

The Revised Handbook for Analyzing Jobs



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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 1

JOB ANALYSIS: WHAT IT IS AND ITS USES

Job information is the basic data used by industry, governmental and private agencies, and employee organizations for many human resource programs. The nature of the required job information varies in type and approach according to program needs. Regardless of the ultimate use for which it is intended, however, the data must be accurate; inclusive, omitting nothing pertinent to the program; and presented in a form suitable for study and use. The techniques for obtaining and presenting this information are known as "job analysis".

In the United States Employment Service, job analysis involves a systematic study of a specific job in terms of:

- The worker's relationship to data, people, and things (Worker Functions);

- The methodologies and techniques employed (Work Fields);

- The machines, tools, equipment, and work aids used (MTEWA);

- The materials, products, subject matter, or services which result (MPSMS); and

- The worker attributes that contribute to successful job performance (Worker Characteristics).

This *Handbook for Analyzing Jobs* (HAJ) is devoted to an explanation of the procedures and techniques used in the public employment service to analyze jobs and record the analyses. These procedures were developed to meet the occupational information needs of various human resource programs, and are applicable to any job analysis program, regardless of the intended utilization of the data.

Job analyses are basic for supplying occupational information needed for human resource development and utilization programs in the public employment service, industry, and other non-government establishments. Some of the major areas of use are:

Recruitment and Placement - Providing meaningful and correct job data for the recruitment and selection of workers.

Better Utilization of Workers - Determining job relationships useful in the transfer and promotion of workers to facilitate the opening of job opportunities at the entry level. Determining actual physical demands of the job and suggesting job adjustments to facilitate improved utilization of workers with a disability.

Job Restructuring - Restructuring jobs to make better use of the available work force; and to assist in opening job opportunities for people who are less than fully qualified, in facilitating the placement of workers in hard-to-fill jobs, and in providing trainee jobs.

Vocational Counseling - Furnishing the Vocational Counselor with an assessment of the tasks and requirements of jobs and of the avocations, training, and experiences that lead to them, as a basis for vocational counseling.

Training - Determining training needs and developing training programs. The content of the training curriculum, the amount of time required for training, and the basis for the selection of trainees are dependent, in part, upon knowledge of the jobs.

Performance Evaluation - Providing an objective basis for developing performance standards.

Occupational Safety - Improving safety through the identification of job hazards.

CHAPTER 2

CONCEPTS AND PRINCIPLES OF JOB ANALYSIS

In modern usage, the word “job” has different meanings depending on how, when, or by whom it is used. Moreover, “job” is often used interchangeably with the words “occupation”, “position”, and “task”. To eliminate this confusion and to clarify terms, the United States Employment Service (USES) developed definitions for the following terms for use in job analysis:

1. An **Element** is the smallest step into which it is practical to subdivide any work activity without analyzing separate motions, movements, and mental processes involved.
2. A **Task** is one or more elements and is one of the distinct activities that constitute logical and necessary steps in the performance of work by the worker. A task is created whenever human effort, physical or mental, is exerted to accomplish a specific purpose.
3. A **Position** is a collection of tasks constituting the total work assignment of a single worker. There are as many positions as there are workers in the country.
4. A **Job** is a group of positions within an establishment¹ which are identical with respect to their major or significant tasks and sufficiently alike to justify their being covered by a single analysis. There may be one or many persons employed in the same job.
5. An **Occupation** is a group of jobs, found at more than one establishment, in which a *common* set of tasks are performed or are related in terms of similar objectives, methodologies, materials, products, worker actions, or worker characteristics.

Element, task, and job are relative concepts; an activity that is an element in one job could be a task in another job, and could be a job in and of itself for a third worker. The following example illustrates this point. “Slices cold meats and cheese” is an element in the job of a Short Order Cook, a task in the job of a Sandwich Maker, and the total job of a Deli Cutter-Slicer.

