

# Appendix B.

## Occupational Descriptions

### Overview

The primary purpose of preparing job descriptions for the Bureau's occupational pay surveys is to assist its field economists in classifying into appropriate 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 classification scheme permits grouping of occupational wage rates representing comparable job content. Because of the emphasis on comparability of occupational content, the Bureau's job descriptions may differ significantly from those in use in individual establishments or those prepared for other purposes. In applying these job descriptions, the Bureau's field economists are instructed to exclude working supervisors; apprentices; learners, beginners, and trainees; and part-time, temporary, and probationary workers, unless specifically included in the job description.

In general, the occupational descriptions of the Bureau of Labor Statistics are much more specific than those found in the SOC manual. The BLS occupation, "Attorney," for example, excludes workers engaged in patent work; the SOC occupation (code 211) includes patent lawyers.

Thus, in comparing the results of this survey with other sources, factors such as differences in occupational definitions and survey scope should be taken into consideration.

## Professional Occupations

### ACCOUNTANT

(1412: Accountant and auditor)

#### Overview

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, an equivalent combination of experience and education.

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.

Professional responsibilities in accountant positions above levels 1 and 2 include several duties such as:

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

Accountant 1 and 2 positions provide opportunities to develop the ability to perform the professional duties enumerated above.

*In addition* to such professional work, most accountants are also responsible for assuring the proper recording and documentation of transactions in the accounts. They, therefore, frequently direct nonprofessional personnel in the actual 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.)

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.

*Exclusions:*

1. Top technical experts in accounting for an organization, who are responsible for the overall direction of an entire accounting program which includes general accounting and at least one other major accounting activity such as cost, property, sales, or tax accounting;
2. Accountants above level 6 who are more concerned with administrative, budgetary, and policy matters than the day-to-day supervision of an operating accounting program; and
3. Accountants primarily responsible for:
  - a. Designing and improving accounting systems; or
  - b. Performing non-operating staff work such as budget or financial analysis, or tax advising.

*Positions are classified into levels on the basis of the following definitions:*

### **Accountant 1**

*General characteristics:* As an entry-level 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:*

1. Examining a variety of financial statements for completeness, internal accuracy, and conformance with uniform accounting classifications or other specific accounting requirements;
2. Reconciling reports and financial data with financial statements already on file, and pointing out apparent inconsistencies or errors;
3. 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; or
4. Preparing charts, tables, and other exhibits to be used in reports.  
In addition, may also perform some nonprofessional tasks for training purposes.

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

### **Accountant 2**

*General characteristics:* 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 applying 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:*

1. Preparing routine working papers, schedules, exhibits, and summaries indicating the extent of the examination and presenting and supporting findings and recommendations; or
2. Examining 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 the supervision of a few clerks.

### **Accountant 3**

*General characteristics:* 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 (that is, the basic chart of accounts, classifications, the nature of the cost accounting system, the report requirements, and 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:

1. The entire system of a relatively small organization;
2. A major segment (for example, general accounting, cost accounting, financial statements and reports) of a somewhat larger system; or
3. 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:*

1. Developing nonstandard reports and statements (for example, those containing cash forecasts reflecting the interrelations of accounting, cost budgeting, or comparable information);
2. Interpreting and pointing out trends or deviations from standards;
3. Projecting data into the future;
4. Predicting the effects of changes in operating programs; or
5. 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 and may coordinate the work of lower level professional accountants.

## Accountant 4

*General characteristics:* 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 3, the accounting system or assigned segment is more complex in that it:

1. Is relatively unstable;
2. Must adjust to new or changing operational environments;
3. Is substantially larger; or
4. Is complicated by the need to provide and coordinate separate or specialized accounting treatment and reporting (for example, 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, may have such assignments as the supervision of the day-to-day operation of:

1. An entire accounting system which has a few relatively stable accounting segments;

2. A major segment (for example, general accounting, cost accounting, or financial statements and reports) of an accounting system serving a larger and more complex organization; or
3. In a complex system, may be assigned to a relatively narrow and specialized segment dealing with some problem, function, or portion of work whose complexity and difficulty are 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 3, 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.

Exercises professional judgment in making frequent, appropriate recommendations for:

1. New accounts;
2. Revisions in the account structure;
3. New types of ledgers;
4. Revisions in the reporting system or subsidiary records; or
5. 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.

## Accountant 5

*General characteristics:* 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 4, extend beyond accounting system maintenance to the solution of more complex technical and managerial problems. Work 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.

*Examples of assignment characteristics are supervision of the day-to-day operation of:*

1. An entire accounting system which has a few relatively complex accounting segments;

2. A major segment of a larger and more complex accounting system;
3. 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
4. In a complex system, may be assigned to a relatively narrow and specialized segment dealing with some problem, function, or portion of work whose complexity and difficulty are characteristic of this level.

*Direction received:* An accountant of higher level is normally 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:*

1. Participating in the development and coordinating the implementation of new or revised accounting systems, and initiating necessary instructions and procedures;
2. Assuring that accounting reporting systems and procedures are in compliance with established administrative policies, regulations, and acceptable accounting practices;
3. Providing technical advice and services to operating managers, interpreting accounting reports and statements, and identifying problem areas; or
4. 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.

## Accountant 6

*General characteristics:* Applies accounting principles, theories, concepts, and practices to specialized, unique, or non-recurring complex problems (for example, implementation of specialized automated accounting systems). The work is substantially more difficult and of greater responsibility than level 5 because of the unusual nature, magnitude, importance, or overall impact of the work on the accounting program.

The accounting system or segment is usually complex, that is:

1. Is generally unstable;
2. Must adjust to the frequent changing needs of the organization; or
3. Is complicated by the need to provide specialized or individualized reports.

*Examples of assignments are the supervision of the day-to-day operation of:*

1. A large and complex accounting system; or
2. A major segment (for example, general accounting, property accounting, etc.) of an unusually complex accounting system requiring technical expertise in a particular

accounting field (such as, 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:* Has complete responsibility delegated from higher authority to establish and implement new or revised accounting policies and procedures, typically:

1. Participating in decision-making sessions with operating managers who have policy-making authority for their subordinate organizations or establishments;
2. Recommending management actions or alternatives which can be taken when accounting data disclose unfavorable trends, situations, or deviations; or
3. Assisting 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.

## ACCOUNTANT, PUBLIC

(1412: Accountant and auditor)

### Overview

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.

*Exclusions:*

1. Positions which do not require full professional accounting training; and
2. Specialist positions in tax or management advisory services.

*Positions are classified into levels on the basis of the following definitions:*

### Accountant, Public 1

*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:

1. Verifying reports against source accounts and records;
2. Reconciling bank and other accounts;
3. 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; or
4. Preparing selected portions of audit working papers.

## **Accountant, Public 2**

*General characteristics:* 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 (that is, functional work areas such as cash, receivables, etc.). When assigned to more complicated audits, carries out activities similar to public accountant 1.

*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:

1. Examining transactions and verification of accounts;
2. Analyzing and evaluating accounting practices and internal controls; and
3. Other detail work.

Prepares a share of the audit working papers and, participates in drafting reports.

*In moderately complex audits, may:*

1. Assist in selecting appropriate tests, samples, and methods commonly applied by the firm, or
2. 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.

## **Accountant, Public 3**

*General characteristics:* 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 4), 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:*

1. Is responsible for carrying out the technical features of the audit, leading team members and personally performing the most difficult work;
2. Carrying out field work in accordance with the general format prescribed in the audit program, but selecting specific methods, types and sizes of samples and tests;
3. Assigning work to team members, furnishes guidance, and adjusts work loads to accommodate daily priorities;
4. Thoroughly reviewing work performed for technical accuracy and adequacy;
5. Resolving anticipated problems with established guidelines and priorities but refers problems of unusual difficulty to superiors for discussion and advice;
6. Drafting financial statements, final reports, management letters, and other closing memoranda; or
7. Discussing significant recommendations with superiors and serves as a technical resource at "closing" meetings with clients.

Personal contacts are usually with accounting directors and assistant controllers of medium size companies and divisions of large corporations to explain and interpret policies and procedures governing the audit process.

## Accountant, Public 4

*General characteristics:* Directs field work including difficult audits, (for example, 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 3 public accountants who handle major components of the audit.* The audits are complex and clients typically include:

1. Those engaged in projects which span accounting periods;
2. Highly regulated industries which have various external reporting requirements;
3. Publicly held corporations; or
4. 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:*

1. 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;
2. Often participating in the development of the audit scope, and drafts complicated audit programs with a large number of concurrently executed phases;
3. Independently develops audit steps and detailed procedures, deviating from traditional methods to the extent required;
4. Making program adjustments as necessary once an audit has begun;
5. Selecting specific methods, types and sizes of samples, the extent to which discrepancies need to be investigated, and the depth of required analyses;
6. Resolving most operational difficulties and unanticipated problems;
7. Assigning work to team members; reviews work for appropriateness, conformance to time requirements, and adherence to generally accepted accounting principles and

auditing standards;

8. Consolidating working papers, draft reports, and findings; and prepares financial statements, management letters, and other closing memoranda for management approval; or
9. Participating 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, for example, assistant controllers and controllers. Such contacts involve coordinating and advising on work efforts and resolving operating problems.

*Exclusions.* Excluded from this level are public accountants who direct field work associated with the complete range of audits undertaken by the firm, 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:*

1. The size and diversity of the client organizations (for example, multinational corporations and conglomerates with a large number of separate and distinct subsidiaries);
2. Accounting issues where precedents are lacking or in conflict; and
3. In some cases, clients who are encountering substantial financial difficulties.

These excluded public accountants 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.

## ATTORNEY

(211: Lawyer)

### Overview

Performs consultation, advisory, and/or trial 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. or J.D. degree and admission to the bar.

*Responsibilities or functions include one or more of the following or comparable duties:*

1. Preparing and reviewing various legal instruments and documents, such as contracts, leases, licenses, purchases, sales, real estate, etc.;
2. Acting as agent of the organization in its transactions;

3. Examining material (for example, advertisements, publications, etc.) for legal implications; advising officials of proposed legislation which might affect the organization;
4. Applying for patents, copyrights, or registration of the organization's products, processes, devices, and trademarks; advising whether to initiate or defend law suits;
5. Conducting pretrial preparations; defending the organization in lawsuits;
6. Prosecuting criminal cases for a local or state government or defending the general public (for example, public defenders and attorneys rendering legal services to students); or
7. Advising officials on tax matters, government regulations, and/or legal rights.

*Exclusions:*

1. Patent work which requires professional training in addition to legal training (typically, a degree in engineering or in a science);
2. Claims examining, claims investigating, or similar work for which professional legal training and bar membership is not essential;
3. 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 6 as described below);
4. Attorneys in legal firms; and,
5. Attorneys primarily responsible for drafting legislation or planning and producing legal publications.

*Classification by level.* Attorney jobs are matched at one of six levels according to two factors:

1. Difficulty level of legal work; and
2. Responsibility level of job.

Attorney jobs which meet the above definitions are to be classified and coded in accordance with Table B-1.

D-1, -2, -3, and R-1, -2, -3, and -4 are explained on the following pages.

*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 are involved.)

**Table B-1. Criteria for matching attorneys by level**

Job level and code	Difficulty level of legal work	Responsibility level of job
Attorney 1 .....	D-1	R-1
Attorney 2 .....	D-1 or D-2	R-2 R-1
Attorney 3 .....	D-2	R-2
Attorney 4 .....	D-2 or D-3	R-3 R-2
Attorney 5 .....	D-2 or D-3	R-4 R-3
Attorney 6 .....	D-3	R-4

*Examples of D-1 work are:*

1. 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;
2. 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;
3. 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;
4. Preparing routine criminal cases for trial when the legal or factual issues are relatively straight forward and the impact of the case is limited; and
5. Advising public defendants in regard to routine criminal charges or complaints and representing such defendants in court when legal alternatives and facts are relatively clear and the impact of the outcome is limited primarily to the defendant.

**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 ; or the matter is being strongly pressed or contested in formal proceedings or in negotiations by the individuals, corporations, or government agencies involved.

*Examples of D-2 work are:*

1. Advising on the legal implications of advertising representations when the facts supporting the representations and the applicable precedent cases are subject to different interpretations;
2. Reviewing and advising on the implications of new or revised laws affecting the organization;
3. Presenting the organization's defense in court in a negligence lawsuit which is strongly pressed by counsel for an organized group;
4. Providing counsel on tax questions complicated by the absence of legal precedents that are directly applicable to the organization's situation;
5. Preparing and prosecuting criminal cases when the facts of the cases are complex or difficult to determine or the outcome will have a significant impact within the jurisdiction; and
6. Advising and representing public defendants in all phases of criminal proceedings when the facts of the case are complex or difficult to determine, complex or unsettled legal issues are involved, or the prosecutorial jurisdiction devotes substantial resources to obtaining a conviction.

### **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; or the legal matter is of critical importance to the organization and is being vigorously pressed or contested.

*Examples of D-3 work are:*

1. Advising on the legal aspects and implications of Federal antitrust laws to projected greatly expanded marketing operations involving joint ventures with several other organizations;
2. 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;
3. 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 (for example, having a broad regional or national reputation) legal talent;
4. 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 multi-state coverages and laws;
5. Performing the principal legal work in the non-routine, major revision of a company's charter or in effectuating new major financing steps; and
6. Serving as lead prosecutor in major felony trials, when legal issues involve balancing conflicting laws or principles or factual issues require extensive research and

expert testimony in highly technical subjects or the case is vigorously contested for the defendant by very distinguished legal talent.

