	27,268	25,865	24,459	29,609
IV .....	189	2,821	2,739	2,729	2,970	33,857	32,867	32,747	35,640
<b>Personnel clerks/assistants</b>									
I .....	2,368	1,196	1,168	1,040	1,325	14,357	14,018	12,479	15,900
II .....	5,235	1,459	1,408	1,299	1,599	17,503	16,893	15,594	19,192
III .....	3,045	1,731	1,667	1,560	1,900	20,769	19,999	18,719	22,800
IV .....	977	2,143	2,135	1,905	2,365	25,719	25,624	22,865	28,380
<b>Purchasing clerks/assistants</b>									
I .....	1,935	1,272	1,257	1,144	1,354	15,263	15,079	13,723	16,244
II .....	2,951	1,522	1,499	1,347	1,653	18,265	17,993	16,160	19,842
III .....	1,176	1,969	1,986	1,799	2,141	23,625	23,830	21,591	25,691
<b>General clerks</b>									
I .....	15,109	902	867	823	975	10,823	10,400	9,877	11,699
II .....	61,639	1,130	1,093	975	1,213	13,555	13,116	11,695	14,559
III .....	66,385	1,440	1,384	1,200	1,670	17,283	16,613	14,400	20,040
IV .....	29,237	1,769	1,842	1,499	1,998	21,223	22,104	17,993	23,970

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

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

<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 service-producing industries for selected professional, administrative, technical, and clerical occupations, metropolitan areas, United States, except Alaska and Hawaii, March 1989)

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 .....	10,197	\$1,843	\$1,833	\$1,666	\$2,000	\$22,117	\$21,991	\$19,992	\$24,000
II .....	22,909	2,175	2,145	1,974	2,341	26,101	25,740	23,691	28,089
III .....	26,833	2,789	2,749	2,499	3,020	33,465	32,987	29,988	36,240
IV .....	13,617	3,612	3,557	3,274	3,915	43,349	42,683	39,284	46,981
V .....	3,538	4,553	4,517	4,082	4,979	54,638	54,203	48,980	59,754
VI .....	686	5,688	5,482	5,306	5,998	68,252	65,782	63,674	71,971
<b>Chief Accountants</b>									
II .....	867	4,615	4,582	4,248	5,057	55,384	54,978	50,980	60,690
III .....	377	6,016	5,956	5,581	6,372	72,190	71,471	66,972	76,469
IV .....	92	7,777	7,497	6,898	8,871	93,321	89,964	82,779	106,457
<b>Auditors</b>									
I .....	1,157	1,972	1,916	1,846	2,107	23,666	22,991	22,151	25,290
II .....	1,977	2,379	2,338	2,168	2,517	28,545	28,057	26,016	30,210
III .....	2,676	2,923	2,879	2,600	3,165	35,076	34,543	31,200	37,985
IV .....	1,362	3,617	3,531	3,316	3,915	43,410	42,377	39,792	46,981
<b>Public accountants</b>									
I .....	11,952	2,113	2,084	1,999	2,233	25,358	25,008	23,990	26,796
II .....	12,703	2,294	2,249	2,124	2,457	27,523	26,989	25,490	29,488
III .....	12,736	2,616	2,557	2,353	2,816	31,398	30,688	28,239	33,786
IV .....	4,839	3,385	3,258	2,969	3,798	40,625	39,092	35,626	45,582
<b>Personnel Specialists</b>									
I .....	1,803	1,858	1,807	1,666	2,000	22,292	21,685	19,992	24,000
II .....	10,167	2,122	2,080	1,874	2,291	25,467	24,958	22,491	27,489
III .....	15,236	2,705	2,666	2,416	2,987	32,456	31,987	28,988	35,839
IV .....	8,286	3,520	3,466	3,094	3,915	42,246	41,597	37,125	46,981
V .....	1,623	4,490	4,415	4,116	4,875	53,881	52,979	49,396	58,496
<b>Personnel Supervisors/Managers</b>									
I .....	1,326	3,659	3,624	3,270	4,000	43,912	43,483	39,240	48,000
II .....	2,065	4,568	4,575	4,140	4,998	54,821	54,900	49,680	59,976
III .....	622	6,080	5,998	5,415	6,664	72,964	71,981	64,980	79,968
IV .....	88	7,671	6,985	6,504	8,746	92,049	83,816	78,045	104,956
<b>Directors of Personnel</b>									
I .....	815	3,481	3,415	3,251	3,749	41,778	40,984	39,018	44,982
II .....	1,752	4,428	4,462	3,957	4,915	53,139	53,549	47,481	58,976
III .....	760	5,940	5,831	5,415	6,248	71,280	69,972	64,974	74,970
IV .....	165	7,920	7,700	6,677	8,750	95,043	92,400	80,128	104,987
<b>Attorneys</b>									
I .....	1,561	3,034	2,916	2,667	3,332	36,404	34,986	32,000	39,984
II .....	3,352	3,620	3,465	3,240	3,890	43,444	41,583	38,884	46,681
III .....	3,673	4,619	4,565	4,164	4,998	55,423	54,775	49,972	59,976
IV .....	2,946	6,217	6,164	5,498	6,825	74,601	73,970	65,974	81,900
V .....	1,191	7,636	7,496	6,742	8,288	91,637	89,953	80,904	99,460
VI .....	185	9,882	9,770	8,931	11,038	118,583	117,240	107,177	132,451
<b>Buyers</b>									
I .....	2,063	1,913	1,884	1,741	2,073	22,962	22,611	20,891	24,875
II .....	4,350	2,387	2,357	2,155	2,570	28,640	28,289	25,856	30,840
III .....	2,662	3,149	3,124	2,824	3,498	37,784	37,485	33,886	41,976
IV .....	691	3,829	3,780	3,486	4,145	45,954	45,360	41,832	49,740

See footnotes at end of table.

**Table 2. Average salaries—metropolitan areas—Continued**

(Employment and average salaries in private service-producing industries for selected professional, administrative, technical, and clerical occupations, metropolitan areas,<sup>1</sup> United States, except Alaska and Hawaii, March 1989)

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 programmers</b>									
I .....	10,374	\$1,922	\$1,920	\$1,667	\$2,091	\$23,069	\$23,040	\$20,004	\$25,090
II .....	27,435	2,249	2,229	2,037	2,431	26,990	26,749	24,438	29,167
III .....	32,003	2,684	2,662	2,416	2,937	32,212	31,944	28,988	35,242
IV .....	12,458	3,269	3,249	2,937	3,590	39,225	38,984	35,249	43,083
V .....	3,009	3,868	3,860	3,526	4,144	46,415	46,320	42,312	49,728
<b>Systems analysts</b>									
I .....	22,326	2,659	2,624	2,422	2,891	31,909	31,487	29,067	34,686
II .....	44,066	3,189	3,165	2,889	3,467	38,269	37,985	34,666	41,609
III .....	26,662	3,809	3,790	3,461	4,129	45,712	45,482	41,532	49,552
IV .....	6,364	4,487	4,423	4,049	4,841	53,844	53,079	48,590	58,092
V .....	962	5,457	5,408	4,998	5,914	65,488	64,895	59,976	70,972
<b>Systems Analysts Managers</b>									
I .....	5,448	4,141	4,040	3,749	4,475	49,691	48,481	44,982	53,700
II .....	6,081	4,717	4,665	4,323	5,083	56,608	55,978	51,879	60,996
III .....	1,487	5,699	5,584	5,156	6,078	68,388	67,008	61,675	72,931
<b>Chemists</b>									
III .....	1,395	3,069	2,999	2,745	3,360	36,829	35,986	32,945	40,320
IV .....	618	3,755	3,626	3,220	4,160	45,056	43,510	38,643	49,920
V .....	374	4,850	4,705	4,332	5,198	58,206	56,460	51,979	62,375
<b>Engineers</b>									
I .....	6,906	2,454	2,450	2,288	2,620	29,443	29,400	27,454	31,439
II .....	14,324	2,823	2,791	2,583	3,000	33,879	33,487	31,001	36,000
III .....	28,087	3,335	3,310	3,033	3,587	40,015	39,720	36,397	43,043
IV .....	33,698	3,998	3,950	3,610	4,320	47,982	47,400	43,320	51,840
V .....	24,685	4,752	4,667	4,306	5,115	57,029	56,004	51,674	61,380
VI .....	8,716	5,511	5,415	5,000	5,998	66,136	64,980	60,000	71,971
VII .....	2,288	6,279	6,205	5,660	6,622	75,345	74,458	67,920	79,468
VIII .....	840	6,937	6,950	6,361	7,515	83,248	83,394	76,330	90,183
<b>Registered nurses</b>									
I .....	13,834	2,088	2,054	1,834	2,333	25,061	24,646	22,005	27,995
II .....	344,968	2,403	2,387	2,121	2,639	28,831	28,639	25,457	31,668
II Specialists .....	20,772	2,699	2,657	2,390	3,021	32,385	31,884	28,677	36,247
III .....	13,431	3,368	3,172	2,802	3,827	40,421	38,069	33,620	45,923
IV .....	926	3,472	3,264	3,022	3,858	41,662	39,163	36,267	46,297
<b>Licensed practical nurses</b>									
I .....	8,906	1,388	1,343	1,213	1,536	16,658	16,119	14,559	18,427
II .....	131,978	1,597	1,565	1,395	1,771	19,165	18,781	16,743	21,256
III .....	3,887	1,937	1,910	1,747	2,080	23,248	22,920	20,965	24,958
<b>Nursing assistants</b>									
I .....	40,562	848	849	699	946	10,172	10,191	8,384	11,356
II .....	305,302	984	936	771	1,153	11,811	11,231	9,255	13,831
III .....	26,777	1,260	1,217	1,083	1,443	15,118	14,600	12,999	17,311
IV .....	2,234	1,507	1,454	1,345	1,685	18,088	17,443	16,139	20,216
<b>Medical machine technicians</b>									
I .....	7,252	1,400	1,393	1,206	1,560	16,795	16,722	14,476	18,719
II .....	13,217	1,809	1,804	1,614	2,000	21,714	21,651	19,363	24,001
III .....	15,647	2,157	2,146	1,940	2,361	25,887	25,748	23,281	28,327
IV .....	238	2,670	2,614	2,300	2,919	32,044	31,364	27,599	35,025

See footnotes at end of table.

**Table 2. Average salaries--metropolitan areas--Continued**

(Employment and average salaries in private service-producing industries for selected professional, administrative, technical, and clerical occupations, metropolitan areas,<sup>1</sup> United States, except Alaska and Hawaii, March 1989)

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>Engineering technicians</b>									
I .....	996	\$1,548	\$1,478	\$1,338	\$1,724	\$18,571	\$17,741	\$16,052	\$20,692
II .....	2,678	1,867	1,840	1,596	2,093	22,400	22,084	19,155	25,116
III .....	3,909	2,324	2,262	2,049	2,584	27,893	27,139	24,590	31,010
IV .....	6,138	2,785	2,735	2,450	3,081	33,419	32,820	29,400	36,969
V .....	3,645	3,061	2,957	2,748	3,305	36,731	35,486	32,979	39,660
<b>Drafters</b>									
II .....	5,073	1,661	1,647	1,352	2,069	19,931	19,758	16,223	24,828
III .....	6,763	1,899	1,911	1,697	2,006	22,786	22,930	20,362	24,074
IV .....	4,948	2,407	2,383	2,141	2,644	28,883	28,598	25,688	31,731
V .....	2,730	2,999	2,999	2,738	3,250	35,988	35,986	32,861	38,997
<b>Computer operators</b>									
I .....	7,175	1,241	1,242	1,083	1,374	14,887	14,899	12,995	16,493
II .....	26,553	1,583	1,546	1,387	1,749	19,002	18,552	16,639	20,992
III .....	17,306	1,948	1,941	1,745	2,105	23,375	23,295	20,938	25,257
IV .....	3,778	2,274	2,239	2,067	2,441	27,284	26,867	24,806	29,288
V .....	560	2,634	2,669	2,398	2,919	31,612	32,030	28,782	35,031
<b>Photographers</b>									
II .....	664	1,859	1,842	1,610	2,003	22,306	22,109	19,322	24,038
III .....	408	2,284	2,166	2,083	2,503	27,402	25,990	24,990	30,040
IV .....	183	2,835	2,739	2,729	2,970	34,016	32,867	32,747	35,640
<b>Personnel clerks/assistants</b>									
I .....	2,245	1,198	1,169	1,040	1,325	14,370	14,022	12,479	15,900
II .....	5,074	1,464	1,408	1,299	1,605	17,565	16,899	15,594	19,260
III .....	2,886	1,737	1,680	1,560	1,900	20,842	20,162	18,719	22,800
IV .....	935	2,137	2,135	1,870	2,365	25,643	25,624	22,440	28,380
<b>Purchasing clerks/assistants</b>									
I .....	1,748	1,292	1,300	1,170	1,365	15,501	15,599	14,039	16,380
II .....	2,683	1,529	1,499	1,349	1,662	18,345	17,993	16,194	19,944
III .....	1,052	1,994	2,007	1,833	2,158	23,933	24,083	21,991	25,898
<b>General clerks</b>									
I .....	14,224	904	875	823	975	10,845	10,503	9,879	11,699
II .....	57,467	1,135	1,100	975	1,219	13,614	13,195	11,699	14,624
III .....	62,014	1,465	1,395	1,214	1,710	17,578	16,743	14,568	20,520
IV .....	28,364	1,771	1,844	1,500	1,998	21,253	22,130	18,000	23,970

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

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

<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 service-producing industries for selected professional, administrative, technical, and clerical occupations, three establishment size groupings, United States, except Alaska and Hawaii, March 1989)

Occupation and level <sup>2</sup>	Establishments employing 50-999 workers <sup>3</sup>			Establishments employing 1,000-2,499 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>Accountants</b>									
I .....	5,808	\$21,316	\$21,041	2,532	\$22,142	\$21,994	2,298	\$23,912	\$23,688
II .....	16,565	25,338	25,123	4,059	26,277	25,990	4,321	28,458	27,989
III .....	19,450	32,886	32,487	4,526	33,273	32,537	4,544	35,750	34,986
IV .....	8,182	43,094	42,782	2,900	42,225	41,483	2,853	45,005	44,100
V .....	1,433	53,681	52,779	970	53,895	54,478	1,169	56,393	55,920
<b>Auditors</b>									
I .....	516	23,781	22,991	412	22,967	22,991	237	24,619	24,190
II .....	682	27,515	26,999	561	27,941	27,967	752	29,860	29,200
III .....	1,097	34,616	34,486	584	33,880	33,337	1,029	36,178	35,686
IV .....	398	42,349	41,548	401	42,193	42,169	573	44,935	44,982
<b>Personnel specialists</b>									
I .....	947	21,433	21,291	580	21,640	21,685	349	25,366	24,490
II .....	6,776	24,316	23,990	2,104	26,306	25,990	1,926	28,347	27,656
III .....	9,577	31,476	31,188	3,436	32,830	32,387	3,003	34,830	34,320
IV .....	4,799	40,957	39,984	1,612	43,086	42,346	2,224	44,296	44,087
<b>Personnel supervisors/managers</b>									
I .....	561	42,736	41,597	474	43,473	43,200	365	46,027	46,681
II .....	823	54,022	54,720	559	54,664	54,478	716	55,716	55,759
III .....	176	72,584	70,972	184	71,643	69,972	288	73,292	73,335
<b>Attorneys</b>									
I .....	1,105	35,450	33,986	250	36,712	37,320	219	40,582	39,984
II .....	2,517	42,486	40,944	440	42,804	41,457	510	47,327	46,110
III .....	1,885	53,805	53,978	791	55,777	52,979	1,034	58,163	57,000
IV .....	1,278	75,896	76,719	712	71,759	70,947	968	74,816	872,959
V .....	346	95,613	91,963	246	87,608	87,151	603	90,941	87,816
<b>Buyers</b>									
I .....	972	22,989	22,991	732	21,684	21,515	586	24,703	24,022
II .....	2,122	27,002	27,150	1,415	28,358	28,161	1,403	30,086	29,438
III .....	627	36,717	36,397	626	38,962	38,580	1,625	37,858	37,665
<b>Computer programmers</b>									
I .....	6,240	21,439	20,798	1,655	23,161	22,980	3,142	25,676	25,101
II .....	15,174	25,902	25,890	5,942	27,040	26,684	7,520	28,807	28,589
III .....	15,931	31,410	30,900	7,539	31,935	31,536	9,288	33,671	33,986
IV .....	3,610	38,935	38,385	3,094	37,782	37,593	5,980	40,088	40,323
<b>Systems analysts</b>									
I .....	10,073	31,308	30,988	6,166	32,184	31,800	6,834	32,493	31,800
II .....	18,936	37,493	37,485	10,560	38,200	37,931	15,537	39,226	38,700

See footnotes at end of table.

