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INTRODUCTION TO THE FEDERAL WAGE SYSTEM JOB GRADING SYSTEM

Workforce Compensation and Performance Service

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Introduction to the Federal Wage System Job Grading System

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SECTION I -- INTRODUCTION

A. BACKGROUND

1. *Authority*

On November 16, 1965, the President asked the heads of Federal departments and agencies to cooperate with the Chairman of the U.S. Civil Service Commission (now the U.S. Office of Personnel Management) in developing a coordinated wage system for Federal employees in trades and labor occupations.

On August 19, 1972, the Congress enacted Public Law 92-392 to provide an equitable system for fixing and adjusting the rates of pay for prevailing rate employees of the government and for other purposes. Thus, P.L. 92-392 is basically an extension and an update of the old Coordinated Federal Wage System (CFWS). The new system contains nearly all the features of the CFWS but, among the changes, it adds coverage of the system to include non-appropriated fund and Veterans Administration Canteen Service employees in positions having trade, craft, or laboring experience and knowledge as the paramount requirement.

2. *Objectives*

The policies and practices of the Federal Wage System (FWS) are based on the principles that:

a. wages shall be fixed and adjusted from time to time as nearly as is consistent with the public interest in accordance with prevailing rates; and

b. there shall be equal pay for substantially equal work, and pay distinctions shall be maintained in keeping with work distinctions.

3. *Action*

The law directs that common job standards, wage policies, and practices be developed to insure interagency equity in wage rates and to bring about equitable coordination of wage-fixing practices among the different executive departments and agencies.

Thus jobs under the Federal Wage System are to be graded on the basis of the same set of job standards and grade criteria, regardless of the department or agency involved or the community in which they are located.

B. OUTLINE OF THE JOB GRADING SYSTEM

1. *Nature of the system*

The job grading system has been established in keeping with these directives. The system includes:

a. a framework of key ranking jobs to serve as the basic pegpoints of the grade structure;

b. job grading standards to provide the criteria for determining the relative worth of jobs in terms of grades;

c. a job grading method to assure consistency in the application of job standards; and

d. a plan for coding and titling trades and labor jobs.

The key ranking jobs establish the basic scale for grading jobs. In turn, the job grading standards define grade levels in keeping with that basic scale. The standards are the immediate "yardsticks" or tools used for deciding the grade levels of the jobs to which the standards apply.

Under the job grading method used, the grade of a job is decided by comparison of the whole job with grade definitions in an appropriate job grading standard, considering job facts as indicated by the four factors of skill and knowledge, responsibility, physical effort, and working conditions involved in the work. The grade definitions in job grading standards also are described in terms of these four factors.

The method provides a means for analyzing and comparing jobs with applicable job grading standards so that jobs involving the same level of work can consistently be assigned the same grade. When directly applicable job grading standards are not available, jobs can be graded consistently by comparison with grade-level definitions in standards for most nearly related occupations.

Under this common job grading system, jobs with sufficiently similar levels of work are placed in the same grade; jobs with significantly different levels of work are placed in different grades depending on the extent of the differences. The job grading system is summarized graphically in APPENDIX 1.

The identification of the significant similarities and differences in the levels of jobs by means of grades permits the setting of pay in keeping with work distinctions for jobs in many different occupations throughout the Federal Government.

2. *Coverage of the system*

The common job grading system covers jobs in the executive agencies as indicated in the *Operating Manual for the Federal Wage System*. In effect, it applies to most trades and labor jobs outside the postal field service that are paid from appropriated and nonappropriated funds.

The basic guidelines for determining trades or labor jobs, and for distinguishing them from General Schedule (GS) jobs, are in *Section IV of the Introduction to the Position Classification Standards*, published by the Office of Personnel Management. Other guidance is contained in individual FWS job grading standards and General Schedule position classification standards.

(**Note**: The instructions on grading, coding, and titling trades and labor jobs contained herein apply only to jobs under the Federal Wage System. This includes jobs converted from individual agency systems, following procedures in the *Operating Manual for the Federal Wage Systems* and to new jobs established under the Federal Wage System.)

SECTION II -- ASSIGNING GRADES TO JOBS

A. KEY RANKING JOBS

1. *Nature and purpose of key ranking jobs*

The nonsupervisory structure of the job grading system has 15 grades. To establish a framework for that structure, the Office of Personnel Management determined the ranking relationships among certain key jobs. The descriptions of these key jobs, which are called key ranking jobs, serve as grade-level "pegpoints" for the 15-grade nonsupervisory structure. They reflect the relative worth of different key lines of work and levels within lines of work and control the alinement of the grade levels in all nonsupervisory job grading standards.

The ranking framework is based on the extensive network of relationships among the various kinds of jobs as well as the various grade levels within these kinds of jobs. In keeping with the factor guided job grading technique, these relationships are highlighted in the descriptions of the key ranking jobs by means of the similarities and differences cited among the factors of skill and knowledge, responsibility, physical effort, and working conditions. The grading criteria in all job grading standards are consistent with these relationships.

2. *Listing of key ranking jobs*

The 39 key ranking jobs listed below and described in APPENDIX 2 are found in the majority of agencies which have trades and labor jobs. They represent a cross section of varying kinds of work as well as various skill levels within these kinds of work.

(**Note**: The following titles are used only to identify the key ranking jobs. They should not be used as the guide for titling jobs. Rather, the official titles of jobs should be determined following the titling instructions in Section III, Codes and Titles.)

Key ranking job title	Grade
1. Laundry Worker	1
2. Janitor (Light)	1
3. Janitor (Heavy)	2
4. Food Service Worker	2
5. Laborer (Light)	2
6. Laborer (Heavy)	3
7. Sales Store Worker	4
8. Fork Lift Operator	5

Key ranking job title	Grade
9. Warehouseman	5
10. Helper (Trades)	5
11. Truck Driver (Light)	5
12. Truck Driver (Medium)	6
13. Packer	6
14. Stockroom Attendant	6
15. Sewing Machine Operator	6
16. Bindery Worker	7
17. Office Appliance Repairer	7
18. Truck Driver (Heavy)	7
19. Truck Driver (Trailer)	8
20. Cook	8
21. Machine Tool Operator	8
22. Water Plant Operator	9
23. Painter	9
24. Carpenter	9
25. Plumber	9
26. Motor Grader Operator	10
27. Automotive Mechanic	10
28. Aircraft Mechanic	10
29. Welder	10
30. Pipefitter	10
31. Sheetmetal Worker	10
32. Electrician	10
33. Machinist	10
34. Electronics Equipment Mechanic	11

Key ranking job title	Grade
35. Radar Mechanic (Ground)	12
36. Tool, Die, and Gage Maker	13
37. Die Sinker	14
38. Modelmaker	14
39. Instrument Maker	15

3. *Use of key ranking jobs in job grading*

The key ranking jobs are not job grading standards and are not to be used to make final grade decisions for jobs. However, since they establish the grade framework for standards development, the key ranking jobs can be very useful as a general guide.

B. JOB GRADING STANDARDS

1. *Nature and purpose of standards*

To insure interagency equity in job grading and wage rates, the Office of Personnel Management develops and publishes common job grading standards and instructions which provide the criteria for grading, titling, and coding jobs. These standards are based on fact finding studies conducted in selected representative work situations. They govern the grading of all jobs under the Federal Wage System.

All jobs under that system must be graded in accordance with or consistent with the common job grading standards and instructions published by the Office of Personnel Management. For jobs not covered directly by published standards, grades are determined by comparison with standards for most nearly related occupation.

2. *Content of standards*

Because of the many differences in duties, skills, knowledge, and other aspects of trades and labor jobs, standards are developed mainly along occupational lines. Most job grading standards are applicable to specific occupations such as Laborer or Tool Maker. However, the Office of Personnel Management does issue broad standards for certain functional areas which cross occupational boundaries, and which are common to a number of jobs in various occupations. Examples of broad standards are those for Helper, Inspector, Supervisor, and Leader jobs. Such a broad standard is used to grade all jobs consisting mainly of the duties covered by the standard regardless of the occupation involved. The specific form of a standard, and the information it contains, may vary depending on whether the standard applies to an occupation or to a broad function. A nonsupervisory standard generally:

a. states the coverage by summarizing the kind(s) of work for which the standard provides directly applicable grade-level criteria;

b. indicates the title(s) of the jobs covered by the standard;

c. provides explanatory information as needed, such as further details of the work covered, how to apply the standard, or additional information for distinguishing Trades and Labor work from General Schedule work; and

d. defines grade levels by describing the factors of skill and knowledge, responsibility, physical effort, and working conditions.

The grade definitions establish distinct lines of demarcation among the different levels of work within an occupation. The standards do not try to describe every work assignment of each position in the occupation covered. Rather, based on fact finding and study of selected work situations, the standards identify and describe those key characteristics of occupations which are significant for distinguishing different levels of work. They define these key characteristics in such a way as to provide a basis for assigning the appropriate grade levels to all positions in the occupations to which the standards apply. However, Office of Personnel Management standards do not prescribe agency organization of work or the content of positions.