*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, for example, in planning and organizing legal research and 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 non-routine written presentations, the final product is reviewed carefully, but primarily for overall soundness of legal reasoning and consistency with organization policy. May assign work to lower level attorneys, aides, or clerks.

### **R-3**

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

### **R-4**

Carries out assignments which entail independently planning investigations and negotiations on legal problems of the highest importance to the organization and developing 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 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 perform 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.

## **ENGINEER**

(162-3: Engineer)

### **Overview**

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 BS degree in engineering or, in rare instances, equivalent education and experience combined.

### *Exclusions:*

1. Safety engineers;
2. Sales engineers;
3. Engineers whose primary responsibility is to be in charge of nonprofessional maintenance work;
4. Engineers in charge of programs so extensive and complex (for example, 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 8;
5. 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
6. 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.

*Positions are classified into levels on the basis of the following definitions:*

### **Engineer 1**

*General characteristics:* Entry-level engineers perform 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.

### **Engineer 2**

*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 non-routine work. Receives close supervision on new aspects of assignments.

*Typical duties and responsibilities:*

1. Performing specific and limited portions of a broader assignment of an experienced engineer, using prescribed methods;
2. Applying standard practices and techniques in specific situations;
3. Adjusting and correlating data;
4. Recognizing discrepancies in results; or
5. Following 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.

### **Engineer 3**

*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:*

1. Equipment design and development;
2. Testing of materials;
3. Preparing specifications;
4. Process study;
5. Researching investigations;
6. Report preparation; or
7. 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.

## Engineer 4

*General characteristics:* The engineer 4, being knowledgeable 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.

## Engineer 5

*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. 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 4.

*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:* Performs 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 4;
2. **As an 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; or
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.

## Engineer 6

*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 5.

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

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

1. **In a supervisory capacity** - Plans, develops, coordinates, and directs a number of large and important projects or a project of major scope and importance; or is re-

sponsible 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 (3 to 5) subordinate supervisors or team leaders with at least one in a position comparable to level 5;

2. **As an 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, are 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; or

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 (that is, 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.

## Engineer 7

*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:* Performs one or both of the following:

1. **In a supervisory capacity** - Is responsible for: an important segment of the engineering program of a company or government agency with extensive and diversified engineering requirements; or 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; or

2. **As an 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; and 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 who are in positions comparable to engineer 6; or as individual researcher and consultant, may be assisted on individual projects by other engineers and technicians.

## Engineer 8

*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:* Performs one or both of the following:

1. **In supervisory capacity** - Is responsible for: an important segment of a very extensive and highly diversified engineering program of a company or government agency, or 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; or
2. **As an 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 7, or individual researchers some of whose positions are comparable to engineer 7 and sometimes engineer 8. As an individual researcher and consultant may be assisted on individual projects by other engineers or technicians.

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.

## SCIENTIST

(18: Natural scientist) (171 Computer scientist) (162-2: Engineers)

*Note:* Matching is confined to positions that can not be matched to the Engineer, Computer Programmer, Computer Systems Analyst, or Computer Systems Analyst Supervisor/Manager definitions.

### Overview

This generic level guide is to be used for evaluating professional work in one or more of the fields of engineering and science. Work typically requires a B.S. degree in a specialty field of engineering or science, or, in rare instances, equivalent education and experience combined. Positions covered include the following:

**Computer Scientists:** Work involves developing new methods and techniques to store, manipulate, transform, or present information by means of digital computer systems. Examples of studies undertaken may include: developing criteria for the development of improved electronic computer devices; developing advanced concepts of automation and information processing display, control, and transfer; and researching computational complexity and analyzing algorithms to explore data structures that lead to highly efficient combinatorial algorithms.

**Engineers:** Work involves performing 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.

**Physical Scientists:** Work involves the study of matter, energy, physical space, time, nature of physical measurement, and fundamental structural particles; and the nature of the physical environment. Performs work in any of the fields of physical sciences, including chemistry, physics, geophysics, hydrology, metallurgy, astronomy, cartography, geodesy, meteorology, geology, oceanography, space science, food technology, and land surveying.

**Biologists:** Work involves the study of living organisms, their distribution, characteristics, life processes, and their adaptations and relations to the environment; the soil, its properties and distribution, and the living organisms growing in or on the soil; and the management, conservation, or utilization of the biological properties for particular purposes. Performs work in any of the fields of biological sciences, including microbiology, ecology, zoology, physiology, entomology, toxicology, genetics, botany, plant pathology and physiology, horticulture, forestry, soil science and conservation, agronomy, animal science, fishery biology, and wildlife biology.

### Exclusions:

1. Technicians (for example, physical science, biology, and chemistry technicians) performing work in support of professional scientists. Typically, these jobs do not require a four-year college degree;
2. Positions requiring a Doctor of Medicine Degree or any other position primarily concerned with the treatment of patients (for example, Dentists, Osteopaths, Chiropractors, Veterinarians, etc);
3. Positions requiring a degree in one or more of the social or behavioral sciences;
4. Positions primarily teaching, directing research programs of students, or conducting research in colleges and universities;
5. Scientists supervising operating or maintenance staff working in areas other than their scientific discipline (for example engineers supervising construction or managing a production or operating activity).
6. Scientists or engineers in charge of programs so extensive and complex (for example, consisting of highly diversified or unusually novel products or procedures) that one or more subordinate supervisory engineers or scientists are comparable to level 8;
7. 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 or scientific programs" within broad guidelines set by management officials); and
8. 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.

*Positions are classified into levels on the basis of the following definitions:*

### Scientist 1

*General characteristics:* At this entry level, performs assignments designed to develop professional knowledge and abilities. Formal classroom/seminar-type training may be provided. (Terminal positions are excluded.)

*Direction received:* Works under close supervision. Receives detailed instructions on what is required and work is reviewed in progress and upon completion.

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

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

## Scientist 2

*General characteristics:* Applies standard methods, techniques, procedures, and criteria to carry out a variety of standardized tests, experiments, or procedures. Following specific instructions, may carry out proposed and less common procedures. Exercises limited judgment to recommend adaptations of procedures, for example, using alternative methods and extending or curtailing analysis. Work requires experience acquired in an entry level position, or appropriate graduate level study. For developmental purposes, assignments may include some higher level duties.

*Direction received:* Routine assignments are performed independently and results are reviewed for accuracy. For non-routine work or to resolve difficult problems, the supervisor provides techniques and procedures to be applied. Receives close supervision on new aspects of assignments.

*Typical duties and responsibilities:* Conducts a variety of common tests, experiments, or procedures; performs specific and limited portions of a broader assignment; or applies standard practices and techniques in specific situations, adjusts and correlates data, recognizes discrepancies in results, and follows operations or tests through a series of related detailed steps or processes.

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

## Scientist 3

*General characteristics:* Performs assignments of fairly limited scope and complexity with increased independence. Implements the fundamental concepts, practices, and procedures of a particular field of specialization. The objectives of the assignments are clearly defined and require the investigation of a limited number of variables. Work requires developmental experience in a professional position, or equivalent graduate level education.

*Direction received:* Receives instructions on 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, tests, experiments, or equipment. There are precedents for the relatively few complex features present. Examples of work assignments include:

1. Performs equipment design and development, test of materials, preparation of specifications, process study, research investigations, report preparation, and other activities of limited scope;
2. Performs varied tests, experiments, and procedures, using judgment to evaluate, select, and adapt standard methods and techniques; or
3. Assists higher level scientist 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 entry level engineers or scientists.

## Scientist 4

*General characteristics:* As a fully competent engineer or scientist 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 satisfy unusual or specialized requirements. 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. Refers unusual or complex problems to supervisor, with recommendations. Receives supervisory approval on proposed plans for projects.

*Typical duties and responsibilities:* Performs the full range of moderately difficult assignments requiring a broad knowledge of precedents in the specialty area and good knowledge of principles and practices of related specialties. Examples of work assignments include:

1. 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. Applies conventional practices but work may include a variety of complex features such as conflicting design requirements, unsuitability of standard materials, and difficult coordination requirements; or
2. Conducts research 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 engineers, scientists and technicians.

## Scientist 5

*General characteristics:* Applies intensive and comprehensive knowledge of engineering or scientific principles and practices in broad areas of assignments and related fields. Makes decisions independently on problems and methods and represents the organization in con-

ferences to resolve important issues and to plan and coordinate work. The difficulty of the projects/programs 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 work usually reflects progressive experience through level 4.

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

*Typical duties and responsibilities:*

1. **As a supervisor** - Plans, organizes, and directs:
  - a. a large and important engineering or scientific project, or a number of small projects with many complex features; or
  - b. is responsible for an important research laboratory program.  
Independently defines scope and critical elements of projects and selects approaches to be taken. A substantial portion of the work supervised is comparable to level 4;
2. **As an individual researcher** - Completes complex projects requiring development of new or highly modified engineering or scientific techniques and procedures, extensive knowledge of specialty, and knowledge of related scientific fields. Interprets and evaluates results to determine their validity and scientific significance. Work results in the development of new or refined equipment, materials, processes, products, and/or scientific methods; or
3. **As a staff specialist** - Develops and evaluates plans and criteria for a variety of projects and activities. Assesses the feasibility and soundness of proposed evaluation tests, products, experiments, or equipment when necessary data are insufficient or confirmation by testing is advisable. Usually performs as a staff advisor or 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, scientists, and technicians. Or, as an individual researcher or staff specialist, may be assisted on projects by other engineers, scientists, or technicians.

## Scientist 6

*General characteristics:* Has full technical responsibility for interpreting, organizing, executing, and coordinating assignments. Plans and conducts projects concerned with unique or controversial problems requiring unconventional or novel approaches and which have an important effect on major programs. Maintains contact with individuals and units within and outside the organization, acting independently on technical matters pertaining to the field. Work requires extensive progressive experience, including work comparable to level 5.

*Direction received:* Receives assignments in terms of broad functional responsibilities, overall objectives and resource availability. Keeps supervisor informed of progress.

*Typical duties and responsibilities:*

1. **As a supervisor** -
  - a. Plans, organizes, and directs a number of large and important projects, a project of major scope and importance, or a large number of small projects with many complex features; or
  - b. Is responsible for the entire chemical or engineering program of a company or government agency when the program is of limited complexity and scope.  
Activities supervised are of such scope that they require a few (three to five) subordinate supervisors or team leaders with at least one comparable to level 5;
2. **As an individual researcher or specialist** - Determines, conceives, plans, and conducts projects of considerable scope and complexity and of major importance to the employer. Problems are difficult to define, require unconventional and novel approaches and sophisticated research techniques to resolve, and must be approached through a series of complete and conceptually related studies. May serve as a consultant to other engineers and scientists; or
3. **As a staff specialist** - Serves as the technical expert for applying advanced theories, concepts, principles, and processes for an assigned area of responsibility (that is, 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, scientists, and technicians. Evaluates progress of the study and the results obtained, and recommends major changes to achieve overall objectives. Or, as an individual researcher or staff specialist, may be assisted on projects by other engineers, scientists or technicians.

## Scientist 7

*General characteristics:* Makes decisions and recommendations that are recognized as authoritative and have an important impact on extensive activities. Typically, has achieved recognized standing in a professional field for scientific or engineering contributions. Initiates and maintains contact with key scientists and officials of other organizations requiring skill to persuade and negotiate mutually satisfactory solutions to critical issues. At this level, engineers and scientists have demonstrated creativity, foresight, and mature judgment in anticipating and solving unprecedented problems, determining program objectives and requirements, organizing programs and projects, and developing standards and guides for diverse activities.

*Direction received:* Receives general administrative direction.

*Typical duties and responsibilities:*

1. **As a supervisor** - Is responsible for:

- a. An important segment of a company's or government agency's engineering or scientific program with extensive and diversified requirements; or
- b. The entire engineering or scientific program of a company or agency when the program is more limited in scope.

Resolves critical problems which require major technological advances and opens the way for extensive related development. Recommends the most profitable scientific objectives and levels of work taking into consideration the organization's program requirements and scientific and industrial trends and developments. 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; or

2. **As an individual researcher or consultant** - Is recognized as a leader and authority in the company or government agency in a broad area of specialization or in a narrow but intensely specialized field. Advises officials on complex aspects of extremely broad and important programs. Selects research problems to further program objectives. Conceives and plans investigations of broad areas of considerable novelty and importance, for which precedents are lacking in areas critical to the overall engineering or scientific program. Is consulted extensively by associates and others, with a high degree of reliance placed on the professional'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 level 6; or as an individual researcher and consultant, may be assisted on projects by other engineers, scientists, and technicians.

## Scientist 8

*General characteristics:* Makes decisions and recommendations that are authoritative and have far-reaching impact on extensive engineering and scientific programs and related activities. Negotiates critical and controversial issues with top level scientists and officials of other organizations, who are themselves regarded as authorities in the specialized scientific field, and represents the organization in professional forums. Scientists and engineers have demonstrated a high degree of creativity, foresight, and mature judgment in planning, organizing and guiding extensive engineering and scientific programs and activities of outstanding novelty and importance.

*Direction received:* Receives general administrative direction.