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

(Employment and average salaries in private service-producing industries for selected professional, administrative, technical, and clerical occupations, three establishment size groupings,<sup>1</sup> United States, except Alaska and Hawaii, March 1989)

Occupation and level <sup>2</sup>	Establishments employing 50-999 workers <sup>3</sup>		Establishments employing 1,000-2,499 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>Systems analysts</b>									
III .....	10,266	\$44,719	\$44,481	7,389	\$45,723	\$45,115	9,279	\$46,623	\$46,584
IV .....	2,258	53,668	52,979	1,941	53,709	52,454	2,180	54,085	54,375
<b>Systems analysts/managers</b>									
I .....	2,342	49,393	48,000	1,466	49,073	48,740	1,795	50,505	48,581
II .....	2,102	57,403	57,000	1,541	56,353	56,052	2,442	56,076	55,500
III .....	439	67,201	66,500	394	67,120	65,474	658	69,950	69,900
<b>Engineers</b>									
I .....	5,199	28,483	28,078	1,013	30,892	30,473	1,397	31,329	31,560
II .....	9,013	33,038	32,760	2,897	35,291	34,008	3,418	35,467	35,586
III .....	14,373	38,750	38,280	4,636	40,157	39,600	10,728	41,879	42,000
IV .....	17,590	47,679	46,980	7,581	47,625	46,680	10,016	48,858	48,834
V .....	12,958	56,904	55,799	6,014	57,070	56,160	6,088	57,050	56,207
VI .....	4,889	65,256	64,475	2,300	66,238	65,136	1,710	68,423	66,900
VII .....	1,455	73,402	73,210	615	76,615	75,270	340	80,905	79,428
<b>Registered nurses</b>									
I .....	14,220	24,007	23,544	1,903	26,955	26,544	2,288	26,370	26,185
II .....	157,763	26,370	26,372	136,623	28,803	28,660	96,403	30,306	29,793
III .....	7,551	32,472	32,196	8,668	31,099	30,158	5,405	33,206	32,799
IV .....	3,456	44,615	41,597	5,583	38,668	36,168	5,190	40,145	38,651
<b>Licensed practical nurses</b>									
I .....	11,533	15,831	15,599	1,107	16,069	16,077	990	18,255	18,377
II .....	123,469	17,798	17,429	34,769	20,006	19,966	14,635	20,614	20,882
<b>Nursing assistants</b>									
I .....	56,647	9,232	8,943	5,875	12,057	11,855	1,651	15,317	15,715
II .....	342,357	10,862	10,524	33,473	14,831	14,684	17,644	15,760	15,891
<b>Medical machine technicians</b>									
I .....	4,371	16,022	15,869	2,763	16,973	16,784	1,670	17,329	16,805
II .....	7,114	21,118	21,316	6,128	21,208	21,131	2,847	22,699	22,293
III .....	5,417	25,494	25,104	7,075	25,797	25,790	4,712	26,118	26,144
<b>Engineering technicians</b>									
II .....	1,440	21,698	21,480	664	20,212	19,738	695	25,732	25,748
III .....	1,606	26,397	26,028	1,029	25,790	25,812	1,516	30,601	30,392
IV .....	1,867	31,818	31,836	1,294	32,317	32,250	3,380	34,444	33,900
<b>Drafters</b>									
II .....	2,376	16,243	16,015	352	19,705	18,540	2,398	23,543	24,828

See footnotes at end of table.

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

(Employment and average salaries in private service-producing industries for selected professional, administrative, technical, and clerical occupations, three establishment size groupings,<sup>1</sup> United States, except Alaska and Hawaii, March 1989)

Occupation and level <sup>2</sup>	Establishments employing 50-999 workers <sup>3</sup>			Establishments employing 1,000-2,499 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>Drafters</b>									
III .....	3,785	\$21,407	\$20,988	549	\$23,015	\$22,740	2,634	\$24,536	\$323,970
IV .....	3,059	27,552	27,038	517	27,566	27,974	1,544	31,571	31,731
<b>Computer operators</b>									
I .....	5,452	14,034	13,987	1,530	15,626	15,494	1,353	16,992	16,769
II .....	17,829	17,893	17,793	4,589	18,752	18,609	6,495	21,491	22,380
III .....	8,968	22,464	22,461	3,610	22,989	22,497	5,322	25,180	24,646
IV .....	1,410	26,778	26,414	966	27,583	27,589	1,450	27,578	27,175
<b>Photographers</b>									
II .....	208	20,697	21,534	198	21,898	21,338	269	23,807	22,379
III .....	132	26,078	25,380	121	26,320	25,521	177	28,804	28,286
<b>Personnel clerks/assistants</b>									
I .....	1,423	13,757	13,041	608	14,699	14,284	337	16,269	15,887
II .....	3,301	17,099	16,843	1,045	17,852	17,575	889	18,591	17,949
III .....	1,923	20,293	19,758	616	20,958	20,958	506	22,345	21,991
<b>Purchasing clerks/assistants</b>									
I .....	1,429	14,700	14,994	271	15,767	15,828	235	18,103	17,484
II .....	1,782	17,825	17,693	597	18,353	17,887	572	19,543	19,260
III .....	549	23,286	23,880	349	23,753	23,880	278	24,134	23,761
<b>General clerks</b>									
I .....	11,640	10,393	10,400	1,349	11,775	11,700	2,120	12,578	12,373
II .....	43,528	12,846	12,651	6,586	13,805	13,464	11,525	16,093	15,032
III .....	35,300	15,772	15,599	7,248	15,916	15,599	23,837	19,936	21,768

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

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

<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.

**Table 4. Earnings distribution—professional and administrative occupations**

(Percent distribution of employees in selected professional and administrative occupations by annual salary, private service-producing industries, United States, except Alaska and Hawaii, March 1989)

Annual salary	Accountants					
	I	II	III	IV	V	VI
Number of employees .....	10,638	24,945	28,520	13,935	3,572	686
Average annual salary .....	\$22,073	\$26,031	\$33,404	\$43,304	\$54,627	\$68,252
Total .....	100.0	100.0	100.0	100.0	100.0	100.0
\$15,000 and under \$16,000 .....	2.5	-	-	-	-	-
\$16,000 and under \$17,000 .....	4.1	( <sup>1</sup> )	-	-	-	-
\$17,000 and under \$18,000 .....	4.5	.3	-	-	-	-
\$18,000 and under \$19,000 .....	4.1	.8	-	-	-	-
\$19,000 and under \$20,000 .....	11.8	3.0	( <sup>1</sup> )	-	-	-
\$20,000 and under \$21,000 .....	12.6	3.7	.1	-	-	-
\$21,000 and under \$22,000 .....	12.0	5.4	.2	-	-	-
\$22,000 and under \$23,000 .....	12.6	6.6	.2	-	-	-
\$23,000 and under \$24,000 .....	10.5	10.5	.5	( <sup>1</sup> )	-	-
\$24,000 and under \$25,000 .....	9.0	11.9	2.6	( <sup>1</sup> )	-	-
\$25,000 and under \$26,000 .....	6.1	14.3	2.2	.1	-	-
\$26,000 and under \$27,000 .....	5.2	9.3	3.0	.1	-	-
\$27,000 and under \$28,000 .....	2.6	8.7	4.1	( <sup>1</sup> )	-	-
\$28,000 and under \$29,000 .....	1.0	6.4	5.6	.1	-	-
\$29,000 and under \$30,000 .....	.6	5.8	10.8	.3	-	-
\$30,000 and under \$31,000 .....	.3	4.2	7.5	.5	-	-
\$31,000 and under \$32,000 .....	.2	2.5	7.9	.9	-	-
\$32,000 and under \$33,000 .....	.2	2.4	6.5	.9	.1	-
\$33,000 and under \$34,000 .....	( <sup>1</sup> )	1.4	7.2	1.6	.1	-
\$34,000 and under \$35,000 .....	.1	.9	9.7	2.2	-	-
\$35,000 and under \$36,000 .....	( <sup>1</sup> )	.4	5.6	3.5	.1	-
\$36,000 and under \$37,000 .....	( <sup>1</sup> )	.3	5.5	4.2	.2	-
\$37,000 and under \$38,000 .....	-	.3	5.1	4.9	.1	-
\$38,000 and under \$39,000 .....	-	.2	2.7	5.1	.3	-
\$39,000 and under \$40,000 .....	( <sup>1</sup> )	.1	3.7	7.1	1.0	-
\$40,000 and under \$41,000 .....	-	.1	1.7	6.9	1.2	-
\$41,000 and under \$42,000 .....	-	.1	1.0	9.0	1.5	-
\$42,000 and under \$43,000 .....	-	.1	2.0	5.7	2.1	-
\$43,000 and under \$44,000 .....	-	.1	.8	6.4	1.8	-
\$44,000 and under \$45,000 .....	-	( <sup>1</sup> )	.6	8.5	1.5	-
\$45,000 and under \$46,000 .....	-	( <sup>1</sup> )	.6	4.6	2.6	-
\$46,000 and under \$47,000 .....	-	( <sup>1</sup> )	1.1	3.5	4.0	.6
\$47,000 and under \$48,000 .....	-	( <sup>1</sup> )	.3	5.0	5.1	-
\$48,000 and under \$49,000 .....	-	-	.2	2.1	3.9	-
\$49,000 and under \$50,000 .....	-	-	.3	4.6	7.0	.3
\$50,000 and under \$52,000 .....	-	-	.3	3.4	9.0	.6
\$52,000 and under \$54,000 .....	-	-	.1	4.8	7.5	1.9
\$54,000 and under \$56,000 .....	-	-	.1	1.9	11.2	1.9
\$56,000 and under \$58,000 .....	-	-	( <sup>1</sup> )	.4	9.9	4.4
\$58,000 and under \$60,000 .....	-	-	-	.5	7.2	5.1
\$60,000 and under \$62,000 .....	-	-	( <sup>1</sup> )	.3	8.0	4.1
\$62,000 and under \$64,000 .....	-	-	( <sup>1</sup> )	.2	4.2	15.9
\$64,000 and under \$68,000 .....	-	-	( <sup>1</sup> )	.8	4.5	25.1
\$68,000 and under \$70,000 .....	-	-	.1	( <sup>1</sup> )	1.1	9.0
\$70,000 and under \$72,000 .....	-	-	-	( <sup>1</sup> )	1.1	6.3
\$72,000 and under \$74,000 .....	-	-	-	.2	.6	4.1
\$74,000 and under \$76,000 .....	-	-	-	( <sup>1</sup> )	.5	1.3
\$76,000 and under \$78,000 .....	-	-	-	( <sup>1</sup> )	.7	4.7
\$78,000 and under \$80,000 .....	-	-	-	-	.8	3.1
\$80,000 and under \$82,000 .....	-	-	-	-	.9	1.5
\$82,000 and under \$84,000 .....	-	-	-	-	( <sup>1</sup> )	3.4
\$84,000 and under \$86,000 .....	-	-	-	-	( <sup>1</sup> )	2.6
\$86,000 and over .....	-	-	-	-	.2	4.4

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 service-producing industries, United States, except Alaska and Hawaii, March 1989)

Annual salary	Chief accountants		
	II	III	IV
Number of employees .....	914	383	92
Average annual salary .....	\$55,196	\$72,156	\$93,321
Total .....	100.0	100.0	100.0
Under \$45,000 .....	4.7	-	-
\$45,000 and under \$46,000 .....	-	-	-
\$46,000 and under \$47,000 .....	2.2	-	-
\$47,000 and under \$48,000 .....	1.9	-	-
\$48,000 and under \$49,000 .....	1.9	-	-
\$49,000 and under \$50,000 .....	8.4	-	-
\$50,000 and under \$52,000 .....	19.9	-	-
\$52,000 and under \$54,000 .....	5.7	-	-
\$54,000 and under \$56,000 .....	21.3	-	-
\$56,000 and under \$58,000 .....	.5	3.4	-
\$58,000 and under \$60,000 .....	6.7	2.3	-
\$60,000 and under \$62,000 .....	8.2	-	-
\$62,000 and under \$64,000 .....	10.0	10.7	-
\$64,000 and under \$66,000 .....	5.9	5.5	-
\$66,000 and under \$68,000 .....	2.3	13.6	-
\$68,000 and under \$70,000 .....	.2	11.5	-
\$70,000 and under \$72,000 .....	-	3.7	-
\$72,000 and under \$74,000 .....	-	5.5	-
\$74,000 and under \$76,000 .....	-	7.8	-
\$76,000 and under \$78,000 .....	-	14.6	-
\$78,000 and under \$80,000 .....	-	4.4	1.1
\$80,000 and under \$82,000 .....	.2	8.4	5.4
\$82,000 and under \$84,000 .....	-	3.1	37.0
\$84,000 and under \$86,000 .....	-	2.9	3.3
\$86,000 and under \$88,000 .....	-	.5	-
\$88,000 and under \$90,000 .....	-	1.6	7.6
\$90,000 and under \$92,000 .....	-	.3	2.2
\$92,000 and under \$94,000 .....	-	-	6.5
\$94,000 and under \$96,000 .....	-	-	2.2
\$96,000 and under \$98,000 .....	-	-	-
\$98,000 and under \$100,000 .....	-	-	3.3
\$100,000 and under \$102,000 .....	-	-	-
\$102,000 and under \$104,000 .....	-	-	1.1
\$104,000 and under \$106,000 .....	-	-	4.3
\$106,000 and under \$108,000 .....	-	-	4.3
\$108,000 and under \$110,000 .....	-	-	15.2
\$110,000 and over .....	-	.3	6.5

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 service-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

Annual salary	Auditors			
	I	II	III	IV
Number of employees .....	1,165	1,995	2,690	1,372
Average annual salary .....	\$23,664	\$28,519	\$35,059	\$43,384
Total .....	100.0	100.0	100.0	100.0
Under \$20,000 .....	7.7	-	-	-
\$20,000 and under \$21,000 .....	6.7	-	-	-
\$21,000 and under \$22,000 .....	9.4	2.9	-	-
\$22,000 and under \$23,000 .....	31.5	2.0	.3	-
\$23,000 and under \$24,000 .....	7.5	4.0	.4	-
\$24,000 and under \$25,000 .....	10.7	7.3	.4	-
\$25,000 and under \$26,000 .....	9.9	9.2	.7	-
\$26,000 and under \$27,000 .....	5.9	13.8	2.0	-
\$27,000 and under \$28,000 .....	5.1	10.5	2.3	-
\$28,000 and under \$29,000 .....	1.6	10.2	5.4	-
\$29,000 and under \$30,000 .....	2.1	14.8	3.8	.1
\$30,000 and under \$31,000 .....	1.4	6.8	8.7	-
\$31,000 and under \$32,000 .....	.1	4.6	9.4	1.7
\$32,000 and under \$33,000 .....	.3	3.4	6.9	.7
\$33,000 and under \$34,000 .....	.1	2.5	4.8	.9
\$34,000 and under \$35,000 .....	-	3.4	10.8	2.8
\$35,000 and under \$36,000 .....	-	1.8	5.5	2.9
\$36,000 and under \$37,000 .....	.1	.5	5.2	3.7
\$37,000 and under \$38,000 .....	-	.8	12.7	3.4
\$38,000 and under \$39,000 .....	-	.6	3.1	6.3
\$39,000 and under \$40,000 .....	-	-	3.3	8.1
\$40,000 and under \$41,000 .....	-	.2	2.4	5.2
\$41,000 and under \$42,000 .....	-	.9	2.6	10.6
\$42,000 and under \$43,000 .....	-	-	1.2	7.1
\$43,000 and under \$44,000 .....	-	.2	1.7	4.2
\$44,000 and under \$45,000 .....	-	-	.9	9.1
\$45,000 and under \$46,000 .....	-	-	1.3	4.4
\$46,000 and under \$47,000 .....	-	-	1.7	3.9
\$47,000 and under \$48,000 .....	-	.1	1.3	5.1
\$48,000 and under \$49,000 .....	-	-	.3	2.4
\$49,000 and under \$50,000 .....	-	-	.2	4.1
\$50,000 and under \$52,000 .....	-	-	.4	5.3
\$52,000 and under \$54,000 .....	-	-	.3	2.9
\$54,000 and over .....	-	-	.3	4.7

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 service-producing industries, United States, except Alaska and Hawaii, March 1989)

Annual salary	Public accountants			
	I	II	III	IV
Number of employees .....	11,988	12,739	12,754	4,875
Average annual salary .....	\$25,335	\$27,505	\$31,390	\$40,532
Total .....	100.0	100.0	100.0	100.0
Under \$22,000 .....	6.7	.5	.1	-
\$22,000 and under \$23,000 .....	10.5	2.7	.2	-
\$23,000 and under \$24,000 .....	16.1	3.9	.4	-
\$24,000 and under \$25,000 .....	16.7	13.2	1.4	-
\$25,000 and under \$26,000 .....	18.8	16.5	3.8	.2
\$26,000 and under \$27,000 .....	9.5	16.7	7.9	1.6
\$27,000 and under \$28,000 .....	13.1	10.2	9.1	1.6
\$28,000 and under \$29,000 .....	2.6	7.8	12.3	1.8
\$29,000 and under \$30,000 .....	2.1	13.2	10.2	1.5
\$30,000 and under \$31,000 .....	.7	4.7	9.1	1.2
\$31,000 and under \$32,000 .....	2.2	3.0	8.7	2.4
\$32,000 and under \$33,000 .....	.5	3.9	8.4	3.1
\$33,000 and under \$34,000 .....	.1	1.8	5.4	3.8
\$34,000 and under \$35,000 .....	.1	.7	6.4	6.0
\$35,000 and under \$36,000 .....	.3	.5	3.7	6.5
\$36,000 and under \$37,000 .....	-	.2	3.0	5.0
\$37,000 and under \$38,000 .....	.1	.3	2.6	5.6
\$38,000 and under \$39,000 .....	-	.2	2.4	9.5
\$39,000 and under \$40,000 .....	-	.1	1.8	6.6
\$40,000 and under \$41,000 .....	-	( <sup>9</sup> )	.6	2.5
\$41,000 and under \$42,000 .....	-	-	.6	5.1
\$42,000 and under \$43,000 .....	-	-	.5	3.8
\$43,000 and under \$44,000 .....	-	( <sup>9</sup> )	.7	3.2
\$44,000 and under \$45,000 .....	-	( <sup>9</sup> )	( <sup>9</sup> )	3.4
\$45,000 and under \$46,000 .....	-	-	.2	4.3
\$46,000 and under \$47,000 .....	-	-	.2	2.9
\$47,000 and under \$48,000 .....	-	-	.1	3.5
\$48,000 and under \$49,000 .....	-	-	.2	3.1
\$49,000 and under \$50,000 .....	-	-	.1	2.2
\$50,000 and over .....	-	-	.1	9.6

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 service-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