Job, Task, and Element as Relative Concepts

JOB TITLE	SHORT ORDER COOK	SANDWICH MAKER	DELICUTTER-SLICER
JOB	Prepares and cooks, to order, food requiring short preparation time	Prepares sandwiches	Slices cold meats and cheese by hand or machine
TASK	Prepares sandwiches	Slices cold meats and cheese by hand or machine	
ELEMENT	Slices cold meats and cheese by hand or machine		

DETERMINING JOB LIMITS

In the analysis of jobs it is necessary to determine where jobs begin and where they end. The analyst must be able to analyze a group of positions, determine the number of jobs existing among the positions, and then determine the exact nature of these jobs.

Jobs must be analyzed as they exist; therefore, each completed Job Analysis Report (JAR) must report the job as it exists at the time of the analysis, not as it should exist, not as it has existed in the past, and not as it exists in similar establishments.

¹Establishment: A public or private employing unit that produces, provides, and/or sells goods or services at a single, physical location. An establishment may range in size from a single, self-employed worker to thousands of workers.

Basically, every job analysis should represent a description of one job; no more and no less. Tasks temporarily assigned to a given worker in addition to regular duties should not be considered part of the basic job. The following examples are the kinds of situations which the analyst may encounter in job analysis studies:

A. **The worker performs a specific cycle or sequence of operations.** The analyst should begin with the first task the worker is called upon to do and consider the work steps successively. For example, tasks for some machine operating jobs may be arranged in the following order: (1) sets up machine; (2) operates machine; (3) removes workpieces; (4) maintains tools; and (5) maintains machine.

B. **The worker has no regular cycle of operations.** This situation is usually more difficult to analyze since it frequently involves a considerable variety of tasks. Therefore, the analyst should organize the information according to function.

For example, a chemist could (1) test and analyze raw materials or manufactured products for conformance to plant standards; (2) conduct controlled experiments for purposes of devising new methods for improving production or testing and analyzing raw materials and products, of adapting substances to new uses, and of recovering and utilizing by-products; and (3) supervise workers engaged in manufacturing processes and operations, including the measuring and mixing of ingredients and the control of chemical reactions during processing.

C. **The worker frequently changes from one set of duties to another.** For example, four workers are found performing a set of duties which include (1) weighing out specified amounts of loose tobacco; (2) packing the weighed tobacco into shape boxes in which the tobacco is compressed into cakes in a mashing machine; (3) taking shape boxes from mashing machine and removing the cakes of pressed tobacco from the shape boxes; and (4) cutting the tobacco cakes into large squares. Since the workers frequently rotate to relieve monotony, the duties involved actually constitute one job, all phases of which are performed by all the workers.

D. **The worker performs a given set of duties although in emergencies the worker performs duties involved in other jobs.** For example, in an aircraft factory a group of workers are known as fuselage frame builders, rib frame builders, and spar builders. The workers are engaged in framework assembly. Each assembles various members of a unit fuselage, wing, rib, or wing spar in a jig, and then temporarily secures the assembly with screws, bolts, or tack welds prior to final riveting or welding operations. Although the jobs are interchangeable to the extent that any one of the workers performs the duties of any one of the others in emergencies, the workers perform their respective jobs in regular production work. Situations such as these should be considered separate jobs.

DIMENSIONS OF A JOB: THE JOB ANALYSIS COMPONENTS

All job analysis methods require that certain categories of information about jobs be collected, analyzed, and recorded in a systematic way. The method used by the USES recognizes two major areas of job information: Work Performed and Worker Characteristics. The specific categories of information under each are the job analysis components. Each job analysis component has a specific number of factors, which are defined subcomponents. Factors are assigned to a given job based on an evaluation of the activities and requirements of the job.

Work Performed Components

Work Performed includes those job analysis components that relate to the actual work activities of a job and constitute information that should be reflected in the job summary and the body of a well-written job description. The Work Performed components consist of:

Worker Functions: The ways in which a job requires the worker to function in relation to Data, People, and Things, as expressed by mental, interpersonal, and physical worker actions. Every job is assigned the three Worker Functions that best characterize the worker's primary involvement with Data, People, and Things, and the predominance of each function is indicated. These estimates provide useful information about the Work Performed. This job analysis component contains 24 identifying functions and is defined and discussed in Chapter 3.