*Typical duties and responsibilities:*

1. **As a supervisor** - Is responsible for:
  - a. An important segment of very extensive and highly diversified engineering or scientific program of a company or government agency; or
  - b. The entire engineering or scientific 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 have resisted solution, and consist of several segments requiring subordinate supervisors. Decides the kind and extent of programs needed to accomplish the objectives of the company or agency, chooses scientific approaches, plans and organizes facilities and programs, and interprets results; or

2. **As an individual researcher and consultant** - Formulates and guides the plan for resolving problems of exceptional difficulty and marked importance to the company, industry, or government. Problems are characterized by their lack of scientific precedent 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. Serves as the authority and consultant for broad program areas or for an intensely specialized area of considerable novelty and importance.

*Responsibility for the direction of others:*

Supervises several subordinate supervisors or team leaders some of whom are comparable to level 7, or individual researchers some of whom are comparable to level 7 and sometimes 8. As an individual researcher and consultant, may be assisted on projects by other engineers, scientists, or technicians.

## Administrative Occupations

### BUDGET ANALYST

(141: Accountant, auditor, and other financial specialist)

#### Overview

Formulates and analyzes and/or administers and monitors an organization's budget.

Typical duties include: Preparing budget estimates to support programs; presenting and justifying budget estimates; administering approved budgets and determining funding requirements within authorized limits; evaluating and administering requests for funds and monitoring and controlling obligations and expenditures; and developing and interpreting budget policies.

*In addition* to the technical responsibilities described in levels 1 through 4, budget analysts may also supervise subordinate staff members. At levels 1 and 2, the subordinate staff typically consists of clerical and paraprofessional employees; level 3 may also coordinate the work of lower level analysts; and level 4 may supervise one or two analysts.

*Exclusions:*

1. Budget clerks and assistants performing clerical work in support of budget analysts;
2. Program analysts evaluating the success of an organization's operating programs;
3. Financial analysts evaluating the financial operations, transactions, practices and structure of an organization;
4. Budget Analysts (above level 4) responsible for analyzing and administering highly

complex budgets requiring frequent reprogramming and evaluating the impact of complicated legislation or policy decisions on the organization's budget; and

5. Positions responsible for supervising three or more budget analysts and support staff.

*Positions are classified into levels on the basis of the following definitions:*

### **Budget Analyst 1**

As a trainee, performs a variety of clearly-defined tasks assigned to increase the employee's knowledge and understanding of budget concepts, principles, practices, and procedures. Assists in the development of budgets by comparing projected costs to prior year expenditures verifying totals and subtotal, preparing budget forms and schedules; or assists in budget administration by examining and highlighting obvious deviations in reports listing the status of financial obligations and expenditures. (Terminal positions are excluded.)

Work is performed under close supervision. Assignments are clearly defined, methods are specified, and items to be noted and referred to supervisor are identified.

### **Budget Analyst 2**

Performs routine and recurring budget analysis duties which typically facilitate more complex review and analysis performed by supervisors or higher-level budget analysts. Initial assignments are designed to expand practical experience and to develop judgment in applying basic budget analysis techniques. Follows specific guidelines and previous budget reports in analyzing budgets for operating programs which are uniform and repetitive.

*Typical duties and responsibilities:*

1. **Budget development** - Assisting operating officials in preparing budget requests and justifications by gathering, extracting, reviewing, verifying, and consolidating a variety of narrative and statistical data; examining budget requests for accuracy and conformance with procedures and regulations; and comparing budget requests with prior year estimates and current operating reports; and/or
2. **Budget administration** - Screening requests for allocations of approved budgets and recommending approval, disapproval, or modification based on availability of funds and conformance with regulations; analyzing operating reports to monitor program expenditures and obligations; and summarizing narrative and statistical data in budget forms and reports.

Applies previously learned skills to perform routine work independently. Supervisor provides information regarding budgetary actions to be performed, organizational functions to be covered, and specific instructions for unfamiliar work or complex problems.

### **Budget Analyst 3**

Uses a knowledge of commonly used budgetary procedures and practices, regulations, and organizational policies to analyze budgets for relatively stable operations (for example, minor budget reprogramming is required two or three times a year). Forecasts funding needs for operating programs with varying annual requirements for goods, services, equipment, and personnel.

*Typical duties and responsibilities:*

1. **Budget development** - Reviews and verifies budget data for consistency with financial and program objectives; formulates and revises budget estimates; validates justifications through comparisons with operating reports; and explores funding alternatives based on precedents and guidelines; or
2. **Budget administration** - Certifies obligations and expenditures, monitors trends in spending, and anticipates funding and reprogramming needs; within established limits, recommends transfer of funds within accounts to cover increased expenditures; assembles data for use in preparing budget and program evaluations; and recommends the approval of or revises requests for allotments.

Carries out assignments independently in accordance with standard procedures and practices. Supervisor provides assistance on unfamiliar or unusual problems. May perform more complex assignments to assist supervisor or higher level analyst.

### **Budget Analyst 4**

Provides analytical support for budgets which require annual modifications due to changing work processes, resource needs, funding requirements, or fluctuating revenue. Interprets guidelines and precedents and advises operating managers concerning budgeting policies. May recommend new budgeting techniques.

*Typical duties and responsibilities:*

1. **Budget development** - Performs in-depth analysis of budget requests using techniques such as cost-benefit analysis and program trade-offs, and by exploring alternative methods of funding; writes and edits justifications for higher level approval; coordinates the compilation and evaluation of information required for executive level budget meetings; confers on modifications to budget requests; and interprets, revises, and develops procedures and instructions for preparing and presenting budget requests; or
2. **Budget administration** - Prepares a variety of reports detailing the status of funds, expenses, and obligations; identifies trends and recommends adjustments in program spending; advises management on budgeting deadlines and alternative means of accomplishing budgetary objectives; and serves as budgeting liaison between managers and staff of various organizational programs.

Participates with supervisor in determining deadlines for assigned projects, which are linked to the budget cycle and typically require more than a year for completion. Works independently for several months at a time, with little review, while work progresses.

## **BUYER/CONTRACTING SPECIALIST**

(1449: Purchasing agent and buyer, not elsewhere classified)

### **Overview**

Purchases materials, supplies, equipment, and services (for example, utilities, maintenance, and repair) and/or administers purchase contracts (assuring compliance after contract is awarded). In some instances items purchased 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. At levels 3 and higher, formal contract negotiation methods are typically used where knowledge of market trends and conditions is required. May interview prospective vendors.

Purchases items and services or negotiates contracts 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 not reviewed 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.

Contract administration includes determining allowable costs, monitoring contractor compliance with contract terms, resolving problems concerning obligations of the parties, explaining and re-negotiating contract terms, and ensuring satisfactory contract completion.

In addition to work described above, some (but not all) buyers or contracting specialists 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 or contracting specialists are responsible for the purchasing or contract administration 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 should be considered to equal the highest level that characterizes at least a substantial portion of the buyer's time.

*Exclusions:*

1. Buyers of items for direct sale, either wholesale or retail;
2. Brokers and dealers buying for clients or for investment purposes;
3. Positions that specifically require professional education and qualifications in a physical science or in engineering (for example, chemist, mechanical engineer);
4. 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;
5. Buyers or contracting specialists whose principal responsibility is the supervision of a purchasing or contracting program;
6. Persons whose major duties consist of ordering, reordering, or requisitioning items under existing contracts;
7. Positions restricted to clerical functions or to purchase expediting work;
8. Positions not requiring:

- a. Three years of administrative, technical, or substantive clerical experience;
  - b. A bachelor's degree in any field; or
  - c. Any equivalent combination of experience and education yielding basic skills in problem analysis and communication;
9. Contracting specialists above level 4 serving as lead negotiator or contract administrator for: new or unique equipment; extensive technical or professional services; or complex construction projects; and
  10. Contracting specialists above level 4 performing large-scale centralized purchasing or contract administration for a multi-unit organization or large establishment that requires either items with unique requirements as to construction, testing, durability, or quality characteristics, or organization-wide services.

*Positions are classified into levels on the basis of the following definitions:*

### **Buyer/Contracting Specialist 1**

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, for example, 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, screws; janitorial and common building maintenance supplies; or common utility services or office machine repair services.

OR

As a trainee, performs various clearly defined procurement tasks designed to increase the employee's knowledge and understanding of procurement and contracting concepts, principles, practices, and procedures. Examples of duties include: assisting in the preparation of solicitation documents; analyzing prices, discounts, and delivery dates; making procurement recommendations; and drafting simple contract provisions and supporting documentation. Work is performed under close supervision.

### **Buyer/Contracting Specialist 2**

Purchases "off-the-shelf" types of standard, generally available technical items, materials, and services. Transactions may involve occasional modification of standard and common usage 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. Limited contract negotiation techniques may be used, primarily for developmental purposes to increase employee's skill and knowledge.

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 or under contract include:*

1. Standard industrial types of hand tools, gloves, and safety equipment;
2. Standard electronic parts, components, and component test instruments; electric motors;
3. Gasoline service station equipment;
4. PBX or other specialized telephone services;
5. Special purpose printing services;
6. Custodial services for a large building; and
7. 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 1 when the quantities purchased are large, so that local sources of supply are generally inadequate and the buyer must deal directly with manufacturers on a broader than local scale.

OR

In a developmental position, assists higher level buyers or contracting specialists in purchasing, and/or negotiating contracts for items, materials, or services of a technical and specialized nature. Assigned work is designed to provide diversified experience, as a background for future higher level work. Examples of duties include: reviewing requisitions and drafting solicitations; evaluating bids and the dependability of suppliers; meeting with commercial representatives; and monitoring the progress of contractors. Supervisor provides general instructions, monitors work, and reviews recommendations. Standard or routine aspects of work are performed with greater independence.

### **Buyer/Contracting Specialist 3**

Purchases items, materials, or services of a technical and specialized nature, usually by negotiating a standard contract based on reimbursement of costs and expenses or a fixed price ceiling. May be responsible for overseeing the post award (contract administration) functions (for example, monitoring contract compliance, recommending action on problem situations, and negotiating extensions of delivery schedules) of such contracts. The items, while of a common general type, are usually made, altered, or customized to meet the user's specific needs and specifications.

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:*

1. Specifications that detail, in technical terms, the required physical, chemical, electrical, or other comparable properties;

2. Special testing prior to acceptance;
3. Grouping of items for lot bidding and awards;
4. Specialized processing, packing, or packaging requirements;
5. Export packs; or
6. Overseas port differentials.

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:*

1. Castings;
2. Special extruded shapes of normal size and material;
3. Special formula paints;
4. Electric motors of special shape or speeds;
5. Production equipment;
6. Special packaging of items;
7. Raw materials in substantial quantities or with special characteristics; and
8. Protective services where security presents an especially significant problem.

### **Buyer/Contracting Specialist 4**

Negotiates and/or administers purchase contracts for complex and highly technical items, materials, or services, frequently 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. Negotiation techniques are also frequently involved with convincing the vendor to reduce costs.

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. Contracting specialists determine appropriate quantities to be contracted for at any given period of time and negotiate with vendors to establish or adjust delivery schedules.

*Negotiations and contract administration are often complicated by the following:*

1. Requirements for spare parts;
2. Pre-production samples and testing, or technical literature;
3. Patent and royalty provisions; or

4. Re-negotiation of contract terms.

*In reviewing contract proposals, extensive cost analysis is required to evaluate the cost of such factors as:*

1. Numerous technical specifications; and
2. Potential changes in manufacturing processes that might affect projected cost figures.

These complications result in the incorporation of numerous special provisions and incentives in re-negotiated contracts.

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

*Examples of items purchased include:*

1. Special purpose high-cost machine tools and production facilities;
2. Specialized condensers, boilers, and turbines;
3. Raw materials of critically important characteristics or quality; and
4. Parts, subassemblies, components, etc., specially designed and made to order (for example, communications equipment for installation in aircraft being manufactured; component assemblies for missiles and rockets; and motor vehicle frames).

## **COMPUTER PROGRAMMER**

(397: Programmer)

### **Overview**

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, that is, 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 1, 2, and 3, 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 4 and 5, some programming analysis must be performed as part of the programming assignment. The analysis duties are identified in a separate paragraph at levels 1, 2, 3, and 4, and are part of each alternative described at level 5. However, the systems requirements are defined by systems analysts or scientists.

*Exclusions:*

1. Positions which require a bachelor's degree in a specific scientific field (other than computer science), such as an engineering, mathematics, physics, or chemistry; however, positions are potential matches where the required degree may be from any of several possible scientific fields;
2. Positions responsible for developing and modifying computer systems;
3. Computer programmers who perform level 4 or 5 duties but who perform no programming analysis;
4. Workers who primarily analyze and evaluate problems concerning computer equipment or its selection or utilization;
5. Computer systems programmers or analysts who primarily write programs or analyze problems concerning the system software, for example, 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;
6. Employees who have significant responsibility for the management or supervision of workers (for example, 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
7. Positions not requiring:
  - a. Three years of administrative, technical, or substantive clerical experience;
  - b. A bachelor's degree in any field; or
  - c. 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 Programmer 1**

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, for example, 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 2) under close supervision.

In addition, as training and to assist higher level staff, may perform elementary fact finding concerning a specified work process, for example, 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 fact-finding. 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 Programmer 2

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, that is, 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, for example, 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 (for example, 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 Programmer 3

As a fully qualified computer programmer, applies standard programming procedures and detailed knowledge of pertinent subject matter (for example, work processes, governing rules, clerical procedures, etc.) in a programming area such as: a record keeping 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, that is, users, or develop programs where there is one primary user and the others give input.)