Annual salary	Personnel specialists				
	I	II	III	IV	V
Number of employees .....	1,876	10,706	16,016	8,635	1,694
Average annual salary .....	\$22,229	\$25,395	\$32,395	\$42,214	\$53,816
Total .....	100.0	100.0	100.0	100.0	100.0
Under \$18,000 .....	8.2	1.6	( <sup>2</sup> )	-	-
\$18,000 and under \$19,000 .....	9.8	1.0	.1	-	-
\$19,000 and under \$20,000 .....	11.5	3.9	.2	-	-
\$20,000 and under \$21,000 .....	11.5	5.2	.5	-	-
\$21,000 and under \$22,000 .....	16.8	8.9	.2	-	-
\$22,000 and under \$23,000 .....	10.8	11.0	1.3	-	-
\$23,000 and under \$24,000 .....	6.1	11.9	1.0	( <sup>2</sup> )	-
\$24,000 and under \$25,000 .....	9.0	11.2	2.8	( <sup>2</sup> )	-
\$25,000 and under \$26,000 .....	4.9	7.1	4.6	-	-
\$26,000 and under \$27,000 .....	2.1	10.3	5.6	( <sup>2</sup> )	-
\$27,000 and under \$28,000 .....	3.4	7.5	4.0	.1	-
\$28,000 and under \$29,000 .....	1.9	4.9	6.3	.2	-
\$29,000 and under \$30,000 .....	.7	4.1	9.7	.4	-
\$30,000 and under \$31,000 .....	.9	3.0	7.0	.9	-
\$31,000 and under \$32,000 .....	.4	1.8	7.6	2.0	.1
\$32,000 and under \$33,000 .....	.3	1.8	7.4	1.0	-
\$33,000 and under \$34,000 .....	.2	.9	6.5	3.0	-
\$34,000 and under \$35,000 .....	.3	.8	6.2	7.3	.1
\$35,000 and under \$36,000 .....	.3	.8	6.2	5.1	.1
\$36,000 and under \$37,000 .....	.2	.3	5.5	4.5	.9
\$37,000 and under \$38,000 .....	.2	.5	4.4	5.4	.1
\$38,000 and under \$39,000 .....	.3	.1	1.7	5.8	.2
\$39,000 and under \$40,000 .....	.1	.3	3.7	7.2	.4
\$40,000 and under \$41,000 .....	-	.1	1.8	5.4	.6
\$41,000 and under \$42,000 .....	.1	.2	1.2	4.7	1.2
\$42,000 and under \$43,000 .....	.1	.2	1.4	5.9	1.7
\$43,000 and under \$44,000 .....	-	.3	.8	3.5	.8
\$44,000 and under \$45,000 .....	-	.1	.8	5.8	2.4
\$45,000 and under \$46,000 .....	-	( <sup>2</sup> )	.3	3.5	4.5
\$46,000 and under \$47,000 .....	-	( <sup>2</sup> )	.3	4.2	3.7
\$47,000 and under \$48,000 .....	-	-	.2	6.1	3.7
\$48,000 and under \$49,000 .....	-	-	.2	1.9	2.5
\$49,000 and under \$50,000 .....	-	-	.1	4.5	10.3
\$50,000 and under \$52,000 .....	-	( <sup>2</sup> )	.2	3.9	9.6
\$52,000 and under \$54,000 .....	-	( <sup>2</sup> )	( <sup>2</sup> )	3.5	13.8
\$54,000 and under \$56,000 .....	-	-	( <sup>2</sup> )	1.7	10.3
\$56,000 and under \$58,000 .....	-	-	.1	.6	8.0
\$58,000 and under \$60,000 .....	-	-	-	1.0	10.0
\$60,000 and under \$62,000 .....	-	-	-	.3	2.5
\$62,000 and under \$64,000 .....	-	-	( <sup>2</sup> )	.2	2.5
\$64,000 and over .....	-	-	-	.2	10.2

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 service-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

Annual salary	Personnel supervisors/managers			
	I	II	III	IV
Number of employees .....	1,400	2,098	648	88
Average annual salary .....	\$43,844	\$54,771	\$72,632	\$92,049
Total .....	100.0	100.0	100.0	100.0
under \$36,000 .....	8.2	.2	-	-
\$36,000 and under \$37,000 .....	2.2	.3	-	-
\$37,000 and under \$38,000 .....	7.6	.2	-	-
\$38,000 and under \$39,000 .....	5.1	.5	-	-
\$39,000 and under \$40,000 .....	4.0	1.2	-	-
\$40,000 and under \$41,000 .....	6.9	1.0	-	-
\$41,000 and under \$42,000 .....	11.2	.4	-	-
\$42,000 and under \$43,000 .....	3.3	1.3	-	-
\$43,000 and under \$44,000 .....	7.2	2.9	-	-
\$44,000 and under \$45,000 .....	5.9	3.9	-	-
\$45,000 and under \$46,000 .....	4.6	1.5	-	-
\$46,000 and under \$47,000 .....	4.2	2.5	-	-
\$47,000 and under \$48,000 .....	4.4	2.0	.2	-
\$48,000 and under \$49,000 .....	6.5	6.0	.3	-
\$49,000 and under \$50,000 .....	2.7	3.3	-	-
\$50,000 and under \$52,000 .....	7.8	11.7	.5	-
\$52,000 and under \$54,000 .....	1.9	7.3	1.1	-
\$54,000 and under \$56,000 .....	2.0	10.0	1.2	-
\$56,000 and under \$58,000 .....	2.2	10.8	.9	-
\$58,000 and under \$60,000 .....	.5	11.2	2.8	-
\$60,000 and under \$62,000 .....	.2	4.3	5.7	-
\$62,000 and under \$64,000 .....	.9	6.2	9.3	3.4
\$64,000 and under \$66,000 .....	.1	4.1	9.7	1.1
\$66,000 and under \$68,000 .....	-	3.6	6.3	2.3
\$68,000 and under \$70,000 .....	-	1.3	8.3	2.3
\$70,000 and under \$72,000 .....	-	.8	5.9	2.3
\$72,000 and under \$74,000 .....	-	.6	5.7	3.4
\$74,000 and under \$76,000 .....	-	.4	5.7	2.3
\$76,000 and under \$78,000 .....	-	.4	7.7	5.7
\$78,000 and under \$80,000 .....	-	-	8.3	13.6
\$80,000 and under \$82,000 .....	-	-	5.2	6.8
\$82,000 and under \$84,000 .....	-	.1	1.5	6.8
\$84,000 and under \$86,000 .....	-	( <sup>1</sup> )	2.6	2.3
\$86,000 and under \$88,000 .....	-	-	1.1	3.4
\$88,000 and under \$90,000 .....	.1	-	4.9	1.1
\$90,000 and under \$92,000 .....	-	-	2.2	4.5
\$92,000 and under \$94,000 .....	-	-	.3	5.7
\$94,000 and under \$96,000 .....	-	-	-	1.1
\$96,000 and under \$98,000 .....	-	-	.3	-
\$98,000 and under \$100,000 .....	-	-	.6	2.3
\$100,000 and under \$102,000 .....	-	-	-	1.1
\$102,000 and under \$104,000 .....	-	-	.6	1.1
\$104,000 and under \$106,000 .....	-	-	.9	3.4
\$106,000 and under \$108,000 .....	-	-	-	1.1
\$108,000 and under \$110,000 .....	-	-	-	2.3
\$110,000 and under \$112,000 .....	-	-	-	-
\$112,000 and under \$114,000 .....	-	-	-	-
\$114,000 and under \$116,000 .....	-	-	-	-
\$116,000 and under \$118,000 .....	-	-	-	6.8
\$118,000 and under \$120,000 .....	-	-	-	-
\$120,000 and over .....	-	-	-	13.6

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 service-producing industries, United States, except Alaska and Hawaii, March 1989)

Annual salary	Directors of personnel			
	I	II	III	IV
Number of employees .....	867	1,792	795	166
Average annual salary .....	\$41,229	\$52,906	\$71,414	\$95,012
Total .....	100.0	100.0	100.0	100.0
under \$32,000 .....	7.4	.1	-	-
\$32,000 and under \$33,000 .....	1.2	-	-	-
\$33,000 and under \$34,000 .....	1.2	-	-	-
\$34,000 and under \$35,000 .....	1.3	-	-	-
\$35,000 and under \$36,000 .....	2.0	.1	-	-
\$36,000 and under \$37,000 .....	3.2	1.3	-	-
\$37,000 and under \$38,000 .....	7.7	.7	-	-
\$38,000 and under \$39,000 .....	5.1	4.2	-	-
\$39,000 and under \$40,000 .....	18.1	-	-	-
\$40,000 and under \$41,000 .....	10.0	.1	-	-
\$41,000 and under \$42,000 .....	3.0	2.1	-	-
\$42,000 and under \$43,000 .....	4.3	1.7	-	-
\$43,000 and under \$44,000 .....	7.8	2.7	-	-
\$44,000 and under \$45,000 .....	8.5	3.4	-	-
\$45,000 and under \$46,000 .....	4.8	3.0	.1	-
\$46,000 and under \$47,000 .....	.1	2.1	-	-
\$47,000 and under \$48,000 .....	6.8	6.4	-	-
\$48,000 and under \$49,000 .....	1.5	2.7	-	-
\$49,000 and under \$50,000 .....	1.2	12.1	-	-
\$50,000 and under \$52,000 .....	3.0	3.2	.1	-
\$52,000 and under \$54,000 .....	.7	9.7	1.4	-
\$54,000 and under \$56,000 .....	.5	7.1	1.3	-
\$56,000 and under \$58,000 .....	.3	9.9	4.7	-
\$58,000 and under \$60,000 .....	.2	11.9	5.0	-
\$60,000 and under \$62,000 .....	-	5.7	1.8	-
\$62,000 and under \$64,000 .....	.1	3.6	6.3	-
\$64,000 and under \$68,000 .....	-	4.5	19.9	.6
\$68,000 and under \$70,000 .....	-	.2	14.0	2.4
\$70,000 and under \$72,000 .....	-	.5	2.0	-
\$72,000 and under \$74,000 .....	-	.6	6.4	1.8
\$74,000 and under \$76,000 .....	-	-	16.0	-
\$76,000 and under \$78,000 .....	-	-	2.9	2.4
\$78,000 and under \$80,000 .....	-	.1	5.5	.6
\$80,000 and under \$82,000 .....	-	.1	2.0	22.3
\$82,000 and under \$84,000 .....	-	.1	1.4	12.0
\$84,000 and under \$86,000 .....	-	-	.1	3.0
\$86,000 and under \$88,000 .....	-	-	1.3	1.2
\$88,000 and under \$90,000 .....	-	.1	.8	2.4
\$90,000 and under \$92,000 .....	-	.1	2.1	1.2
\$92,000 and under \$94,000 .....	-	-	.8	3.0
\$94,000 and under \$96,000 .....	-	-	2.1	5.4
\$96,000 and under \$98,000 .....	-	-	.3	4.2
\$98,000 and under \$100,000 .....	-	-	.1	4.2
\$100,000 and under \$102,000 .....	-	-	.4	2.4
\$102,000 and under \$104,000 .....	-	-	-	1.8
\$104,000 and under \$106,000 .....	-	-	-	5.4
\$106,000 and under \$108,000 .....	-	-	1.1	1.2
\$108,000 and under \$110,000 .....	-	-	.3	1.2
\$110,000 and under \$112,000 .....	-	-	-	3.0
\$112,000 and under \$114,000 .....	-	-	-	-
\$114,000 and under \$116,000 .....	-	-	-	1.2
\$116,000 and under \$118,000 .....	-	-	-	-
\$118,000 and under \$120,000 .....	-	-	-	5.4
\$120,000 and over .....	-	-	-	11.4

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 service-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

Annual salary	Attorneys					
	I	II	III	IV	V	VI
Number of employees .....	1,574	3,467	3,710	2,958	1,195	186
Average annual salary .....	\$36,365	\$43,239	\$55,440	\$74,547	\$91,607	\$118,601
Total .....	100.0	100.0	100.0	100.0	100.0	100.0
under \$30,000 .....	8.8	.5	-	-	-	-
\$30,000 and under \$31,000 .....	7.0	-	-	-	-	-
\$31,000 and under \$32,000 .....	9.0	.1	-	-	-	-
\$32,000 and under \$33,000 .....	3.7	.2	-	-	-	-
\$33,000 and under \$34,000 .....	18.0	.5	-	-	-	-
\$34,000 and under \$35,000 .....	7.9	2.7	-	-	-	-
\$35,000 and under \$36,000 .....	3.4	3.7	-	-	-	-
\$36,000 and under \$37,000 .....	6.3	8.3	.6	-	-	-
\$37,000 and under \$38,000 .....	5.4	6.6	-	-	-	-
\$38,000 and under \$39,000 .....	5.0	5.7	.1	-	-	-
\$39,000 and under \$40,000 .....	1.5	11.2	.4	-	-	-
\$40,000 and under \$41,000 .....	.9	7.1	.6	-	-	-
\$41,000 and under \$42,000 .....	4.6	6.8	2.0	-	-	-
\$42,000 and under \$43,000 .....	3.4	2.9	2.3	.2	-	-
\$43,000 and under \$44,000 .....	3.1	4.6	2.7	-	-	-
\$44,000 and under \$45,000 .....	2.8	7.4	2.4	-	-	-
\$45,000 and under \$46,000 .....	2.8	6.5	1.9	-	-	-
\$46,000 and under \$47,000 .....	1.0	1.4	3.4	.1	-	-
\$47,000 and under \$48,000 .....	1.8	2.5	3.5	.1	-	-
\$48,000 and under \$49,000 .....	.4	1.7	3.3	-	-	-
\$49,000 and under \$50,000 .....	.1	2.2	4.5	.1	-	-
\$50,000 and under \$52,000 .....	2.2	8.5	13.2	.5	-	-
\$52,000 and under \$54,000 .....	.1	2.0	7.2	.8	.1	-
\$54,000 and under \$56,000 .....	.6	2.1	12.0	1.7	-	-
\$56,000 and under \$58,000 .....	.3	1.4	8.4	2.7	.3	-
\$58,000 and under \$60,000 .....	.1	1.2	8.3	3.7	.3	-
\$60,000 and under \$62,000 .....	.1	1.1	3.7	5.0	.3	-
\$62,000 and under \$64,000 .....	-	.3	3.3	4.8	.6	-
\$64,000 and under \$68,000 .....	-	.5	6.3	10.1	1.9	-
\$68,000 and under \$70,000 .....	-	( <sup>1</sup> )	4.1	9.1	3.9	-
\$70,000 and under \$72,000 .....	-	-	1.2	4.9	1.3	-
\$72,000 and under \$74,000 .....	-	.1	.5	6.8	2.7	-
\$74,000 and under \$76,000 .....	-	-	.5	6.3	2.8	-
\$76,000 and under \$78,000 .....	-	-	.4	9.0	2.8	-
\$78,000 and under \$80,000 .....	-	( <sup>1</sup> )	.5	7.2	6.4	-
\$80,000 and under \$82,000 .....	-	-	.6	3.8	4.4	1.1
\$82,000 and under \$84,000 .....	-	-	.3	2.4	3.8	-
\$84,000 and under \$86,000 .....	-	-	1.5	3.7	6.6	1.6
\$86,000 and under \$88,000 .....	-	-	.1	2.9	8.1	.5
\$88,000 and under \$90,000 .....	-	-	.1	4.3	6.3	2.7
\$90,000 and under \$92,000 .....	-	-	.1	1.5	8.8	-
\$92,000 and under \$94,000 .....	-	-	( <sup>1</sup> )	2.6	1.9	3.8
\$94,000 and under \$96,000 .....	-	-	-	.7	5.4	1.6
\$96,000 and under \$98,000 .....	-	-	-	2.0	4.9	2.2
\$98,000 and under \$100,000 .....	-	-	-	.7	3.8	.5
\$100,000 and under \$102,000 .....	-	-	-	.8	3.6	2.7
\$102,000 and under \$104,000 .....	-	-	-	.2	1.4	4.3
\$104,000 and under \$106,000 .....	-	-	-	.8	3.3	2.2
\$106,000 and under \$108,000 .....	-	-	-	-	.8	4.3
\$108,000 and under \$110,000 .....	-	-	-	.2	3.2	4.8
\$110,000 and under \$112,000 .....	-	-	-	( <sup>1</sup> )	.9	3.2
\$112,000 and under \$114,000 .....	-	-	-	.1	.7	2.7
\$114,000 and under \$116,000 .....	-	-	-	-	1.3	9.7
\$116,000 and under \$118,000 .....	-	-	-	-	.3	3.8
\$118,000 and under \$120,000 .....	-	-	-	-	1.6	2.2

See footnote 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 service-producing industries, United States, except Alaska and Hawaii, March 1989)—Continued

Annual salary	Attorneys					
	I	II	III	IV	V	VI
\$120,000 and under \$122,000 .....	-	-	-	0.2	0.7	3.8
\$122,000 and under \$124,000 .....	-	-	-	-	.7	.5
\$124,000 and under \$126,000 .....	-	-	-	-	.3	1.6
\$126,000 and under \$128,000 .....	-	-	-	-	.3	1.1
\$128,000 and under \$130,000 .....	-	-	-	-	.2	1.1
\$130,000 and under \$132,000 .....	-	-	-	-	.2	3.2
\$132,000 and under \$134,000 .....	-	-	-	-	-	23.1
\$134,000 and under \$136,000 .....	-	-	-	-	1.5	1.6
\$136,000 and under \$138,000 .....	-	-	-	-	.2	.5
\$138,000 and under \$140,000 .....	-	-	-	-	-	1.6
\$140,000 and under \$142,000 .....	-	-	-	-	-	.5
\$142,000 and under \$144,000 .....	-	-	-	-	-	.5
\$144,000 and under \$146,000 .....	-	-	-	-	-	4.3
\$146,000 and over .....	-	-	-	-	1.8	2.7

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 service-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

Annual salary	Buyers			
	I	II	III	IV
Number of employees .....	2,290	4,940	2,878	702
Average annual salary .....	\$23,013	\$28,266	\$37,849	\$46,058
Total .....	100.0	100.0	100.0	100.0
Under \$15,000 .....	.6	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
\$15,000 and under \$16,000 .....	.5	-	-	-
\$16,000 and under \$17,000 .....	2.4	( <sup>1</sup> )	-	-
\$17,000 and under \$18,000 .....	2.6	( <sup>1</sup> )	-	-
\$18,000 and under \$19,000 .....	6.3	.4	.1	-
\$19,000 and under \$20,000 .....	4.5	.2	-	-
\$20,000 and under \$21,000 .....	14.6	1.3	-	-
\$21,000 and under \$22,000 .....	10.1	5.5	.2	-
\$22,000 and under \$23,000 .....	15.7	2.5	-	-
\$23,000 and under \$24,000 .....	7.9	10.5	.2	-
\$24,000 and under \$25,000 .....	8.6	5.1	.1	-
\$25,000 and under \$26,000 .....	7.5	8.1	.3	-
\$26,000 and under \$27,000 .....	6.6	6.3	.8	-
\$27,000 and under \$28,000 .....	2.9	8.3	.7	.1
\$28,000 and under \$29,000 .....	2.3	10.3	1.9	.3
\$29,000 and under \$30,000 .....	2.8	7.3	2.2	-
\$30,000 and under \$31,000 .....	1.7	11.6	3.2	.4
\$31,000 and under \$32,000 .....	1.0	5.1	3.9	.6
\$32,000 and under \$33,000 .....	1.0	5.7	5.8	.1
\$33,000 and under \$34,000 .....	( <sup>1</sup> )	3.1	5.9	1.6
\$34,000 and under \$35,000 .....	-	1.5	7.3	.9
\$35,000 and under \$36,000 .....	.2	1.9	6.6	2.0
\$36,000 and under \$37,000 .....	( <sup>1</sup> )	1.6	6.6	2.0
\$37,000 and under \$38,000 .....	-	.5	6.1	3.6
\$38,000 and under \$39,000 .....	-	.6	7.4	2.3
\$39,000 and under \$40,000 .....	-	.6	6.3	4.0
\$40,000 and under \$41,000 .....	-	1.3	5.2	2.7
\$41,000 and under \$42,000 .....	-	.1	6.0	5.0
\$42,000 and under \$43,000 .....	-	.1	5.5	6.0
\$43,000 and under \$44,000 .....	-	.1	4.8	5.7
\$44,000 and under \$45,000 .....	-	.1	2.4	9.0
\$45,000 and under \$46,000 .....	-	.1	3.8	6.4
\$46,000 and under \$47,000 .....	-	.1	2.6	5.3
\$47,000 and under \$48,000 .....	-	.1	1.3	4.6
\$48,000 and under \$49,000 .....	-	( <sup>1</sup> )	1.0	9.1
\$49,000 and under \$50,000 .....	-	( <sup>1</sup> )	.3	3.3
\$50,000 and under \$51,000 .....	-	-	.2	4.3
\$51,000 and under \$52,000 .....	-	-	.5	4.6
\$52,000 and under \$53,000 .....	-	-	.1	4.1
\$53,000 and under \$54,000 .....	-	-	.2	1.9
\$54,000 and under \$55,000 .....	-	-	.1	2.4
\$55,000 and over .....	-	-	.3	8.0