C. JOB GRADING METHOD

1. *Basic method for grading nonsupervisory jobs*

Jobs are graded by use of a method which involves:

a. study of the job being graded, including its purpose and relationship to other jobs;

b. analysis of the work done and its requirements; and

c. determination of the correct grade by comparison with grade definitions in an appropriate job grading standard.

Four factors identify the nature of the occupational facts considered in grading jobs under this method. These factors, defined in more detail in APPENDIX 3, are:

a. *Factor I: Skill and Knowledge*

Covers the nature and level of skill, knowledge, and mental application required in performing assigned work. Positions vary in such ways as the kind, amount, and depth of skill and knowledge needed, as well as in the manner, frequency, and extent to which they are used.

b. *Factor II: Responsibility*

Covers the nature and degree of responsibility involved in performing work. Positions vary in responsibility in such ways as the complexity and scope of work assigned, the difficulty and frequency of judgments and decisions made, the kind of supervisory controls, and the nature of work instructions and technical guides used.

c. *Factor III: Physical Effort*

Covers the physical effort exerted in performing assigned work. Positions vary in such bays as the nature, degree, frequency, and duration of muscular effort or physical strain experienced in work performance.

d. *Factor IV: Working Conditions*

Covers the hazards, physical hardships, and working conditions to which workers are exposed in performing assigned work. Positions vary in such ways as the nature of the work environment; the extent to which it includes unpleasant, disagreeable, or hazardous conditions; the degree to which such conditions are experienced; the frequency and duration of exposure; the adequacy of protective clothing and gear, safety devices, and safe trade practices; and the possible effects on the workers. The grade definitions in job grading standards for particular occupations follow this factor pattern. They define levels of work in terms of detailed factor information that is geared to the occupation covered by each standard.

The general factors shown above, and the more detailed factor information provided by grade definitions, also can be used as guides on what kinds of job facts to look for when studying a job to be graded. The factors also provide a means for arranging job facts in an orderly way for easier analysis and comparison with grade definition in job grading standards.

Some of the other main points to keep in mind when grading jobs are discussed below.

2. *Main points to consider*

a. The method of grading involves consideration of the total job. When comparing a job with the factor information and grade level definitions in job grading standards, a determination should be made as to the most appropriate grade value, overall, of the total job rather than a mechanical addition of individual factor judgments. This follows the basic principle that the grade value of a job is determined by its relative worth as a whole in comparison with all other jobs and their grade values.

b. In grading jobs, no one factor should be considered by itself. Care should be taken to avoid any tendency to overgrade a job on the basis of a predominant characteristic, or to undergrade it because it does not contain a particular element. Rather, all pertinent job facts related to the four factors should be analyzed, including the possible relationships among the different elements of the job. For example, when comparing a job with grade level definitions in an appropriate standard, one of the differences found may be that the job involves responsibility for additional judgments and decisions. Determination of the grade significance of this difference from the standard requires consideration of the possible effect of the additional judgments and decisions on the nature and level of the skill and knowledge required to perform the work.

c. For exposure to conditions of an unusual nature, employees are compensated by means of environmental pay differentials rather than job grading. (See Operating Manuals for the FWS, Subchapters S8-7 to determine whether or not hazards, physical hardships, or working conditions are of an unusual nature.) However, if exposure to conditions of an unusual nature is regular and recurring, any related skill and knowledge, and responsibility should be taken into account in grading the jobs. This may or may not result in changes in the basic grades of the jobs as shown by the applicable standards.

d. Trades and labor jobs are graded considering the actual skill, knowledge, and other requirements of the work performed. The requirement that employees be licensed or certified to perform work, or that they certify with their signatures that standards of quality and safety have been met in performing work, does not in itself affect the grades of their jobs.

e. Because of the nature of trades and labor occupations, jobs in such an occupation tend to cluster at one or only a few grades. Rather than describe all possible grades for a line of work, each job grading standard therefore describes only those levels which reflect the more commonly found jobs in the occupation covered by the standard. The particular grades defined in the standard then provide a basis for comparing and assigning the proper grades to jobs at any grade called for by their skill and knowledge, responsibility, and other work requirements. This can be at grades either above or below those described in the standards.

3. *Mixed jobs*

A mixed job involves performance on a regular and recurring basis of duties in two or more occupations at the same or different grade levels. To assure consistency and equity in the grading of such mixed jobs, the following rules apply:

a. A mixed job should be graded in keeping with the duties that (1) involve the highest skill and qualification requirements of the job, and (2) are a regular and recurring part of the job, even if the duties involved are not performed for a majority of the time. If a job involves regular and recurring duties at the same level in two or more occupations, such a mixed job is graded to that same level. For example, see the Job Grading Standards for Cemetery Caretaking, 4754, and Maintenance Mechanic, 4749.

b. Duties performed only in the absence of another employee, to meet emergency workloads, or for training purposes to gain qualifying experience for a higher grade position should not be considered as "regular and recurring" duties when grading mixed jobs.

4. *Supervisor and leader jobs*

Separate grading standards are used to place supervisor and leader jobs in their proper grades. Under these standards, the grades of such jobs reflect the relative difficulty, responsibility and qualification requirements of the supervisory or leader work performed.

The FWS Job Grading Standard for Supervisors supervisory grading standard provides for grading supervisor jobs through consideration Of the volume, kinds and levels of work involved, and the nature of supervision exercised. Similarly, leader jobs are graded taking into consideration the kinds and levels of work led.

D. RELATIONSHIP BETWEEN JOB GRADING STANDARDS AND DETERMINING GUIDES

Job grading standards provide criteria for distinguishing different levels of work by describing the requirements of different grade levels in terms of the skill and knowledge, responsibility, physical effort, and working conditions involved.

Examining guides, on the other hand, provide guidance for the requirements for filling jobs and apply to the movement of employees into and within the Federal Service. They describe the knowledge, skill, ability, and personal characteristics required to predict potential for successful performance of the duties of a job, and are a means for determining that job applicants have this potential.

To insure consistent occupational relationships in terms of kinds and levels of work, and qualifications required, job grading standards and examining guides are developed on the basis of coordinated fact-finding studies. Statements in a job grading standard covering the specific knowledge, skill, and ability necessary for performance of work at a particular grade level are

consistent with the corresponding guide for establishing the qualification requirements for positions involving that work.

Nevertheless, it would be noted that, since they serve different purposes, the criteria in job grading standards are not completely identical with those in examining guides. For example, certain personal characteristics, such as interest in the work, may be very useful in a qualification guide to predict potential for successful performance of the duties of a job. These personal characteristics at times, however, are of little use in distinguishing among different grade levels of work, and therefore may not be mentioned in the job grading standard.

Care must be taken to assure that examining guides remain basically consistent with the corresponding grade-level criteria in job grading standards. Any significant change of qualification requirements for a job may change the grade of the job. For this reason, employees who are responsible for staffing functions, and employees who are responsible for grading the jobs involved, should work closely with each other to achieve the necessary coordination.

SECTION III-CODES AND TITLES

This section describes the common plan for the coding and titling of trades and labor jobs. The purpose of these instructions is to achieve consistency in coding and titling practices among agencies.

A. THE CODING PLAN

The coding plan provides an orderly method for identifying jobs. The system uses a combination of letters and numbers to indicate pay category, job family and occupation, and grade level.

1. *Pay category*

The pay category indicates the type of job and specific wage schedule from which the job is paid. The designations for regular schedule FWS jobs are as follows:

Grade--- – for nonsupervisory jobs
WL--- – for leader jobs
WS--- – for supervisory jobs

Other prefixes are used for special wage schedules and pay plans.

2. *Job family and occupation*

The various kinds of work performed by employees have been organized into occupations and job families. Each is defined in terms of the nature of work. These definitions establish the boundaries between the various occupations and families. The job family is a broad grouping of occupations which are related in one or more ways such as: similarity of functions performed, transferability of knowledge and skills from one occupation to another, or similarity of materials or equipment worked on. For example, the Transportation/Mobile Equipment Operations Family groups together all occupations involving the operation of self-propelled mechanical equipment in providing transportation or performing industrial work.

An occupation is a subgroup of a family which includes all jobs at the various skill levels in a particular kind of work. Jobs within an occupation are similar to each other with regard to subject matter, and basic knowledge and skill requirements.

The code for family and occupation has four numbers. The first two numbers show the family and the second two identify the specific occupation within the family. The main code for a family has four numbers with zeroes as the third and fourth numbers. For example, 5700 identifies the Transportation/Mobile Equipment Operation Family. The third and fourth numbers, ranging from 01 to 99, stand for specific occupations within the family. For example, 5704 identifies the Forklift Operating occupation within the job family.

3. *Grade level*

The grade level of a job represents a range of skills, knowledge, and responsibilities sufficiently similar to warrant a common range of rates of basic pay on a local area wage schedule. The grade is represented by two numbers. For grade levels 1 to 9, a zero precedes the number which indicates the grade -- for example, grade seven is indicated by 07. With the exception of Apprentice jobs, all jobs have a grade-level designation. Instead of the grade-level code, Apprentice jobs are designated by two zeroes.