*Typical duties and responsibilities:*

1. Develops, modifies, and maintains assigned programs;

2. Designs and implements modifications to the interrelation of files and records within programs in consultation with higher level staff;
3. Monitors the operation of assigned programs and responds to problems by diagnosing and correcting errors in logic and coding; or
4. 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:*

- a. Using predetermined physical laws expressed in mathematical terms to relate one set of data to another;
- b. The routine storage and retrieval of field test data; and
- c. 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 fact-finding 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 4) 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 Programmer 4

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 multi-user computer system which meets the data processing needs of a broad area (for example, 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 soft-

ware, computer equipment, work processes, regulations, and management practices.

*Typical duties and responsibilities:*

1. Develops, modifies, and maintains complex programs;
2. Designs and implements the interrelations of files and records within programs which will effectively fit into the overall design of the project; or
3. Working with problems or concepts, develops programs for the solution to major scientific computational problems requiring the analysis and development of logical or mathematical descriptions of functions to be programmed; and develops occasional special programs, (for example, 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:*

1. Investigating the feasibility of alternate program design approaches to determine the best balanced solution, (for example, one that will best satisfy immediate user needs, facilitate subsequent modification, and conserve resources);
2. 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
3. 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 Programmer 5

At level 5, 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 4.

*Typical duties and responsibilities:* include one or both 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 4. Supervises, coordinates, and reviews the work of a small staff, normally not more than 15 programmers and technicians; esti-

mates 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 (for example, computational) or other highly complex programming problems (for example, 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 co-workers and user personnel at various locations to plan and coordinate project and gather data; devises ways to obtain data not previously available; 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 ANALYST

(1712: Computer systems analyst)

### Overview

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.

*Exclusions:*

1. Trainees who receive detailed directives and work plans, select authorized procedures for use in specific situations, and seek assistance for deviations and problems;
2. 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;
3. Computer programmers who write computer programs and solve user problems not requiring systems modification;
4. Workers who primarily analyze and evaluate problems concerning computer equipment or its selection or utilization; and

5. Computer systems programmers or analysts who primarily write programs or analyze problems concerning the system software, for example, 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 Analyst 1**

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 fact finding approaches, knowledge of pertinent work processes and procedures, and familiarity with related computer programming practices, system software, and computer equipment.

Carries out fact finding 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 Analyst 2**

Applies systems analysis and design skills in an area such as a record keeping or scientific operation. A system of several varied sequences or formats is usually developed, for example, 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, work load, 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 program, 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 3. 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 Analyst 3**

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, for example, 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 2; existing systems provide precedents for the operation of new subsystems.

### **Computer Systems Analyst 4**

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 2 and 3.

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

1. **As team or project leader** - Provides systems design in a specialized and highly complex design area, for example, 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 post-implementation 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 3; one or two team members may also perform work as a level 4 staff specialist or consultant as described below; or
2. **As staff specialist or consultant** - With expertise in a specialty area (for example, 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 Analyst 5**

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 fact finding, 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 4;
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, for example, programming techniques;
  - b. Conceives and plans exploratory investigations critical to the overall organization where useful precedents do not exist and new concepts are required, for example,

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 SUPERVISOR/MANAGER**

(1712: Computer systems analyst)

#### **Overview**

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.

#### *Exclusions:*

1. Positions also having significant responsibility for the management or supervision of functional areas (for example, system software development, data entry, or computer operations) not related to the Computer Systems Analyst and Computer Programmer definitions;
2. Supervisory positions having base levels below Computer Systems Analyst 2 or Computer Programmer 4; and
3. Managers who supervise two or more subordinates performing at Computer Systems Analyst Supervisor/Manager level 4.

#### **Classification by level**

*Supervisory jobs are matched at one of four levels according to two factors:*

1. Base level of work supervised; and
2. Level of supervision.

Table B-2 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 non-supervisory work under the direct or indirect supervision of the supervisor/manager which (when added to the non-supervisory levels above it) represents at least 25 percent of the total non-supervisory, non-clerical staff and at least two of the full-time positions supervised.

*To determine the base level of non-supervisory, non-clerical work:*

1. Array the positions by level of difficulty;
2. Determine the number of workers in each position; and
3. Count down from the highest level (if necessary) until at least 25 percent of the total non-supervisory, non-clerical staff are represented.

## Level of supervision

Supervisors and managers should be 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 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 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 other employees; selects non-supervisors (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 (for example, 20-30 employees) may not have subordinate supervisors, but have all other LS-2 responsibilities. Such positions should be 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:*

1. Decides what programs and projects should be initiated, dropped, expanded, or curtailed;
2. Determines long range plans in response to program changes, evaluates program goals, and redefines objectives;

3. Determines changes to be made in organizational structure, delegation of authority, coordination of units, etc.;
4. Decides what compromises to make in operations in view of public relations implications and need for support from various groups;
5. Decides on the means to substantially reduce operating costs without impairing overall operations; justifies major equipment expenditures; and
6. Resolves differences between key subordinate officials; decides, or significantly affects final decisions, on personnel actions for supervisors and other key officials.

## PERSONNEL SPECIALIST

(143: Personnel, training, and labor relations specialist)

### Overview

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

1. **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.
2. **Salary and Benefit Administration** - Analyzing and evaluating compensation practices, participating in compensation surveys, and recommending pay and benefit adjustments.
3. **Recruitment and Placement** - Recruiting applicants through various sources (for example, schools, colleges, employment agencies, newspapers, professional societies); evaluating applicants using qualification ratings, test scores, interviews, and reference checks; and recommending applicant placement.
4. **Employee Development** - Planning, evaluating, and administering employee training and development programs to achieve both organizational goals and personnel management objectives.
5. **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.
6. **Equal Employment Opportunity** - Planning, evaluating, and administering equal opportunity provisions.
7. **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 1 through 6, personnel specialists may also manage personnel functions and supervise subordinate staff. At levels 1 and 2, the subordinate staff typically consists of clerks and paraprofessionals; level 3 may coordinate the work of lower level specialists; and levels 4 and above may supervise subordinate specialists. Positions which are primarily supervisory, rather than technical, in na-

**Table B-2. Criteria for matching computer systems analyst supervisors/managers**

Base level of nonsupervisory job(s)		Level of supervision		
Matched in the computer programmer definition	Matched in the computer systems analyst definition	LS-1	LS-2	LS-3
4	2	1	2	3
5	3	2	3	4
-	4	3	4	exclude
-	5	4	exclude	exclude



ture (that is, 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.

*Exclusions:*

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

### **Classification by level**

Establishment positions which meet the above criteria are matched at one of six levels. Primary leveling concepts are presented for each of the three options:

1. Operations;
2. Program evaluation; and
3. Program development.

These leveling concepts take precedent over *Typical duties and responsibilities*: in determining the level of a match. Job duties that are "moderately complex" in one establishment

may be "procedural" in another establishment.

*Positions are classified into levels on the basis of the following definitions:*

### **Personnel Specialist 1**

*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 Specialist 2**

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

1. Analyzing and evaluating nonexempt jobs using standard procedures;
2. Participating in recruitment or compensation surveys for nonexempt jobs;
3. Rating applicants using established guides;
4. Explaining established policies, procedures, or regulations to employees or management; or
5. Performing limited tasks to assist higher level specialists in employee development, employee relations, and labor relations programs.

### **Personnel Specialist 3**

*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 impact 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 (for example, merit promotions, incentive awards), resolving problems of average difficulty, and reporting findings to be included in evaluation reports.

*Typical duties and responsibilities:*

1. Analyzing, evaluating, and defining both exempt and nonexempt jobs in various occupational groups using established procedures;
2. Participating in surveys of broad compensation areas;
3. Recruiting and screening applicants for both exempt and nonexempt jobs, checking references and recommending placement;
4. Interpreting established personnel policy, regulations, and precedents;
5. Assisting in identifying training needs and arranging training;
6. Initiating personnel actions or awards, or
7. Participating in preparing for and conducting labor negotiations.

## **Personnel Specialist 4**

*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 3.

Situation (2) combines typical level 3 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 on for management decisions.

Situation (3) applies to specialists who are solely responsible for performing moderately complex assignments (as described in level 3) 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 and responsibilities:*

1. Analyzing, evaluating, and defining difficult exempt jobs, that is, those in research and development, administration, law, and computer science;

2. Planning and conducting broad compensation surveys and recommending pay and benefit adjustments;
3. Developing training plans and procedures for an organizational segment;
4. Participating in complex employee-management relations issues such as controversies, poor morale, and high turnover; or
5. Developing plans and procedures for labor negotiations in a moderately complex organization.

## **Personnel Specialist 5**

*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 situation 1 in level 4 above), 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, that is, limited to an occupational field or to a specific program area. May have full technical responsibility for personnel projects, studies, policies, or programs that are less complex than described at level 6.

*Typical duties and responsibilities:*

1. Participating in the development of personnel policies and procedures;
2. Analyzing, evaluating, and defining unusually difficult jobs, for example, 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;
3. Recruiting candidates for one-of-a-kind jobs;
4. Participating in employee-management relations where the underlying issues are difficult to identify;
5. Planning and administering a comprehensive employee development program; or
6. Performing labor relations assignments for a large conglomerate.

## Personnel Specialist 6

*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, for example, 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 facts are vague.

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

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

## PERSONNEL SUPERVISOR/MANAGER

(143: Personnel, training, and labor relations specialist)

### Overview

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.

*Exclusions:*

1. Positions matched to the personnel specialist or director of personnel definitions;
2. Labor relations positions which are primarily responsible for negotiating with labor unions as the principal representative of their overall organization;
3. Supervisory positions having both a base level below personnel specialist 3 and requiring technical expertise below personnel specialist 4; and
4. Positions also having significant responsibility for functional areas beyond personnel (for example, payroll, purchasing, or administration).

### Classification by Level

*Supervisory jobs are matched at one of five levels according to two factors:*

1. Base level of work supervised; and
2. Level of supervision.

Table B-3 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 non-supervisory work under the direct or indirect supervision of the supervisor/manager which (when added to the non-supervisory levels above it) represents at least 25 percent of the total non-supervisory, non-clerical staff and at least two of the full-time positions supervised.

*To determine the base level of non-supervisory, non-clerical work:*

1. Array the positions by level of difficulty;
2. Determine the number of workers in each position; and
3. Count down from the highest level (if necessary) until at least 25 percent of the total non-supervisory, non-clerical staff are represented.

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

Due to the unique nature of this particular occupation series, the mechanics of the base level concept are often not applicable in determining the appropriate job level of a personnel supervisor/manager. See Alternative Criteria For Matching Personnel Supervisors/Managers at the end of this definition for assistance in assuring correct job matches.

### Level of supervision

Supervisors and managers should be 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 non-supervisors (higher level approval is virtually assured) and recommends supervisory selections; and hears group grievances and serious or unresolved complaints. May shift resources among projects and perform long range budget planning.

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

LS-3 Directs 2 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.

**Table B-3. Criteria for matching personnel supervisors/managers**

Base level of nonsupervisory job(s) matched in the specialist definition	Level of supervision		
	LS-1	LS-2	LS-3
3	1	2	3
4	2	3	4
5	3	4	5
6	4	5	exclude

*Performs at least three of the following:*

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

**Alternative criteria for matching Personnel Supervisor/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, raise the level of the supervisor/manager match to correlate to the equivalent level of personnel specialist (see Table B-4).

**DIRECTOR OF PERSONNEL**

(123: Personnel and labor relations manager)

**Overview**

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.

**Table B-4. Level equivalents of personnel professional occupations**

Personnel specialist	Personnel supervisor/manager	Director of personnel
1	–	–
2	–	–
3	–	–
4	1	1
5	2	2
6	3	3
–	4	4
–	5	5

Typically, the director of personnel for an overall organization reports to a policy-making 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.

For a job to be covered by this definition, the personnel management program must include significant responsibility for all three of the following functions:

1. **Administering a job evaluation system** - That is, 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** - That is, recruiting actively for at least some kinds of workers through a variety of sources (for example, 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** - That is, functions designed to maintain employee morale and productivity at a high level (for example, 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:

1. Employee training and development;
2. Labor relations activities which are confined mainly to the administration, interpre-

tation, 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, for example, 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;

3. Equal Employment Opportunity (EEO); or
4. Reporting under the Occupational Safety and Health ACT (OSHA).

**Table B-5. 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 .....	1	2	2	3
1,000-5,000 .....	2	3	3	4
6,000-12,000 .....	3	4	4	5
15,000-25,000 .....	4	5	5	—

<sup>1</sup> Operations level personnel program—director of personnel servicing an organization segment where the basic personnel program policies, plans and objectives are established at a higher organizational level (for example, 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 policy-making 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, for example, 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 (for example, 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 functions, 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 should be matched at level 2 if the organization serviced falls slightly below type B. However, the same position should be matched at level 1 if the organization serviced clearly fits type A.

*Exclusions:*

1. 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, that is, a responsibility which serves as a primary basis for qualification requirements or compensation;
2. Positions servicing less than 250 (FTE) employees;
3. Positions participating in the management and formulation of policy for the overall organization in addition to directing its personnel program; and
4. Positions responsible for directing a personnel program but which do not fully meet all of the responsibilities of a director of personnel. These positions should be matched to either the personnel specialist or personnel supervisor/manager definition.

Director of personnel jobs which meet the above definition are classified by level of work in accordance with Table B-5.

