

# The Revised Handbook for Analyzing Jobs



U.S. Department of Labor  
Lynn Martin, Secretary

Employment and Training Administration  
Roberts T. Jones  
Assistant Secretary for Employment Training  
1991



This digital version of *The Revised Handbook for Analyzing Jobs* is a reprint of the original text printed by the U.S. Department of Labor (1991). It includes pages that were missing in the original printing (Chapter 9) by:

U.S. Government Printing Office  
Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402-9328  
ISBN 0-16-035877-9  
STOCK NO. 029-013 00095-1

A print version of this entire publication is available from [www.elliottfitzpatrick.com/pcr.html](http://www.elliottfitzpatrick.com/pcr.html) as Item B128

# CONTENTS

Chapter	Page
Introduction .....	i
1. Job Analysis: What It Is and Its Uses .....	1-1
2. Concepts and Principles of Job Analysis .....	2-1
Determining Job Limits .....	2-1
Dimensions of a Job: The Job Analysis Components .....	2-2
Sentence Analysis .....	2-3
Machines, Tools, Equipment, and Work Aids .....	2-3
3. Worker Functions .....	3-1
Structure of Worker Functions .....	3-1
Procedure for Rating Worker Functions .....	3-2
Definitions and Examples of Worker Functions .....	3-2
4. Work Fields .....	4-1
Combination Work Fields .....	4-1
Procedure for Assigning Work Fields .....	4-1
Alphabetical Listing of Work Fields .....	4-3
Work Fields Organization .....	4-4
List of Combination Work Fields .....	4-7
Work Fields Descriptions .....	4-8
5. Materials, Products, Subject Matter, and Services .....	5-1
Organization of MPSMS .....	5-1
Procedure for Assigning MPSMS .....	5-2
MPSMS Groups .....	5-3
Classifications, Definitions, and Examples of MPSMS .....	5-5
Alphabetical Listing of MPSMS .....	5-25
6. Sentence Analysis Technique .....	6-1
7. General Educational Development .....	7-1
Divisions of GED Scale .....	7-1
Rationale for GED Scale Definitions .....	7-1
Scale of General Educational Development .....	7-2
Definitions and Examples of GED Levels .....	7-4
Procedure for Evaluating and Recording GED Requirements .....	7-13
8. Specific Vocational Preparation .....	8-1
Scale of Specific Vocational Preparation .....	8-1
Definitions and Examples of SVP Levels .....	8-2
Procedure for Evaluating and Recording SVP Requirements .....	8-10
9. Aptitudes .....	9-1
Levels of Aptitudes .....	9-2
Procedure for Rating Aptitudes .....	9-2
Definitions, Interpretive Information, and Examples of Aptitudes .....	9-3
10. Temperaments .....	10-1
Definitions and Examples of the Temperament Factors .....	10-1
Procedure for Rating Temperaments .....	10-5
11. Guide for Occupational Exploration .....	11-1
Procedure for Assigning GOE Code and Title .....	11-1
Definitions and Work Groups of GOE Interest Areas .....	11-1

12. Physical Demands and Environmental Conditions .....	12-1
Physical Demands Factors, Definitions, and Examples .....	12-1
Environmental Conditions Factors, Definitions, and Examples .....	12-1
Procedure for Preparing the Physical Demands and Environmental Conditions Section of the JAR .....	12-14
Physical Demand and Environmental Condition Symbols .....	12-14
Limits of Weights Lifted/Carried or Force Exerted .....	12-15
Sample Physical Demands Form .....	12-17
Sample Environmental Conditions Form .....	12-18
13. Writing Job Summaries and Descriptions of Tasks .....	13-1
Preparing Job Summaries .....	13-1
Preparing Descriptions of Tasks .....	13-3
Writing Descriptions of Tasks .....	13-4
Style Conventions for Recording Descriptions of Tasks .....	13-10
Determining Detail Needed in Job and Task Descriptions .....	13-12
List of Frequently Used and Misspelled Words .....	13-13
14. The Job Analysis Report .....	14-1
Procedure for Preparing the JAR .....	14-1
Procedure for Recording Establishment Job Titles and DOT Titles .....	14-6
Sample Job Analysis Report Form .....	14-7
15. Procedure for Preparing for and Conducting a Job Analysis Study .....	15-1
Industry Study Planning Report .....	15-1
Sample ISPR Face Sheet .....	15-4
Sample ISPR Segment Analysis Sheet .....	15-7
Procedure for Conducting a Job Analysis Study .....	15-9
16. Plant Control Card and Staffing Table .....	16-1
Plant Control Card .....	16-1
Procedure for Preparing A Plant Control Card .....	16-1
Sample Plant Control Card .....	16-3
Staffing Table .....	16-4
Procedure for Preparing The Staffing Table .....	16-4
Sample Staffing Table Form .....	16-7
Alphabetical List of DOT Industries and Codes .....	16-9
17. Organization and Workflow Charts .....	17-1
Organization Charts .....	17-1
Sample Organization Chart .....	17-3
Workflow Charts .....	17-4
Sample Workflow Chart, Manufacturing Establishment .....	17-5
Sample Workflow Chart, Service Organization .....	17-6
18. The Narrative Report .....	18-1
Compiling Data .....	18-1
Organizing Materials .....	18-1
Writing the Report .....	18-2
Sample Narrative Report .....	18-5
Appendix A: Breaking A Job Down Into Tasks .....	A-1
Appendix B: Determining Detail Needed In Job And Task Descriptions .....	B-1
Appendix C: Machines, Tools, Equipment, And Work Aids .....	C-1
Appendix D: Bibliography .....	D-1
Appendix E: Agency Identification Numbers For Occupational Analysis .....	E-1

## CHAPTER 3

### WORKER FUNCTIONS

Worker Functions, one of the three components of Work Performed, are activities which identify worker relationships to data, people, and things. The following 24 Worker Functions are used in job analysis to express these relationships.