4. *Method for indicating the code*

The complete code is indicated in the following order: pay category, job family and occupation, and grade level. For example, a Fork Lift Operator at grade five is designated as: 5704-05.

5. *Using the coding plan*

a. Approved codes: Each job grading standard indicates the types of jobs that are to be graded by application of that particular standard. A job covered by a job grading standard is assigned the code indicated in the standard.

   Part 3 of the FWS Job Grading System, titled Definitions of Trades and Labor Job Families and Occupations issued by the Office of Personnel Management is to be used for determining the codes for jobs for which no job grading standard his been published. (Part 3 of the Job Grading System for Trades and Labor Occupations includes a list of occupational definitions and codes that are covered by published job grading standards.) A job is coded to the occupation which represents the best match between the content of the job and the definitions of the various occupations.

   Supervisor, Leader, Inspector, Helper, and Apprentice jobs are assigned the code of the specific occupation involved. For example, a supervisor of carpenters would be coded to the carpentry occupation.

b. General code ("01"): Because of the scope and variety of Federal Government operations, and the continuing changes taking place in occupations, a separate occupation is not always established for each identifiable line of work. The "01" code in each job family therefore is designated as a general code, and is used for jobs which cannot be identified with an established occupation within the family but which can be identified with the family itself. One type of job which should be assigned the "01" code is the general job which is characteristic of the family but not of any specific occupation within the family. A second type of job which should be assigned the "01" code is that which has a narrower range of duties readily identifiable with the job family but for which no specific occupation has been established.

c. Mixed jobs: Jobs requiring the performance of work in two or more occupations (mixed jobs) are coded to the occupation which is most important for recruitment, selection, placement, promotion, or reduction in force purposes. This is ordinarily the occupation having the highest skill and knowledge requirements. Mixed jobs usually are not assigned to the "01" code.

6. *Establishing new codes*

The Classification Programs Division in the Office of Personnel Management (OPM) establishes and defines occupations and job families. When a job is not specifically covered by an established occupation, the job is coded to the existing occupation which is most closely related in terms of the skills and knowledge involved or to the "01" code as discussed above).

Agencies may request that the Office of Personnel Management establish new occupations or revise the definitions of established occupations. Such recommendations include the suggested occupational title, a proposed definition, and a justification for the addition or change. If study indicates it is warranted, the Office of Personnel Management approves such additions or changes for use by all agencies, and incorporates them in Part 3 of the FWS Job Grading System.

B. TITLES

The Office of Personnel Management prescribes official titles for those occupations covered by OPM job grading standards. For all other occupations, agencies develop titles in accordance with the principles and instructions contained in this section.

A title designated for use in one occupation is not used as a title in any other occupation. Titles specified in job grading standards are used only for the occupation for which they were developed.

Job titles are as brief and as broad in coverage as possible, consistent with the need to distinguish one occupation from all other occupations. Specializations are added to the basic titles only when needed for a specific personnel purpose in distinguishing between jobs on the basis of qualifications and other special requirements. Such specializations are also as broad as possible to assure that the overall title does not make overrefined distinctions between jobs, which may tend to hamper rather than aid personnel processes.

Modifying words usually are placed before key nouns to avoid the need for commas and other punctuation marks. For example, the title of Electronics Mechanic is to be used rather than Mechanic, Electronics.

Agencies may use organizational or other local titles for the purpose of internal operation, but only official titles are used for official purposes.

1. *Nonsupervisory jobs*

Titles for nonsupervisory jobs resemble, as closely as possible, occupation titles as indicated in Part 3 of the FWS Job Grading System. Usually, this is done by changing the last word of the occupation title from that of "doing" to that of "doer." For example, the employee doing "Welding" work is called "Welder."

When the title of the occupation covers several functions, such as installing and repairing, the job title includes only one function if the duties of the job involve only that one function.

Broad terms such as Mechanic are used when the employee performs a broad range of functions. For example, if the job involves building, installing, and repairing small engines, the specified job title is Small Engine Mechanic.

In some cases, traditional titles which have generally accepted meanings are used-for example, Electrician and Machinist.

The title of an Apprentice, Helper, or Inspector job consists of the occupation title followed by a designator for the type of job involved. For example, the job title of an Apprentice who is being trained as a Carpenter is Carpenter Apprentice.

2. *Leader and supervisor jobs*

The title of a leader or supervisory job consists of the job title of the occupation followed by a designator which identifies the nature and scope of the leader or supervisory responsibilities -- for example, Carpenter Leader and Carpenter Supervisor.

3. *Jobs in the 01 code*

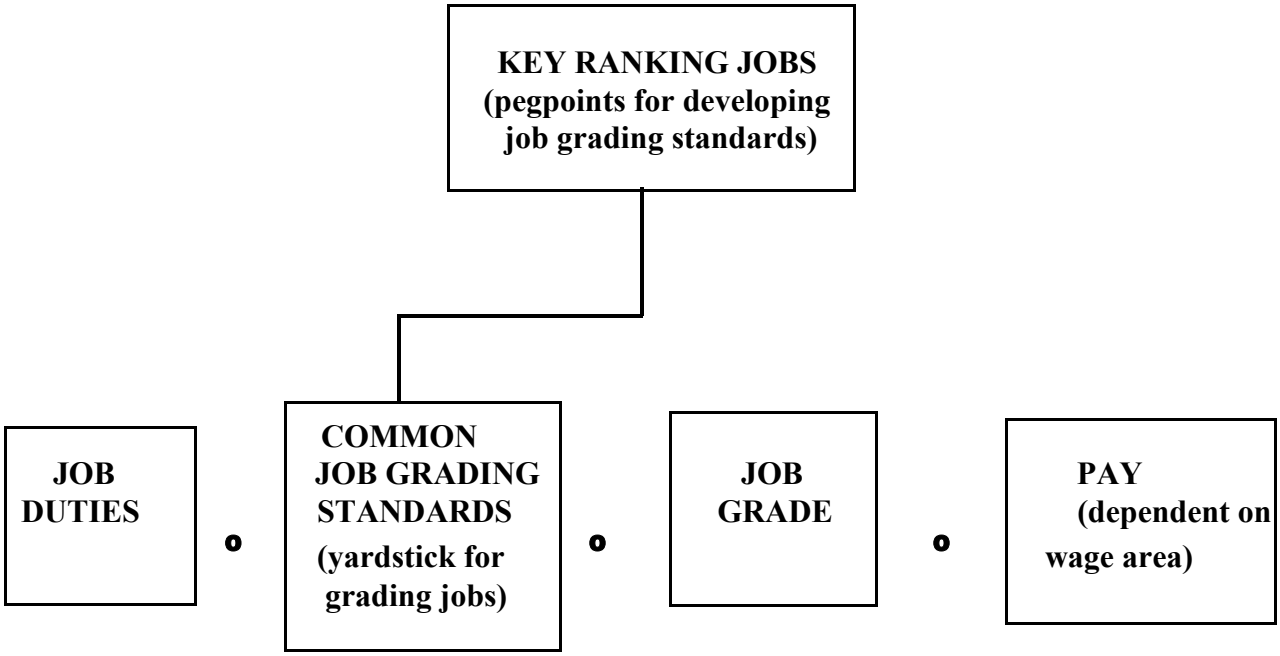
The title of a broad and general job assigned to the "01" code usually is the job family title. For example, a job with a combination of skills such as repairing air conditioning equipment and boiler plant equipment should be titled, Industrial Equipment Mechanic and assigned to the 01 code of the 5300 job family.

On the other hand, in accordance with the principles and instructions contained in this section, a job has a more precise title when it is specific in nature but when a separate occupation has not been established for it in the job family. For example, a Reindeer Herder should be assigned to the 01 code in the 5000 job family.

4. *Mixed jobs*

The basic title of a job requiring the performance of work in two or more occupations (mixed job) is the job title of the occupation which is most important for recruitment, selection, placement, promotion, or reduction-in-force purposes. This is ordinarily the occupation having the highest skill and knowledge requirements.

APPENDIX 1
SUMMARY OF JOB GRADING SYSTEM



- Determined through job analysis
- Recorded in job description

- Job ranking with factor guidance

Grade definitions in standards described in some of 4 factors
Grade determined by comparison of whole job with grade definitions in standards considering job facts indicated by 4 factors

- Same series, title, code and grade for same job

APPENDIX 2

DESCRIPTIONS OF KEY RANKING JOBS

Laundry Worker; Grade: 1

Does various manual duties in a laundry. Shakes out and separates different laundry items. Hand feeds items into automatic flatwork ironer or spreader by holding items, straightening edges and smoothing wrinkles. Catches, folds and stacks flatwork. Wraps and seals laundry bundles, and ties by hand or with automatic typing machines. Wipes off laundry equipment.

Follows a few specific and easily understood oral instructions to perform assignments. Continually handles objects weighing up to 5 kilograms (10 pounds) and occasionally objects weighing up to 9 kilograms (20 pounds). Works inside in areas that are usually hot, humid and noisy. Is exposed to the possibility of cuts and bruises.