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 service-producing industries, United States, except Alaska and Hawaii, March 1989)

Annual salary	Computer programmers				
	I	II	III	IV	V
Number of employees .....	11,037	28,636	32,758	12,664	3,044
Average annual salary .....	\$22,903	\$26,901	\$32,172	\$39,196	\$46,400
Total .....	100.0	100.0	100.0	100.0	100.0
Under \$18,000 .....	8.9	.7	( <sup>0</sup> )	-	-
\$18,000 and under \$19,000 .....	7.7	1.3	( <sup>0</sup> )	-	-
\$19,000 and under \$20,000 .....	11.3	1.2	.2	-	-
\$20,000 and under \$21,000 .....	8.5	1.7	( <sup>0</sup> )	( <sup>0</sup> )	-
\$21,000 and under \$22,000 .....	6.3	3.2	.4	( <sup>0</sup> )	-
\$22,000 and under \$23,000 .....	9.1	6.6	.5	( <sup>0</sup> )	-
\$23,000 and under \$24,000 .....	12.3	8.5	.9	( <sup>0</sup> )	-
\$24,000 and under \$25,000 .....	10.8	9.6	2.2	( <sup>0</sup> )	-
\$25,000 and under \$26,000 .....	7.0	11.6	2.6	.1	-
\$26,000 and under \$27,000 .....	5.5	10.0	3.3	.2	-
\$27,000 and under \$28,000 .....	3.3	11.2	8.0	.3	-
\$28,000 and under \$29,000 .....	3.3	9.2	7.7	.4	-
\$29,000 and under \$30,000 .....	1.4	6.5	9.8	1.2	-
\$30,000 and under \$31,000 .....	2.2	4.3	8.0	1.9	-
\$31,000 and under \$32,000 .....	.7	4.3	8.6	3.4	-
\$32,000 and under \$33,000 .....	.6	3.1	6.7	3.7	.1
\$33,000 and under \$34,000 .....	.5	2.8	7.7	6.1	.3
\$34,000 and under \$35,000 .....	.2	1.9	7.5	6.5	.5
\$35,000 and under \$36,000 .....	.1	.7	6.5	6.1	.6
\$36,000 and under \$37,000 .....	.1	.6	6.4	6.1	1.8
\$37,000 and under \$38,000 .....	.3	.3	3.9	7.0	2.8
\$38,000 and under \$39,000 .....	( <sup>0</sup> )	.2	3.3	7.3	3.5
\$39,000 and under \$40,000 .....	( <sup>0</sup> )	.2	1.6	7.2	4.0
\$40,000 and under \$41,000 .....	-	.2	1.5	5.4	4.6
\$41,000 and under \$42,000 .....	( <sup>0</sup> )	.1	.8	5.3	4.6
\$42,000 and under \$43,000 .....	-	( <sup>0</sup> )	.5	6.7	6.3
\$43,000 and under \$44,000 .....	( <sup>0</sup> )	( <sup>0</sup> )	.3	4.0	4.6
\$44,000 and under \$45,000 .....	-	( <sup>0</sup> )	.5	4.7	6.9
\$45,000 and under \$46,000 .....	-	( <sup>0</sup> )	.1	9.9	7.1
\$46,000 and under \$47,000 .....	-	-	.1	2.2	10.4
\$47,000 and under \$48,000 .....	-	( <sup>0</sup> )	.2	1.4	7.2
\$48,000 and under \$49,000 .....	-	-	.1	1.2	6.3
\$49,000 and under \$50,000 .....	-	-	( <sup>0</sup> )	.6	5.4
\$50,000 and under \$51,000 .....	-	-	( <sup>0</sup> )	.2	4.5
\$51,000 and under \$52,000 .....	-	-	-	.5	4.0
\$52,000 and under \$53,000 .....	-	-	( <sup>0</sup> )	.1	2.8
\$53,000 and under \$54,000 .....	-	-	-	.1	2.3
\$54,000 and over .....	-	-	-	.1	9.1

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 service-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

Annual salary	Systems analysts				
	I	II	III	IV	V
Number of employees .....	23,073	45,033	26,934	6,379	962
Average annual salary .....	\$31,893	\$38,256	\$45,650	\$53,823	\$65,488
Total .....	100.0	100.0	100.0	100.0	100.0
Under \$25,000 .....	3.7	.2	-	-	-
\$25,000 and under \$26,000 .....	2.2	.2	( <sup>1</sup> )	-	-
\$26,000 and under \$27,000 .....	4.0	.5	( <sup>1</sup> )	-	-
\$27,000 and under \$28,000 .....	7.4	.5	( <sup>1</sup> )	.1	-
\$28,000 and under \$29,000 .....	8.0	.8	.1	-	-
\$29,000 and under \$30,000 .....	10.0	2.0	( <sup>1</sup> )	( <sup>1</sup> )	-
\$30,000 and under \$31,000 .....	11.2	3.0	.1	-	-
\$31,000 and under \$32,000 .....	9.2	4.1	.2	-	-
\$32,000 and under \$33,000 .....	8.5	4.6	.2	-	-
\$33,000 and under \$34,000 .....	7.1	5.5	.5	( <sup>1</sup> )	-
\$34,000 and under \$35,000 .....	7.3	6.5	1.0	( <sup>1</sup> )	-
\$35,000 and under \$36,000 .....	5.6	7.9	1.9	( <sup>1</sup> )	-
\$36,000 and under \$37,000 .....	4.4	7.2	2.5	( <sup>1</sup> )	-
\$37,000 and under \$38,000 .....	3.6	8.6	3.1	.2	-
\$38,000 and under \$39,000 .....	3.1	7.7	4.1	.3	-
\$39,000 and under \$40,000 .....	1.7	7.3	4.4	.7	-
\$40,000 and under \$41,000 .....	.9	5.9	4.7	.9	-
\$41,000 and under \$42,000 .....	.8	5.1	5.8	1.8	-
\$42,000 and under \$43,000 .....	.5	5.1	6.1	2.1	-
\$43,000 and under \$44,000 .....	.3	4.0	6.5	2.2	-
\$44,000 and under \$45,000 .....	.1	3.3	6.1	2.4	.1
\$45,000 and under \$46,000 .....	.1	3.0	7.2	2.8	.1
\$46,000 and under \$47,000 .....	.2	1.7	6.5	4.0	.6
\$47,000 and under \$48,000 .....	( <sup>1</sup> )	1.5	6.2	3.5	.3
\$48,000 and under \$49,000 .....	( <sup>1</sup> )	1.1	5.5	5.8	.8
\$49,000 and under \$50,000 .....	.1	1.1	5.2	6.3	.5
\$50,000 and under \$52,000 .....	-	.8	8.4	10.3	1.2
\$52,000 and under \$54,000 .....	-	.7	5.4	10.7	4.7
\$54,000 and under \$56,000 .....	-	.3	4.0	11.4	4.5
\$56,000 and under \$58,000 .....	-	.1	1.3	9.1	4.0
\$58,000 and under \$60,000 .....	-	( <sup>1</sup> )	1.1	7.8	13.3
\$60,000 and under \$62,000 .....	-	( <sup>1</sup> )	.5	4.4	11.3
\$62,000 and under \$64,000 .....	-	-	.6	3.8	5.4
\$64,000 and under \$68,000 .....	-	( <sup>1</sup> )	.5	4.9	18.7
\$68,000 and under \$70,000 .....	-	( <sup>1</sup> )	.1	1.5	5.1
\$70,000 and under \$72,000 .....	-	-	.1	.6	7.4
\$72,000 and under \$74,000 .....	-	-	( <sup>1</sup> )	.6	3.5
\$74,000 and under \$76,000 .....	-	-	-	.7	5.0
\$76,000 and under \$78,000 .....	-	-	-	.4	4.8
\$78,000 and under \$80,000 .....	-	-	-	.3	4.4
\$80,000 and under \$82,000 .....	-	-	-	.1	1.2
\$82,000 and under \$84,000 .....	-	-	-	.1	.9
\$84,000 and under \$86,000 .....	-	-	-	.1	.6
\$86,000 and under \$88,000 .....	-	-	-	.1	.5
\$88,000 and under \$90,000 .....	-	-	-	-	.5
\$90,000 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 service-producing industries, United States, except Alaska and Hawaii, March 1989)

Annual salary	Systems analyst managers		
	I	II	III
Number of employees .....	5,603	6,085	1,491
Average annual salary .....	\$49,665	\$56,605	\$68,393
Total .....	100.0	100.0	100.0
Under \$40,000 .....	4.4	.8	-
\$40,000 and under \$41,000 .....	1.6	.5	-
\$41,000 and under \$42,000 .....	2.9	.8	-
\$42,000 and under \$43,000 .....	3.5	.6	-
\$43,000 and under \$44,000 .....	6.1	.9	-
\$44,000 and under \$45,000 .....	7.0	1.5	-
\$45,000 and under \$46,000 .....	6.8	1.1	-
\$46,000 and under \$47,000 .....	7.4	2.0	-
\$47,000 and under \$48,000 .....	7.8	2.6	.1
\$48,000 and under \$49,000 .....	5.8	4.0	-
\$49,000 and under \$50,000 .....	5.4	4.0	.6
\$50,000 and under \$52,000 .....	9.0	8.1	.5
\$52,000 and under \$54,000 .....	8.7	9.9	1.4
\$54,000 and under \$56,000 .....	7.0	13.8	2.5
\$56,000 and under \$58,000 .....	5.4	8.6	5.9
\$58,000 and under \$60,000 .....	3.4	11.1	6.4
\$60,000 and under \$62,000 .....	2.8	9.2	8.2
\$62,000 and under \$64,000 .....	1.7	5.6	8.4
\$64,000 and under \$68,000 .....	2.9	8.4	19.3
\$68,000 and under \$70,000 .....	.2	2.1	12.9
\$70,000 and under \$72,000 .....	.1	1.5	6.0
\$72,000 and under \$74,000 .....	( <sup>2</sup> )	1.7	4.5
\$74,000 and under \$76,000 .....	-	.3	4.3
\$76,000 and under \$78,000 .....	-	.3	3.3
\$78,000 and under \$80,000 .....	-	.3	5.2
\$80,000 and over .....	-	.2	10.5

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 service-producing industries, United States, except Alaska and Hawaii, March 1989)

Annual salary	Chemists		
	III	IV	V
Number of employees .....	1,693	914	386
Average annual salary .....	\$36,469	\$43,526	\$58,228
Total .....	100.0	100.0	100.0
Under \$28,000 .....	7.2	-	-
\$28,000 and under \$29,000 .....	3.9	-	-
\$29,000 and under \$30,000 .....	3.4	-	-
\$30,000 and under \$31,000 .....	1.3	.1	-
\$31,000 and under \$32,000 .....	5.6	.2	-
\$32,000 and under \$33,000 .....	4.7	-	-
\$33,000 and under \$34,000 .....	6.7	9.3	-
\$34,000 and under \$35,000 .....	13.3	.1	-
\$35,000 and under \$36,000 .....	11.2	.3	-
\$36,000 and under \$37,000 .....	5.8	5.1	-
\$37,000 and under \$38,000 .....	4.8	8.9	-
\$38,000 and under \$39,000 .....	3.2	6.8	-
\$39,000 and under \$40,000 .....	5.4	7.8	-
\$40,000 and under \$41,000 .....	3.7	8.4	-
\$41,000 and under \$42,000 .....	3.1	4.0	1.3
\$42,000 and under \$43,000 .....	3.4	10.2	1.0
\$43,000 and under \$44,000 .....	2.9	4.7	.8
\$44,000 and under \$45,000 .....	1.4	3.9	1.0
\$45,000 and under \$46,000 .....	1.9	1.4	4.1
\$46,000 and under \$47,000 .....	.4	3.2	.8
\$47,000 and under \$48,000 .....	2.2	4.4	.3
\$48,000 and under \$49,000 .....	.8	2.6	4.1
\$49,000 and under \$50,000 .....	.5	2.3	1.3
\$50,000 and under \$52,000 .....	.7	4.0	17.4
\$52,000 and under \$54,000 .....	.9	3.1	9.1
\$54,000 and under \$56,000 .....	.5	1.1	7.3
\$56,000 and under \$58,000 .....	.6	1.8	5.4
\$58,000 and under \$60,000 .....	.3	1.1	5.2
\$60,000 and under \$62,000 .....	.1	.3	15.0
\$62,000 and under \$64,000 .....	.1	1.3	5.7
\$64,000 and under \$68,000 .....	-	2.6	5.7
\$68,000 and under \$70,000 .....	-	.4	1.3
\$70,000 and under \$72,000 .....	-	.4	2.3
\$72,000 and under \$74,000 .....	-	-	.8
\$74,000 and over .....	-	-	10.1

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 service-producing industries, United States, except Alaska and Hawaii, March 1989)

Annual salary	Engineers							
	I	II	III	IV	V	VI	VII	VIII
Number of employees .....	7,609	15,328	29,737	35,187	25,060	8,899	2,410	840
Average annual salary .....	\$29,340	\$34,005	\$40,098	\$48,003	\$56,989	\$66,118	\$75,280	\$83,248
Total .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under \$25,000 .....	6.6	.5	.1	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	-	-
\$25,000 and under \$26,000 .....	5.0	.6	( <sup>1</sup> )	-	-	-	-	-
\$26,000 and under \$27,000 .....	9.0	1.1	.1	-	-	-	-	-
\$27,000 and under \$28,000 .....	14.4	2.2	.1	-	-	-	-	-
\$28,000 and under \$29,000 .....	11.5	4.7	.2	( <sup>1</sup> )	-	-	-	-
\$29,000 and under \$30,000 .....	12.3	5.7	.9	( <sup>1</sup> )	-	-	-	-
\$30,000 and under \$31,000 .....	12.1	9.0	.7	( <sup>1</sup> )	-	-	-	-
\$31,000 and under \$32,000 .....	12.6	10.1	1.8	.1	-	-	-	-
\$32,000 and under \$33,000 .....	5.6	9.6	2.7	( <sup>1</sup> )	-	-	-	-
\$33,000 and under \$34,000 .....	6.0	11.3	3.5	.1	-	-	-	-
\$34,000 and under \$35,000 .....	1.6	9.8	5.4	.1	-	-	-	-
\$35,000 and under \$36,000 .....	1.1	8.5	6.5	.3	-	-	-	-
\$36,000 and under \$37,000 .....	.9	7.6	6.8	1.0	( <sup>1</sup> )	-	-	-
\$37,000 and under \$38,000 .....	.4	5.1	7.5	1.8	.1	-	-	-
\$38,000 and under \$39,000 .....	.6	4.1	7.4	1.9	.2	-	-	-
\$39,000 and under \$40,000 .....	.1	2.6	7.9	2.9	.1	.3	-	-
\$40,000 and under \$41,000 .....	( <sup>1</sup> )	2.1	8.1	4.3	.2	-	-	-
\$41,000 and under \$42,000 .....	( <sup>1</sup> )	1.3	7.4	4.5	.4	-	-	-
\$42,000 and under \$43,000 .....	.1	1.2	7.6	5.9	.6	-	-	-
\$43,000 and under \$44,000 .....	.1	.4	5.5	5.5	.8	-	-	-
\$44,000 and under \$45,000 .....	-	.4	4.8	5.8	1.1	( <sup>1</sup> )	-	-
\$45,000 and under \$46,000 .....	-	.4	3.9	6.8	1.6	.4	-	-
\$46,000 and under \$47,000 .....	-	.2	2.5	6.8	2.2	( <sup>1</sup> )	-	-
\$47,000 and under \$48,000 .....	-	.3	2.1	6.1	2.8	.3	-	-
\$48,000 and under \$49,000 .....	-	.5	1.9	5.4	3.5	.1	-	-
\$49,000 and under \$50,000 .....	-	.2	1.2	6.4	3.7	.7	.1	-
\$50,000 and under \$52,000 .....	-	.2	1.7	10.8	10.7	2.6	.1	-
\$52,000 and under \$54,000 .....	-	.2	.7	7.1	9.8	3.9	( <sup>1</sup> )	-
\$54,000 and under \$56,000 .....	-	.1	.5	5.2	12.5	4.1	1.1	-
\$56,000 and under \$58,000 .....	-	-	.2	3.9	9.5	6.4	3.2	2.7
\$58,000 and under \$60,000 .....	-	-	.1	2.5	9.5	5.8	1.5	-
\$60,000 and under \$62,000 .....	-	-	.3	1.7	7.6	10.0	2.8	2.7
\$62,000 and under \$64,000 .....	-	-	.1	1.1	5.4	11.2	6.8	-
\$64,000 and under \$68,000 .....	-	-	-	1.5	8.9	17.1	8.1	5.8
\$68,000 and under \$70,000 .....	-	-	-	.1	2.7	6.1	5.4	2.7
\$70,000 and under \$72,000 .....	-	-	-	.1	1.9	7.9	10.7	3.3
\$72,000 and under \$74,000 .....	-	-	-	( <sup>1</sup> )	1.1	4.7	8.5	2.7
\$74,000 and under \$76,000 .....	-	-	-	( <sup>1</sup> )	1.2	4.1	11.9	3.5
\$76,000 and under \$78,000 .....	-	-	-	( <sup>1</sup> )	.6	2.9	7.8	9.3
\$78,000 and under \$80,000 .....	-	-	-	-	.6	3.1	9.7	1.0
\$80,000 and under \$82,000 .....	-	-	-	-	.3	2.0	3.4	8.3
\$82,000 and under \$84,000 .....	-	-	-	-	.2	1.8	2.2	8.7
\$84,000 and under \$86,000 .....	-	-	-	-	( <sup>1</sup> )	1.1	4.4	6.4
\$86,000 and under \$88,000 .....	-	-	-	-	-	.5	1.2	11.5
\$88,000 and under \$90,000 .....	-	-	-	-	( <sup>1</sup> )	.9	1.6	6.1
\$90,000 and under \$92,000 .....	-	-	-	-	-	.6	1.0	4.4
\$92,000 and under \$94,000 .....	-	-	-	-	( <sup>1</sup> )	.4	.8	2.6
\$94,000 and under \$96,000 .....	-	-	-	-	-	.3	.2	5.0
\$96,000 and under \$98,000 .....	-	-	-	-	-	.1	.9	3.9
\$98,000 and under \$100,000 .....	-	-	-	-	-	( <sup>1</sup> )	.8	3.3
\$100,000 and over .....	-	-	-	-	-	.1	5.5	5.8