#### WORKER FUNCTIONS

Data	People	Things
0 Synthesizing	0 Mentoring	0 Setting Up
1 Coordinating	1 Negotiating	1 Precision Working
2 Analyzing	2 Instructing	2 Operating-Controlling
3 Compiling	3 Supervising	3 Driving-Operating
4 Computing	4 Diverting	4 Manipulating
5 Copying	5 Persuading	5 Tending
6 Comparing	6 Speaking-Signaling	6 Feeding-Off Bearing
	7 Serving	7 Handling
	8 Taking Instructions-Helping	

#### NOTE:

1. The hyphenated functions Speaking-Signaling, Taking Instructions-Helping, Operating-Controlling, Driving-Operating, and Feeding-Off Bearing are single functions.
2. The functions Setting Up, Operating-Controlling, Tending, and Feeding-Off Bearing include the situation in which the worker is part of the setup of the machine, as the holder and guider of the material or the tool.
3. Feeding-Off Bearing and Tending, Operating-Controlling and Driving-Controlling, and Setting Up are special cases involving machines and equipment of Handling, Manipulating, and Precision Working, respectively.
4. When a worker becomes part of the machine function by reason of holding and guiding the material or the tool, the Worker Function should be interpreted as machine-related. In these cases the worker is Setting Up, Operating-Controlling, Tending, or Feeding-Off Bearing.
5. When a worker is involved primarily with non-machine activities, but also has a minor relationship to a machine, the appropriate non-machine Things Worker Function should be assigned.

Each Worker Function depicts a broad action which summarizes what the worker does in relation to Data, People, and Things. The selection of three Worker Functions, which represent the most characteristic worker relationships in the job to Data, People, and Things, respectively, provides a device to structure the analysis of the job. Worker Function code numbers are also reflected in DOT definition codes, i.e., the middle three digits of a 9-digit code.

#### STRUCTURE OF WORKER FUNCTIONS

Although the arrangement within each of the three relationships (Data, People, Things) is structured to suggest an upward progression from the less complex to the more complex, there are instances where hierarchical relationships are limited.

Data Functions are an arrangement of different kinds of activities involving information, knowledge, or concepts. Some are broad in scope and others are narrow. There is considerable overlap in complexity among the Functions. Computing and Copying are more specialized types of functional activities than the other Data Functions.

People Functions are also activities that have little or no hierarchical arrangement. Beyond the generalization that Taking Instructions-Helping is usually the least complex People Function, the remaining Functions have no specific order denoting levels.

Things Functions can be divided into relationships based upon the worker's involvement with either machines and equipment (machine-related) or with tools and work aids (non-machine related). [For clarification, Machines, Tools, Equipment and Work Aids (MTEWA) are defined in Chapter 2, Concepts and Principles of Job Analysis.] As shown in the following chart, Things Functions also represent levels of complexity based on the worker's decisions or judgments.

#### LEVELS OF JUDGMENT OF THINGS WORKER FUNCTIONS

Levels of Judgment	Nonmachine-Related Levels	Machine-Related Levels
Considerable judgment	1 Precision Working	0 Setting Up
Some latitude for judgment	4 Manipulating	2 Operating-Controlling 3 Driving-Operating
Little or no latitude for judgment	7 Handling	5 Tending 6 Feeding-Off Bearing

#### PROCEDURE FOR RATING WORKER FUNCTIONS

Read the definitions of the Worker Functions and the examples that follow each definition, and compare them with the activities of the job studied. Select the Data, People, and Things Worker Functions that best characterize the job. The Worker Functions selected should reflect the Data, People, and Things levels needed to accomplish the overall purpose of the job and the important worker activities in the job.

The Worker Function assigned that best characterizes the job is not necessarily the Function which is the "highest" Function present in the job. In some cases, the amount of time spent in an activity will determine which particular Worker Function is most characteristic. In other cases, the contribution of an activity to the completion of the overall purpose of the job, rather than the frequency of the activity, will determine the selection of a Worker Function. In short, the analyst must differentiate the incidental from the essential work activities.

When selecting the appropriate Things Worker Function, consider the following: (1) determine the highest appropriate level of complexity of the worker's relationship to Things based on the degree of judgment involved as depicted in the previous chart; then (2) decide whether the worker relates to several items, in which machines sometimes are one of the items, or whether the situation is a special case in which the worker is concerned almost exclusively with one or more machines or pieces of equipment.

After determining the highest appropriate level of the worker's relationship to Data, People, and Things, evaluate which of the Functions is relatively the most important. Enter in Item 8 of the JAR the appropriate number in each space provided. Circle the "Data", "People", and "Things" caption(s) to indicate which relationship(s) best exemplify the job.

#### DEFINITIONS AND EXAMPLES OF WORKER FUNCTIONS

**DATA:** Information, knowledge, and conceptions related to data, people, or things obtained by observation, investigation, interpretation, visualization, and mental creation. Data are intangible and include numbers, words, symbols, ideas, concepts, and oral verbalization.

- 0 Synthesizing:** Integrating analyses of data to discover facts or develop knowledge concepts or interpretations.
- 0:1 Creates satirical or humorous cartoons based on personal interpretations of current news events.
- 0:2 Writes critical reviews of literary, musical, or artistic works and performances for broadcast and publication.
- 0:3 Interprets play scripts and conducts rehearsals for stage presentation.
- 0:4 Formulates hypotheses and experimental designs to investigate problems of growth, intelligence, learning, personality, and sensory processes.