Janitor (Light); Grade: 1

Does a variety of janitorial duties, including the operation of lightweight hand or powered cleaning equipment. Sweeps, dry-mops, waxes and polishes floors. Dusts and polishes furniture and fixtures. Empties ash trays and waste baskets. Wipes room partitions and fixtures that can be reached without use of ladders.

Follows a few specific and easily understood oral instructions concerning what to clean and how to clean it.

Continually handles objects weighing up to 5 kilograms (10 pounds) and occasionally objects up to 9 kilograms (20 pounds).

Works inside in areas that usually have adequate light, heat and fresh air. Is exposed to some unpleasant odors and to the possibility of cuts, chapped hands and bruises.

Janitor (Heavy); Grade: 2

Does a variety of janitorial duties including the operation of heavy industrial type power operated equipment. Scrubs, wet mops, waxes, and polishes floors. Cleans walls, ceilings, room partitions and polishes fixtures that can be reached only by ladder. Washes and replaces venetian blinds. Removes stains from a variety of surfaces such as rugs, drapes, walls, floors and fixtures by use of chemicals and cleaning solutions. Moves furniture, cabinets, boxes, crates and equipment to clean areas.

Janitor (Heavy); Grade: 2 cont.

Follows a few specific and easily understood instructions concerning what to clean and what cleaning methods and equipment to use.

Continually bales objects weighing up to 9 kilograms (20 pounds) and occasionally objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that usually have adequate light, heat and fresh air. Is exposed to some unpleasant odors and to the possibility of cuts, chapped hands, and bruises.

Food Service Worker; Grade: 2

Does various duties in connection with the preparation and serving of foods and beverages. Makes coffee, tea and other beverages. Washes, peels, scrapes, and cuts vegetables and fruits. Prepares simple salads and toast. Dishes out portions of foods on trays or plates and pours beverages. Prepares dining and serving areas by setting up counters, stands and tables. Places food containers in serving order, fills salt and pepper shakers, and places linen and silverware on tables. Clean kitchen equipment, pots and pans, counters, and tables. Sweeps and mops floors.

Follows a few specific and easily understood oral instructions concerning what foods to prepare and how to prepare them, what dining and serving areas to set up and with what materials.

Frequently handles objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that are usually hot and humid. Is exposed to the possibility of cuts, bruises, and burns.

Laborer (Light); Grade: 2

Does various laboring duties requiring moderately heavy physical effort. Loads and unloads materials. Moves supplies by hand, handtruck, or dolly. Sorts and stacks various items by obvious breakdowns. Opens and closes packages and boxes by using hammers, shears and crow-bars. Loads material in bailing presses. Runs hand or powered lawnmowers. Washes cars and trucks. Follows a few specific and easily understood oral instructions concerning what materials to handle, what to do with them and when the work should be completed.

Frequently handles objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that are usually dusty and dirty and outside, sometimes in bad weather. Is exposed to the possibility of cuts and bruises.

Laborer (Heavy); Grade: 3

Does various laboring duties requiring very heavy physical effort.

Digs ditches and trenches using pick and shovel, involving some simple sloping and grading. Breaks up pavement, concrete, or other hard surfaces using jackhammers. Fills, tamps, and levels holes. Mixes, pours and pushes wheelbarrow loads of concrete, asphalt, hot mix, gravel and other materials to worksite. Removes forms after concrete has set. Lays and repairs railroad tracks. Carries ties and rails and places on railbed. Drives spikes, shovels ballast under ties and tightens bolts between rails.

Follows a few specific and easily understood oral instructions concerning what to do and when and where to do it.

Frequently handles objects weighing over 23 kilograms (50 pounds).

Works inside in areas that are usually dusty and dirty and outside in all kinds of weather. Is exposed to the possibility of cuts, and bruises.

Sale Store Worker; Grade: 4

Does various manual stock handling duties in commissary stores, self-service supply centers and clothing sales stores. Moves stock items from storage areas. Stacks and replenishes empty spaces in display shelves and cases. Arranges stock in a neat and orderly manner and rotates items based on stamped code dates, age or freshness of stock. Sets aside damaged goods for salvage or disposal. Measures, weighs and marks prices on items based on master price lists or oral instructions. Answers questions concerning item location and prices. Assists in checking out customer purchases by placing items in paper bags or boxes and lifting into push carts. Assists in inventories of stock by counting containers on shelves and giving totals to responsible person. Assists in unloading incoming trucks by checking container markings and quantities against figures shown on receiving reports. Reports damaged items. Places items in stockroom or freezer locations, stacking containers in groups by commodity, brand and size.

Follows various oral instructions, written price lists and receiving reports which indicate what stock to move and what to do with it, current prices of items and types and quantities of stock received.

Frequently handles objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that are sometimes damp and drafty and occasionally outside, sometimes in bad weather. Is exposed to the possibility of cuts, and bruises.

Fork Lift Operator; Grade: 5

Operates electric, gasoline or diesel-powered fork lift trucks capable of lifting loads up to, but not including 4500 kilograms (10,000 pounds) to a height of 420 centimeters (168"). Operates the lifting and tilting controls and steers the vehicle into position to load, transport, and stack goods and materials contained on pallets, skids, crates or boxes about warehouses, piers, shipsides or railroad car sidings. Must be able to pass operator's test, read traffic signs and fill out trip tickets. Follows written or oral orders concerning location and priority of assignments and instructions concerning the movement and placement of materials.

Follows safety and traffic rules and drives carefully to prevent damage to vehicle and materials, and injury to others.

Uses light physical effort in operating hand and foot controls.

Works inside in areas that are sometimes damp and drafty and occasionally outside in all kinds of weather. Is exposed to the possibility of cuts and bruises.

Warehouseman; Grade: 5

Receives, stores, and ships bin and bulk supplies, materials and equipment. Verifies quantity, nomenclature and unit of issue against receiving documents, notes discrepancies, and reports findings. Selects specific storage locations within the framework of general warehousing plan. Stores, stacks, and palletizes items considering use, size, shape, weight, quantity, spoilage, pilferage, contamination and safety to others. Examines stock for deterioration and damage and reports findings. Conducts inventory of stock on hand and reports reasons for overages, shortages and misplacements. Selects designated items from storage and assembles for shipment. Assures that items are properly marked, tagged and labeled and in properly marked containers.

Accomplishes final loading in trucks and freighters. Completes and signs receiving and shipping documents. Records and updates stock location cards shoring location, nomenclature, stock number, quantity oil hand and unit of issue. Uses handtools. Moves stock by hand, handtruck and dollies.

Follows accepted warehousing methods, procedures and techniques and various written or oral instructions on day-to-day operations.

Frequently handles objects weighing up to 18 kilograms (40 pounds). Works inside in areas that are sometimes damp and drafty and outside, sometimes in bad weather. Is exposed to the possibility of cuts and bruises.

Helper (Trades); Grade: 5

Assists journey level worker in a skilled trade by performing the least skilled duties of the trade. Engages in joint operations with the journey level workers as instructed. Uses hand and powered tools of the trade to perform such tasks as cutting holes in walls and floors and cutting threads on piping. Supplies, lifts and holds materials and tools for journey level workers. Applies knowledge gained from previous work assignments.

Receives detailed instructions with each new assignment. Work is reviewed while in progress and when it is finished.

Frequently handles objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that are usually dusty, dirty or greasy and outside, sometimes in bad weather. Is exposed to the possibility of cuts, bruises, and scrapes.

Truck Driver (Light); Grade: 5

Drives one or more types of trucks with rated weight capacities up to and including one ton in hauling cargo or passengers within Government installations and over public roads. Usually loads and unloads cargo. Must be able to pass driver's test, read traffic signs and fill out trip tickets.

Follows written or oral orders and schedules concerning where to go and what to do. Follows safety and traffic rules and drives carefully to prevent damage to truck and materials, and injury to others.

Uses light physical effort in operating hand and foot controls. Frequently handles objects weighing up to 9 kilograms (20 pounds) and occasionally, objects weighing over 23 kilograms (50 pounds) while loading and unloading trucks.

Works outside and occasionally is exposed to bad weather conditions while loading and unloading trucks. Drives in all types of traffic and weather and is exposed to the possibility of serious accidents.

Truck Driver (Medium); Grade: 6

Drives one or more types of trucks with rated weight capacities of over one ton and up to but not including four tons in hauling cargo or passengers within Government installations and over public roads. Double clutches. Occasionally directs or assists in loading or unloading cargo and checks to see that loads are properly distributed, secured and within maximum rated weight capacity. Must be able to pass driver's test, read traffic signs and fill out trip tickets.

Truck Driver (Medium); Grade: 6 cont.

Follows written or oral orders and schedules concerning where to go and what to do. Follows safety and traffic rules and drives carefully to prevent damage to trucks and materials and injury to others.