**TAX COLLECTOR**

(1139: Officials and administrators, public administration)

**Overview**

Collects delinquent taxes, canvasses for unreported taxes due, secures delinquent tax returns, and counsels taxpayers on filing and paying obligations.

Tax collection typically begins after office examination of tax returns and financial records and subsequent notices of tax liability fail to collect full payment. Obtains and analyzes financial information, selects appropriate administrative or judicial remedy, and liquidates tax liability through such measures as compromise, installment agreements, and seizure and sale of property or other assets. Establishes liability for and imposes various penalties under State or County revenue codes. Serves summonses, takes testimony under oath, and testifies in court.

Work typically requires at least three years experience in general business or financial practices or the equivalent in education and experience combined. Level 1 is primarily for training and development. Level 2 is the full working level for tax collectors who follow standard procedures and level 3 includes specialists, team leaders, and quasi-supervisors solving moderately complex tax collection problems.

*Tax collection involves two overlapping functions:*

1. Investigation of tax returns; and
2. Collection of delinquent taxes.

Investigation of tax returns involves analyzing financial records, examining taxpayer's situation or business operations, and counseling taxpayers on statutory requirements and preparation of delinquent returns. Tax collectors primarily performing investigation of tax return work are not typically found above level 2.

Collection of delinquent taxes involves analyzing a taxpayer's financial worth and ability to pay. In resolving delinquency, tax collectors evaluate (or use appraisers to evaluate): market value of assets; equity shares of other creditors; liens and ownership rights; taxpayer earning capacity; and the potential of taxpayer businesses.

If bankruptcy is imminent, tax collectors file notices of lien to give their agency priority over subsequent creditors. If necessary, collectors take action for seizure and make arrange-

ments for selling property. However, before resorting to enforced collection procedures, they may recommend alternatives such as installment payments, appointing escrow agents, or accepting collateral or mortgage arrangements to protect their agency's equity.

*Exclusions:*

1. Tax collection supervisors. Incumbents in these full supervisory positions typically assign, coordinate, and review work; estimate personnel needs and schedules; evaluate performance; resolve complaints; and make recommendations for hiring and firing; and
2. Tax auditors responsible for determining taxpayer liability.

*Positions are classified into levels on the basis of the following definitions:*

### **Tax Collector 1**

Receives formal training in: internal revenue laws, regulations, and procedures; collection enforcement techniques and laws of evidence and procedures; and business fundamentals. On-the-job training is provided and progressively broader assignments are given for development purposes. Most assignments are simple, although more difficult work such as that encountered at level 2 may be performed under close supervision and guidance. Individuals hired typically have 1-2 years experience in accounting, loan collection, or related area or equivalent education in accounting, business law, or related field of study.

### **Tax Collector 2**

Follows standard procedures to collect delinquent tax accounts and secure delinquent returns. Receives specific assignments from supervisor and works out details independently. Explains to tax debtors sanctions which may be used in the event of nonpayment and procedures for appealing tax bills or assessments. Compiles prescribed records and reports. Refers problems to supervisor which cannot be resolved by applying standard procedures.

### **Tax Collector 3**

As a tax collection specialist, team leader, or quasi-supervisor, conducts moderately complex investigations to detect or verify suspected tax violations according to established rules, regulations, and tax ordinances. Selects methods of approach, resolves problems referred by lower level tax collectors, and applies all remedies available to collect delinquent taxes. Prepares comprehensive records and reports. Trains lower level tax collectors and assists them in uniformly enforcing tax laws. May also assign, review, and coordinate work of lower level tax collectors.

## **Technical Occupations**

### **COMPUTER OPERATOR**

(4612: Computer operator)

#### **Overview**

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:*

1. Studies operating instructions to determine equipment setup needed;
2. Loads equipment with required items (tapes, cards, paper, etc.);
3. Switches necessary auxiliary equipment into system;
4. Starts and operates control console;
5. Diagnoses and corrects equipment malfunctions;
6. Reviews error messages and makes corrections during operation or refers problems; and
7. 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.

*Exclusions:*

1. 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;
2. 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;
3. Workers using the computer for scientific, technical, or mathematical work when a knowledge of the subject matter is required; and
4. Positions above level 5; in addition to level 5 responsibilities, workers in these excluded positions use a knowledge of program language, computer features, and software systems to assist in:
  - a. Maintaining, modifying, and developing operating systems or programs;
  - b. Developing operating instructions and techniques to cover problem situations; and
  - c. Switching to emergency backup procedures.

*Positions are classified into levels on the basis of the following definitions:*

### **Computer Operator 1**

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 Operator 2

Processes scheduled routines which present few difficult operating problems (for example, 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 pre-planned procedure. May serve as an assistant operator, working under general supervision.

## Computer Operator 3

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 (for example, 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 Operator 4

Adapts to a variety of nonstandard problems which require extensive operator intervention (for example, 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 (for example, 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 Operator 5

Resolves a variety of difficult operating problems (for example, 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 on-going 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.

## DRAFTER

(372: Drafting occupation)

### Overview

Performs drafting work, manually or using a computer, 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.

### Exclusions:

1. Designers using technical knowledge and judgment to conceive, plan, or modify designs;
2. Illustrators or graphic artists using artistic ability to prepare illustrations;
3. Office drafters preparing charts, diagrams, and room arrangements to depict statistical and administrative data;
4. Cartographers preparing maps and charts primarily using a technical knowledge of cartography;
5. Positions below level 1; workers in these trainee positions either (1) trace or copy finished drawings under close supervision or (2) receive instruction in the elementary methods and techniques of drafting; and
6. Supervisors.

*Positions are classified into levels on the basis of the following definitions:*

### Drafter 1

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:

1. From marked-up prints, revises the original drawings of a plumbing system by increasing pipe diameters;
2. From sketches, draws building floor plans, determining size, spacing, and arrangement of freehand lettering according to scale; or
3. 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.

### Drafter 2

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:

1. From a layout and manual references, prepares several views of a simple gear sys-

tem. Obtains dimensions and tolerances from manuals and by measuring the layout;

2. 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; or
3. 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.

### **Drafter 3**

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:*

1. 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;
2. 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;
3. 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; or
4. 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.

*Exclusion:* Exclude 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.

### **Drafter 4**

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.

## **ENGINEERING TECHNICIAN**

(371: Engineering technologist and technicians)

### **Overview**

*To be covered by these definitions, employees must meet all of the following criteria:*

1. Provide 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.

Included are workers who prepare design drawings and assist with the design, evaluation, and/or modification of machinery and equipment.

*Exclusions:*

1. Production and maintenance workers, including workers engaged in calibrating, repairing, or maintaining electronic equipment (see Maintenance Electronics Technician);
2. Model makers and other craft workers;
3. Quality control technicians and testers;
4. Chemical and other non-engineering laboratory technicians;
5. Civil engineering technicians and drafters;
6. Positions (below level 1) which 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
7. Engineers required to apply a professional knowledge of engineering theory and principles.

*Positions are classified into levels on the basis of the following definitions:*

### **Engineering Technician 1**

Performs simple routine tasks under close supervision or from detailed procedures. Work is checked in progress or on completion.



*Typical duties and responsibilities:* Performs one or a combination of such typical duties as:

1. Assembles or installs equipment or parts requiring simple wiring, soldering, or connecting;
2. Performs simple or routine tasks or tests such as tensile or hardness tests; operates and adjusts simple test equipment; records test data;
3. 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 Technician 2**

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. May become familiar with the operation and design of equipment and with maintenance procedures and standards. Technical adequacy of routine work is reviewed on completion; non-routine work may also be reviewed in progress.

*Typical duties and responsibilities:* Performs one or a combination of such typical duties as:

1. Following specific instructions, assembles or constructs simple or standard equipment or parts; may service or repair simple instruments or equipment;
2. Conducts a variety of tests using established methods. Prepares test specimens, adjusts and operates equipment, and records test data, pointing out deviations resulting from equipment malfunction or observational errors;
3. Extracts engineering data from various prescribed but non-standardized sources; processes the data following well-defined methods including elementary algebra and geometry; presents the data in prescribed form.

### **Engineering Technician 3**

Performs assignments that are not completely standardized or prescribed. Selects or adapts standard procedures or equipment, using precedents that are not fully applicable. Receives initial instruction, equipment requirements, and advice from supervisor or engineer as needed; performs recurring work independently; work is reviewed for technical adequacy or conformity with instructions.

*Typical duties and responsibilities:* Performs one or a combination of such typical duties as:

1. Constructs components, subunits, or simple models and adapts standard equipment. May troubleshoot and correct malfunctions requiring simple solutions;
2. Follows specific layout and scientific diagrams to construct and package simple devices and subunits of equipment;
3. 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;

4. 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;
5. Assists in design modification by compiling data related to designs, specifications, and materials which are pertinent to specific items of equipment or component parts. Develops information concerning previous operational failures and modifications. Uses judgment and initiative to recognize inconsistencies or gaps in data and seek sources to clarify information.

### **Engineering Technician 4**

Performs non-routine assignments of substantial variety and complexity, using operational precedents which are not fully applicable. Such assignments, which are typically parts of broader assignments, are screened to eliminate unusual design problems. 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.

*Typical duties and responsibilities:* Performs one or a combination of such typical duties as:

1. Develops or reviews designs by extracting and analyzing a variety of engineering data. Applies conventional engineering practices to develop, prepare, or recommend schematics, designs, specifications, electrical drawings, and parts lists. Examples of designs include:
  - a. Detailed circuit diagrams;
  - b. Hardware fittings or test equipment involving a variety of mechanisms;
  - c. Conventional piping systems; and
  - d. Building site layouts.
2. 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.
3. Applies methods outlined by others to limited segments of research and development projects; 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.

### **Engineering Technician 5**

Performs non-routine 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 tech-

nical adequacy and satisfaction of requirements. May train and be assisted by lower level technicians.

*Typical duties and responsibilities:* Performs one or a combination of such typical duties as:

1. 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;
2. From general guidelines and specifications (for example, size or weight requirements), develops designs for equipment without critical performance requirements which are difficult to satisfy such as engine parts, research instruments, or special purpose circuitry. Analyzes technical data to determine applicability to design problems; selects from several possible design layouts; calculates 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;
3. Plans or assists in planning tests to evaluate equipment performance. Determines test requirements, equipment modification, and test procedures; conducts tests using all types of instruments, analyzes and evaluates test results, and prepares reports on findings and recommendations.

## Engineering Technician 6

Independently plans and accomplishes complete projects or studies of broad scope and complexity; or, serves as an expert in a narrow aspect of a particular field of engineering, for example, environmental factors affecting electronic engineering. Complexity of assignments typically requires considerable creativity and judgment to devise approaches to accomplish work, resolve design and operational problems, and make decisions in situations where standard engineering methods, procedures, and techniques may not be applicable. Supervisor or professional engineer provides advice on unusual or controversial problems or policy matters; completed work is reviewed for compliance with overall project objectives. May supervise or train and be assisted by lower level technicians.

*Typical duties and responsibilities:* Performs one or a combination of such typical duties as:

1. Prepares designs and specifications for various complex equipment or systems (for example, a heating system in an office building, or new electronic components such as solid state devices for instrumentation equipment). Plans approach to solve design problems; conceives and recommends new design techniques; resolves design problems with contract personnel, and assures compatibility of design with other parts of the system;
2. Designs and coordinates test set ups and experiments to prove or disprove the feasibility of preliminary design; uses untried and untested measurement techniques; and improves the performance of the equipment. May advise equipment users on redesign to solve unique operational deficiencies;
3. Plans approach and conducts various experiments to develop equipment or systems characterized by:

- a. Difficult performance requirements because of conflicting attributes such as versatility, size, and ease of operation; or
- b. Unusual combination of techniques or components. Arranges for fabrication of pilot models and determines test procedures and design of special test equipment.

## ENGINEERING TECHNICIAN, CIVIL

(1472: Construction inspector)

(3733: Surveying technician)

### Overview

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 one or more of the following support functions:

1. **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; preparing detailed site layouts and specifications; and reviewing and analyzing design drawings for feasibility, performance, safety, durability, and design content;
2. **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;
3. **Surveying** - Measuring or determining distances, elevations, areas, angles, land boundaries or other features of the earth's surface;
4. **Construction inspection and monitoring** - Performing on-site inspection of construction projects to determine conformance with contract specifications and building codes. Levels 5 and 6 include positions responsible for monitoring and controlling construction projects.

*Exclusions:* Building, electrical, and mechanical inspectors; 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 1 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.

*Positions are classified into levels on the basis of the following definitions:*

### Engineering Technician, Civil 1

Performs simple, routine tasks under close supervision or from detailed procedures. Work is checked in progress and on completion.

*Typical duties and responsibilities:*

1. **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;
2. **Testing** - Conducts simple or repetitive tests on soils, concrete and aggregates; for example, sieve analysis, slump tests and moisture content determination;
3. **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;
4. **Construction inspection** - makes simple measurements and observations; may make preliminary recommendations concerning the acceptance of materials or workmanship in clear-cut situations.

### Engineering Technician, Civil 2

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; non-routine work is reviewed in progress.

*Typical duties and responsibilities:*

1. **Data compilation and analysis** - Compiles and examines a variety of data required by engineers for project planning (for example, hydrologic and sedimentation data; earthwork quantities), applying simple algebraic or geometric formulas;
2. **Testing** - Conducts a variety of standard tests on soils, concrete and aggregates, for example, 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;
3. **Surveying** - Applies specialized knowledge, skills or judgment to a varied and complex sequence of standard operations, for example, surveys small land areas using rod, tape and hand level to estimate volume to be excavated; or records data requiring numerous calculations;
4. **Construction inspection** - Applies a variety of techniques in inspecting less complex projects, for example, 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.