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 service-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

Annual salary	Registered nurses				
	I	II	II Specialist	III	IV
Number of employees .....	18,411	390,789	21,624	14,229	926
Average annual salary .....	\$24,605	\$28,434	\$32,105	\$40,651	\$41,662
Total .....	100.0	100.0	100.0	100.0	100.0
Under \$18,000 .....	2.1	.3	-	-	-
\$18,000 and under \$19,000 .....	4.3	.2	-	-	-
\$19,000 and under \$20,000 .....	6.5	.9	( <sup>2</sup> )	-	-
\$20,000 and under \$21,000 .....	6.3	1.8	( <sup>2</sup> )	-	-
\$21,000 and under \$22,000 .....	7.6	3.5	1.4	( <sup>2</sup> )	-
\$22,000 and under \$23,000 .....	12.1	4.8	.8	( <sup>2</sup> )	-
\$23,000 and under \$24,000 .....	11.9	5.8	2.2	.1	-
\$24,000 and under \$25,000 .....	9.2	7.3	2.8	.2	-
\$25,000 and under \$26,000 .....	6.7	8.6	4.1	.8	-
\$26,000 and under \$27,000 .....	7.5	7.9	4.6	.9	-
\$27,000 and under \$28,000 .....	5.2	8.0	5.9	1.3	-
\$28,000 and under \$29,000 .....	4.9	8.2	7.8	2.2	.4
\$29,000 and under \$30,000 .....	7.8	7.7	8.6	2.8	1.9
\$30,000 and under \$31,000 .....	2.0	7.7	6.9	4.1	1.8
\$31,000 and under \$32,000 .....	1.0	6.2	8.7	4.7	1.3
\$32,000 and under \$33,000 .....	1.8	5.0	6.6	4.6	2.3
\$33,000 and under \$34,000 .....	.4	4.6	4.6	5.4	3.0
\$34,000 and under \$35,000 .....	1.7	3.1	5.1	6.5	4.5
\$35,000 and under \$36,000 .....	.9	2.2	5.1	5.3	8.7
\$36,000 and under \$37,000 .....	( <sup>2</sup> )	1.4	5.9	5.4	6.3
\$37,000 and under \$38,000 .....	.2	1.5	3.4	4.7	9.6
\$38,000 and under \$39,000 .....	( <sup>2</sup> )	1.0	5.6	4.1	7.8
\$39,000 and under \$40,000 .....	( <sup>2</sup> )	.7	4.4	3.3	8.4
\$40,000 and under \$41,000 .....	( <sup>2</sup> )	.4	1.5	2.8	3.6
\$41,000 and under \$42,000 .....	-	.3	2.1	5.1	2.4
\$42,000 and under \$43,000 .....	-	.1	.4	2.6	2.6
\$43,000 and under \$44,000 .....	-	.2	.3	2.8	4.2
\$44,000 and under \$45,000 .....	-	.1	.3	1.9	3.9
\$45,000 and under \$46,000 .....	-	.1	.2	3.2	1.8
\$46,000 and under \$47,000 .....	-	.1	.1	1.7	2.2
\$47,000 and under \$48,000 .....	-	( <sup>2</sup> )	.3	2.3	2.1
\$48,000 and under \$49,000 .....	-	( <sup>2</sup> )	.1	2.5	1.8
\$49,000 and under \$50,000 .....	-	( <sup>2</sup> )	.1	1.8	1.9
\$50,000 and under \$51,000 .....	-	( <sup>2</sup> )	( <sup>2</sup> )	.9	1.0
\$51,000 and under \$52,000 .....	-	( <sup>2</sup> )	-	2.1	1.4
\$52,000 and under \$53,000 .....	-	( <sup>2</sup> )	-	1.6	1.4
\$53,000 and under \$54,000 .....	-	( <sup>2</sup> )	-	1.0	6.4
\$54,000 and under \$55,000 .....	-	( <sup>2</sup> )	-	1.4	1.3
\$55,000 and under \$56,000 .....	-	-	-	1.3	-
\$56,000 and under \$57,000 .....	-	( <sup>2</sup> )	( <sup>2</sup> )	1.0	.6
\$57,000 and under \$58,000 .....	-	-	-	.2	1.6
\$58,000 and under \$59,000 .....	-	-	( <sup>2</sup> )	1.0	.9
\$59,000 and under \$60,000 .....	-	-	-	.4	1.6
\$60,000 and over .....	-	-	-	5.9	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: 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 service-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

Annual salary	Licensed practical nurses		
	I	II	III
Number of employees .....	13,630	172,873	4,421
Average annual salary .....	\$16,027	\$18,481	\$22,755
Total .....	100.0	100.0	100.0
Under \$12,000 .....	4.2	.4	-
\$12,000 and under \$13,000 .....	7.9	2.5	-
\$13,000 and under \$14,000 .....	14.7	4.7	-
\$14,000 and under \$15,000 .....	14.8	8.5	-
\$15,000 and under \$16,000 .....	13.4	9.4	1.7
\$16,000 and under \$17,000 .....	12.3	11.6	2.4
\$17,000 and under \$18,000 .....	9.8	11.5	2.1
\$18,000 and under \$19,000 .....	6.7	11.2	3.8
\$19,000 and under \$20,000 .....	7.2	10.0	5.1
\$20,000 and under \$21,000 .....	4.2	8.4	16.0
\$21,000 and under \$22,000 .....	2.4	6.5	12.8
\$22,000 and under \$23,000 .....	1.2	4.9	13.5
\$23,000 and under \$24,000 .....	.2	3.2	12.8
\$24,000 and under \$25,000 .....	.2	3.2	9.0
\$25,000 and under \$26,000 .....	.1	1.4	2.9
\$26,000 and under \$27,000 .....	.1	.9	5.7
\$27,000 and under \$28,000 .....	-	.8	4.7
\$28,000 and under \$29,000 .....	.6	.5	4.7
\$29,000 and under \$30,000 .....	-	.2	1.6
\$30,000 and over .....	-	.2	1.3

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 service-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

Annual salary	Nursing assistants			
	I	II	III	IV
Number of employees .....	64,173	393,474	30,958	2,234
Average annual salary .....	\$9,647	\$11,420	\$14,562	\$18,088
Total .....	100.0	100.0	100.0	100.0
Under \$7,000 .....	5.0	3.9	.1	-
\$7,000 and under \$8,000 .....	22.1	10.8	2.5	-
\$8,000 and under \$9,000 .....	18.7	12.8	2.0	-
\$9,000 and under \$10,000 .....	14.8	10.5	5.0	-
\$10,000 and under \$11,000 .....	11.6	13.7	5.9	-
\$11,000 and under \$12,000 .....	18.3	12.2	6.9	.5
\$12,000 and under \$13,000 .....	3.5	9.0	9.9	1.5
\$13,000 and under \$14,000 .....	2.5	6.9	12.6	.4
\$14,000 and under \$15,000 .....	.8	5.6	14.0	8.5
\$15,000 and under \$16,000 .....	.9	3.8	9.8	13.0
\$16,000 and under \$17,000 .....	.7	3.5	7.8	14.7
\$17,000 and under \$18,000 .....	.6	2.2	5.4	17.2
\$18,000 and under \$19,000 .....	.3	2.1	8.5	14.7
\$19,000 and under \$20,000 .....	.2	1.6	4.0	2.9
\$20,000 and under \$21,000 .....	( <sup>1</sup> )	.6	2.3	9.5
\$21,000 and under \$22,000 .....	( <sup>1</sup> )	.4	1.5	8.1
\$22,000 and under \$23,000 .....	( <sup>1</sup> )	.2	.7	3.3
\$23,000 and under \$24,000 .....	-	.1	.4	3.1
\$24,000 and under \$25,000 .....	-	( <sup>1</sup> )	.1	1.0
\$25,000 and over .....	-	( <sup>1</sup> )	.5	1.5

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 service-producing industries, United States, except Alaska and Hawaii, March 1989)

Annual salary	Medical machine technicians			
	I	II	III	IV
Number of employees .....	8,804	16,089	17,204	279
Average annual salary .....	\$16,568	\$21,432	\$25,790	\$31,817
Total .....	100.0	100.0	100.0	100.0
Under \$12,000 .....	6.1	-	-	-
\$12,000 and under \$13,000 .....	6.9	(?)	-	-
\$13,000 and under \$14,000 .....	12.7	.6	-	-
\$14,000 and under \$15,000 .....	9.5	1.9	-	-
\$15,000 and under \$16,000 .....	8.9	2.9	-	-
\$16,000 and under \$17,000 .....	12.8	4.4	-	-
\$17,000 and under \$18,000 .....	10.0	6.6	.7	-
\$18,000 and under \$19,000 .....	11.5	7.2	1.4	-
\$19,000 and under \$20,000 .....	8.8	11.0	2.9	-
\$20,000 and under \$21,000 .....	4.9	10.0	3.8	-
\$21,000 and under \$22,000 .....	2.9	14.4	6.9	-
\$22,000 and under \$23,000 .....	1.9	11.2	8.4	1.1
\$23,000 and under \$24,000 .....	1.6	7.2	8.6	1.1
\$24,000 and under \$25,000 .....	1.1	8.6	11.0	.7
\$25,000 and under \$26,000 .....	.3	4.4	10.7	4.7
\$26,000 and under \$27,000 .....	.1	3.9	10.2	8.6
\$27,000 and under \$28,000 .....	(?)	2.0	8.8	6.8
\$28,000 and under \$29,000 .....	(?)	1.7	7.5	3.6
\$29,000 and under \$30,000 .....	(?)	.8	5.3	11.8
\$30,000 and under \$31,000 .....	(?)	.7	4.7	7.9
\$31,000 and under \$32,000 .....	(?)	.3	3.0	13.3
\$32,000 and under \$33,000 .....	-	.1	2.4	9.7
\$33,000 and under \$34,000 .....	-	.2	1.2	5.0
\$34,000 and under \$35,000 .....	-	-	1.3	4.3
\$35,000 and under \$36,000 .....	-	(?)	.7	4.7
\$36,000 and under \$37,000 .....	-	-	.2	1.8
\$37,000 and under \$38,000 .....	-	-	.1	6.8
\$38,000 and over .....	-	-	.1	8.2

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 service-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

Annual salary	Engineering technicians				
	I	II	III	IV	V
Number of employees .....	1,062	2,799	4,151	6,541	4,281
Average annual salary .....	\$18,462	\$22,347	\$27,781	\$33,274	\$36,594
Total .....	100.0	100.0	100.0	100.0	100.0
Under \$14,000 .....	1.9	.5	-	-	-
\$14,000 and under \$15,000 .....	13.0	.8	-	-	-
\$15,000 and under \$16,000 .....	10.4	1.4	-	-	-
\$16,000 and under \$17,000 .....	16.2	2.2	.1	-	-
\$17,000 and under \$18,000 .....	10.8	8.2	.1	-	-
\$18,000 and under \$19,000 .....	6.5	10.5	.4	-	-
\$19,000 and under \$20,000 .....	10.4	11.1	1.3	-	-
\$20,000 and under \$21,000 .....	9.0	6.9	3.3	.1	-
\$21,000 and under \$22,000 .....	7.7	8.1	3.2	.2	-
\$22,000 and under \$23,000 .....	2.7	7.8	7.3	.6	-
\$23,000 and under \$24,000 .....	4.2	9.1	6.8	.7	-
\$24,000 and under \$25,000 .....	3.7	7.0	6.6	1.5	-
\$25,000 and under \$26,000 .....	2.9	7.8	9.1	3.1	.3
\$26,000 and under \$27,000 .....	.2	5.8	10.3	5.1	.7
\$27,000 and under \$28,000 .....	.2	2.8	8.0	6.0	.8
\$28,000 and under \$29,000 .....	-	3.4	7.3	6.6	1.2
\$29,000 and under \$30,000 .....	.2	2.4	5.7	7.1	2.4
\$30,000 and under \$31,000 .....	-	2.1	6.5	6.4	3.3
\$31,000 and under \$32,000 .....	-	.8	4.5	6.1	6.0
\$32,000 and under \$33,000 .....	-	.9	5.3	10.2	11.0
\$33,000 and under \$34,000 .....	-	.2	4.3	7.0	9.5
\$34,000 and under \$35,000 .....	-	.1	3.0	4.5	9.3
\$35,000 and under \$36,000 .....	-	-	1.9	4.4	9.1
\$36,000 and under \$37,000 .....	-	-	1.9	6.2	10.2
\$37,000 and under \$38,000 .....	-	-	.4	3.0	6.7
\$38,000 and under \$39,000 .....	-	.1	.2	4.9	4.4
\$39,000 and under \$40,000 .....	-	-	2.5	4.5	3.4
\$40,000 and under \$41,000 .....	-	-	( <sup>1</sup> )	1.4	4.2
\$41,000 and under \$42,000 .....	-	-	-	2.5	3.6
\$42,000 and under \$43,000 .....	-	-	-	2.2	1.6
\$43,000 and under \$44,000 .....	-	-	-	2.1	2.0
\$44,000 and under \$45,000 .....	-	-	-	1.5	1.2
\$45,000 and under \$46,000 .....	-	-	-	.9	2.3
\$46,000 and under \$47,000 .....	-	-	-	.9	1.4
\$47,000 and under \$48,000 .....	-	-	-	.1	.9
\$48,000 and under \$49,000 .....	-	-	-	-	1.4
\$49,000 and under \$50,000 .....	-	-	-	( <sup>1</sup> )	1.1
\$50,000 and over .....	-	-	-	( <sup>1</sup> )	2.2

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 service-producing industries, United States, except Alaska and Hawaii, March 1989)

Annual salary	Drafters			
	II	III	IV	V
Number of employees .....	5,126	6,968	5,120	2,833
Average annual salary .....	\$19,896	\$22,717	\$28,766	\$35,853
Total .....	100.0	100.0	100.0	100.0
Under \$14,000 .....	8.0	-	-	-
\$14,000 and under \$15,000 .....	7.2	( <sup>1</sup> )	-	-
\$15,000 and under \$16,000 .....	8.9	1.2	( <sup>1</sup> )	-
\$16,000 and under \$17,000 .....	8.5	5.7	-	-
\$17,000 and under \$18,000 .....	8.2	5.8	-	-
\$18,000 and under \$19,000 .....	7.6	5.5	.8	-
\$19,000 and under \$20,000 .....	2.7	5.6	.3	-
\$20,000 and under \$21,000 .....	2.7	8.4	1.1	-
\$21,000 and under \$22,000 .....	9.3	8.9	2.9	-
\$22,000 and under \$23,000 .....	6.1	12.4	5.6	-
\$23,000 and under \$24,000 .....	1.4	14.0	6.0	-
\$24,000 and under \$25,000 .....	26.0	15.6	7.2	.6
\$25,000 and under \$26,000 .....	1.7	5.1	7.2	.1
\$26,000 and under \$27,000 .....	.4	2.0	5.7	.4
\$27,000 and under \$28,000 .....	.9	2.3	9.6	1.4
\$28,000 and under \$29,000 .....	.2	1.1	7.6	2.6
\$29,000 and under \$30,000 .....	.1	.9	8.6	1.9
\$30,000 and under \$31,000 .....	-	1.8	5.6	5.8
\$31,000 and under \$32,000 .....	.1	.6	8.6	8.0
\$32,000 and under \$33,000 .....	-	1.9	5.4	6.3
\$33,000 and under \$34,000 .....	.1	.1	6.3	9.4
\$34,000 and under \$35,000 .....	-	.2	2.8	7.5
\$35,000 and under \$36,000 .....	-	.2	.9	7.7
\$36,000 and under \$37,000 .....	-	.1	3.5	6.9
\$37,000 and under \$38,000 .....	-	.6	.6	10.1
\$38,000 and under \$39,000 .....	-	-	( <sup>1</sup> )	7.7
\$39,000 and under \$40,000 .....	-	-	1.1	7.4
\$40,000 and under \$41,000 .....	-	-	( <sup>1</sup> )	5.4
\$41,000 and under \$42,000 .....	-	-	1.8	3.5
\$42,000 and over .....	-	-	.6	7.4

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 service-producing industries, United States, except Alaska and Hawaii, March 1989)