Uses light physical effort in operating hand and foot controls. Frequently handles objects weighing up to 9 kilograms (20 pounds) and occasionally objects weighing over 23 kilograms (50 pounds) while loading and unloading trucks.

Works outside and occasionally is exposed to bad weather conditions while loading and unloading trucks. Drives in all types of traffic and weather and is exposed to the possibility of serious accidents.

Packer; Grade: 6

Performs a variety of duties involved in packing for shipment or storage different kinds of material or equipment, including items of a large, heavy, or fragile nature. Checks items against shipping document to insure correct identification and quantity. Follows written packing instructions and manuals. Selects proper size and type of container, cushioning and other packaging materials, taking into consideration the destination, method of shipment, weight, configuration, fragility and nature of items to be packed. Packs items in wood, plywood, and fiberboard boxes, metal containers and cartons. Blocks, braces, cushions, applies desiccants and secures container by sealing, banding or wiring. Over-packs previously packed materials for greater protection when necessary. Uses special techniques such slot hanging, bracketing and suspending within boxes and crates. Completes and signs various documents. Stencils necessary identification and affixes standard and special labels and markings on containers.

Makes independent judgments and decisions within the framework of oral and written instructions and accepted methods, techniques and procedures.

Frequently handles objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that usually have adequate light, heat and fresh air. Is exposed to the possibility of cuts and bruises.

Stockroom Attendant; Grade: 6

Receives, stores and issues a variety of hand and powered tools and equipment, shop supplies, and common and special parts. Identifies item being requested from descriptions of item shop nomenclature, parts number, or intended usage. Checks catalogs and listings for more specific identification and to determine substitute or interchangeable items. Makes visual and operational checks of returned items, some of which require the use of specialized measuring instruments such as micrometers. Determines items needing repair or

Stockroom Attendant; Grade: 6 cont.

maintenance and accomplishes those of a minor nature such as preserving with oil and grease, replacing broken handles, and sharpening rough edges with hand files. Requests reasons for damaged items and reports those requiring major repair. Segregates, assembles and rearranges items in stock based on size, convenience in handling, similarity in nomenclature and kind, and available space. Inventories items for quantities and conditions and reports reasons for overages, shortages, and damages.

Requisitions new or additional items based on predetermined stock levels, and based on shop workload requirements, recommends changes in stock levels. Assures that stock items are properly marked, tagged, labeled and placed in proper locations. Uses handtools.

Follows established receiving, storing and issuing methods and procedures. Assures that adequate levels of stock are maintained and in workable condition to support shop workload requirements. Frequently handles objects weighing up to 10 pounds and occasionally objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that are sometimes damp and drafty. Is exposed to the possibility of cuts and bruises.

Sewing Machine Operator; Grade: 6

Sets up and runs a variety of domestic and industrial type power operated sewing machines and related special purpose machines such as buttonhole, basting and feed-off the arm machines. Does all work involved in the sewing of textiles and fabrics for such items as clothing, blankets, linens, tents and other heavy fabrics. Makes, alters, repairs and modifies items that require difficult sewing because of their large size, weight, or appearance, such as setting coat sleeves, taping and stitching the edges of coats with seaming tape requiring very close stitching.

Makes independent judgments and decisions within the framework of oral or written instructions and accepted methods, techniques and procedures.

Continually handles objects weighing up to 5 kilograms (10 pounds) and occasionally objects weighing up to 9 kilograms (20 pounds).

Works inside in areas that usually have adequate light, heat and fresh air. Is exposed to the possibility of cuts and bruises.

Bindery Worker; Grade: 7

Sets up and operates powered paper staplers, drills, punches and plastic binding machines to trim, assemble and package printed material. Selects proper drills, dies, punches and combs.

Bindery Worker; Grade: 7 cont.

Makes sure that machines are working correctly and makes necessary operating adjustments. Lays out and collates material from round-tables and rack assemblies. Assists higher grade workers in running power paper cutters, folders and collators. Must be familiar with different sizes, kinds, weights and colors of papers.

Makes independent judgments and decisions within the framework of oral and written instructions and accepted methods, techniques and procedures. Follows detailed oral instructions while assisting higher grade workers.

Continually handles objects weighing up to 5 kilograms (10 pounds) and occasionally objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that are occasionally noisy. Is exposed to the possibility of cuts, bruises and broken bones.

Office Appliance Repairer; Grade: 7

Repairs and maintains various kinds of standard office appliances and machines such as standard (manual) typewriters, small manual or electric accounting machines having limited automatic parts, envelope opening and sealing machines, and address plate and embossing machines. Reads basic sketches, blueprints and wiring diagrams. Determines work sequence, materials and tools to be used. Uses standard repair techniques. Makes operational tests, diagnoses malfunctions, disassembles, replaces parts, reassumes, adjusts and makes final operational tests. Uses a variety of handtools.

Makes independent judgments and decisions within the framework of oral and written instructions and accepted methods, techniques and procedures.

Frequently handles objects weighing up to 18 kilograms (40 pounds).

Works inside areas that usually have adequate light, heat and fresh air. Is exposed to the possibility of cuts and bruises.

Truck Driver (Heavy); Grade: 7

Drives one or more types of trucks without trailers, with rated weight capacities of four tons and over in hauling cargo or passengers within Government installations and over public roads. Occasionally directs or assists in loading or unloading cargo and checks to see that loads are properly distributed, secured and within the maximum rated weight capacity. Must be able to pass driver's test, read traffic signs and fill out trip tickets.

Truck Driver (Heavy); Grade: 7 cont.

Follows written or oral orders and schedules concerning where to go and what to do. Follows safety and traffic rules and drives carefully to prevent damage to truck and materials and injury to others.

Uses moderate physical effort in operating hand and foot controls.

Occasionally handles objects weighing over 23 kilograms (50 pounds) while loading and unloading trucks.

Works outside and occasionally is exposed to bad weather conditions while loading and unloading trucks. Drives in all types of traffic and weather and is exposed to the possibility of serious accidents.

Truck Driver (Trailer); Grade: 8

Drives truck or truck tractor with trailer or semi-trailer to haul cargo within Government installations and over public roads. Backs and drives vehicles in traffic, over uneven roads and grounds, and in narrow or crowded areas. Carefully applies hydraulic or airbrakes to prevent slipping, tipping or jackknifing. Directs or occasionally assists in loading or unloading cargo and checks to see that loads are properly distributed, secured and within maximum rate weight capacity. Must be able to pass driver's test, read traffic signs and fill out trip tickets.

Follows written or oral orders and schedules concerning where to go and what to do. Follows safety and traffic rules and drives carefully to prevent damage to vehicle and materials and injury to others.

Uses moderate physical effort in operating hand and foot controls.

Occasionally handles objects weighing over 23 kilograms (50 pounds) while loading and unloading vehicle.

Works outside and occasionally is exposed to bad weather conditions while loading and unloading vehicle. Drives in all types of traffic and weather and is exposed to the possibility of serious burns.

Cook; Grade: 8

Prepares and cooks all kinds of food in bulk or individual servings using a wide variety of cooking methods and techniques. Cooks foods for standard and special diets. Prepares and cooks meats, fish, poultry, vegetables, soups, sauces, gravies, dressings and desserts by frying, roasting, baking, broiling, braising, steaming and boiling. Uses various standard tests to determine that food is properly cooked and assures that high nutritive value and good

Cook; Grade: 8 cont.

tastes are achieved. Prevents waste and spoilage. Uses a variety of cooking utensils, tools and powered kitchen equipment.

Makes independent judgments and decisions within the framework of oral and written instructions and accepted methods, techniques and procedures.

Continually handles objects weighing up to 5 kilograms (10 pounds) and occasionally objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that are usually hot and humid. Is exposed to the possibility of cuts, bruises, and serious burns.

Machine Tool Operator; Grade: 8

Operates one or more types of machine tools such as lathes, boring mills, milling machines, shapes, grinding machines, planers, and drill presses to machine castings, forgings, or bar stock of various metals and metal alloys. Normally operates machines of only one type, or closely related types. Carries out production runs involving standard operations. Alines metal parts in machines according to set methods and given reference points. Controls machine speed and feed, and uses different tools in successive operations. Checks dimensions as necessary, using various standard or preset gages. Changes tools as necessary. Makes minor changes in machine setup, such as realining for different sizes of workpiece or changes in shape.

Follows detailed oral and written instructions concerning machine speeds, tools to be used, alinement processes and predetermined machined dimensions.

Frequently handles objects weighing up to 5 kilograms (10 pounds) and occasionally objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that are usually noisy and dirty. Is exposed to fumes and to the possibility of cuts, bruises and scrapes.