- 0:5 Directs choral group rehearsals and performances to achieve desired effects, such as tonal and harmonic balance, dynamics, rhythms, tempos, and shadings.
  - 0:6 Conducts research to discover new uses for chemical byproducts, and devises new procedures for preparing organic compounds.
  - 0:7 Creates musical compositions, using knowledge of harmonic, rhythmic, melodic, and tonal structure and other elements of music theory.
  - 0:8 Formulates editorial policies of newspaper and originates plans for special features or projects.
  - 0:9 Interprets serious or comic parts by speech or gesture to portray role in theatrical production.
  - 0:10 Creates and teaches original dances for ballet, musical, or revue to be performed for stage, television, nightclub, or motion picture production.
- 1 Coordinating:** Determining time, place, or sequence of operations or activities on the basis of analysis of data; executing determinations or reporting on events.
- 1:1 Plans, directs, and coordinates activities of designated project to ensure that aims, goals, or objectives are accomplished in accordance with prescribed priorities, time limitations, and funding conditions.
  - 1:2 Plans and arranges for activities of radio or television studio and control room personnel to ensure technical quality of pictures and sound for programs originating in studio or from remote pickup points.
  - 1:3 Coordinates movement of air traffic between altitude sectors and control centers to provide maximum separation and safety for aircraft.
  - 1:4 Directs the routing and controlling of oil through pipelines from wells and storage tanks to delivery points in accordance with delivery obligations and deadlines.
  - 1:5 Plans advertising campaign to promote sale of merchandise.
  - 1:6 Plans and establishes collection routes and directs assignment of personnel and equipment in the operation of a municipal sanitation department.
  - 1:7 Authorizes number and frequency of buses traveling over established city routes to meet the transportation needs of patrons.
  - 1:8 Arranges activities of public and private housing projects to relocate residents in accordance with relocation regulations, facilities, and services.
  - 1:9 Plans and directs milk plant activities, such as pasteurizing, separating, evaporating, drying, cooling, and bottling, in the processing of milk products.
- 2 Analyzing:** Examining and evaluating data. Presenting alternative actions in relation to the evaluation is frequently involved.
- 2:1 Examines food service records and tastes food and beverage samples to determine sales appeal and cost of preparing and serving meals and beverages in food establishments.
  - 2:2 Observes and listens to engine to diagnose causes of engine malfunction.
  - 2:3 Evaluates student loan applications and determines eligibility based on need and academic standing.
  - 2:4 Examines incoming weather data and plots anticipated weather developments on maps and charts.
  - 2:5 Reviews and evaluates scouting reports in preparing defensive plans for football team.

- 2:6 Assays mineral samples taken from outcrops, floats, and stream channels for preliminary quantitative estimates of mineral content.
- 2:7 Investigates and evaluates customers' bill complaints for electric or gas-power service.
- 2:8 Studies blueprints and operation of machinery or equipment in plant and evaluates deviations from original specifications to resolve problems.
- 2:9 Analyzes water in purification plant to control chemical processes which soften water or make it suitable for drinking.
- 2:10 Examines works of art, such as paintings, sculpture, and antiques, to determine their authenticity and value.
  
- 3 **Compiling:** Gathering, collating, or classifying information about data, people, or things. Reporting or carrying out a prescribed action in relation to the information is frequently involved.
- 3:1 Operates wire-drawing machine, observing operation of machine as work progresses and making adjustments to conform to written specifications.
- 3:2 Classifies aircraft flight data and submits data to Dispatcher for approval and flight authorization.
- 3:3 Collects, classifies, and records forest data, such as rainfall, stream flow, and soil moisture, to develop information tables.
- 3:4 Summarizes details of transactions in separate ledgers and transfers data to general ledger to maintain records of financial transactions of an establishment.
- 3:5 Collects and arranges flight arrival and departure times at specified points to construct flight schedule.
- 3:6 Receives telephone complaints from public concerning crimes or other emergencies, records complaints, and files them for future processing.
- 3:7 Catalogs library materials, such as books, films, and periodicals, according to subject matter.
- 3:8 Sells footwear, such as shoes, boots, overshoes, and slippers, in department store.
- 3:9 Sets up metal-stamping machines for other workers according to product specifications and prescribed procedures.
- 3:10 Prepares specialty foods, such as tacos and fish and chips, according to recipe using specific methods applicable to type of cookery.
- 3:11 Inspects precision optical and ophthalmic lenses at various stages of production to determine lenses meet company standards, according to work order and prescription specifications, using precision measuring instruments.
  
- 4 **Computing:** Performing arithmetic operations and reporting on or carrying out a prescribed action in relation to them. Does not include counting.
- 4:1 Calculates cost of customers' laundry by pricing each item on customers' lists, using adding machine or calculating machine.
- 4:2 Calculates interest and principal payments on mortgage loans, using calculating machine.
- 4:3 Computes and quotes repair cost estimates for hosiery and gloves.
- 4:4 Calculates daily wages of miners from production records.
- 4:5 Totals payments and proves daily transactions in car-rental establishment.
- 4:6 Calculates change due for payment received for food bill, cashes checks, and issues receipts or tickets to customers.
- 4:7 Calculates freight or passenger charges payable to participating carriers, using rate table and calculating machine.

- 4:8 Calculates customer telephone charge according to time consumed, type of call, and mileage zone rate.
- 4:9 Calculates cost to customer of water conditioner based on frequency of service and size of unit required.

**5 Copying:** Transcribing, entering, or posting data.

- 5:1 Enters information on manifest, such as name of shipper, tonnage, and destination, from bills of lading and shipper's declaration.
- 5:2 Records meter readings, such as oil, steam, temperature, and pressure, on company operating chart.
- 5:3 Enters data from production records into computer system terminal.
- 5:4 Enters test scores of applicants on permanent office record form.
- 5:5 Transcribes addresses from mailing list to envelopes, cards, advertising literature, packages, and similar items.
- 5:6 Records quantity and length of hides from tag on bundle.
- 5:7 Types letters, reports, stencils, forms, or other straight copy material from corrected rough draft.
- 5:8 Records color, quantity, material, and part number from work ticket onto production report.
- 5:9 Posts totals of checks and drafts to clearing-house settlement sheets.
- 5:10 Records odometer reading and amount of gas and oil used during refueling in vehicle logbook.

**6 Comparing:** Judging the readily observable functional, structural, or compositional characteristics (whether similar to or divergent from obvious standards) of data, people, or things.