### Engineering Technician, Civil 3

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.

*Typical duties and responsibilities:*

1. **Data compilation and analysis** - Applies knowledge and judgment in selecting

sources, evaluating data and adapting methods, for example, 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;

2. **Design and specification** - Assists in preparing plans and layouts for modifying specific structures, systems, or components by compiling pertinent design, specifications, and survey data. From detailed notes and instructions, prepares simple sketches or drawings for excavation, embankment, or structures to assist survey team in staking out work and in computing quantities;
3. **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;
4. **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;
5. **Construction inspection** - Independently inspects standard procedures, items or operations of limited difficulty, for example, slope, embankment, grading, moisture content, earthwork compaction, concrete forms, reinforcing rods or simple batching and placement of concrete on road construction.

### Engineering Technician, Civil 4

Plans and performs non-routine 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.

*Typical duties and responsibilities:*

1. **Design and specification** - Prepares site layouts for projects from such information as design criteria, soil conditions, existing buildings, topography and survey data; sketches plans for grading sites; and makes preliminary cost estimates from established unit prices; or  
Reviews and develops plans, specifications, and cost estimates for standard modifications to the interior system (for example, electrical) of a small, conventional building;
2. **Testing** - Conducts tests which require the selection and substantial modification of equipment and procedures. Recognizes and interprets subtle, that is, fluctuating, test reactions;
3. **Surveying** - Makes exacting measurements under difficult conditions, for example, 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;
4. **Construction inspection** - Performs inspections for a variety of complete projects of limited size and complexity or a phase of a larger project, for example, conven-

tional 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.

### Engineering Technician, Civil 5

Performs non-routine and complex assignments involving responsibility for planning and conducting a complete project of limited scope or a portion of a larger, more complex project. Selects and adapts techniques, designs, or layouts. Reviews, analyzes and interprets the technical work of others. Completed work is reviewed for technical adequacy. Recommendations for major changes or costly alterations to basic designs are approved by supervisor.

#### *Typical duties and responsibilities:*

1. **Design and specification** - Prepares plans and specifications for major projects such as roads and airport runways, bridge spans, highway structures, or electrical distribution systems. Applies established engineering practice; calculates dimensions, elevations, and quantities; and selects and adapts precedents to meet specific requirements. Applies applicable standards and guidelines in resolving design problems; refers difficult or novel requirements to supervisor;
2. **Construction inspection** - Inspects projects of unusual difficulty and complexity, for example, large multi-story 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;
3. **Construction monitoring** - Monitors progress of specialized phases of construction projects. For example, develops or revises specifications for clearing land for excavation; and building access roads, utilities, construction offices, testing facilities, and maintenance and storage facilities; or  
  
Investigates prospective contractor's capabilities, operating methods, and equipment; or reviews contractor's cost estimates and operating reports for use in computing periodic payments.

### Engineering Technician, Civil 6

Independently plans and accomplishes complete conventional projects or serves as an expert in a narrow aspect of a civil engineering field. Applies creativity and judgment to plan projects, resolve design problems, and adapt equipment, procedures, or techniques. Recommendations, plans, designs, and reports are reviewed for general adequacy and soundness of engineering judgment. Supervisor provides advice on unusual or controversial problems or policy matters. May direct or train lower level technicians.

#### *Typical duties and responsibilities:*

1. **Design and specification** - Develops cost estimates for competitive bidding for a variety of multiple-use construction projects. Determines the construction processes involved, along with coordination and scheduling requirements. Compares types and capacities of construction equipment and calculates detailed cost estimates; or

Prepares designs and specifications for various utility systems of complex facilities; resolves design problems by adapting precedents or developing new design features;

2. **Construction inspection and monitoring** - Inspects and monitors progress of multi-use construction projects typically requiring more than a year for completion. Uses a knowledge of construction systems, practices, and processes to determine if projects are progressing according to contract requirements and organizational policies.

## Protective Service Occupations

### CORRECTIONS OFFICER

(5133: Correctional institution officer)

Maintains order among inmates in a State prison or local jail. Performs routine duties in accordance with established policies, regulations, and procedures to guard and supervise inmates in cells, at meals, during recreation, and on work assignments. May, if necessary, employ weapons or force to maintain discipline and order.

#### *Typical duties include:*

1. Taking periodic inmate counts;
2. Searching inmates and cells for contraband articles;
3. Inspecting locks, window bars, grills, doors, and grates for tampering;
4. Aiding in prevention of escapes and taking part in searches for escaped inmates;
5. Escorting inmates to and from different areas for questioning, medical treatment, work, and meals; and
6. Acting as outside or wall guard, usually on rotation.

#### *Exclusions:*

1. Workers receiving on-the-job training in basic correctional officer activities; and
2. Positions responsible for providing counseling or rehabilitation services to inmates.

### FIREFIGHTER

(5123: Firefighter occupation)

As a full-time paid member of the fire department, combats, extinguishes, and prevents fires and performs rescue operations in structural and airfield environments. Performs maintenance on own equipment and quarters. Wears protective clothing and breathing devices; drives fire and crash equipment; and operates a variety of fire fighting equipment such as hoses, extinguishers, ladders and axes. May hold national certification as an Emergency Medical Technician.

*Exclusions:*

1. Fire academy cadets;
2. Positions receiving additional compensation for driving and operating structural pumpers and crash vehicles; and
3. Work leaders and supervisors.

## **POLICE OFFICER**

(5132: Police and detective, public service)

### **Overview**

Enforces laws established for the protection of persons and property, by detaining, arresting, interrogating, and incarcerating suspected violators, and appearing as a witness at trials. Work is performed in uniform or civilian clothes and officers are typically armed.

*Exclusions:*

1. Supervisory positions;
2. Criminal investigators;
3. Police detectives and specialists performing duties above those described for Police Officer 2;
4. Positions requiring the operation of an aircraft; and
5. Police academy cadets and positions receiving on-the-job training and experience in basic police activities.

*Positions are classified into levels on the basis of the following definitions:*

### **Police Officer 1**

Carries out general and specific assignments from superior officers in accordance with established rules and procedures.

Maintains order, enforces laws and ordinances, and protects life and property in an assigned patrol district or beat by performing a combination of such duties as:

1. Patrolling a specific area on foot or in a vehicle;
2. Directing traffic;
3. Issuing traffic summonses;
4. Investigating accidents;
5. Apprehending and arresting suspects;
6. Processing prisoners; and
7. Protecting scenes of major crimes.

May participate with detectives or investigators in conducting surveillance operations.

### **Police Officer 2**

In addition to the basic police duties described at level 1, receives additional compensation to specialize in one or more activities, such as:

1. Canine patrol;
2. Special reaction teams (for example, special weapons assault team, special operations reaction team);
3. Juvenile cases;
4. Hostage negotiations;
5. Participating in investigations (for example, stakeout, surveillance); or
6. Other enforcement activities requiring specialized training and skills.

## **Clerical Occupations**

### **CLERK, ACCOUNTING**

(4712: Bookkeeper and accounting and auditing clerk)

#### **Overview**

Performs one or more accounting tasks, such as posting to registers and ledgers; balancing and reconciling accounts; verifying the internal consistency, completeness, and mathematical accuracy of accounting documents; assigning prescribed accounting distribution codes; examining and verifying the clerical accuracy of various types of reports, lists, calculations, postings, etc.; preparing journal vouchers; or making entries or adjustments to accounts.

Levels 1 and 2 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 3 and 4 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.

*Positions are classified into levels on the basis of the following definitions:*

#### **Clerk, Accounting 1**

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.

## Clerk, Accounting 2

*Typical duties and responsibilities:* Performs one or more routine accounting clerical operations, such as:

1. 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;
2. Totaling, balancing, and reconciling collection vouchers;
3. Posting data to transaction sheets where employee identifies proper accounts and items to be posted; or
4. 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.

## Clerk, Accounting 3

*Typical duties and responsibilities:* Uses a knowledge of double entry bookkeeping in performing one or more of the following:

1. Posting actions to journals, identifying subsidiary accounts affected and debit and credit entries to be made and assigning proper codes;
2. Reviewing computer printouts against manually maintained journals, detecting and correcting erroneous postings, and preparing documents to adjust accounting classifications and other data; or
3. Reviewing 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.

## Clerk, Accounting 4

Maintains journals or subsidiary ledgers of an accounting system and balances and reconciles accounts.

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

1. Reviewing 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
2. Analyzing and reconciling 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 train-

ing and experience. Supervisor provides suggestions for handling unusual or non-recurring 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 4 are positions responsible for maintaining either a general ledger or a general ledger in combination with subsidiary accounts.

## CLERK, GENERAL

(463: General office occupation)

### Overview

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 1, 2, and 3 follow prescribed procedures or steps to process paperwork; they may perform other routine office support work, (for example, typing, filing, or operating a keyboard controlled data entry device to transcribe data into a form suitable for data processing). Workers at level 4 are also required to make decisions about the adequacy and content of transactions handled in addition to following proper procedures.

Clerical work is controlled (for example, 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.

### Exclusions:

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.

*Positions above level 4 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; or
2. Select or devise steps necessary to complete assignments. Typical jobs covered by this exclusion include administrative assistants, clerical supervisors, and office managers.

*Positions are classified into levels on the basis of the following definitions:*

### Clerk, General 1

Follows a few clearly detailed procedures in performing simple repetitive tasks in the same sequence, such as filing pre-coded documents in a chronological file or operating office equipment, for example, mimeograph, photocopy, addressograph or mailing machine.

## **Clerk, General 2**

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.

## **Clerk, General 3**

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 and responsibilities:*

1. Maintaining time and material records;
2. Taking inventory of equipment and supplies;
3. Answering questions on departmental services and functions;
4. Operating a variety of office machines;
5. Posting to various books;
6. Balancing a restricted group of accounts to controlling accounts; and
7. Assisting in preparation of budgetary requests.

May oversee work of lower level clerks.

## **Clerk, General 4**

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 and responsibilities:*

1. Assisting in a variety of administrative matters;
2. Maintaining a wide variety of financial or other records;
3. Verifying statistical reports for accuracy and completeness; and
4. Handling and adjusting complaints.

May also direct lower level clerks.

## **CLERK, ORDER**

(4664: Order clerk)

### **Overview**

Receives written or verbal customers' purchase orders for material or merchandise from customers or sales people.

*Work typically involves some combination of the following duties:*

1. Quoting prices;
2. Determining availability of ordered items and suggesting substitutes when necessary;
3. Advising expected delivery date and method of delivery;
4. Recording order and customer information on order sheets;
5. Checking order sheets for accuracy and adequacy of information recorded;
6. Ascertaining credit rating of customer;
7. Furnishing customer with acknowledgment of receipt of order;
8. Following up to see that order is delivered by the specified date or to let customer know of a delay in delivery;
9. Maintaining order file; or
10. Checking shipping invoice against original order.

*Exclusions:* Exclude workers paid on a commission basis or whose duties include any of the following:

1. Receiving orders for services rather than for material or merchandise;
2. Providing customers with consultative advice using knowledge gained from engineering or extensive technical training;
3. Emphasizing selling skills; or
4. Handling material or merchandise as an integral part of the job.

*Positions are classified into levels on the basis of the following definitions:*

### **Clerk, Order 1**

Handles orders involving items which have readily identified uses and applications. May refer to a catalog, manufacturer's manual, or similar document to insure that proper item is supplied or to verify price of ordered item.

## **Clerk, Order 2**

Handles orders that involve making judgments such as choosing which specific product or material from the establishment's product lines will satisfy the customer's needs, or determining the price to be quoted when pricing involves more than merely referring to a price list or making some simple mathematical calculations.

## **KEY ENTRY OPERATOR**

(4793: Data entry keyer)

### **Overview**

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 Operator 1**

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 Operator 2**

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 1.

*Note:* Excluded are operators above level 2 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.

## **PERSONNEL ASSISTANT**

(4692: Personnel clerk, except payroll and timekeeper)

### **Overview**

Personnel assistants provide clerical and technical support to personnel professionals or managers in internal matters relating to one or more personnel specialties, such as recruitment and placement, compensation, employee relations and services, employee development, equal employment opportunity and labor relations.

At the lower levels, assistants primarily provide basic information to current and prospective employees, maintain personnel records and information listings, and prepare and process papers on personnel actions (accessions, separations, changes in pay and benefits, etc.). At the higher levels, clerks perform work in support of personnel professionals which requires knowledge of personnel procedures, guides, and precedents for example, interviewing candidates, supervisors, and employees; recommending placements; explaining personnel policies, benefits, and services; and preparing personnel reports.

Final decisions on personnel actions are made by personnel professionals or managers. Data entry and word processing may be required at any level.

Automated (computerized) procedures may be used in personnel activities, such as processing personnel actions and maintaining employee and organizational records and inventories. Automation primarily affects clerical work, that is, it reduces the need to hand flag, count, tally, and type items, but does not generally impact on the personnel clerical knowledge required. Typically, the automation of personnel records will require skill in coding, sequencing, and reconciling information.

### *Exclusions:*

1. Workers who primarily compute and process payrolls;
2. Workers whose duties do not require a knowledge of personnel rules and procedures, such as receptionists, general clerks, typists, or stenographers;
3. Workers in career development positions requiring a bachelor's degree; and
4. Positions above level 4. Workers in these excluded positions perform duties which are similar to level 4, but which are more complicated because they include limited aspects of professional personnel work for a variety of conventional and stable occupations.