Water Plant Operator; Grade: 9

Operates, cleans and maintains water pumping and treating equipment to purify and supply water for domestic and industrial use. Accomplishes such treatment processes as filtration, softening, fluoridation, chlorination, demineralization and ammunition. Operates a variety of automatic or manually controlled pumps and related equipment by adjusting valves to control rates of feed of various chemicals as well as waterflow; and reading various meters, gages, thermometers and charts to determine when pumps should be started, stopped, or adjusted. In accordance with standard methods and procedures, performs a variety of tests to determine

Water Plant Operator; Grade: 9 cont.

the bacterial, physical and chemical content of the water. Selects and mixes chemical compounds in correct amounts and feeds into equipment in correct quantities and sequence. Adjusts equipment to regulate chemical input as well as waterflow. Checks operation of plant equipment and accomplishes minor repairs and maintenance such as cleaning and replacing gaskets, valves and piping; and fixing leaks by replacing packing. Reports damages requiring major repairs. Prepares reports showing test results, waterflow, pressures and temperatures.

Makes independent judgments and decisions within the frame-work of written and oral instructions and accepted practices, processes and procedures while completing assignments.

Frequently handles objects weighing up to 5 kilograms (10 pounds) and occasionally objects weighing up to 18 kilograms (40 pounds). Occasionally works in awkward and cramped positions.

Works inside in areas that are usually noisy but have adequate light and heat, and outside, sometimes in bad weather. Is exposed to some unpleasant odors and to the possibility of burns, cuts, bruises and broken bones.

Painter; Grade: 9

Paints wood, metal parts, equipment, interiors and exteriors of buildings, vessels and other structures, using brushes, rollers and spray guns. Examines surfaces to determine proper coating materials. Prepares wood, metal, and other surfaces by sanding and scraping. Blends colors and mixes paints and other surfacing materials. Applies prime, intermediate and finished coats including decorative finishes by stippling, graining, marbling and mottling.

Makes independent judgments and decisions within the framework of oral and written instructions and accepted trade practices, processes and procedures while completing assignments.

Continually handles objects weighing up to 5 kilograms (10 pounds) and occasionally handles objects weighing up to 18 kilograms (40 pounds).

Works inside and outside, sometimes in bad weather, and is usually exposed to paint spray and fumes. Experiences discomfort while wearing respirator. Is exposed to the possibility of cuts, bruises and broken bones.

Carpenter; Grade: 9

Builds, repairs, alters and installs wooden articles and structures. Constructs and installs window frames, door frames, inside walls, floors, ceilings, closets, counters, shelves, casing, wood foundations, and similar structures. Lays beams, shingles and clapboards. Plans and

Carpenter; Grade: 9 cont.

lays out work from blueprints, drawings and verbal instructions. Determines work sequence, materials and tools to be used. Measures and cuts materials to required lengths. Uses hand and portable power tools of the carpentry trade, shop woodworking equipment and standard measuring instruments such as rulers, carpenter's square and levels.

Makes independent judgments and decisions within the frame-work of oral and written instructions and accepted trade practices, processes and procedures while completing assignments.

Continually handles objects weighing up to 5 kilograms (10 pounds) and occasionally handles objects weighing up to 23 kilograms (50 pounds). Occasionally works in awkward and cramped positions.

Works inside in areas that are usually dusty and noisy and outside, sometimes in bad weather. Is exposed to the possibility of cuts, bruises and broken bones.

Plumber; Grade: 9

Assembles, installs and repairs pipes, fittings and fixtures of heating, water and drainage systems. Installs and repairs various fixtures and facilities such as water mains, sewage lines, hydrants, unit gas heaters, water heaters, hot water tanks, garbage disposal units, dishwashers and water softeners. Plans and lays out work from blueprints, drawings and verbal instructions. Determines work sequence, materials and tools to be used. Measures, cuts, reams, threads, bends, fits and assembles pipe and pipe fittings. Installs piping through floors, walls and ceilings of various structures. Joins pipes by use of screws, bolts, fittings or solder and caulks joints. Locates source and determines cause of malfunctions; checks piping, fittings and fixtures for defective parts or connections. Disassembles and repairs damaged sections. Uses hand and power tools of the plumbing trade.

Makes independent judgments and decisions within the framework of oral and written instructions and accepted trade practices, processes, and procedures while completing assignments.

Frequently handles objects weighing up to 18 kilograms (40 pounds). Frequently works in awkward and cramped positions.

Works inside in areas that are usually dusty, dirty, or greasy and outside, sometimes in bad weather. Is exposed to fumes and the possibility of burns, infection, scrapes, and broken bones.

Motor Grader Operator; Grade: 10

Operates pneumatic-tired gasoline or diesel powered motor graders to perform excavating, backfilling and leveling of earth to rough grading requirements. Starts and checks the

Motor Grader Operator; Grade: 10 cont.

operation of the power unit. Assures that control levers, tires, blade, scarifier and leaning wheel control are in proper position and working order, making adjustments as necessary. Steers grader and operates clutches, brakes, levers and valves in accomplishing required grading. Operates graders close to buildings, around obstructions and in open areas. Performs rough grading such as digging and cleaning ditches and roadbeds; spreading crushed rock, gravel and sand; cleaning highways and airfields of rocks, boulders and snow; performing rough bank sloping and building; removing light stumps, small rocks and roots; and operating scarifier while building and grading road shoulders.

Follows oral instructions concerning job location and what has to be done. Follows safety rules and operates motor graders carefully to prevent damage to the grader and injury to others.

Uses strenuous physical effort in operating hand and foot controls. Occasionally handles objects weighing up to 23 kilograms (50 pounds).

Operates motor grader in all types of weather and is exposed to the possibility of serious accidents.

Automotive Mechanic; Grade: 10

Overhauls, repairs and maintains vehicles such as automobiles, buses, trucks, forklifts, warehouse tractors and light ground maintenance equipment. Within the framework of inspection reports or instructions, determines nature and extent of repairs required on engines, transmissions, suspension, steering and braking systems and related electrical, fuel, hydraulic, wheel and engine assembles. Following instructions contained in technical manuals, tears down, adjusts, repairs, reassembles and runs operational checks on components of these systems. Tunes and adjusts vehicle components to prescribed operating tolerances. Uses specialized testing equipment such as compression testers, motor analyzers, test benches, and specialized measuring instruments such as micrometers, vernier calipers and dial indicators.

Makes independent judgments and decisions within the framework of oral and written instructions and accepted trade practices, processes, and procedures while completing assignments.

Continually handles objects weighing up to 9 kilograms (20 pounds) and occasionally handles objects weighing up to 23 kilograms (50 pounds). Frequently works in awkward and cramped positions. Works inside in areas that are usually noisy, dirty and greasy. Is exposed to the possibility of cuts, bruises, shocks, scrapes and burns.

Aircraft Mechanic; Grade: 10

Makes repairs, adjustments and modifications to a variety of reconnaissance, fighter, bomber or cargo aircraft. Within the frame-work of discrepancies noted by the pilot, inspection reports, periodic maintenance checklists or engineering modification work orders, determines nature and extent of repairs or adjustments required on engines, fuel systems, landing gear, flight control

surfaces and systems, heating, cooling and de-icing system's and hydraulic systems. Following instructions contained in technical manuals or engineering work orders, removes items to be inspected, repaired or replaced, installs, makes adjustments and makes repairs to items. Installs and adjusts engine accessories, control surfaces, fuel tanks and lining, oil, fuel and hydraulic fluid tubing, propellers and propeller governors, wings, seats, tail assemblies, armament mounts, canopies, wheels and landing gear mechanisms. Makes visual and functional check of items installed, repaired or adjusted. Uses handtools, power tools, jigs, fixtures, tests stands, external power sources and specialized measuring instruments such as gages, micrometers, vernier calipers and templates. Uses a knowledge of overall aircraft systems.

Makes independent judgments and decisions within the frame-work of oral and written instructions and accepted trade practices, processes and procedures while completing assignments.

Continually handles objects weighing up to 9 kilograms (20 pounds) and occasionally weighing up to 23 kilograms (50 pounds). Frequently works in awkward and cramped positions. Works inside in areas that are usually noisy, dirty and greasy, and outside, sometimes in bad weather. Is exposed to the possibility of cuts, bruises, shocks, scrapes, broken bones and burns.

Welder; Grade: 10

Repairs, modifies and fabricates all types of metal and alloy parts and equipment by use of electric, gas or insert gas-shielded welding processes. Plans and lays out work from blueprints, sketches, drawings and work orders. Determines work sequence. Selects proper materials and processes to be applied. Sets up and adjusts equipment. Welds, in vertical, horizontal, flat and overhead positions, items of various sizes and shapes, frames, flame-cuts, beads, heat-treats, pressure and tack welds. Welds are subject to X-ray analysis, magnaflux inspection, dye check, water or gas tight pressure and other tests. Uses hand and power tools of the welding trade. Uses templates in measuring, marking, scribing and cutting.

Makes independent judgments and decisions within the framework of oral and written instructions and accepted trade practices, processes and procedures while completing assignments.

Welder; Grade: 10 cont.

Continually handles objects weighing up to 9 kilograms (20 pounds) and occasionally objects weighing up to 23 kilograms (50 pounds). Frequently works in awkward and cramped positions.

Works inside in areas that are usually noisy and dirty and outside, sometimes in bad weather. Experiences considerable discomfort while wearing a welding helmet. Is exposed to fumes and heat and to the possibility of cuts and bruises, scrapes, shock, broken bones and serious burns.