- 6:1 Inspects loaded freight cars to ascertain that materials and goods, such as automobiles, lumber, or containers of explosives, are securely braced and blocked according to loading specifications.
- 6:2 Sorts and inspects telephone charge tickets for such billing information as destination of telegraph message and accuracy of telephone number to which charges are made.
- 6:3 Compares invoices of incoming articles with actual numbers and weights of articles.
- 6:4 Grades dressed poultry according to size and physical appearance.
- 6:5 Sorts burned clay products, such as brick, roofing tile, and sewer pipe, according to form, color, and surface characteristics.
- 6:6 Examines wood of designated logs to determine that moisture content of logs is within limits specified on work ticket.
- 6:7 Inspects candy in containers or on conveyor to ensure that it is formed, coated, cupped, wrapped, or packed according to plant standards.
- 6:8 Examines painted surfaces of automobile to detect scratches, blemishes, and thin spots.
- 6:9 Sorts and stacks hats according to color, size, and style specified.
- 6:10 Inspects washed automobiles at end of automatic carwash line to ensure completeness of wash job.

**PEOPLE:** Human beings; also animals dealt with on an individual basis as if they were human.

**0 Mentoring:** Dealing with individuals in terms of their total personality in order to advise, counsel, or guide them with regard to problems that may be resolved by legal, scientific, clinical, spiritual, or other professional principles.

- 0:1 Counsels individuals in debt to provide financial information and advice concerning resolution of financial problems.



- 0:2 Confers with and advises parents, teachers, and children in order to develop plans for overcoming behavioral, personality, or scholastic problems in children.
- 0:3 Counsels clients in legal matters.
- 0:4 Counsels and aids individuals and families requiring assistance of social service agency.
- 0:5 Provides treatment for individuals with mental and emotional disorders.
- 0:6 Provides individuals with vocational and educational planning services based on appraisal of their interests, aptitudes, temperaments, and other personality factors.
- 0:7 Diagnoses or evaluates mental and emotional disorders of individuals, and administers programs of treatment.
- 0:8 Assists foreign students in making academic, social, and environmental adjustments to campus and community life.
- 0:9 Provides spiritual and moral guidance and assistance to congregation members.
- 0:10 Diagnoses and treats diseases and disorders of animals.
  
- 1     Negotiating:** Exchanging ideas, information, and opinions with others to formulate policies and programs or arrive jointly at decisions, conclusions, or solutions.
- 1:1 Negotiates with property owners and public officials to secure purchase or lease of land and right-of-way for utility lines, pipelines, and other construction projects.
- 1:2 Contacts landowners and representatives of oil-producing firms in attempt to complete agreements, such as leases, options, and royalty contracts covering oil exploration, drilling, and production activities in specified oil fields.
- 1:3 Arranges with officials of various organizations in each locality to rent premises for circus, to arrange for distribution of publicity and promotional materials, and to hire musicians for circus band.
- 1:4 Participates in talks to settle labor disputes. Confers with union members and prepares cases for presentation. Meets with employers to negotiate or arbitrate.
- 1:5 Confers with foreign shippers to agree upon reciprocal freight-handling contract.
- 1:6 Contracts with hospitals and other institutional agencies for students to obtain clinical experience in school of nursing.
- 1:7 Meets with representatives of entertainment attractions, such as troupes, performers, or motion picture distributors, to arrange terms of contract and fees to be paid for engagement in establishments, such as nightclubs, theaters, or dancehalls.
- 1:8 Contracts with farmers to raise or purchase fruit or vegetable crops.
- 1:9 Consults with members of welfare board to plan activities and expenditures.
- 1:10 Confers with editorial committee and heads of production, advertising, and circulation departments of newspaper to develop editorial and operating procedures and negotiate decisions affecting publication of newspaper.
  
- 2     Instructing:** Teaching subject matter to others, or training others (including animals) through explanation, demonstration, and supervised practice; or making recommendations on the basis of technical disciplines.
- 2:1 Trains nursing staff in techniques of industrial nursing. Conducts classes in first aid and home nursing for employees.
- 2:2 Conducts classes in instrumental or vocal music for individuals or groups in public or private school.
- 2:3 Provides training for police recruits in police science investigative methods and techniques, government, law, community life, proficiency in firearms, self-defense, and care of firearms.

- 2:4 Trains wild animals, such as lions, tigers, bears, and elephants, to perform tricks for entertainment of audience at circus or other exhibitions.
  - 2:5 Teaches one or more subjects in college or university classroom.
  - 2:6 Coaches groups at playgrounds and schools in fundamentals and rules of competitive sports. Demonstrates techniques of game and drills players in fundamentals until they are familiar with all phases.
  - 2:7 Lectures, demonstrates, and uses audiovisual teaching aids to present subject matter to class.
  - 2:8 Lectures and demonstrates job fundamentals to flight attendants of passenger airline.
  - 2:9 Instructs workers in painting decorations on plates, bowls, saucers, and other dinnerware.
- 3 Supervising:** Determining or interpreting work procedures for a group of workers, assigning specific duties to them, maintaining harmonious relations among them, and promoting efficiency. A variety of responsibilities is involved in this function. (NOTE: The activities may include training workers; evaluating workers' performance; assisting workers in solving work problems; initiating and recommending personnel actions, such as hiring, firing, promoting, transferring, and disciplining; enforcing company regulations; and maintaining or directing maintenance of production and personnel records.)
- 3:1 Assigns guard force personnel to station or patrols. Interprets security rules and supervises subordinates in carrying out rules. Reports irregularities and hazards to appropriate personnel. Selects and trains subordinates. Ensures that safety standards are maintained.
  - 3:2 Supervises and coordinates activities of workers engaged in loading ships' cargoes. Studies bills of lading to determine sequence of loading operations, calculates number of hours and personnel required, and assigns tasks to workers. Oversees workers to ensure cargo is loaded in proper sequence.
  - 3:3 Issues oral and written orders to newspaper workers engaged in gathering, writing, and publishing one type of news, such as sports, society, music, or drama.
  - 3:4 Directs activities of workers engaged in distributing materials to other workers and keeping records of parts worked on and completed.
  - 3:5 Inspects engines and other equipment and orders ship's crew to repair or replace defective parts.
  - 3:6 Assigns duties to typists and examines typed material for accuracy, neatness, and conformance to standards.
  - 3:7 Interviews, hires, and gives instructions to crew of fishing vessel, and assigns crew to watches and quarters. Directs fishing operations, using knowledge of fishing grounds and work load capacities of vessel and crew.
  - 3:8 Establishes work procedures for workers engaged in loading and unloading kiln to dry green hops. Examines hops on kiln floor to determine distribution for drying, and gives instructions to workers concerning depth hops may be piled in kiln bay and kiln temperature and air volume to be maintained.
  - 3:9 Directs workers engaged in maintaining grounds and turf on golf course. Determines work priority and assigns workers to tasks, such as fertilizing, seeding, mowing, raking, and spraying. Observes employees' work and demonstrates more efficient work methods.
  - 3:10 Assigns bricklayers to specific duties. Inspects work in progress to determine conformance to specifications and trains new workers.
- 4 Diverting:** Amusing others, usually through the medium of stage, screen, television, or radio.
- 4:1 Portrays role in dramatic production to entertain audience.
  - 4:2 Sings classical, opera, church, or folk music in musical programs.