Positions are classified into levels on the basis of the following definitions. The definitions describe responsible clerical work at the low levels and progress to paraprofessional or technician work at the higher levels. At level 3, which is transitional, both types of work are described. Jobs which match either type of work described at level 3, or which are combinations of the two, can be matched.

*Positions are classified into levels on the basis of the following definitions:*

### **Personnel Assistant 1**

*Performs routine tasks which require a knowledge of personnel procedures and rules, such as:*

1. 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;
2. Ensuring that the proper forms are completed for name changes, locator information, applications, etc. and reviewing completed forms for signatures and proper entries; or
3. 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.

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 Assistant 2

Performs clerical work requiring experience and judgment in applying personnel procedures and policies.

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

1. Examines and/or processes personnel action documents;
2. Ensures that information on forms or applications 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;
3. Selects appropriate precedents, rules, or procedures from a number of alternatives;
4. 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; or
5. Assists employees in completing forms for processing insurance or income tax changes and computes eligibility for basic benefits or services.

May also provide information to managers on availability of applicants; coordinate notification of employees approved for training; review award or suggestion submissions for completeness; explain the basic features of benefit plans; verify employment dates and places supplied on job applications; maintain personnel records; and administer typing tests.

Completes routine assignments independently. Detailed guidance is available for situations which deviate from established precedents. Work may be spot checked periodically.

## Personnel Assistant 3

*Type A.* Serves as a clerical expert in independently processing the most complicated types of personnel actions, and in providing information when it is necessary to consolidate data from a number of sources, often with short deadlines.

*Typical duties and responsibilities:*

1. Screening applications for obvious rejections;
2. Determining whether applicants have required licenses, certificates, or permits;
3. Checking references of applicants when information in addition to dates and places of past work is needed, and judgment is required to ask appropriate routine follow-up questions;
4. Processing a variety of forms for different actions, payroll deductions, health and life insurance; or
5. Resolving conflicts in personnel records by locating lost documents or reconstructing information from different sources.

May provide guidance to lower level clerks. Supervisory review is similar to level 2.

AND/OR

*Type B.* Performs routine personnel assignments beyond the clerical level, such as:

1. Orienting new employees to programs, facilities, rules on time and attendance, and leave policies;
2. Computing basic statistical information for reports on staff resource profiles, EEO progress and accomplishments, hiring activities, attendance and leave profiles, turnover, etc.;
3. Conducting screening interviews of applicants for well-defined training opportunities or positions, rejecting those who do not qualify for available openings for clear cut reasons, and referring others to senior staff;
4. Addressing more complicated questions on special pay and leave plans (for example, special pay or bonuses for critical skill/hard-to-fill occupations, locality differentials, maternity leave, leave for jury duty, etc.), non-routine benefits problems, etc.;
5. Explaining rules and procedures for converting health and life insurance, or filing for unemployment compensation to employees who are retiring, resigning, or being terminated;
6. Responding to pay or benefit surveys by providing readily available establishment information; or
7. Resolving problems with employee pay checks or benefits requiring coordination with payroll, health insurance carriers, etc.

Guidance is provided on potential sources of information, methods of work, and types of reports needed. Completed written work receives close technical review; other work may be checked occasionally.

## Personnel Assistant 4

Performs work in support of personnel professionals which requires a good working knowledge of personnel procedures, guides, and precedents. In representative assignments:

1. Conducts recurring types of interviews to develop facts and obtain additional background, for example interviews applicants, obtains references, and recommends placement of applicants in a few well-defined occupations (trades or clerical) within a stable organization or unit;
2. Conducts post-placement or exit interviews to identify job adjustment problems or reasons for leaving the organization;
3. Requisitions applicants through employment agencies for clerical or blue-collar jobs;
4. Interviews employees or supervisors to develop facts surrounding noncontroversial cases or problems, such as on-the-job injuries or illness, and prepares claims identifying and substantiating relevant information in written narrative formats;
5. Performs routine statistical analyses related to staff resource, EEO, hiring, or other employment concerns, for example, compares one set of data to another set as instructed; or

6. Computes employee's service creditable towards retirement and estimates annuity by feeding prescribed data into computer programmed to make calculations.

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.

## **SECRETARY**

(4622: Secretary)

### **Overview**

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:

1. Clerks or secretaries working under the direction of secretaries or administrative assistants as described in 5;
2. Stenographers not fully performing secretarial duties;
3. Secretaries assigned to two or more professional, technical, or managerial persons of equivalent rank;
4. Assistants or secretaries performing any kind of technical work, for example, personnel, accounting, or legal work;
5. Secretaries receiving additional pay primarily for maintaining confidentiality of payroll records or other sensitive information;
6. 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
7. Trainees;
8. Administrative assistants or supervisors performing duties which are more difficult or more responsible than the secretarial work described in LR-1 through LR-4;
9. Secretaries above LR-4 who perform any of the following duties:
  - a. Acts as office manager for the executive's organization, for example, 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; or

- 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 (for example, 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.

### **Classification by level**

*Secretary jobs are matched at one of five levels according to two factors:*

1. level of the secretary's supervisor within the overall organizational structure, and
2. level of the secretary's responsibility.

Table B-6 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 (for example, 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, for example, 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. Executive's program(s) are usually inter-locked 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 decision making 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.

*Duties include or are comparable to the following:*

1. 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;
2. As instructed, maintains supervisor’s calendar, makes appointments, and arranges for meeting rooms;
3. Reviews materials prepared for supervisor’s approval for typographical accuracy and proper format;
4. Maintains recurring internal reports, such as time and leave records, office equipment listings, correspondence controls, training plans, etc.; and
5. 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:*

1. 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, non-technical correspondence in own or supervisor’s name;
2. 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;
3. Reviews outgoing materials and correspondence for internal consistency and conformance with supervisor’s procedures; assures that proper clearances have been obtained, when needed;

4. Collects information from the files or staff for routine inquires on office program(s) or periodic reports. Refers non-routine requests to supervisor or staff; and
5. 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 non-routine 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:*

1. 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;
2. Anticipates and prepares materials needed by the supervisor for conferences, correspondence, appointments, meetings, telephone calls, etc., and informs supervisor on matters to be considered;
3. Reads publications, regulations, and directives and takes action or refers those that are important to the supervisor and staff;
4. Prepares special or one-time reports, summaries, or replies to inquires, selecting relevant information from a variety of sources such as reports, documents, correspondence, other offices, etc., under general direction; and
5. Advises secretaries in subordinate offices on new procedures; requests information needed from the subordinate office(s) for periodic or special conferences, reports, inquires, 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:*

1. Composes correspondence requiring some understanding of technical matters; may sign for executive when technical or policy content has been authorized;

**Table B-6. 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 .....	1*	2	3	4
LS-2 .....	1*	3	4	5
LS-3 .....	1*	4	5	5

\* Regardless of LS level.

2. 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;
3. 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;
4. 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; and
5. 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.

## **SWITCHBOARD OPERATOR-RECEPTIONIST**

(4645: Receptionist)

Operates a single-position telephone switchboard or console, used with a private branch exchange (PBX) system to relay incoming, outgoing, and intra-system calls and acts as a receptionist greeting visitors, determining nature of visits and directing visitors to appropriate persons.

*Work may also involve other duties such as:*

1. Recording and transmitting messages;
2. Keeping records of calls placed;
3. Providing information to callers and visitors;
4. Making appointments;
5. Keeping a log of visitors; and
6. Issuing visitor passes.

May also type and perform other routine clerical work, usually while at the switchboard or console, which may occupy the major portion of the worker's time.

## **WORD PROCESSOR**

(4624: Typist)

### **Overview**

Uses automated systems, such as word processing equipment, or personal computers or work stations linked to a larger computer or local area network, to produce a variety of documents, such as correspondence, memos, publications, forms, reports, tables and graphs. Uses one or more word processing software packages. May also perform routine clerical tasks, such as operating copiers, filing, answering telephones, and sorting and distributing mail.

### *Exclusions:*

1. Typists using automatic or manual typewriters with limited or no text-editing capabilities: workers in these positions are not typically required to use word processing software packages;
2. Key entry operators, accounting clerks, inventory control clerks, sales clerks, supply clerks, and other clerks who may use automated word processing equipment for purposes other than typing composition; and
3. Positions requiring subject-matter knowledge to prepare and edit text using automated word processing equipment.

*Positions are classified into levels on the basis of the following definitions:*

### **Word Processor 1**

Produces a variety of standard documents, such as correspondence, form letters, reports, tables and other printed materials. Work requires skill in typing; a knowledge of grammar, punctuation, and spelling; and ability to use reference guides and equipment manuals. Performs familiar, routine assignments following standard procedures. Seeks further instructions for assignments requiring deviations from established procedures.

### **Word Processor 2**

Uses a knowledge of varied and advanced functions of one software type, a knowledge of varied functions of different types of software, or a knowledge of specialized or technical terminology to perform such typical duties as:

1. Editing and reformatting written or electronic drafts. Examples include: correcting function codes; adjusting spacing and formatting; and standardizing headings, margins, and indentations; or
2. Transcribing scientific reports, lab analyses, legal proceedings, or similar material from voice tapes or handwritten drafts. Work requires knowledge of specialized, technical, or scientific terminology.

Work requires familiarity with office terminology and practices; incumbent corrects copy and questions originator of document concerning missing information, improper formatting, or discrepancies in instructions. Supervisor sets priorities and deadlines on continuing assignments, furnishes general instructions for recurring work, and provides specific instructions for new or unique projects. May lead lower level word processors.

### **Word Processor 3**

Requires both a comprehensive knowledge of word processing software applications and office practices and a high degree of skill in applying software functions to prepare complex and detailed documents. For example, processes complex and lengthy technical reports which include tables, graphs, charts, or multiple columns. Uses either different word processing packages or many different style macros or special command functions. Independently completes assignments and resolves problems.

# Maintenance and Toolroom Occupations

## GENERAL MAINTENANCE WORKER

(6179: Mechanic and repairer)

### Overview

Performs general maintenance and repair of buildings, equipment, and related fixtures. Work requires practical skill and knowledge, but not journey-level skill, in two or more trades such as: Painting, plumbing, plastering, welding, glazing, carpentry, masonry, tile setting, and electrical work. May occasionally perform general grounds maintenance and basic road maintenance work.

### Exclusions:

1. Workers in a formal apprenticeship or similar experience and training program leading to automatic placement in a journey-level single or multi-craft maintenance occupations;
2. Positions involving maintenance work in a single craft;
3. Positions requiring significantly more skill in one craft than in others;
4. Positions requiring workers to primarily perform building construction or renovation work, rather than maintenance;
5. Maintenance trades helpers who primarily assist skilled craft workers; or
6. Workers (below level 1) performing simple maintenance duties not requiring practical skill and knowledge of a trade (that is, changing light bulbs and replacing faucet washers).

*Positions are classified into levels on the basis of the following definitions:*

### General Maintenance Worker 1

Performs routine maintenance and repair using basic skills and knowledge of craft trades.

Work typically includes a variety of the following or equivalent duties: Replacing electrical receptacles, switches, fixtures, wires, and motors; using plaster or compound to patch minor holes and cracks in walls and ceilings; repairing sinks, water coolers, and toilets; painting structures and equipment; repairing concrete floors, steps, and sidewalks; replacing damaged paneling and floor tiles; hanging doors and installing door locks; replacing broken window panes; and performing scheduled maintenance and making simple repairs on equipment and machinery.

### General Maintenance Worker 2

Performs moderately difficult maintenance and repair work using skills and knowledge of craft trades and some specialized hand or power-tools. Work requires most of the following: Interpreting simple blueprints, manufacturers' manuals, or similar documents; determining methods and materials to be used in completing assignments; making standard shop calculations; prioritizing requests; and responding to emergencies.

In addition to the duties described for level 1, work typically includes a variety of the

following or equivalent duties: Wiring building accessories such as burglar alarm systems, air conditioners, and hot water heaters; installing basins, lavatories, and pipes; painting in confined or exposed areas; removing, constructing, and repairing walls and floors; and performing standard repairs to equipment and machinery.

## MAINTENANCE ELECTRICIAN

(615: Electrical and electronic equipment repairer)

(6432: Electrician)

Performs a variety of electrical trade functions such as the installation, maintenance, or repair of equipment for the generation, distribution, or utilization of electric energy.

*Work involves most of the following:*

1. Installing or repairing any of a variety of electrical equipment such as generators, transformers, switchboards, controllers, circuit breakers, motors, heating units, conduit systems, or other transmission equipment;
2. Working from blueprints, drawings, layouts, or other specifications;
3. Locating and diagnosing trouble in the electrical system or equipment;
4. Working standard computations relating to load requirements of wiring or electrical equipment; and
5. Using a variety of electrician's handtools and measuring and testing instruments.

In general, the work of the maintenance electrician requires rounded training and experience usually acquired through a formal apprenticeship or equivalent training and experience.

## MAINTENANCE ELECTRONICS TECHNICIAN

(615: Electrical and electronic equipment repairer)

### Overview

Maintains, repairs, and installs various types of electronic equipment and related devices such as electronic transmitting and receiving equipment (for example, radar, radio, television, telecommunication, sonar, and navigational aids); personal and mainframe computers and terminals; industrial, medical, measuring, and controlling equipment; satellite equipment; and industrial robotics devices. Applies technical knowledge of electronics principles in determining equipment malfunctions, and applies skill in restoring equipment operations.