Pipefitter; Grade: 10

Installs, repairs and maintains high pressure piping systems such as steam heating, steam power, hydraulic and high pressure air or oil line system. Determines nature and extent of necessary repairs. Plans band lays out work from blueprints, drawings, technical manuals or specifications. Determines work sequence and tools to be used. Works with a variety of pipe and pipe fittings including those made of copper, brass, lead, glass and plastic. Measures, cuts, bends, threads, packs and joins piping to pipe fittings. Installs valves, traps, thermostats and gages to maintain flow and pressure. Makes pressure test of piping systems to assure pressure tight joints and proper circulation and flow. Uses hand and power tools of the pipefitting trade.

Makes independent judgments and decisions within the frame-work of oral and written instructions and accepted trade practices, processes and procedures while completing assignments.

Frequently handles objects weighing up to 23 kilograms (50 pounds) and occasionally handles objects weighing over 23 kilograms (50 pounds). Frequently works in awkward and cramped positions.

Works inside in areas that are usually dusty and dirty and outside, sometimes in bad weather. Is exposed to fumes and the possibility of burns, infection, scrapes and broken bones.

Sheetmetal Worker; Grade: 10

Fabricates, repairs and installs a variety of standard sheetmetal articles and equipment such as heating, air-conditioning and ventilating systems, down spouts, gutters, partitions and refrigeration compartments. Plans and lays out work from blueprints, drawings, sketches and work orders. Determines work sequence. Selects materials, equipment and tools to be used. Sets up and operates a variety of sheetmetal machines to bend and form light gage metals into desired shapes, allowing for seams, joints, laps, and shrinkages. Joins parts by riveting, soldering and spot welding. Installs sheetmetal sections with bolts, rivets, screws, and other fastening devices. Uses hand and power tools of the sheetmetal trade. Uses shop mathematics in developing templates and patterns used to lay out work.

Sheetmetal Worker; Grade: 10 cont.

Makes independent judgments and decisions within the frame-work of oral and written instructions, and accepted trade practices, processes and procedures while completing assignments.

Continually handles objects weighing up to 9 kilograms (20 pounds) and occasionally handles objects weighing up to 23 kilograms (50 pounds). Frequently works in awkward and cramped positions.

Works inside in areas that are usually dirty and noisy and outside, sometimes in bad weather. Is exposed to the possibility of cuts, bruises, burns and broken bones.

Electrician; Grade: 10

Installs, maintains, repairs and tests electrical systems, electric setup equipment and internal electrical power distribution facilities including connection of power and control circuits to motors, industrial equipment and alarm systems. Determines nature and extent of repairs required. Plans and lays out work from blueprints, sketches, wiring diagrams, technical manuals and other specifications. Determines work sequence. Makes standard computations relating to load requirements of wiring or electrical equipment. Uses specialized measuring instruments such as voltmeters, ammeters, wattmeters, ohmmeters and meggers. Makes independent judgments and decisions within the frame-work of oral and written instructions and accepted trade practices, processes and procedures while completing assignments.

Frequently handles objects weighing up to 9 kilograms (20 pounds). Occasionally works in awkward and cramped positions.

Works inside in areas that are usually dirty and greasy, and outside, sometimes in bad weather. Is exposed to the possibility of cuts, bruises, shocks, burns and broken bones.

Machinist; Grade: 10

Sets up and operates various machine tools such as engine lathes, milling machines, "boring mills, planers, shapers and precision grinders for machining castings, forgings and bar stock of various metal and metal alloys from raw stock to finished product. Plans and lays out work from blueprints, work orders, sketches and other specifications. Determines work procedures, machines, tools, equipment and attachments to be used. Decides on type and size of raw stock to be used. Determines speeds, feed tolerances and sequence of machine operations. Makes complex setups and adjustments. Cuts, turns, drills, bores, taps, reams, shapes, grinds, and finishes item. Uses specialized measuring instruments such as vernier calipers, inside and outside micrometers, surface gages, center-head protractors and dial indicators. Uses shop mathematics and standard handbook formulas in computing dimensions for planning and laying out work. Uses a high degree of manual skill and works within close tolerances.

Machinist; Grade: 10 cont.

Makes independent judgments and decisions within the framework of oral and written instructions and accepted trade practices, processes, and procedures while completing assignment.

Frequently handles objects weighing up to 5 kilograms (10 pounds) and occasionally handles objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that are usually noisy and dirty. Is exposed to the possibility of cuts, bruises, scrapes and burns.

Electronics Equipment Mechanic; Grade: 11

Tests, overhauls, repairs, modifies, alines and installs various electronic equipment and related devices involving audio and video electronic circuits including all components in a complete standard operational system. Works on radar, radio, sonar, loran units, radio teletype and related equipment which requires an extensive knowledge of a wide range of the principles of the electronics mechanic trade.

Determines nature and extent of repairs required. Plans and lays out work from blueprints, schematic diagrams, wiring diagrams, technical manuals and other specifications. Determines work sequence. Selects specialized testing and measuring instruments such as spectrum analyzer, oscilloscope, wave meter, voltmeters and frequency meters. Performs complete operational tests to assure that all components of systems are working within prescribed close tolerances.

Makes independent judgments and decisions within the framework of oral and written instructions and accepted maintenance shop practices, processes and procedures while completing assignments.

Continually handles objects weighing up to 5 kilograms (10 pounds) and occasionally objects weighing up to 18 kilograms (40 pounds). Occasionally works in cramped and awkward positions.

Works inside in areas that have adequate light, heat and fresh air, and outside, sometimes in bad weather. Is exposed to the possibility of cuts, bruises, scrapes, shock, broken bones and serious burns.

Radar Mechanic (Ground); Grade: 12

Performs trouble analysis, complete overhaul and final alinement on complete complex ground radar systems, such as search height finders, ground approaches, bomb scoring devices and gap fillers. Following technical orders, factory test specifications and preoverhaul survey reports, analyzes intricate relationships among, and signal flow through, all subsystems, circuits and components. Determines significant defects, such as burning power supplies, overloaded amplifiers, arcing magnet rolls, improper indicator sweep rotations and excessive power consumption. Applies advanced radar theory and special data flow tests which are complex because of frequent technological changes in systems. Determines modifications, parts replacements, relocation of consoles and repair of components to be made by lower grade workers. Performs final operational tests in terms of continuity, power, amplitude, signal frequency, voltage, amperage and resistance. Alines all system components, circuits and subsystems to assure their optimum operating effectiveness.

Makes independent judgments and decisions within the framework of oral or written instructions and accepted maintenance shop practices, processes, and procedures while completing assignments.

Frequently handles objects weighing up to 5 kilograms (10 pounds) and occasionally objects weighing up to 18 kilograms (40 pounds). Frequently works in cramped and awkward positions.

Works inside in areas that usually have adequate light, heat and fresh air and outside, in all kinds of weather. Is exposed to the possibility of cuts, bruises, broken bones and burns.

Tool, Die, and Gage Maker; Grade: 13

Fabricates and repairs tools, jigs, fixtures, dies, punches and gages used in the manufacture, overhaul and repair of equipment. Fabricates molds and dies for use in the forming of metals, plastics and other types of materials. Determines the structural characteristics of the item based on how it will be used bearing in mind the intricate working relationship of holes or surfaces in the functioning of the end item. Determines the dimensions and layout of broken lines, compound radii, or holes. Determines need for, sets up and operates a variety of types of machine tool equipment. Works with a variety of kinds of metals and metal alloys. Uses specially constructed devices to hold work at a position or angle. Calibrates work while in process and upon completion. Accomplishes precision fitting and assembly of end items. Uses specialized and precision measuring instruments such as computing devices, toolmaker's microscopes, air gage devices, optical flats and master gage blocks. Uses shop mathematics to calculate the dimensional sizes and relationships of parts and working tolerances and clearances. Uses a very high degree of manual dexterity and works within extremely close tolerances.

Makes independent judgments and decisions within the framework of oral and written instructions. Uses originality and ingenuity by frequently adapting or modifying existing tools and dies and work processes and procedures in fabricating and repairing items.

Tool, Dial, and Gage Maker; Grade: 13 cont.

Frequently handles objects weighing up to 5 kilograms (10 pounds), and occasionally handles objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that are usually noisy and dirty. Is exposed to the possibility of cuts, bruises, scrapes and burns.

Die Sinker; Grade: 14

Machines and grinds matched impressions in two blocks of steel simultaneously to make impression dies or molds used in forging hammers and presses. Studies blueprints, templates of drawings of the product as well as the die or mold. Plans sequences of operations, visualizing shape of die or mold in reverse of item to be produced. Measures, marks and scribes steel stock to lay out for machining. Determines need for, sets up and operates a variety of types of machine tool equipment to machine outer dimensions and contoured cavities of die or mold to extremely close tolerances. Grinds, files and sands parts using handtools such as files, emery cloth and power grinders to

Die Sinker; Grade: 14 cont.

smooth and finish cavity for precision fitting and assembling. Fastens die halves and pours in molten lead to make castings from which final checks of dies can be made. Verifies dimensions, using such specialized measuring instruments as micrometers, calipers, planer gages and dial indicators. Uses shop mathematics to calculate the dimensional sizes and relationships of parts and working tolerances and clearances. Uses a very high degree of manual dexterity.