Work Fields: These are groupings of technologies and socioeconomic objectives that reflect how work gets done and what gets done as the result of the work activities of a job, or in other words, the purpose of the job. They summarize and classify the overall objectives of work, such as processing of materials, fabricating products, utilizing data, and providing services. The 96 Work Fields are defined and discussed in Chapter 4.

Materials, Products, Subject Matter, and Services (MPSMS): MPSMS include (a) basic materials being processed, such as fabric, metal, or wood; (b) final products being made, such as automobiles or baskets; (c) data, when being dealt with or applied, such as in dramatics or physics; and (d) services being rendered, such as barbering or dentistry. Chapter 5 contains information about this component.

Worker Characteristics Components

The Worker Characteristics component includes job analysis components which reflect worker attributes that contribute to successful job performance. The Worker Characteristics components consist of:

General Educational Development (GED): Education of a general nature which contributes to reasoning development and to the acquisition of mathematical and language skills that are required of the worker to achieve average satisfactory job performance. GED is estimated on the basis of discrete scales for reasoning, mathematical, and language development and is discussed in Chapter 7.

Specific Vocational Preparation (SVP): Vocational preparation that involves acquiring information, learning the techniques, and developing the facility for acceptable performance in a specific job. The application of SVP in job analysis is discussed in Chapter 8.

Aptitudes: Capacities or abilities required of an individual in order to facilitate the learning of some task or job duty. The 11 Aptitudes included in this component are defined and discussed in Chapter 9.

Temperaments: Adaptability requirements made on the worker by the job-worker situation. This component consists of 11 factors, which are defined and discussed in Chapter 10.

GOE (Interest Areas): A liking or preference for an activity. The 12 Interest factors used by the USES in job analysis are explained in Chapter 11.

Physical Demands and Environmental Conditions: Physical Demands are defined as the physical requirements made on the worker by the specific job-worker situation. Environmental Conditions are the surroundings in which a job is performed. This component is defined and discussed in Chapter 12.

SENTENCE ANALYSIS

The technique of sentence analysis has been devised to help the analyst express a job-worker situation in standard, concise form. Use of this technique makes it easier for an analyst to collect complete job information, to assign correct ratings for the ratable Work Performed components (Worker Functions, Work Fields, and MPSMS), and to write the job summary section of the job description. Application of the sentence analysis technique in job analysis is discussed in Chapter 6.

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Machines, Tools, Equipment, and Work Aids (MTEWA) are instruments and devices used to carry out work activities and are defined as follows:

1. **Machines:** Devices which are a combination of mechanical parts with the framework and fastenings to support and connect them, and are designed to apply a force to do work on or move materials or to process data. A machine may be activated by hand or foot power applied through levers or treadles, or outside power sources, such as electricity, steam, or compressed air. Included are printing presses, drill presses, casting machines, forging machines, conveyors, hoists, locomotives, and automobiles.

2. **Tools:** Devices or implements which are manipulated by hand to do work on or move materials. Included are common handtools, plus those manipulated by the worker and activated by outside power sources, such as electricity or compressed air. Examples are pneumatic hammers, cutting torches, paint-spray guns, electric-powered screwdrivers, and electric cutters.
3. **Equipment:** Devices which generate power, communicate signals, or have an effect upon materials through application of light, heat, electricity, steam, chemicals, or atmospheric pressure. Examples are ovens, stills, forges, cameras, and power-generating devices. Also included in this category are nonprocessing devices, such as PBX switchboards, radio transmitters, ammeters, and signal-light systems.
4. **Work Aids:** Miscellaneous items which cannot be considered as machines, tools, or equipment, and yet are necessary for carrying out the work. Included are (1) supportive devices, such as jigs, fixtures, clamps, vises, or anvils; (2) special measuring, hand-manipulated devices, such as micrometers, calipers, gauges, rules, squares, and tapes; (3) graphic instructions, such as blueprints, sketches, maps, charts, wiring diagrams, manuals, and formalized job instructions; (4) substances used in the processing or fabrication of materials and products, such as glue and paint; and (5) musical instruments.