- 4:3 Performs classical, modern, or acrobatic dances alone, with partner, or in groups to entertain audience.
- 4:4 Induces hypnotic trance in subjects, occasionally using members of audience as subjects, and commands hypnotized subjects to perform specific activities.
- 4:5 Speaks in such manner that voice appears to come from source other than own vocal chords, such as from dummy or hand puppet.
- 4:6 Pilots airplane to perform stunts and aerial acrobatics at fairs and carnivals.
- 4:7 Drives racing car over track in competition with other drivers.
- 4:8 Performs difficult and spectacular feats, such as leaping, tumbling, and balancing, alone or as member of team.
- 4:9 Impersonates Santa Claus during Christmas season.
- 4:10 Performs original and stock tricks of illusion and sleight of hand to mystify audience, using props such as cards and cigarettes. Frequently uses members of audience in act.

**5 Persuading:** Influencing others in favor of a product, service, or point of view.

- 5:1 Sells services of industrial psychology firms to management officials.
- 5:2 Calls on farmers to solicit repair business and to sell new milking equipment. Demonstrates milking machines.
- 5:3 Offers articles at auction, asking for bids, attempting to stimulate buying desire of bidders and closing sales to highest bidder.
- 5:4 Sells all types of life insurance by pointing out company programs that meet clients' insurance needs.
- 5:5 Solicits membership for club or trade association. Visits or contacts prospective members to explain benefits and cost of membership and to describe organization and objective of club or association.
- 5:6 Contacts individuals and firms by telephone and in person to solicit funds for charitable organization.
- 5:7 Sells home appliances to customer after pointing out salable features of merchandise.
- 5:8 Calls on retail outlets to suggest merchandising advantages of company's trading stamp plan.
- 5:9 Promotes use of and sells ethical drugs and other pharmaceutical products to doctors, dentists, hospitals, and retail and wholesale drug establishments.
- 5:10 Purchases merchandise or commodities for resale.

**6 Speaking-Signaling:** Talking with and signaling people to convey or exchange information. Includes giving assignments and directions to helpers or assistants.

- 6:1 Manages program to ensure that implementation and prescribed activities are carried out in accordance with specified objectives.
- 6:2 Directs and coordinates through subordinate supervisory personnel activities of production department(s) in processing materials or manufacturing products in industrial establishment.
- 6:3 Directs traffic by motioning with flag when construction work obstructs normal traffic route.
- 6:4 Gives property coordinator verbal directions in placing of items on stage or set.
- 6:5 Informs public on library activities, facilities, rules, and services.
- 6:6 Indicates customer bid by word, mannerism, hand, or other characteristic signal.
- 6:7 Interviews job applicants in employment agency.
- 6:8 Answers questions from passengers concerning train routes, stations, and timetable information.

- 6:9 Informs tourists concerning size, value, and history of establishment; points out features of interest; and gives other information peculiar to establishment.
- 6:10 Answers telephone to give information about company's special services to potential customers.
- 6:11 Signals or relays signals to operators of hoisting equipment engaged in raising or lowering loads and pumping or conveying materials.
- 6:12 Explains hunting and fishing laws to sporting groups.
  
- 7     **Serving:**** Attending to the needs or requests of people or animals or the expressed or implicit wishes of people. Immediate response is involved.
- 7:1 Accompanies and assists ambulance driver on calls. Assists in lifting patient onto wheeled cart or stretcher and into and out of ambulance. Renders first aid, such as bandaging, splinting, and administering oxygen.
- 7:2 Renders variety of personal services conducive to safety and comfort of airline passengers during flight.
- 7:3 Carries golf bags around golf course for players, handing clubs to players as requested.
- 7:4 Cares for elderly, handicapped, or convalescent people. Acts as aide or friend by attending to employer's personal, business, or social needs.
- 7:5 Arranges wearing apparel and checks personal effects for performers and other personnel when they are on set.
- 7:6 Feeds and waters animals in zoo.
- 7:7 Mixes and serves alcoholic and nonalcoholic drinks to patrons of bar, following standard recipes.
- 7:8 Bathes and gives alcohol rubs to hospital patients.
- 7:9 Cleans and polishes footwear for customers.
- 7:10 Escorts hotel guests to rooms, assists them with luggage, and offers information pertaining to available services and facilities of hotel.
  