Annual salary	Computer operators				
	I	II	III	IV	V
Number of employees .....	8,335	28,913	17,900	3,826	560
Average annual salary .....	\$14,807	\$18,837	\$23,377	\$27,284	\$31,612
Total .....	100.0	100.0	100.0	100.0	100.0
Under \$11,000 .....	8.2	.3	-	-	-
\$11,000 and under \$12,000 .....	4.8	.5	( <sup>1</sup> )	-	-
\$12,000 and under \$13,000 .....	13.8	1.1	( <sup>1</sup> )	-	-
\$13,000 and under \$14,000 .....	13.8	3.5	.1	-	-
\$14,000 and under \$15,000 .....	13.7	6.6	.4	-	-
\$15,000 and under \$16,000 .....	17.9	6.5	.4	.2	-
\$16,000 and under \$17,000 .....	8.9	11.2	1.6	.1	-
\$17,000 and under \$18,000 .....	7.1	17.0	3.7	.1	-
\$18,000 and under \$19,000 .....	6.2	11.5	4.6	.2	-
\$19,000 and under \$20,000 .....	2.8	10.0	6.4	.9	-
\$20,000 and under \$21,000 .....	1.3	8.5	8.3	1.8	.4
\$21,000 and under \$22,000 .....	.8	5.9	11.7	3.1	1.1
\$22,000 and under \$23,000 .....	.4	3.6	10.8	3.7	2.1
\$23,000 and under \$24,000 .....	.2	5.2	8.9	6.8	3.6
\$24,000 and under \$25,000 .....	.1	5.4	14.6	11.4	2.9
\$25,000 and under \$26,000 .....	( <sup>1</sup> )	.9	9.1	10.3	5.4
\$26,000 and under \$27,000 .....	.1	.6	6.0	13.4	3.8
\$27,000 and under \$28,000 .....	( <sup>1</sup> )	.7	4.0	9.7	2.1
\$28,000 and under \$29,000 .....	-	.2	2.7	10.0	5.4
\$29,000 and under \$30,000 .....	-	.4	1.5	8.0	8.4
\$30,000 and under \$31,000 .....	-	.2	1.5	5.6	5.9
\$31,000 and under \$32,000 .....	-	.1	.9	4.0	8.6
\$32,000 and under \$33,000 .....	-	( <sup>1</sup> )	1.2	3.3	10.9
\$33,000 and under \$34,000 .....	-	( <sup>1</sup> )	.5	2.4	4.8
\$34,000 and under \$35,000 .....	-	( <sup>1</sup> )	.3	1.3	8.9
\$35,000 and under \$36,000 .....	-	( <sup>1</sup> )	.3	.9	10.0
\$36,000 and under \$37,000 .....	-	-	.1	.7	5.2
\$37,000 and under \$38,000 .....	-	( <sup>1</sup> )	.3	1.4	5.2
\$38,000 and over .....	-	-	.1	.5	5.5

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 service-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

Annual salary	Photographers		
	II	III	IV
Number of employees .....	675	430	189
Average annual salary .....	\$22,289	\$27,268	\$33,857
Total .....	100.0	100.0	100.0
\$15,000 and under \$16,000 .....	.1	-	-
\$16,000 and under \$17,000 .....	12.4	.7	-
\$17,000 and under \$18,000 .....	4.0	2.3	-
\$18,000 and under \$19,000 .....	5.8	-	-
\$19,000 and under \$20,000 .....	7.6	3.3	-
\$20,000 and under \$21,000 .....	8.7	1.2	-
\$21,000 and under \$22,000 .....	11.1	3.0	-
\$22,000 and under \$23,000 .....	20.9	4.9	-
\$23,000 and under \$24,000 .....	4.0	3.0	.5
\$24,000 and under \$25,000 .....	4.3	19.5	-
\$25,000 and under \$26,000 .....	3.0	14.7	-
\$26,000 and under \$27,000 .....	7.6	5.3	-
\$27,000 and under \$28,000 .....	3.0	4.7	2.1
\$28,000 and under \$29,000 .....	1.8	8.6	2.6
\$29,000 and under \$30,000 .....	.6	4.4	3.2
\$30,000 and under \$31,000 .....	.9	3.5	3.2
\$31,000 and under \$32,000 .....	.4	2.8	4.2
\$32,000 and under \$33,000 .....	.1	4.7	38.6
\$33,000 and under \$34,000 .....	-	1.4	2.1
\$34,000 and under \$35,000 .....	1.2	2.8	9.5
\$35,000 and under \$36,000 .....	.3	1.2	16.4
\$36,000 and under \$37,000 .....	.1	2.8	7.9
\$37,000 and under \$38,000 .....	1.3	2.6	1.1
\$38,000 and under \$39,000 .....	.7	.5	5.3
\$39,000 and under \$40,000 .....	-	.5	-
\$40,000 and over .....	-	1.9	3.2

<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: A dash indicates no data.

**Table 6. Earnings distribution—clerical occupations**

(Percent distribution of employees in selected clerical occupations by annual salary, private service-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

Annual salary	Personnel clerks/assistants			
	I	II	III	IV
Number of employees .....	2,368	5,235	3,045	977
Average annual salary .....	\$14,357	\$17,503	\$20,769	\$25,719
Total .....	100.0	100.0	100.0	100.0
Under \$11,000 .....	6.7	-	.2	-
\$11,000 and under \$12,000 .....	6.6	1.4	-	-
\$12,000 and under \$13,000 .....	23.6	2.7	.8	-
\$13,000 and under \$14,000 .....	13.0	2.5	.5	-
\$14,000 and under \$15,000 .....	14.9	9.0	.8	.1
\$15,000 and under \$16,000 .....	11.1	22.2	1.5	.4
\$16,000 and under \$17,000 .....	6.8	16.1	7.8	.4
\$17,000 and under \$18,000 .....	10.6	11.0	5.8	.2
\$18,000 and under \$19,000 .....	2.6	9.6	18.1	.1
\$19,000 and under \$20,000 .....	.9	7.0	14.5	1.4
\$20,000 and under \$21,000 .....	2.0	7.8	7.5	1.5
\$21,000 and under \$22,000 .....	.6	3.1	9.1	17.5
\$22,000 and under \$23,000 .....	.2	2.8	10.3	6.8
\$23,000 and under \$24,000 .....	( <sup>1</sup> )	1.7	9.0	7.3
\$24,000 and under \$25,000 .....	.2	1.9	2.5	8.7
\$25,000 and under \$26,000 .....	.1	.4	5.4	14.6
\$26,000 and under \$27,000 .....	-	.5	1.7	8.7
\$27,000 and under \$28,000 .....	-	.2	1.5	3.0
\$28,000 and under \$29,000 .....	-	.1	.5	11.7
\$29,000 and over .....	-	.1	2.4	17.6

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 service-producing industries, United States, except Alaska and Hawaii, March 1989)

Annual salary	Purchasing clerks/assistants		
	I	II	III
Number of employees .....	1,935	2,951	1,176
Average annual salary .....	\$15,263	\$18,265	\$23,625
Total .....	100.0	100.0	100.0
Under \$12,000 .....	7.8	.2	-
\$12,000 and under \$13,000 .....	10.0	2.3	-
\$13,000 and under \$14,000 .....	10.3	1.3	-
\$14,000 and under \$15,000 .....	18.5	7.7	.2
\$15,000 and under \$16,000 .....	27.2	11.2	.5
\$16,000 and under \$17,000 .....	11.7	13.2	2.0
\$17,000 and under \$18,000 .....	4.0	14.4	1.4
\$18,000 and under \$19,000 .....	3.8	10.7	4.9
\$19,000 and under \$20,000 .....	1.3	16.0	6.7
\$20,000 and under \$21,000 .....	.9	9.0	5.4
\$21,000 and under \$22,000 .....	1.2	5.9	11.0
\$22,000 and under \$23,000 .....	2.2	2.0	11.5
\$23,000 and under \$24,000 .....	.5	2.5	9.9
\$24,000 and under \$25,000 .....	.1	1.4	16.3
\$25,000 and under \$26,000 .....	-	.5	16.1
\$26,000 and under \$27,000 .....	.3	.6	3.7
\$27,000 and over .....	-	1.2	10.4

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 service-producing industries, United States, except Alaska and Hawaii,<sup>1</sup> March 1989)

Annual salary .....	General clerks			
	I	II	III	IV
Number of employees .....	15,109	61,639	66,385	29,237
Average annual salary .....	\$10,823	\$13,555	\$17,283	\$21,223
Total .....	100.0	100.0	100.0	100.0
Under \$8,000 .....	.6	( <sup>2</sup> )	.8	-
\$8,000 and under \$9,000 .....	15.2	1.1	1.7	-
\$9,000 and under \$10,000 .....	14.3	2.8	.4	.1
\$10,000 and under \$11,000 .....	32.6	10.0	1.2	.2
\$11,000 and under \$12,000 .....	15.3	16.8	2.4	.6
\$12,000 and under \$13,000 .....	12.5	18.4	6.3	1.0
\$13,000 and under \$14,000 .....	5.0	15.7	8.3	2.0
\$14,000 and under \$15,000 .....	2.5	13.9	9.7	3.1
\$15,000 and under \$16,000 .....	1.2	8.0	12.9	4.5
\$16,000 and under \$17,000 .....	.5	4.4	12.2	7.2
\$17,000 and under \$18,000 .....	.2	1.9	7.5	6.4
\$18,000 and under \$19,000 .....	( <sup>2</sup> )	2.3	7.1	8.4
\$19,000 and under \$20,000 .....	( <sup>2</sup> )	1.4	4.3	5.8
\$20,000 and under \$21,000 .....	( <sup>2</sup> )	.5	3.7	6.1
\$21,000 and under \$22,000 .....	( <sup>2</sup> )	.8	1.9	4.5
\$22,000 and under \$23,000 .....	.1	.8	7.9	5.0
\$23,000 and under \$24,000 .....	( <sup>2</sup> )	.2	8.2	22.0
\$24,000 and under \$25,000 .....	-	( <sup>2</sup> )	1.7	14.7
\$25,000 and over .....	-	.9	1.6	8.5

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

<sup>2</sup> Less than 0.05 percent  
NOTE: 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 1989)

Occupation	All service-producing industries	Public utilities <sup>3</sup>	Wholesale trade	Retail trade	Finance, insurance, and real estate	All services	Business services	Architectural, engineering, Research services
<b>Professional and administrative</b>								
Accountants .....	100	28	5	3	31	33	8	7
Chief accountants .....	100	21	6	4	22	47	15	13
Auditors .....	100	29	2	1	52	15	4	3
Public accountants .....	100	-	-	-	-	100	-	-
Personnel specialists .....	100	25	3	4	27	40	11	9
Personnel supervisors/managers .....	100	31	3	4	25	37	12	10
Directors of personnel .....	100	18	4	2	22	55	8	10
Attorneys .....	100	27	3	3	54	14	4	3
Buyers .....	100	33	4	1	11	50	11	17
Computer programmers .....	100	18	8	2	36	36	20	8
Systems analysts .....	100	17	7	3	42	30	17	7
Systems analysts supervisors/managers ...	100	20	4	2	51	23	15	4
Chemists .....	100	45	2	-	-	53	39	52
Engineers .....	100	51	4	( <sup>1</sup> )	2	43	8	40
Registered nurses .....	100	1	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	99	( <sup>1</sup> )	( <sup>1</sup> )
<b>Technical support</b>								
Licensed practical nurses .....	100	( <sup>1</sup> )	-	-	( <sup>1</sup> )	100	( <sup>1</sup> )	( <sup>1</sup> )
Nursing assistants .....	100	-	-	-	( <sup>1</sup> )	100	( <sup>1</sup> )	( <sup>1</sup> )
Medical machine technicians .....	100	-	-	-	-	100	( <sup>1</sup> )	( <sup>1</sup> )
Engineering technicians .....	100	40	1	( <sup>1</sup> )	1	58	32	53
Drafters .....	100	44	1	1	3	52	10	48
Computer operators .....	100	13	5	4	38	41	17	7
Photographers .....	100	11	2	8	3	76	9	15
<b>Clerical</b>								
Personnel clerks/assistants .....	100	15	3	5	22	55	11	9
Purchasing clerks/assistants .....	100	24	2	1	13	60	15	14
General clerks .....	100	14	3	3	42	38	6	8

See footnotes at end of table.

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

(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 1989)—Continued

Occupation	Health services	Hospitals	Educational services	Social services
<b>Professional and administrative</b>				
Accountants .....	11	10	6	( <sup>3</sup> )
Chief accountants .....	12	12	6	-
Auditors .....	3	3	4	( <sup>3</sup> )
Public accountants .....	-	-	-	-
Personnel specialists .....	15	14	5	1
Personnel supervisors/managers .....	10	10	5	( <sup>3</sup> )
Directors of personnel .....	26	24	8	1
Attorneys .....	2	2	2	( <sup>3</sup> )
Buyers .....	17	17	7	( <sup>3</sup> )
Computer programmers .....	5	5	4	( <sup>3</sup> )
Systems analysts .....	5	4	3	( <sup>3</sup> )
Systems analysts supervisors/managers ...	3	2	2	-
Chemists .....	1	1	-	-
Engineers .....	( <sup>3</sup> )	( <sup>3</sup> )	1	-
Registered nurses .....	96	92	2	( <sup>3</sup> )
<b>Technical support</b>				
Licensed practical nurses .....	96	70	2	1
Nursing assistants .....	96	55	1	2
Medical machine technicians .....	98	97	2	-
Engineering technicians .....	( <sup>3</sup> )	( <sup>3</sup> )	4	-
Drafters .....	1	1	1	-
Computer operators .....	12	11	5	( <sup>3</sup> )
Photographers .....	26	24	29	-
<b>Clerical</b>				
Personnel clerks/assistants .....	27	25	5	1
Purchasing clerks/assistants .....	24	23	9	1
General clerks .....	16	14	10	1

<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> Transportation (except U.S. Postal Service), communications, electric, gas, and sanitary services.

<sup>4</sup> Less than 0.05 percent

**Table 8. Average salaries by industry division**

(Average salary levels<sup>1</sup> for selected professional, administrative, technical, and clerical occupations by major industry division, United States, except Alaska and Hawaii, March 1989)

Occupation and level <sup>2</sup>	Utilities <sup>3</sup>	Finance, insurance, and real estate	Wholesale and retail trade	Services
<b>Accountants</b>				
I .....	\$1,955	\$1,859	\$1,785	\$1,763
II .....	2,324	2,153	2,155	2,132
III .....	2,987	2,747	2,713	2,747
IV .....	3,767	3,552	3,663	3,542
V .....	4,760	4,407	4,581	4,540
<b>Auditors</b>				
II .....	2,579	2,337	2,360	2,264
III .....	3,183	2,857	2,786	2,860
IV .....	3,845	3,514	3,533	3,604
<b>Personnel specialists</b>				
I .....	-	1,758	-	1,856
II .....	2,527	2,084	2,113	2,068
III .....	3,052	2,621	2,672	2,640
IV .....	3,864	3,323	3,661	3,412
V .....	4,654	4,300	-	4,474
<b>Personnel supervisor managers</b>				
I .....	-	3,636	-	3,495
II .....	4,759	4,514	-	4,463
III .....	6,086	5,857	-	-
<b>Attorneys</b>				
I .....	-	3,031	-	-
II .....	3,857	3,577	-	3,485
III .....	4,902	4,584	-	-
IV .....	6,421	6,116	-	6,240
<b>Computer programmers</b>				
I .....	2,047	1,882	-	-
II .....	2,378	2,233	2,248	2,200
III .....	2,842	2,671	2,652	2,633
IV .....	3,472	3,117	3,279	3,238
<b>Systems analysts</b>				
I .....	2,902	2,637	2,640	2,621
II .....	3,443	3,151	3,121	3,155
III .....	4,000	3,706	3,677	3,886
<b>Systems analysts managers</b>				
I .....	4,250	4,139	-	3,996
II .....	4,932	4,646	-	4,703
III .....	-	5,707	-	-

See footnotes at end of table.

**Table 8. Average salaries by industry division—Continued**

(Average salary levels<sup>1</sup> for selected professional, administrative, technical, and clerical occupations by major industry division, United States, except Alaska and Hawaii, March 1989)

Occupation and level <sup>2</sup>	Utilities <sup>3</sup>	Finance, insurance, and real estate	Wholesale and retail trade	Services
<b>Computer operators</b>				
I .....	-	1,189	-	1,298
II .....	1,878	1,500	1,487	1,544
III .....	2,178	1,868	1,899	1,913
IV .....	2,453	2,213	-	2,276
<b>Personnel clerks</b>				
I .....	-	1,181	-	1,216
II .....	1,560	1,422	-	1,437
III .....	1,932	1,696	-	1,715
<b>Purchasing clerks</b>				
II .....	1,718	1,451	-	1,491
III .....	2,105	-	-	1,882
<b>General clerks</b>				
I .....	-	923	-	915
II .....	1,398	1,066	-	1,107
III .....	1,790	1,275	-	1,335
IV .....	1,967	1,471	-	1,608

<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 C.

<sup>3</sup> Transportation (except U.S. Postal Service), communications, electric, gas, and sanitary services.

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

**Table 9. Average salaries in selected service industries**

(Average salary levels<sup>1</sup> for selected professional, administrative, technical, and clerical occupations in selected service industries, United States, except Alaska and Hawaii, March 1989)

Occupation and level <sup>2</sup>	Health services		Business services	Engineering, architectural, and research
	Total	Hospitals		
<b>Accountants</b>				
I .....	\$1,730	\$1,787	\$1,811	\$1,900
II .....	2,134	2,138	2,100	2,216
III .....	2,718	2,713	2,722	2,784
IV .....	3,476	3,515	3,527	3,498
V .....	4,655	4,664	4,437	-
<b>Personnel specialists</b>				
I .....	1,864	1,871	-	-
II .....	2,055	2,074	2,174	-
III .....	2,597	2,612	2,702	2,768
IV .....	3,373	3,368	3,515	3,558
<b>Personnel supervisor managers</b>				
I .....	3,517	3,517	-	-
II .....	4,277	4,302	4,610	-
<b>Computer programmers</b>				
I .....	1,892	1,896	1,938	-
II .....	2,250	2,241	2,229	-
III .....	2,653	2,687	2,668	2,544
<b>Systems analysts</b>				
I .....	2,732	2,633	2,605	2,702
II .....	3,129	3,125	3,158	3,279
III .....	3,696	3,677	3,923	3,875
<b>Systems analysts managers</b>				
I .....	4,066	4,066	3,984	-
<b>Registered nurses</b>				
I .....	2,066	2,141	-	-
II .....	2,371	2,387	-	-
II specialists .....	2,679	2,685	-	-
III <sup>3</sup> .....	3,432	3,428	-	-
IV .....	3,442	3,442	-	-
<b>Licensed practical nurses</b>				
I .....	1,339	1,357	-	-
II .....	1,539	1,593	-	-
III .....	1,902	1,929	-	-

See footnotes at end of table.