Makes independent judgments and decisions within the frame-work of oral and written instructions. Uses originality and ingenuity by frequently adapting or modifying existing dies and molds and work processes and procedures in fabricating items.

Frequently handles objects weighing over 23 kilograms (50 pounds).

Works inside in areas that are usually noisy and dirty. Is exposed to the possibility of cuts, bruises, scrapes and burns.

Modelmaker; Grade: 14

Fabricates, installs, tests, modifies and repairs a variety of different types of models or various major component parts made of ferrous and nonferrous metals and metal alloys. Makes complete models and model parts, usually used in experimental or developmental work, to a full, reduced, or enlarged scale within extremely close tolerances. Follows blueprints, sketches or oral information that indicates the design data that is required to achieve specific test applications. Discusses with scientists and engineers design characteristics that cannot be met by fabrication processes and indicates what designs could

Modelmaker; Grade: 14 cont.

be achieved by different component alinement and placement; and changes in size, weight or dimensional relationships of parts. Determines from nature of test, experiment or other use what material to use and work methods and operational sequence to follow. Considers such factors as shrinkage, warpage, desired life, location of component members and surface finish of models. Lays out work, which involves a wide variety of interrelated dimensions such as unusual contours and shapes and a variety of irregularly shaped parts at varying angles and planes. Performs precision machining or handwork by use of a variety of machine and handtools. Fabricates and assembles interrelated parts and provides for access holes, cover plates, or other comparable assembly and operational considerations. Devises and makes special tools, templates, molds, jigs, gages, fixtures and securing devices needed in fabrication or assembly of models. Accomplishes precision fitting and assembling of complete model.

Observes tests of models to determine if any defects result from or can be corrected by methods of fabrication or assembly. Uses a variety of specialized and precision measuring instruments such as micrometers; vernier calipers; height, limit, and surface gages; and master gage blocks. Uses shop mathematics to calculate the sizes and dimensional relationships of parts, working tolerances and clearances and machine tool settings. Uses a very high degree of manual dexterity and works within extremely close tolerances.

Makes independent judgments and decisions in determining how to fabricate a model to meet the precise specifications established by the scientist or engineers responsible for testing the model. Uses originality and ingenuity in modifying or adapting standard tools and machines, and work processes to accomplish required fabrication.

Frequently handles objects weighing up to 5 kilograms (10 pounds) and occasionally handles objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that are usually noisy and dirty. Is exposed to the possibility of cuts, bruises, scrapes, burns, and shock.

Instrument Maker; Grade: 15

Fabricates, modifies and tests a variety of mechanical and electrical instruments for special purpose use, such as one-time research and development model, special laboratory equipment or highly precise instruments used to record accurate and uniform physical measurements. Makes complete operating instruments or modifies existing instruments which have fine mechanical or electromechanical movements to measure and regulate factors such as heat, distance, time, pressure, illumination and sound. Works with a wide variety of materials such as ferrous and nonferrous metals and metal alloys, plastics, wood, rubber, stone and porcelain. Discusses with scientists and engineers how the instrument will be used, the operating and environmental conditions under which it will operate and the desired size and shape. Determines what materials to use, considering the special purpose of the instrument.

Instrument Maker; Grade: 15 cont.

Determines the most economical and effective fabrication and modification methods and procedures, considering such factors as use of new or rare materials, the physical properties and reactions of different materials, component alinement and placement, safeloading requirements, and unusual experimental conditions. Plans and lays out work, which involves unique and varied fabrication sequences and methods. Performs highly precise machining by using a variety of special machine tools which often includes the fabrication of special tools, jigs, gages, fixtures and securing devices. Constructs complex electrical circuitry and determines values for electrical parts and accessories, considering wire size and gage, insulation, fuse and the physical placement of instrument components. Assembles instruments by fitting and mounting various electrical parts and circuitry and installing precision components, such as timing devices, springs, gear trains in housing, and balance mechanisms, which often require the use of a jeweler's lathe, tweezers, eyepiece, and specialized 'hand tools. Tests, aligns and calibrates instruments to determine if any defects can be corrected by methods of fabrication. Uses a variety of highly specialized and precise measuring instruments such as electronic indicators, super micrometers and shadowgraphs. Uses advanced shop mathematics to calculate the sizes and dimensional relationships of parts, working tolerances and clearances, and special tool settings. Uses a very high degree of manual dexterity and works within extremely fine tolerances and precise finishes.

Makes unreviewed trade judgments and decisions as to how the instrument will be fabricated, including determinations of precise specifications required to achieve the final operating characteristics required by scientists and engineers. Uses considerable originality and ingenuity in making an instrument without detailed design specifications.

Frequently handles objects weighing up to 5 kilograms (10 pounds) and occasionally handles objects weighing up to 18 kilograms (40 pounds).

Works inside in areas that usually have adequate light, heat and fresh air. Is exposed to the possibility of cuts, bruises, shocks and burns.

APPENDIX 3

FACTOR DEFINITIONS

The following four factors are used in grading nonsupervisory jobs:

a. *Factor I: Skill and Knowledge*

Covers the nature and level of skill, knowledge, and mental application required in performing assigned work. Positions vary in such ways as the kind, amount, and depth of skills and knowledge needed, as well as in the manner, frequency, and extent to which they are used.

Elements covered under this factor include, but are not limited to:

(1) Knowledge of work practices, methods, and processes, and their levels of difficulty.
(2) Knowledge of shop mathematics (such as arithmetic, geometry, trigonometry, algebra).
(3) Practical knowledge of the principle underlying the work, or other special or technical knowledge (e.g., electricity, electronics, processing characteristics of materials).
(4) Knowledge of other trades.
(5) Skill in specific trade operations, and the degree of manual dexterity or precision required.
(6) Ability to read and write, to interpret blueprints, work instructions, and other technical guides of varying degrees of complexity.
(7) Ability to use or operate tools, equipment, or machines of varying difficulty.
(8) Mental abilities needed, such as memory, judgment, and ingenuity.
(9) Mental application required (e.g., in planning and laying out work, in maintaining alertness and concentrated attention, or because of the nature of muscular and visual coordination needed).

b. *Factor II: Responsibility*

Covers the nature and degree of responsibility involved in performing work. Positions vary in responsibility in such ways as the complexity and scope of work assigned, the difficulty and frequency of judgments and decisions made, the kind of supervisory controls, and the nature of work instructions and technical guides used.

(1) *Complexity of work* (e.g., whether the work involves simple repetitive actions, or responsibility for a variety of different operations and machines to complete assignments; whether work sequences are simple or complex; whether the work requires a low or a high degree of accuracy and precision; whether assignments involve a low or a high degree of care and skill to prevent damage to tools and materials, and injury to others).
(2) *Scope of work* (e.g., whether assignments involve responsibility for part of an operation or for a complete process; whether assignments include responsibility for planning and laying out work; whether the worker is responsible for advising management and engineering personnel on practical trade aspects of the work, such as techniques, fabrication details, and work sequences).

(3) *Nature a degree of responsibility for making judgments and decisions* (e.g., whether the work is performed under close supervision, or with considerable independence from supervisory controls; whether the work instructions are complete and specific, or general in nature; whether guides such as technical manuals and work precedents can be applied directly, or must be modified; whether tile worker has authority to deviate from instructions and work precedents without prior approval; whether assignments involve the need to make decisions and judgments which affect the quality and adequacy of work performed).

c. *Factor III: Physical Effort*

Covers the physical effort exerted in performing assigned work. Positions vary in such ways as the nature, degree, frequency, and duration of muscular effort or physical strain experienced in work performance.

Elements considered under this factor include, but are not limited to:

(1) Physical exertion related to actions such as lifting, pushing, pulling, or carrying objects of varying weights, sizes, and shapes.
(2) Physical effort related to movements such as walking, running, climbing, crawling, and bending.
(3) Strain related to lack of movement such as standing in place, crouching, or stooping for extended periods of time.

d. *Factor IV: Working Conditions*

Covers the hazards, physical hardships, and working conditions to which workers are exposed in performing assigned work. Positions vary in such ways as the nature of the work environment; the extent to which it includes unpleasant, disagreeable, or hazardous conditions; the degree to which such conditions are experienced; the frequency and duration of exposure; the adequacy of protective clothing and gear, safety devices, and safe trade practices; and the possible effects on the worker. Elements considered under this factor include, but are not limited to:

(1) Lighting, heating, and ventilation in work area.
(2) Weather conditions to which exposed when working outdoors.
(3) Temperature to which exposed in the work area.
(4) Dust, grease, and soiling of clothing and skin surfaces.
(5) Noise and vibration.
(6) Gases and fumes.
(7) Hazards in working above ground level, on slippery surfaces, or in crowded areas near moving vehicles or cutting tools.