- 8     **Taking Instructions-Helping:**** Attending to the work assignment instructions or orders of supervisor. (No immediate response required unless clarification of instructions or orders is needed.) Helping applies to "non-learning" helpers.
- 8:1 Drives forklift to move, hoist, and stack cartons of materials in warehouse, following oral instructions of supervisor and written work orders.
- 8:2 Tests ballpoint pen cartridges to determine conformity to company specifications, referring to test procedures.
- 8:3 Folds garments for bagging or boxing, following guide marks on table or using folding board.
- 8:4 Records financial transactions in ledgers or accounts books to maintain establishment records.
- 8:5 Inspects, assembles, and packs mounted or unmounted negatives, color film transparencies, and photographic prints.
- 8:6 Weighs and mixes seasonings and other ingredients to prepare spice mixes according to formula.

**THINGS:** Inanimate objects as distinguished from human beings; substances or materials; and machines, tools, equipment, work aids, and products. A thing is tangible and has shape, form, and other physical characteristics.

- 0 Setting Up:** Preparing machines (or equipment) for operation by planning order of successive machine operations, installing and adjusting tools and other machine components, adjusting the position of workpiece or material, setting controls, and verifying accuracy of machine functions and work produced, applying knowledge of machine capabilities, properties of materials, and shop practices. Uses tools, equipment, and work aids, such as precision gauges and measuring instruments. Workers who set up one or a number of machines for other workers or who set up and personally operate a variety of machines are included here.
- 0:1 Selects, positions, and secures cutters in toolhead, in spindle, or on arbor of gear cutting machines, such as gear shapers, hobbers, and generators. Sets feed rates and rotation speeds of cutters and workpiece in relation to each other by selecting and mounting gears, cams, or templates or by moving levers. Moves controls to set cutting speeds and depth of stroke and cut for reciprocating cutters and to position tools and workpieces.
- 0:2 Selects and secures tool in spindle, using wrenches. Positions workpiece in fixture or on machine table, securing it with clamps and wrenches, and verifies positions with instruments, such as surface gauges and dial indicators. Selects feed rate, honing tool rotation speed, and depth of cut according to knowledge of metal properties and abrasives. Moves controls to position tool in relation to workpiece and to set feed rate and spindle speed. Positions and tightens stops, using wrench, to control length of honing tool stroke. Starts machine and turns handwheels to feed tool to workpiece. Measures first-run workpiece for conformance to specifications, using micrometers and fixed gauges.
- 0:3 Selects and positions, aligns, and secures electrodes, jigs, holding fixtures, guides, and stops on resistance welding and brazing machines.
- 0:4 Lifts specified die sections into die-casting machines that cast parts, such as automobile trim, carburetor housing, and motor parts, from nonferrous metals. Secures die sections in position and adjusts stroke of rams. Connects water hoses to cooling system of die. Preheats die sections. Turns valves and sets dials to regulate flow of water circulating through dies. Starts machine to produce sample casting and examines casting to verify setup.
- 0:5 Selects, installs, and adjusts saw blades, cutter heads, boring bits, and sanding belts in variety of woodworking machines, using handtools and rules. Operates machines to saw, smooth, shape, bore, and sand lumber and wood parts. Periodically verifies dimensions of parts for adherence to specifications, using gauges and templates.
- 0:6 Aligns and bolts specified dies to ram and anvil of presses and hammers. Installs impression and gripping dies and synchronizing cams on upsetting machines. Sets and bolts roll dies into self-positioning slots or dogs on roll shafts of forging rolls. Aligns and bolts positioning fixtures and stops, and turns handles or knobs to synchronize conveyor speed with forging-machining action and heating cycle of furnace. Starts machine and inspects work to verify conformance of die setup to specifications.
- 1 Precision Working:** Using body members and/or tools or work aids to work, move, guide, or place objects or materials in situations where ultimate responsibility for the attainment of standards occurs and selection of appropriate tools, objects, or materials, and the adjustment of the tool to the task, require considerable judgment.
- 1:1 Repairs and maintains production machinery in accordance with blueprints, diagrams, operation manuals, and manufacturer's specifications, using handtools, power tools, and precision-measuring and testing instruments.
- 1:2 Lays out position of parts on metal, using scribe and handtools.
- 1:3 Locates and marks reference lines and marks location of holes to be drilled, using scribe.

- 1:4 Sketches original designs for textile cloth patterns on graph paper, using water colors, brushes, pen, and rulers.
  - 1:5 Carves statues, monuments, and ornaments from stone, concrete, and wood, using chisels, hammers, and knives.
  - 1:6 Fits and assembles machine components according to assembly blueprints, manuals, engineering specifications, sketches, and knowledge of machine construction procedures, using handtools and power tools. Shapes parts for precision fit, using metalworking machines.
  - 1:7 Lays out, cuts, shapes, and finishes wood, plastics, plexiglass, and hardboard parts of displays, using handtools.
  - 1:8 Drafts full- or reduced-scale drawings for use by building contractors and craft workers.
  - 1:9 Diagnoses electrical malfunctions, using test lights, ohmmeter, voltmeters, circuit simulators, and wiring diagrams.
  - 1:10 Cuts, trims, and tapers hair, using clippers, comb, and scissors.
  - 1:11 Measures, marks, and cuts carpeting and linoleum with knife to get maximum number of usable pieces from standard size rolls, following floor dimensions and diagrams.
  - 1:12 Forms sand molds for production of metal castings, using handtools, power tools, patterns, and flasks and applying knowledge of variables, such as metal characteristics, molding sand, contours of patterns, and pouring procedures.
- 2    Operating-Controlling:** Starting, stopping, controlling, and adjusting the progress of machines or equipment. Operating machines involves setting up and adjusting the machine or material(s) as the work progresses. Controlling involves observing gauges, dials, etc. and turning valves and other devices to regulate factors such as temperature, pressure, flow of liquids, speed of pumps, and reactions of materials.
- 2:1 Turns controls on television camera, observes scenes through camera monitor, adjusts lens to maintain scenes in focus, and moves levers to alter angle or distance of shot to photograph scenes for broadcasting.
  - 2:2 Types alphabetic or numeric input data on keyboard of computer terminal from source documents. Inserts paper into carriage, presses key to obtain printout or video display of data, and backspaces and strikes over original material, using keyboard, to correct errors. Presses code key to transmit corrected data via telephone lines to computer.
  - 2:3 Moves lever to regulate speed of turntable of tape recorder machines. Turns knobs on cutting arms to shift or adjust weight of stylus. Moves switches to open microphone and tune in live or recorded programs.
  - 2:4 Places wooden barrel horizontally on barrel rest of barrel-lathe machine. Clamps barrel between two chucks of lathe. Starts machine and holds barrel plane against surface of revolving barrel while guiding tool along its length to scrape and smooth it.
  - 2:5 Places glass blanks and tube components in chuck or tailstock of lathes and depresses pedals of compressed air devices that lock parts in lathes. Starts lathes, lights gas-torch heating elements, and turns valves to regulate flames. Turns handwheels or pushes levers to control heating of specified areas of glass parts.
  - 2:6 Places spool on spindle of floor-mounted sewing machines. Draws thread through machine guides, tensions, and needle eye. Inserts bobbins into shuttles and draws thread through slots in shuttle walls or draws thread through guides and looper eyes. Presses knee levers, depresses pedals, or moves hand levers to raise presser foot or spread feed cups. Positions parts to be joined and lowers presser foot. Starts, stops, and controls speed of machines with pedals or knee levers and guides parts under needles.