**Table 9. Average salaries in selected service industries—Continued**

(Average salary levels<sup>1</sup> for selected professional, administrative, technical, and clerical occupations in selected service industries, United States, except Alaska and Hawaii, March 1989)

Occupation and level <sup>2</sup>	Health services		Business services	Engineering, architectural, and research
	Total	Hospitals		
<b>Nursing assistants</b>				
I .....	787	-	-	-
II .....	953	1,181	-	-
III .....	1,211	1,360	-	-
IV .....	1,517	1,517	-	-
<b>Medical machine technicians</b>				
I .....	1,382	1,362	-	-
II .....	1,787	1,785	-	-
III .....	2,151	2,144	-	-
IV .....	2,650	2,571	-	-
<b>Computer operators</b>				
I .....	1,238	1,272	1,317	-
II .....	1,546	1,561	1,565	1,604
III .....	1,885	1,878	1,905	1,933
<b>Personnel clerks</b>				
II .....	1,454	1,453	-	-
III .....	1,735	1,733	-	-
<b>General clerks</b>				
III .....	1,338	1,358	1,359	-

<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 C.

<sup>3</sup> Registered nurse III anesthetists, not shown separately, averaged \$3,997 per month.

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

**Table 10. 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, <sup>3</sup> United states, except Alaska and Hawaii, March 1989)

Occupation	All service-producing industries	Public utilities	Wholesale trade	Retail trade	Finance, insurance, and real estate	All services	Business services
<b>Professional and administrative</b>							
Accountants .....	39.0	40.0	40.0	39.5	38.5	39.5	39.5
Chief accountants .....	39.5	40.0	40.0	40.0	39.5	38.5	39.5
Auditors .....	39.0	39.5	40.0	39.5	38.5	39.5	39.5
Public accountants .....	39.5	-	-	-	-	39.5	-
Personnel specialists .....	39.5	40.0	40.0	40.0	39.0	39.5	39.5
Personnel supervisors/managers .....	39.5	40.0	40.0	39.0	39.0	39.5	39.5
Directors of personnel .....	39.5	40.0	40.0	39.5	39.0	39.5	39.5
Attorneys .....	38.5	39.5	40.0	40.0	38.0	39.0	39.0
Buyers .....	39.5	40.0	40.0	38.5	39.0	39.5	40.0
Computer programmers .....	39.0	39.5	40.0	40.0	38.5	39.5	39.5
Systems analysts .....	39.0	39.5	39.5	40.0	38.5	39.5	39.5
Systems analysts supervisors/managers .....	39.0	40.0	39.5	40.0	38.5	39.5	39.5
Chemists .....	40.0	40.0	40.0	-	-	40.0	40.0
Engineers .....	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Registered nurses .....	39.5	39.5	40.0	40.0	38.0	39.5	40.0
<b>Technical support</b>							
Licensed practical nurses .....	39.5	40.0	-	-	40.0	39.5	40.0
Nursing assistants .....	39.5	-	-	-	40.0	39.5	40.0
Medical machine technicians .....	39.5	-	-	-	-	39.5	.0
Engineering technicians .....	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Drafters .....	40.0	40.0	40.0	39.5	40.0	39.5	40.0
Computer operators .....	39.5	40.0	39.5	39.5	38.5	39.5	39.5
Photographers .....	39.5	39.5	40.0	40.5	38.5	39.0	40.0
<b>Clerical</b>							
Personnel clerks/assistants .....	39.5	40.0	40.0	39.5	39.0	39.5	39.5
Purchasing clerks/assistants .....	39.0	39.5	40.0	36.0	39.0	39.5	40.0
General clerks .....	39.5	39.5	40.0	40.0	39.0	41.0	39.5

See footnotes at end of table.



**Table 10. Average weekly hours by occupation and industry—Continued**

(Average standard weekly hours<sup>1</sup> for employees in selected professional, administrative, technical, and clerical occupations<sup>2</sup> BY industry,<sup>3</sup> United states, except Alaska and Hawaii, March 1989)—Continued

Occupation	Architectural, engineering, research services	Health services	Hospitals	Educational services	Social services
<b>Professional and administrative</b>					
Accountants .....	39.5	39.5	39.5	38.5	39.5
Chief accountants .....	40.0	39.0	38.5	38.5	-
Auditors .....	40.0	39.5	39.5	38.0	40.0
Public accountants .....	-	-	-	-	-
Personnel specialists .....	39.5	39.5	39.5	38.5	38.5
Personnel supervisors/managers .....	40.0	39.0	39.0	39.0	40.0
Directors of personnel .....	40.0	40.0	40.0	38.5	38.0
Attorneys .....	39.5	40.0	40.0	38.5	40.0
Buyers .....	40.0	39.5	39.5	38.5	36.5
Computer programmers .....	39.5	40.0	40.0	38.5	40.0
Systems analysts .....	39.5	39.5	39.5	39.0	40.0
Systems analysts supervisors/managers .....	39.5	39.0	39.5	38.5	-
Chemists .....	40.0	37.5	37.5	-	-
Engineers .....	40.0	39.5	39.5	39.5	-
Registered nurses .....	39.5	39.5	39.5	40.0	39.0
<b>Technical support</b>					
Licensed practical nurses .....	40.0	39.5	39.5	40.0	39.5
Nursing assistants .....	39.5	39.5	39.5	40.0	40.0
Medical machine technicians .....	40.0	39.5	39.5	40.0	-
Engineering technicians .....	40.0	40.0	40.0	40.0	-
Drafters .....	39.5	40.0	40.0	39.5	-
Computer operators .....	39.5	39.5	39.5	39.0	39.5
Photographers .....	40.0	39.5	39.5	39.0	-
<b>Clerical</b>					
Personnel clerks/assistants .....	39.5	39.5	39.5	38.5	39.0
Purchasing clerks/assistants .....	40.0	39.5	39.5	38.5	39.0
General clerks .....	40.0	39.5	39.5	42.5	39.5

<sup>1</sup> Based on the standard workweek for which employees receive their regular straight-time salary. If standard hours are 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.

# 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> and engaged in the following industries: Transportation, communications, and electric, gas, and sanitary services (except the U.S. Postal Service and government agencies, such as the Tennessee Valley Authority); wholesale trade; retail trade; finance, insurance, and real estate; and all services. (See table A-1.)

Establishments which met the minimum size criterion 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.

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 establishment employment size groupings (50-999, 1,000-2,499, and 2,500 workers and over).

## 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 1987) unemployment insurance reports for the 48 contiguous States and the District of Columbia. For the portion of the sampling frame to be checked for accuracy and completeness, i.e., establishments employing at least 100 workers, updating procedures were used (including results of other BLS programs). Establishments known to be missing were added; out-of-business and out-of-scope establishments were removed; some units were combined or split to meet the establish-

<sup>1</sup> For this survey, an establishment is an economic unit which produces goods or services, 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 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 June 1984.

ment/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 with 50-99 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 1989 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 based upon the results of 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.

## Data collection

Data for the survey are obtained primarily by personal visits of the Bureau's field representatives to a nationwide

<sup>4</sup> In 1989, a sample was selected systematically to maximize the probability of retaining establishments that had been selected for the 1987 or 1988 surveys. 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.

sample of establishments. Collection for the 1989 survey was from November 1988 through May 1989 and reflects an average reference month of March 1989.

Employees are classified by occupation and work level using job descriptions (appendix C) 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 D). 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 representatives, 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. However, premium pay for overtime was included in reported salaries of workers in nursing occupations on 12-hour 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 1989 survey, salary data were not available from 13.8 percent of the sample establishments (representing 4,039,114 employees in the total universe covered by the survey). An additional 4.7 percent of the sample establishments (representing 1,529,514 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 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 was not

<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.

available was less than 3 percent. The four are chief accountant IV (9 percent), personnel supervisor/manager I (4 percent), director of personnel III (8 percent), and director of personnel IV (11 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 annual. Before initial tabulations, all salary data are converted to a monthly basis. The factors used to convert the salary data are as follows:

Payroll basis	Conversion factor
Weekly .....	4.3333
Biweekly .....	2.1665
Semimonthly .....	2.0000
Monthly .....	1.0000
Annual .....	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

<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.

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 nonsampling.

*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 (RSE) is the standard error divided by the estimate. The smaller the RSE, the greater the reliability of the estimate.

Estimates of relative standard errors for the 1989 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 108 publishable work levels, the distribution of 1 relative standard error was as follows:

<i>Relative standard error</i>	<i>Number of occupational work levels</i>
Less than 1 percent . . . . .	34
1 and under 2 percent . . . . .	58
2 and under 3 percent . . . . .	13
3 and under 4 percent . . . . .	3

<sup>7</sup> A replication technique with 15 random groups was used to obtain estimates of relative standard errors for the 1989 survey.

In general, a sample estimate<sup>1</sup> standard error will contain the “true value” in 68 percent of all samples,<sup>2</sup> standard errors in 95 percent, and<sup>3</sup> 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 \$21,565 to \$22,581 (annual average \$22,073 plus or minus 2 RSE’s or 2.3 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 maintenance and 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 PATC 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 1989 JMV process was limited to a sample of the survey—those units that were collected by telephone. About 13 percent of the 549 sampled job match decisions checked with respondents were subsequently changed by survey reviewers. These results indicate that, under carefully controlled conditions, data collection by telephone yields high quality data.

<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 study and number studied, by industry division, United States, March 1989**

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
<b>United States</b>	159,896	31,099,484	6,874,568	4,207	5,042,582	1,368,848
All private service-producing industries .....						
Transportation, communications, electric, gas, and sanitary services .....	10,411	3,601,034	833,208	305	1,462,105	366,581
Wholesale trade .....	16,494	1,953,873	543,485	262	163,237	54,219
Retail trade .....	52,614	8,931,561	1,029,475	430	594,194	85,591
Finance, insurance, and real estate Services .....	17,403	3,863,944	1,413,858	626	757,879	376,150
Business services .....	62,973	12,747,599	3,054,105	2,583	2,063,694	486,107
Health services .....	15,973	3,093,205	610,415	518	291,910	66,039
Hospitals .....	17,572	4,859,765	1,187,243	1,057	978,467	257,214
Engineering, architectural, and research services <sup>2</sup> .....	4,332	3,106,136	904,974	547	845,163	209,351
	3,399	599,493	312,816	316	174,014	44,079
<b>Metropolitan areas<sup>3</sup></b> .....	137,008	28,460,714	6,419,098	3,816	4,910,275	1,337,169
<b>Establishments employing:</b>						
50-999 workers .....	155,660	20,692,576	4,368,004	3,114	804,468	220,125
1,000-2,499 workers .....	3,317	4,900,571	1,108,115	622	961,183	275,078
2,500 workers or more .....	919	5,506,337	1,398,449	471	3,276,931	873,645

<sup>1</sup> As defined in the 1972 edition of the "Standard Industrial Classification Manual," U.S. Bureau of Economic Analysis, Office of Management and Budget.

<sup>2</sup> Includes engineering, architectural, and surveying services and noncommercial educational, scientific, and research organizations.

<sup>3</sup> Metropolitan Statistical Areas and Primary Metropolitan Statistical Areas, as defined by the U.S. Office of Management and Budget through June 1984.

# Appendix B. Changes in Survey Scope and Occupational Coverage

## Changes in scope

The March 1989 survey reflects changes introduced in 1986 to broaden the coverage of the survey to more industries and to smaller establishments by conducting the survey in two segments on a biennial cycle; the nonservice industries were covered in 1988 and the service-producing industries in 1989. Rotating the industries in different years allows BLS to obtain a broader coverage in pay surveys while staying within resource constraints. Beginning in 1990, the rotation will be goods-producing industries (mining, construction, and manufacturing) in even-numbered years and service-producing industries in odd-numbered years.

In the first phase of the expansion, the 1986 survey increased its coverage of small establishments within the industries previously studied. The survey's minimum establishment size requirement, which generally had ranged from 100 to 250 employees depending on industry, was lowered to 50 employees in 1986, regardless of industry. In the second stage in 1987, the survey's minimum was lowered to 20 workers and was limited to private service industries. In 1988, the minimum returned to 50 workers for comparability with the 1986 survey. The minimum remained at 50 workers for the 1989 survey.

These initial changes were part of a proposal by the President's Cabinet Council on Management and Administration (CCMA) to expand the PATC 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 National Survey of Professional, Administrative, Technical, and Clerical Pay; the Employee Benefits Survey; and the Employment Cost Index. A 2-year collection cycle will be used for surveying salaries of detailed occupations—private goods-producing industries in even-numbered years and private service-producing industries in odd-numbered years, beginning in 1989. The survey will continue to meet current

Federal pay comparability requirements through 1989.

Table B-1 presents the estimated number of establishments and workers within the combined scope of the 1988 and 1989 surveys, which included all private industries except farms and households, and the number actually studied. Table B-2 presents the occupational employment and salary data from the combined 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 annual salaries in the Federal pay comparability process for white-collar workers.

The goods-producing industries studied as part of the 1988 survey were updated to March 1989 by appropriate unpublished factors from the Bureau's Employment Cost Index: a 3.5-percent increase in wages and salaries for the clerical occupations and 3.3 percent for professional, administrative, and technical salaries. Additionally, data for six clerical occupations (accounting clerk, file clerk, key entry operator, messenger, secretary, and typist) in selected service-producing industries were updated to March 1989 using an unpublished factor from the Employment Cost Index: a 4.5-percent increase in wages and salaries for administrative support occupations, including clerical.

## Changes in occupational coverage

Two jobs in the administrative field were introduced into the survey in 1989. 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 program 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.

Also introduced in 1989 was an additional level in the registered nurse series—registered nurse specialist—which describes duties involving highly specialized patient care in a difficult specialty area, such as intensive care or critical care. Also in the health sector, a four-level medical machine operating technician job was added in 1989. These technicians operate and monitor medical machines,

equipment, or instruments as part of the examination of patients. The work involves machines and equipment such as those used in cardiac catheterization, electrocardiography, electroencephalography, hemodialysis, inhalation/respiratory therapy, and ultrasonography. The duties described range from performing standard examinations or treatments requiring little deviation from instructions or procedures to

performing complex examinations or treatments that regularly require innovative and adaptive approaches.

To conserve resources and reduce respondent burden, data for six clerical occupations in selected service-producing industries were not collected as part of the 1989 survey. The six clerical occupations are accounting clerk, file clerk, key entry operator, messenger, secretary, and typist.

**Table B-1. Number of establishments and workers within scope of study and number studied, by industry division, United States, March 1988 and March 1989 combined**

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>All industries<sup>2</sup></b>	232,970	47,438,948	10,093,086	8,596,759	8,576,936	2,616,438	1,915,821
Goods-producing industries	73,074	16,339,464	3,218,518	1,917,254	3,534,354	1,127,090	546,973
Manufacturing	58,386	14,805,154	2,977,317	1,780,546	3,414,403	1,089,686	527,187
Mining	2,559	444,446	121,377	67,420	82,789	31,114	16,757
Construction	12,129	1,089,864	119,824	69,288	37,162	5,310	30,129
Service-producing industries	159,896	31,099,484	6,874,568	6,679,505	5,042,582	1,489,348	1,368,848
Transportation, communications, electric, gas, and sanitary services	10,411	3,601,034	833,208	778,246	1,462,105	377,992	366,531
Wholesale trade	16,494	1,953,873	543,485	430,191	163,237	83,823	54,219
Retail trade	52,614	8,931,561	1,029,475	831,670	594,194	66,109	85,591
Finance, insurance, and real estate	17,403	3,863,944	1,413,858	1,876,154	757,879	309,853	376,150
Services industries <sup>3</sup>	62,973	12,747,599	3,054,105	2,762,994	2,063,694	651,134	486,107
Business services	15,973	3,093,205	610,415	529,607	291,910	116,130	66,039
Health services	17,572	4,859,765	1,187,243	1,374,873	978,467	278,292	257,214
Hospitals	4,332	3,106,136	904,974	791,071	845,163	256,841	209,351
Engineering, architectural, and research services <sup>4</sup>	3,399	599,493	312,816	164,090	174,014	88,737	44,079

<sup>1</sup> As defined in the 1972 edition of the "Standard Industrial Classification Manual," U.S. Office of Management and Budget.

<sup>3</sup> Includes services industries in addition to those shown separately.

<sup>2</sup> Establishments with total employment at or above the 50-worker minimum; excludes national, scientific, and research organizations.

<sup>4</sup> Includes engineering, architectural, and surveying services and noncommercial educational, scientific, and research organizations.



**Table B-2. 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 1988 and March 1989 combined)<sup>1</sup>

Occupational Classification	Number of workers	Annual mean salary	Annual median salary
<b>Accountants</b>			
I .....	18,661	\$22,726	\$22,717
II .....	44,165	27,111	26,476
III .....	55,820	34,134	33,600
IV .....	28,569	43,377	42,733
V .....	8,078	54,833	54,171
VI .....	1,613	70,056	67,868
<b>Chief Accountants</b>			
II .....	1,498	54,935	53,694
III .....	708	71,915	71,071
IV .....	164	92,297	89,563
<b>Auditors</b>			
I .....	1,560	24,127	23,365
II .....	3,008	29,184	28,774
III .....	4,150	36,007	34,986
IV .....	2,276	44,096	43,351
<b>Public accountants</b>			
I .....	11,988	25,335	25,000
II .....	12,739	27,505	26,989
III .....	12,754	31,390	30,648
IV .....	4,875	40,532	39,044
<b>Personnel Specialists</b>			
I .....	1,876	22,229	21,685
II .....	10,706	25,395	24,830
III .....	16,016	32,395	31,987
IV .....	8,635	42,214	41,493
V .....	1,694	53,816	52,979
<b>Personnel Supervisors/managers</b>			
I .....	1,400	43,844	43,200
II .....	2,098	54,771	54,856
III .....	648	72,632	71,426
IV .....	88	92,049	83,816
<b>Directors of Personnel</b>			
I .....	2,192	42,254	41,788
II .....	3,359	52,568	51,979
III .....	1,365	70,949	69,992
IV .....	350	91,828	88,713
<b>Attorneys</b>			
I .....	1,739	36,773	34,986
II .....	4,593	44,327	43,135
III .....	5,051	57,172	55,772
IV .....	4,373	74,932	74,190
V .....	2,218	91,849	89,953
VI .....	610	113,280	111,129
<b>Buyers</b>			
I .....	9,481	22,856	21,994
II .....	25,258	28,657	28,078
III .....	18,569	37,234	36,667
IV .....	5,191	45,030	44,044

See footnotes at end of table.