*Exclusions:*

1. Repairers of such standard electronic equipment as household radio and television sets, and common office machines and telecommunication equipment such as typewriters, calculators, facsimile machines, telephones, and telephone answering machines;
2. Production assemblers and testers;

3. Workers primarily responsible for servicing electronic test instruments; and
4. Workers providing technical support for engineers working in such areas as research, design, development, testing, or manufacturing process improvement (see Engineering Technician).

*Positions are classified into levels on the basis of the following definitions:*

### **Maintenance Electronics Technician 1**

Applies technical knowledge to perform simple or routine tasks following detailed instructions. Performs such tasks as replacing components and wiring circuits; repairing simple electronic equipment; and taking test readings using common instruments such as digital multimeters, signal generators, semiconductor testers, curve tracers, and oscilloscopes.

Receives technical guidance, as required, from supervisor or higher level technician. Work is spot-checked for accuracy.

### **Maintenance Electronics Technician 2**

Applies comprehensive technical knowledge to solve complex problems by interpreting manufacturers' manuals or similar documents. Work requires familiarity with the interrelationships of circuits and judgment in planning work sequence and in selecting tools and testing instruments.

Receives technical guidance, as required, from supervisor or higher level technician, and work is reviewed for compliance with accepted practices. May provide technical guidance to lower level technicians.

### **Maintenance Electronics Technician 3**

Applies advanced technical knowledge to solve unusually complex problems that typically cannot be solved solely by referencing manufacturers' manuals or similar documents. Examples of such problems include determining the location and density of circuitry, evaluating electromagnetic radiation, isolating malfunctions, and incorporating engineering changes.

Work typically requires a detailed understanding of the interrelationships of circuits. Exercises independent judgment in performing such tasks as making circuit analyses, calculating wave forms, and tracing relationships in signal flow. Uses complex test instruments such as high frequency pulse generators, frequency synthesizers, distortion analyzers, and complex computer control equipment.

Work may be reviewed by supervisor for general compliance with accepted practices. May provide technical guidance to lower level technicians.

## **MAINTENANCE MACHINIST**

(613:Industrial machinery repairer)

Produces replacement parts and new parts in making repairs of metal parts of mechanical equipment.

*Work involves most of the following:*

1. Interpreting written instructions and specifications;
2. Planning and laying out of work;
3. Using a variety of machinist's handtools and precision measuring instruments;
4. Setting up and operating standard machine tools;
5. Shaping of metal parts to close tolerances;
6. Making standard shop computations relating to dimensions of work, tooling, feeds, and speeds of machining;
7. Knowledge of the working properties of the common metals;
8. Selecting standard materials, parts, and equipment required for this work; and
9. Fitting and assembling parts into mechanical equipment.

In general, the machinist's work normally requires a rounded training in machine-shop practice usually acquired through a formal apprenticeship or equivalent training and experience.

## **MAINTENANCE MECHANIC, MACHINERY**

(613: Industrial machinery repairer)

Repairs machinery or mechanical equipment.

*Work involves most of the following:*

1. Examining machines and mechanical equipment to diagnose source of trouble;
2. Dismantling or partly dismantling machines and performing repairs that mainly involve the use of handtools in scraping and fitting parts;
3. Replacing broken or defective parts with items obtained from stock;
4. Ordering the production of a replacement part by a machine shop or sending the machine to a machine shop for major repairs;
5. Preparing written specifications for major repairs or for the production of parts ordered from machine shops; reassembling machines; and
6. Making all necessary adjustments for operation.

In general, the work of a machinery maintenance mechanic requires rounded training and experience usually acquired through a formal apprenticeship or equivalent training and experience.

*Exclusions:* Excluded from this classification are workers whose primary duties involve setting up or adjusting machines.

## **MAINTENANCE MECHANIC, MOTOR VEHICLE**

(611: Vehicle and mobile equipment mechanics and repairers)

Repairs, rebuilds, or overhauls major assemblies of internal combustion automobiles, buses, trucks, or tractors.

*Work involves most of the following:*

1. Diagnosing the source of trouble and determining the extent of repairs required;
2. Replacing worn or broken parts such as piston rings, bearings, or other engine parts;
3. Grinding and adjusting valves;
4. Rebuilding carburetors;
5. Overhauling transmissions; and
6. Repairing fuel injection, lighting, and ignition systems.

In general, the work of the motor vehicle mechanic requires rounded training and experience usually acquired through a formal apprenticeship or equivalent training and experience.

This classification does not include mechanics who repair customers' vehicles or who only perform minor repair and tune-up of motor vehicles. It does, however, include fully qualified journey mechanics even though most of their time may be spent on minor repairs and tune-ups.

## **MAINTENANCE PIPEFITTER**

(645: Plumber, pipefitter, and steamfitter)

Installs or repairs water, steam, gas, or other types of pipe and pipe fittings.

*Work involves most of the following:*

1. Laying out work and measuring to locate position of pipe from drawings or other written specifications;
2. Cutting various sizes of pipe to correct lengths with chisel and hammer or oxyacetylene torch or pipe-cutting machines;
3. Threading pipe with stocks and dies;
4. Bending pipe by hand-driven or power-driven machines;
5. Assembling pipe with couplings and fastening pipe to hangers;
6. Making standard shop computations relating to pressures, flow, and size of pipe required; and

7. Making standard tests to determine whether finished pipes meet specifications.

In general, the work of the maintenance pipefitter requires rounded training and experience usually acquired through a formal apprenticeship or equivalent training and experience.

*Exclusions:* Workers primarily engaged in installing and repairing building sanitation or heating systems are excluded.

## **SKILLED MULTI-CRAFT MAINTENANCE WORKER**

(61: Mechanics and repairers)

Performs maintenance and repair work requiring journey-level skill in two or more craft trades. May lead lower level workers or order materials and parts. Excluded are workers who primarily perform building construction or renovation work, rather than maintenance.

This classification includes workers regularly performing at least two types of skilled maintenance work in such fields as carpentry, painting, plumbing, masonry, electrical work, welding, repair of heating and air conditioning systems, repair of electronic equipment, motor vehicle repair, and machine and equipment repair. In general, the work requires rounded training and experience usually acquired through a formal apprenticeship or equivalent training and experience.

## **TOOL AND DIE MAKER**

(6811: Tool and die maker)

Constructs and repairs jigs, fixtures, cutting tools, gauges, or metal dies or molds used in shaping or forming metal or nonmetallic material (for example, plastic, plaster, rubber, glass).

*Work typically involves:*

1. Planning and laying out work according to models, blueprints, drawings, or other written or oral specifications;
2. Understanding the working properties of common metals and alloys;
3. Selecting appropriate materials, tools, and processes required to complete task;
4. Making necessary shop computations;
5. Setting up and operating various machine tools and related equipment;
6. Using various tool and die maker's handtools and precision measuring instruments;
7. Working to very close tolerances;
8. Heat-treating metal parts and finished tools and dies to achieve required qualities;
9. Fitting and assembling parts to prescribed tolerances and allowances.

In general, the tool and die maker's work requires rounded training in machine-shop and

toolroom practice usually acquired through formal apprenticeship or equivalent training and experience.

For cross-industry wage study purposes, this classification does not include tool and die makers who (1) are employed in tool and die jobbing shops or (2) produce forging dies (die sinkers).

## Material Movement and Custodial Occupations

### GUARD

(5144: Guard and police, except public service)

#### Overview

Protects property from theft or damage, or persons from hazards or interference. Duties involve serving at a fixed post, making rounds on foot or by motorized vehicle, or escorting persons or property. May be deputized to make arrests. May also help visitors and customers by answering questions and giving directions.

*May be required to demonstrate:*

1. Proficiency in the use of firearms and other special weapons; and
2. Continuing physical fitness.

*Positions are classified into levels on the basis of the following definitions:*

#### Guard 1

Carries out instructions primarily oriented toward insuring that emergencies and security violations are readily discovered and reported to appropriate authority. Intervenes directly only in situations that require minimal action to safeguard property or persons. Duties require minimal training.

#### Guard 2

Enforces regulations designed to prevent breaches of security. Exercises judgment and uses discretion in dealing with emergencies and security violations encountered. Determines whether first response should be to intervene directly (asking for assistance when deemed necessary and time allows), to keep situation under surveillance, or to report situation so that it can be handled by appropriate authority. Duties require specialized training in methods and techniques of protecting security areas.

### JANITOR

(5244: Janitor and cleaner)

Cleans and keeps in an orderly condition factory working areas and washrooms, or premises of an office, apartment house, or commercial or other establishment.

*Duties involve a combination of the following:*

1. Sweeping, mopping or scrubbing, and polishing floors;
2. Removing chips, trash, and other refuse;
3. Dusting equipment, furniture, or fixtures;
4. Polishing metal fixtures or trimmings;
5. Providing supplies and minor maintenance services; and
6. Cleaning lavatories, showers, and restrooms.

*Exclusions:*

1. Workers who specialize in window washing;
2. Housekeeping staff who make beds and change linens as a primary responsibility;
3. Workers required to disassemble and assemble equipment in order to clean machinery; and
4. Workers who receive additional compensation to maintain sterile facilities or equipment.

### MATERIAL MOVEMENT AND STORAGE WORKER

(8726: Freight, stock, and material mover, not elsewhere classified)

#### Overview

Ships, receives, stores, or moves material within a warehouse, loading dock, factory, yard, or storage area. Above level 1, the work requires familiarity with the layout of the storage area, skill in storing and retrieving materials, or knowledge of the establishment's record-keeping requirements. Included are workers who primarily transport materials to, from, or between manufacturing production lines, or primarily pack finished products for shipment or storage as part of a manufacturing production process.

*Exclusions are positions requiring any of the following as primary duties:*

1. Stocking shelves in retail establishments (stock clerks);
2. Conducting inventories of merchandise (inventory clerks);
3. Storing or issuing tools, parts, supplies and equipment, and maintaining related records (storekeepers, supply clerks, or tool crib attendants);
4. Expediting or sorting the flow of materials requiring knowledge of parts, end item assemblies or destinations, and processes (expeditors or sorters);
5. Making wooden boxes or crates for packing or other purposes;
6. Driving a truck (see Truckdriver);



7. Traveling on trucks to assist truckdrivers in loading or unloading trucks (truckdriver helpers);
8. Supervising material handlers, equipment operators, or other workers engaged in material movement or storage activities;
9. Loading, unloading, or routing baggage (baggage handlers); or
10. Operating a crane.

*Positions are classified into levels on the basis of the following definitions:*

### **Material Movement and Storage Worker 1**

Performs physical tasks involving little or no specialized skill or prior work experience. Duties involve one or more of the following: Manually loading or unloading freight cars, trucks, ships, or other transporting devices; unpacking, shelving, or packing items in proper storage locations; packing finished products into standard shipping containers; or transporting goods by handtruck, cart, pallet jack, or wheelbarrow.

### **Material Movement and Storage Worker 2**

Performs duties in one or more broad areas of responsibility requiring knowledge of the general storage layout and procedures, or skill in storing and retrieving materials.

*As directed, primarily functions as one of the following:*

1. Forklift Operator - (8318: Industrial truck and tractor equipment operator). Moves goods and materials within a warehouse, factory, yard, loading dock, or storage area by forklift;
2. Shipping/Receiving Clerk - (4112: Traffic, shipping and receiving clerk).

**Shipping** - Verifies that orders are accurately filled by comparing items and quantities of goods gathered for shipment against documents; insures that shipments are properly packaged, identified with shipping information, and loaded into transporting vehicles; and prepares and keeps records of goods shipped, for example, manifests and bills of lading;

AND/OR

**Receiving** - Verifies the correctness of incoming shipments by comparing items and

quantities unloaded against bills of lading, invoices, manifests, storage receipts, or other records; checks for damaged goods; insures that goods are appropriately identified for routing to departments within the establishment; and prepares and keeps records of goods received;

### **Material Movement and Storage Worker 3**

Independently performs duties in one or more broad areas or responsibility requiring little or no supervision. In addition to the duties and responsibilities described for level 2, work involves most of the following: Determines how to best organize and arrange stock within the general storage plan; decides which location is most suitable for assembling shipments; when to shift, consolidate, and arrange items; and the sequence of steps, methods, and procedures to complete assignments in a timely manner. May direct and coordinate the activities of other workers engaged in handling goods or materials.

## **TRUCKDRIVER**

(821: Motor vehicle operator)

### **Overview**

Drives a truck within a city or industrial area to transport materials, merchandise, equipment, or workers between various types of establishments such as: manufacturing plants, freight depots, warehouses, wholesale and retail establishments, or between retail establishments and customers' houses or places of business. May also load or unload truck with or without helpers, make minor mechanical repairs, and keep truck in good working order. Route sales and over-the-road drivers are excluded.

*Positions are classified into levels on the basis of the following definitions:* For wage study purposes, truckdrivers are classified by type and rated capacity of truck, as follows:

### **Truckdriver, Light Truck**

Straight truck, under 1 1/2 tons, usually 4 wheels.

### **Truckdriver, Medium Truck**

Straight truck, 1 1/2 to 4 tons inclusive, usually 6 wheels.

### **Truckdriver, Heavy Truck**

Straight truck, over 4 tons, usually 10 wheels.

### **Truckdriver, Tractor-Trailer**