- 2:7 Moves switches on central control panel of switchboard to regulate converters. Observes demand meters, gauges, and recording instruments and moves controls to ensure efficient power utilization, equipment operation, and maintenance of power distribution. Monitors gauges, alarms, and oscilloscopes to detect and prevent damage to equipment and disruption of power.
- 2:8 Fires furnace or kiln, observes gauges, and adjusts controls to maintain specified temperature for drying coal and ore before or after washing, milling, or pelletizing operations.
- 2:9 Regulates flow and pressure of gas from mains to fuel feed lines of gas-fired boilers, furnaces, kilns, soaking pits, smelters, and related steam-generating or heating equipment. Opens valve on feed lines to supply adequate gas for fuel and closes valves to reduce gas pressure. Observes, records, and reports flow and pressure gauge readings on gas mains and fuel feed lines.
- 3 **Driving-Operating:** Starting, stopping, and controlling the actions of machines or equipment for which a course must be steered or which must be guided to control the movement of things or people for a variety of purposes. Involves such activities as observing gauges and dials, estimating distances and determining speed and direction of other objects, turning cranks and wheels, and pushing or pulling gear lifts or levers. Includes such machines as cranes, conveyor systems, tractors, furnace-charging machines, paving machines, and hoisting machines. Excludes manually powered machines, such as handtrucks and dollies, and power-assisted machines, such as electric wheelbarrows and handtrucks.
- 3:1 Steers vessel over course indicated by electronic equipment, such as radio and land radar, to transport passengers to fishing locations for catching fish and other marine life.
- 3:2 Pushes pedals and pulls levers to move, control speed, and stop crane boom, and raise or lower cables attached to load. Adjusts controls to move and position load by sight or at direction of other worker.
- 3:3 Pilots airplane or helicopter over agricultural fields at low altitudes to dust or spray fields with seeds, fertilizers, or pesticides.
- 3:4 Operates throttle, air brakes, and other controls to transport passengers or freight on electric, diesel-electric, steam, or gas-turbine-electric locomotive. Interprets train orders, block or semaphore signals, and railroad rules and regulations.
- 3:5 Fastens attachments, such as graders, plows, and rollers, to tractor with hitchpins. Releases brake, shifts gears, and depresses accelerator or moves throttle to control forward and backward movement of machine. Steers tractor by turning steering wheel and depressing brake pedals.
- 3:6 Pushes levers and pedals to move machine; to lower and position dipper into material; and to lift, swing, and dump contents of dipper into truck, car, or onto conveyor or stockpile.
- 3:7 Moves control levers, cables, or other devices to control movement of elevator. Opens and closes safety gate and door of elevator of each floor where stop is made.
- 3:8 Controls movement and stops railroad or mine cars by switching, applying brakes, placing sprags (rods) between wheel spokes, or placing wooden wedges between wheel and rail. Positions cars under loading chutes by inserting pinch bar under car wheels, using bar as fulcrum and lever to move car. Hooks cable drum brake to ease car down incline.
- 3:9 Moves controls to drive armored car to deliver money and valuables to business establishments.
- 3:10 Controls action of rail-mounted trackmobile to spot railroad cars on ramp above chip storage bins for unloading, and releases bottom doors of cars allowing chips to fall into bin.
- 3:11 Drives street sweeper and moves controls to activate rotary brushes and spray so that sweeping machine picks up dirt and trash from paved street and deposits it in rear of machine.
- 4 **Manipulating:** Using body members, tools, or special devices to work, move, guide, or place objects or materials. Involves some latitude for judgment with regard to precision attained and selecting appropriate tools, object, or material although this is readily manifest.