**Table B-2. 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 1988 and March 1989 combined)<sup>1</sup>—Continued

Occupational Classification	Number of workers	Annual mean salary	Annual median salary
<b>Computer programmers</b>			
I .....	14,207	\$23,186	\$22,991
II .....	42,407	27,271	27,000
III .....	49,588	32,461	32,317
IV .....	22,586	39,115	38,799
<b>Systems analysts</b>			
I .....	32,134	32,098	31,680
II .....	63,103	38,603	38,206
III .....	39,063	45,911	45,543
IV .....	10,700	54,325	53,927
V .....	1,448	66,175	65,974
<b>Systems Analysts Managers</b>			
I .....	7,389	50,256	49,285
II .....	7,784	56,939	56,327
III .....	2,351	67,940	66,607
<b>Chemists</b>			
I .....	3,969	24,737	25,164
II .....	7,598	30,711	30,370
III .....	8,892	38,810	38,552
IV .....	8,474	47,081	47,167
V .....	4,598	56,961	56,735
VI .....	1,639	67,952	68,151
VII .....	496	81,972	79,605
<b>Engineers</b>			
I .....	34,100	30,296	30,401
II .....	74,421	34,202	33,915
III .....	139,063	39,498	39,171
IV .....	155,808	47,291	46,961
V .....	107,816	57,059	56,505
VI .....	43,545	67,410	67,000
VII .....	11,402	77,268	75,895
VIII .....	2,332	87,963	87,166
<b>Registered nurses</b>			
I .....	19,882	24,573	23,918
II .....	394,284	28,442	28,099
II Specialists .....	21,624	32,105	31,759
III .....	14,394	40,597	38,217
IV .....	926	41,662	39,163
<b>Licensed practical nurses</b>			
I .....	13,844	16,000	15,599
II .....	173,223	18,484	18,136
III .....	4,454	22,762	22,712
<b>Nursing assistants</b>			
I .....	64,173	9,647	9,281
II .....	393,474	11,420	10,919
III .....	30,958	14,562	14,330
IV .....	2,234	18,088	17,443
<b>Medical machine technicians</b>			
I .....	8,804	16,568	16,591
II .....	16,089	21,432	21,422
III .....	17,204	25,790	25,592
IV .....	279	31,817	31,364

See footnotes at end of table.

**Table B-2. 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 1988 and March 1989 combined)—Continued

Occupational Classification	Number of workers	Annual mean salary	Annual median salary
<b>Civil Engineering Technicians</b>			
II .....	3,305	\$20,432	\$19,992
III .....	3,712	25,960	24,958
IV .....	2,800	30,524	30,158
<b>Engineering technicians</b>			
I .....	4,853	18,363	18,262
II .....	15,246	21,983	21,834
III .....	30,562	25,865	25,631
IV .....	34,713	31,010	30,678
V .....	19,819	35,615	35,047
<b>Drafters</b>			
II .....	13,091	18,174	17,243
III .....	21,712	21,996	21,684
IV .....	18,570	27,450	26,963
V .....	11,177	34,087	33,986
<b>Computer Operators</b>			
I .....	10,716	14,970	14,875
II .....	41,496	18,991	18,498
III .....	28,817	23,488	23,149
IV .....	7,562	27,828	27,506
V .....	1,132	31,745	31,715
<b>Photographers</b>			
II .....	1,171	23,710	22,991
III .....	1,020	28,703	28,236
IV .....	496	34,627	34,572
<b>Accounting clerks</b>			
I .....	36,447	13,119	12,575
II .....	163,444	16,068	15,602
III .....	90,521	19,386	18,935
IV .....	29,165	23,690	22,991
<b>File clerks</b>			
I .....	23,269	11,835	11,457
II .....	15,825	13,650	13,280
III .....	2,736	17,247	16,713
<b>Key entry operators</b>			
I .....	81,453	14,092	13,794
II .....	40,850	18,405	17,759
<b>Messengers</b>			
Messengers .....	12,960	13,282	12,804
<b>Secretaries</b>			
I .....	71,217	17,719	17,279
II .....	82,262	20,060	19,760
III .....	127,165	23,235	22,811
IV .....	51,386	26,776	26,477
V .....	13,439	32,080	31,482
<b>Typists</b>			
I .....	21,356	14,153	13,997
II .....	9,518	18,196	17,438

See footnotes at end of table.

**Table B-2. 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 1986 and March 1989 combined)<sup>1</sup>—Continued

Occupational Classification	Number of workers	Annual mean salary	Annual median salary
<b>Personnel clerks/assistants</b>			
I .....	3,902	\$14,684	\$14,380
II .....	7,808	17,859	17,283
III .....	5,452	21,288	21,290
IV .....	1,981	25,822	25,790
<b>Purchasing clerks/assistants</b>			
I .....	5,644	15,045	15,000
II .....	8,986	18,726	18,571
III .....	4,763	24,029	23,920
IV .....	975	32,070	30,690
<b>General clerks</b>			
I .....	18,957	11,025	10,763
II .....	86,585	13,733	13,433
III .....	99,222	17,333	16,680
IV .....	45,477	21,116	21,257

<sup>1</sup> This tabulation combines the results of the March 1989 survey in the service-producing industries with updated results from the March 1988 survey in nonservice industries. The goods-producing industries (mining, construction, and manufacturing) studied as part of the March 1988 survey were updated to March 1989 by appropriate unpublished factors from the Bureau's Employment Cost Index: 3.5 percent increase in wages and salaries for the clerical occupations and 3.3 percent for the professional, administrative, and technical salaries. Additionally, data for six clerical occupations (accounting

clerk, file clerk, key entry operator, messenger, secretary, and typist) in service-producing industries were updated to March 1989 using an unpublished factor from the Employment Cost Index: 4.5 percent increase in wages and salaries for administrative support occupations, including clerical.

SOURCE: U.S. Department of Labor  
Bureau of Labor Statistics  
WASHINGTON, D.C. 20212

# Appendix C. 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 C-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 C-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.
	or		
	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.
V	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.
V	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.* With 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 with 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; and
- 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.

### **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 provide experience in using personnel management principles and techniques and in identifying, analyzing, and resolving 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.

*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 SUPERVISORS/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 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 C-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.

To determine 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.

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 is virtually assured) and recommends

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

Base level of nonsupervisory job matched in the personnel specialist 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

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 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 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 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 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

- 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 C-3).
- 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 C-3).
- 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 are matched to the definition for personnel supervisor/manager.

Director of personnel jobs which meet the above definition are classified by level of work (see table C-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 C-3. Level equivalents of personnel professional occupations**

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

**Table C-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:

a. 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

b. 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 C-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 C-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, or professional experience at the D-2 level.
	D-3	R-3	
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.

**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

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.

**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 carryout 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 C-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 C-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 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 pre planned 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.

#### Licensed Practical Nurses II

Provides nursing care requiring an understanding of

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-orth; 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

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 lay outs. 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. (See level VI.)

### **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; 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; as signing 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.

## MESSENGRERS

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 C-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 C-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 in coming 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 man power 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 reduction, 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.

Expediters 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 D. 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 D-1 shows the surveyed jobs grouped by work levels equivalent to General Schedule grade levels.

**Table D-1. Comparison of average annual salaries in private industry with salary rates for Federal employees under the General Schedule, March 1989**

Occupational 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>	Step <sup>5</sup>										
			1	2	3	4	5	6	7	8	9	10	
File clerks I	\$11,835	GS 1	\$10,477	\$10,213	\$10,555	\$10,894	\$11,233	\$11,573	\$11,773	\$12,108	\$12,445	\$12,461	\$12,780
General clerks I	11,025												
Messengers	13,282												
Nursing assistants I	9,647												
Accounting clerks I	13,119	GS 2	12,116	11,484	11,757	12,137	12,461	12,601	12,972	13,343	13,714	14,085	14,456
File clerks II	13,650												
General clerks II	13,733												
Key entry operators I	14,082												
Typists I	14,153												
Nursing assistants II	11,420												
Drafters I	13,965												
Accounting clerks II	16,068	GS 3	13,786	12,531	12,949	13,367	13,785	14,203	14,621	15,039	15,457	15,875	16,293
Drafters II	18,174												
Engineering technicians I	18,363												
General clerks III	17,333												
Key entry operators II	18,405												
Personnel clerks/assistants I	14,684												
Purchasing clerks/assistants I	15,045												
Typists II	18,196												
Nursing assistants III	14,562												
Licensed practical nurses I	16,000												
File clerk III	17,247	GS 4	15,844	14,067	14,536	15,005	15,474	15,943	16,412	16,881	17,350	17,819	18,288
Accounting clerks III	19,386												
Computer operators I	14,970												
Drafters III	21,996												
Engineering technicians II	21,116												
General clerks IV	21,116												
Personnel clerks/assistants II	17,859												
Purchasing clerks/assistants II	18,726												
Secretaries I	17,719												
Licensed practical nurses II	18,484												
Civil engineering technicians II	20,432												
Medical machine operators I	16,568												
Nursing assistants IV	18,088												
Accounting clerks IV	23,690	GS 5	17,984	15,738	16,263	16,788	17,313	17,838	18,363	18,888	19,413	19,938	20,463
Auditors I	22,726												
Auditors II	24,127												
Buyers I	22,856												
Chemists I	24,737												
Computer operators II	18,991												
Drafters IV	27,450												
Engineers I	30,296												
Engineering technicians III	25,865												
Personnel clerks/assistants III	21,288												
Personnel specialists I	22,229												

See footnotes at end of table.

**Table D-1. Comparison of average annual salaries in private industry with salary rates for Federal employees under the General Schedule, March 1989—Continued**

Occupational 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>	Averages <sup>5</sup>	Step <sup>6</sup>																
				1	2	3	4	5	6	7	8	9	10							
Computer programmers I	\$23,186																			
Purchasing clerks/assistants III	24,029																			
Licensed practical nurses III	22,762																			
Photographers II	23,710																			
Civil engineering technicians III	25,960																			
Medical machine operators II	21,432																			
Secretaries II	20,060																			
Computer operators III	23,488	GS 6	20,295	17,542	18,127	18,712	19,297	19,882	20,467	21,052	21,637	22,222	22,807							
Personnel clerks/assistants IV	25,822																			
Purchasing clerks/assistants IV	32,070																			
Secretaries III	23,235																			
Medical machine operators III	25,790																			
Accountants III	27,111	GS 6	22,151	19,493	20,143	20,793	21,443	22,093	22,743	23,393	24,043	24,693	25,343							
Auditors II	29,184																			
Buyers II	28,657																			
Chemists II	30,711																			
Computer operators IV	27,828																			
Drafters V	34,087																			
Engineers II	34,202																			
Engineering technicians IV	31,010																			
Personnel specialists II	25,395																			
Photographers III	28,703																			
Computer programmers II	27,271																			
Public accountants I	25,335																			
Secretaries IV	26,776																			
Registered nurses I	24,573																			
Civil engineering technicians IV	30,524																			
Medical machine operators IV	31,817																			
Computer operators V	31,745	GS 8	25,169	21,590	22,310	23,030	23,750	24,470	25,190	25,910	26,630	27,350	28,070							
Secretaries V	32,080																			
Accountants III	34,134																			
Attorneys I	36,773																			
Auditors III	36,007																			
Buyers III	37,234																			
Engineers III	39,498																			
Engineering technicians V	35,615																			
Personnel specialists III	32,395																			
Photographers IV	34,627																			
Computer programmers III	32,461																			
Public accountants II	27,505																			
Systems analysts I	32,098																			
Chemists III	38,810																			
Registered nurses II	28,442																			
Registered nurses II specialists <sup>7</sup>	32,105																			

See footnotes at end of table.



**Table D-1. Comparison of average annual salaries in private industry with salary rates for Federal employees under the General Schedule, March 1989—Continued**

Occupational 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>	Steps <sup>5</sup>										
			1	2	3	4	5	6	7	8	9	10	
Accountants IV	\$43,377	GS 11	32,628	28,852	29,814	30,776	31,738	32,700	33,662	34,624	35,586	36,548	37,510
Attorney IV	44,327												
Auditors IV	44,096												
Buyers IV	45,030												
Chemists IV	47,081												
Personnel supervisors/managers I	43,844												
Directors of personnel I	42,254												
Engineers IV	47,291												
Personnel specialists IV	42,214												
Computer programmers IV	39,115												
Public accountants III	31,390												
Systems analysts II	38,603												
Registered nurses III	40,597												
Chief accountants I	42,873												
Accountants VI	54,833	GS 12	39,440	34,580	35,733	36,886	38,039	39,192	40,345	41,498	42,651	43,804	44,957
Attorneys III	57,172												
Chemists V	56,961												
Chief accountants II	54,935												
Personnel supervisors/managers II	54,771												
Directors of personnel II	52,568												
Engineers V	57,059												
Public accountants IV	40,532												
Systems analysts III	45,911												
Systems analysts managers I	50,256												
Registered nurses IV	41,662												
Personnel specialists V	53,816												
Attorneys IV	74,932	GS 13	47,321	41,121	42,492	43,863	45,234	46,605	47,976	49,347	50,718	52,089	53,460
Chemists VI	69,952												
Chief accountants III	71,915												

See footnotes at end of table.

**Table D-1. Comparison of average annual salaries in private industry with salary rates for Federal employees under the General Schedule, March 1989—Continued**

Occupational and level surveyed by BLS <sup>1</sup>	Salary rates for Federal employees under the General Schedule <sup>3</sup>																			
	Average annual salary in private industry <sup>2</sup>	Grade <sup>4</sup>	Step <sup>5</sup>								Averages									
			1	2	3	4	5	6	7	8		9	10							
Directors of personnel III .....	\$70,949																			
Personnel supervisors/managers III .....	72,632																			
Engineers VI .....	67,410																			
Systems analysts IV .....	54,325																			
Systems analysts managers II .....	56,939																			
Accountants VI .....	70,056																			
Attorneys V .....	91,849	GS 14	48,592	50,212	51,832	53,452	55,072	56,692	58,313	59,932	61,552	63,172								
Chemists VII .....	81,972																			
Chief accountants IV .....	92,297																			
Personnel supervisors/managers IV .....	92,049																			
Directors of personnel IV .....	91,828																			
Engineers VII .....	77,268																			
Systems analysts V .....	66,175																			
Systems analysts managers III .....	67,940																			
Attorneys VI .....	113,280	GS 15	57,158	59,063	60,968	62,873	64,778	66,683	68,588	70,493	72,398	74,303								
Engineers VIII .....	87,963																			

<sup>1</sup> For definitions, see appendix C.

<sup>2</sup> Survey findings as summarized in table B-2 of this bulletin. For scope of 1988 and 1989 surveys, see appendix B.

<sup>3</sup> General schedule rates in effect in March 1989, 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, 1989. 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

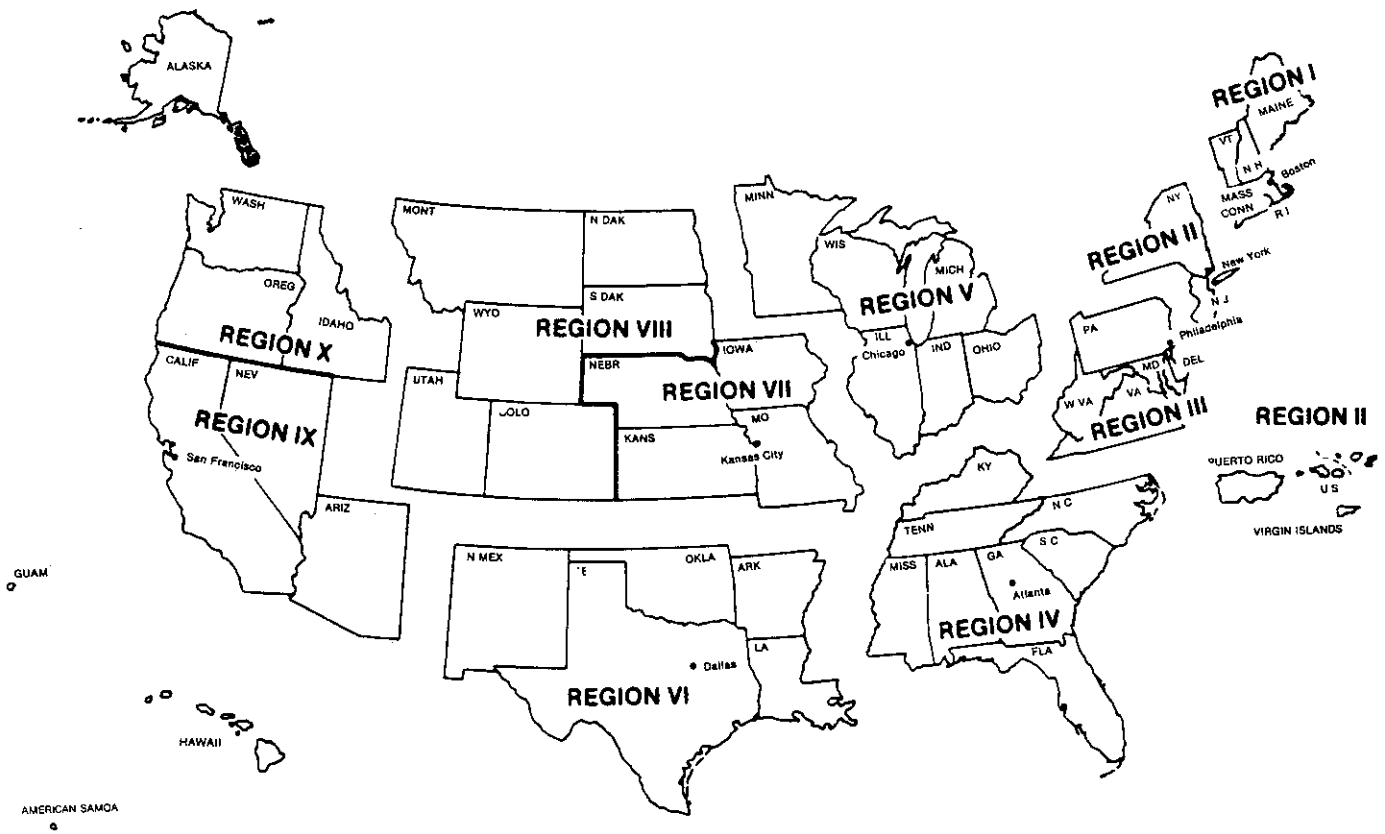
quality performance above that ordinarily found in the type of position concerned.  
<sup>7</sup> Originally slated as a GS-10 occupation, but analyzed to be a GS-9 level by the Office of Personnel Management.

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 1989, 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.

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