- 4:1 Shapes knitted garments after cleaning by shrinking or stretching garments by hand to conform to original measurements.
  - 4:2 Trims and smooths edges, surfaces, and impressed or raised designs of jewelry articles and jewelry findings, using files, chisels, and saws.
  - 4:3 Scrapes, files, and sands machine-shaped gunstocks to remove excess wood and impart finished appearance to surface, using files, sandpaper, and emery cloth.
  - 4:4 Moves rotating disk of powered, portable grinder against surface of stationary workpiece to remove scratches, excess weld material, and burrs. Changes disks to ones with progressively finer abrasives to obtain specified finish on workpiece.
  - 4:5 Draws colored strips of material, such as fabric or leather, between slits in shoe upper to weave decorative design according to specifications.
  - 4:6 Turns sprayer valves and nozzle to regulate width and pressure of spray, pulls trigger, and directs spray onto work surface to apply prime or finish coat according to knowledge of painting techniques.
  - 4:7 Guides tip of soldering iron along seam of metal plates to heat plates to bonding temperature and dips bar or wire of soft solder in seam to solder joint.
  - 4:8 Mixes soldering flux in crock or vat according to formula, using paddle, and tests consistency of flux with hydrometer.
  - 4:9 Repacks parachutes that have been opened in use, or unopened ones that are to be repacked in interest of safety.
  - 4:10 Attaches cables to buildings, installs supports, and cuts or drills holes in walls and partitions through which cables are extended, using wrenches, pliers, screwdrivers, saws, and drills.
- 5 Tending:** Starting, stopping, and observing the functioning of machines and equipment. Involves adjusting materials or controls of the machine, such as changing guides, adjusting timers and temperature gauges, turning valves to allow flow of materials, and flipping switches in response to lights. Little judgment is involved in making these adjustments.
- 5:1 Positions and secures scoring disks on machine shaft, turns handwheel to adjust pressure on disks, and feeds cardboard blanks into machine hopper.
  - 5:2 Turns controls to regulate amount of coal, pushes air-blower controls that blow coal into furnaces, and observes air gauges and feed of coal.
  - 5:3 Presses pedal or button and moves lever on packaging machine. Observes operation to detect malfunctions. Opens valves, changes cutting dies, sets guides, and clears away damaged products or containers.
  - 5:4 Holds and turns wood shoe last against revolving sanding wheel to remove specified amount of material and to smooth surface of last while retaining original contours. Verifies contours of sanded last, using template.
  - 5:5 Lights fire and opens valves to regulate fuel supply to asphalt-heater. Screws hose connections to heater to connect circulating system and uses pump to circulate asphalt through heating unit. Observes temperature gauge and adjusts blower and damper controls to regulate heat and maintain required temperature.
  - 5:6 Adjusts control that regulates stroke of paper pusher on machine that assembles pages of printed material in numerical sequence. Places pages to be assembled in holding tray. Turns controls manually to start machine and removes assembled pages from machine.
  - 5:7 Depresses pedal to start, stop, and control speed of yarn winding machine. Observes yarn to detect slubs and broken or tangled ends, cuts out slubs, using scissors, and ties broken yarn ends.
  - 5:8 Positions spring on bed of machine, turns hand gauges to regulate travel of flattening ram, and pulls lever to lower ram that compresses spring under specified pressure.



- 5:9 Places tack in holder on machine bed. Positions premarked article over tack on bed and positions button on garment over tack and under machine ram. Depresses pedal that lowers ram to join button to article.
- 5:10 Shovels coal or coke into firebox of boiler, turns valves to regulate flow of gas, oil, or pulverized coal into firebox, or moves controls to regulate feeding speed of automatic stoker. Reads gauges and moves controls to maintain specified steam pressure, temperature, and water level in boiler.
- 6 Feeding-Off Bearing:** Inserting, throwing, dumping, or placing materials in or removing them from machines or equipment which are automatic or tended or operated by other workers.
- 6:1 Inserts milled rubber stock into rolls of calendering machine to maintain continuous supply.
- 6:2 Places molded lens blanks into automatic burr-grinding machines. Catches ejected blanks and stacks them in trays prior to polishing.
- 6:3 Removes cartons of bottles from conveyor and stacks them on pallet.
- 6:4 Picks up and dumps specified dry materials into feeder hopper of crutcher equipment which forms slurry for processing into soap.
- 6:5 Hangs toy parts in specified positions on hooks of overhead conveyor that passes through painting operations and lifts painted parts from hooks.
- 6:6 Places eggs in holder that carries them into machine that removes earth, straw, and other residue from egg surface prior to shipment. Removes cleaned eggs and packs them in cases.
- 6:7 Places plate glass onto conveyor of glass silvering machine or automatic washing and drying machines and removes silvered or cleaned mirror from conveyor.
- 6:8 Shovels scrap tobacco onto screens of cleaning machine, picks out stems and dirt from tobacco, and shovels tobacco dust from receptacle under screen into containers.
- 6:9 Picks up handfuls of glass pipettes from conveyor and packs them into boxes.
- 6:10 Dumps dyed cotton fiber into hopper of extractor that removes liquid by forcing cotton through rollers.
- 6:11 Places soiled garments into washing machine, extractor, and tumbler, and removes garments at completion of cleaning cycle.
- 6:12 Removes stacks of paper cups accumulating at collection rack at end of pneumatic tube leading from automatic cup-forming machine and packs cups into cardboard tubes.
- 7 Handling:** Using body members, handtools, or special devices to work, move, or carry objects or materials. Involves little or no latitude for judgment with regard to attainment of standards or in selecting appropriate tool, object, or materials.
- 7:1 Loads and pushes handtruck to move metal molds of pipemaking concrete from forming area to steam-cooking area.
- 7:2 Hammers steel pins into holes in ends of logs preparatory to skidding.
- 7:3 Drives herd of goats to fresh pastures during day and back to corral at night.
- 7:4 Files documents in alphabetical or numerical order or according to subject matter and removes documents from files upon request.
- 7:5 Clears stumps, trees, brush, cactus, mesquite, or other growth from land so land can be used as pasture, for cultivation, or for proposed construction project.
- 7:6 Weighs materials in chemical plant and writes or stencils identifying information on containers. Fastens caps or covers on containers, or screws bungs in place. Cleans stills and other equipment, using detergents. Loads railroad cars or trucks.
- 7:7 Distributes work cards containing instructions to workers.

- 7:8 Mops, sweeps, and dusts halls and corridors.
- 7:9 Digs ditches that drain excess moisture from land, using pick and shovel.
- 7:10 Transfers fingerprints from persons onto cards for purposes of identification.
- 7:11 Cuts candy into squares, using knife.
- 7:12 Folds and stacks cuffs preparatory to sewing cuffs to sleeves of garments.
- 7:13 Scrapes or knocks mortar from bricks, using hammer.
- 7:14 Copies production data, using pen.