



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

APPENDIX A

BREAKING A JOB DOWN INTO TASKS

IDENTIFICATION AND ORGANIZATION OF TASKS

ARE CRITICAL TO WRITING EFFECTIVE JOB DESCRIPTIONS

Organizing job analysis data from notes and deciding on the number and scope of tasks to include in the job description is one of the most difficult aspects of job analysis. The primary consideration is to organize the job description so that the uninformed reader can gain a clear understanding of the work performed.

From the definitions of task and element in the HAJ, it is shown that they differ in scope; yet an identical activity may be a task in one job, an element in another, or an entire job in itself. For example, the activity of typing addresses on envelopes could be an element of a task for a Secretary, an entire task for a Correspondence Clerk, and a complete job activity for an Envelope Addresser. For the Envelope Addresser, the activity can be further subdivided into tasks: 1) Prepares envelopes and address lists and adjusts typewriter; 2) types addresses from lists onto envelopes; 3) counts, bundles, and packs addressed envelopes.

CONSIDERATIONS FOR IDENTIFYING TASKS

A job is a conceptual rather than a physical entity and, as such, cannot be neatly subdivided like a sliced pie or a stack of cards. Two analysts studying the same job are likely to write job descriptions with different task breakdowns; neither description being any more "correct" than the other, provided both are clear, complete, and accurate.

Except for the simplest of jobs, identification of tasks is based on a multifactor approach using the following questions as guidelines:

1. Can the activity potentially be assigned to another worker?

If an activity is sufficiently divisible from other activities of the job so that it can be done by another worker, it may be considered as a separate task. If, on the other hand, it is not practical to assign the activity to another worker, it should be treated as an element integrally related to other elements of a task by common purpose, sequence of actions, or decision-making factors.

In the example below, some activities of a Physical Therapy Aide working in a hospital are arranged in their usual order of performance.

- a. Assists or lifts patient to transfer patient between wheelchair and treatment equipment, following instructions of Physical Therapist.
- b. Observes patient during transfer for correct application of learned transfer technique and gives direction and encouragement as needed.
- c. Informs Physical Therapist of adverse patient reaction during transfer.
- d. Obtains and positions equipment for treatment.
- e. Supports, guides, and stabilizes patient as directed while Physical Therapist administers treatments.

Activities a, b, and c, all relating to the transfer of patients, are inseparable. The performer of activity "a" must also make concurrent observations "b" and take immediate action (notifying Physical Therapist) "c". Therefore, a, b, and c constitute a task. Activities d and e, however, could each be written as a separate task because they are distinct activities assignable to other workers.

2. Do certain key job analysis components (GED, SVP, Worker Functions, Work Fields, MTEWA, and MPSMS) of the activity differ significantly from those of other activities included in the job?

This is determined by informally rating the various job activities and considering those with similar ratings for possible treatment as distinct tasks. Differences in GED, Worker Functions, and Work Fields usually justify treatment as separate tasks; differences in SVP, MPSMS, and Work Devices may justify such treatment, depending on other considerations. For example, because of different Worker Functions, the copying of data is almost always treated as a task distinct from the analysis of data; and because of different Work Fields, the polishing of metal parts is a task separate from the assembly of those parts. However, the cutting of plastic sheets using Handtool A and Machine B may or may not be a task distinct from the cutting of metal sheets using Handtool X and Machine Y depending on the extent to which the required SVP, skills, knowledges, and abilities differ. A 3-month difference in SVP would of course be more significant when comparing activities with 1- and 4-month training times than when comparing those with 9- and 12-month training times.

3. Is the activity performed frequently enough to be written as a distinct task?

A noncritical activity performed a small percentage of time, i.e., less than 5 percent, can be consolidated as an element of a broader task or included with other infrequent activities of a "miscellaneous" task.

4. Is the activity sanctioned by the establishment and performed by an accepted method?

Activities that are not recognized by management as part of the job are not included in a job description. Tasks performed in a nonstandard or unacceptable manner are described as they are expected to be performed.

5. Is the activity sufficiently broad in scope to be ratable for key job analysis components?

For example, "Turns control to regulate flow of material into machine" alone could not be meaningfully rated for GED and Worker Functions, but would have to be combined with other elements to collectively form a ratable task. Although only the entire job will eventually be rated, each task should have the potential to exist as a distinct activity, separately ratable and potentially assignable to another worker.

6. Is the activity self-contained to the extent that it does not include elements that overlap or duplicate other tasks?

For example, see the following element description and task summaries of the same job:

Element: "Wipes machine dies after clearing jammed metal, using rags and solvent, to clean die surface of metal dust and fragments."

Task A (summary): "Monitors machines and clears jams."

Task B (summary): "Cleans machines and work area."

If the analyst feels that cleaning of the die is an integral element of clearing jams, it should be included in Task A but not in Task B. If it were included in both, an overlap would occur.

Below is an example of an element that duplicates a task of the same job:

Task X: Inspects raw material: Visually inspects raw materials for surface defects, such as scratches, creases, and coating imperfections; sets aside defective batches and notifies supervisor of defects.

Task Y:

Conveys raw material to job site: Reviews production order to determine types and amounts of raw materials needed for job order. **Examines raw materials for defects** prior to conveyance to machine and notifies supervisor of defective batches. Conveys materials from storage area to machine area, using handtruck. Stacks materials in designated areas near machine. Periodically conveys additional materials to replenish supplies during production run.

NOTE: The bolded element of Task Y is repetitive of the entire Task X. The analyst must decide whether to retain Task X as a separate task or as an element of the broader Task Y based on the integrity of the element with other activities performed prior, concurrently, or subsequent to the element.

ARRANGING TASKS FOR JOB DESCRIPTIONS

Once the tasks of the job are identified, the next step is to arrange them in a way that results in a clear, logical presentation.

Sequential or chronological presentation of tasks. For jobs that have specific cycles or sequences of operations, list tasks in the order in which they are performed. The sequential arrangement is often applicable to production jobs in manufacturing, especially jobs in which the significant relationship is to Things and the Worker Function involved is machine/equipment related. For example, the tasks of a machine-operating job may be arranged as follows:

- | | |
|----------------------|-----------------------|
| 1. Sets up machine | 4. Inspects workpiece |
| 2. Operates machine | 5. Maintains tools |
| 3. Removes workpiece | 6. Maintains machine |

Functional presentation of tasks. For jobs having no established sequence of operations, arrange tasks according to their function. Tasks, when broken out according to function, are arranged in one of the following ways:

1. In descending order of the **percentage of time** spent in performing each task.
2. In descending order of **importance** or criticality to the job as a whole.
3. In descending order of **skill level**, difficulty, or responsibility.

Decide which of the three arrangements presents the clearest picture of the job and is the most appropriate for the intended use of the job description.

The amount of time spent by the worker in performing a task is sometimes the sole determinant of its relative importance to the overall job, especially if all tasks are at about the same skill level. For example, the tasks of the following job are properly presented in order of frequency:

1. Plants, fertilizes, prunes, and waters flowers and shrubbery. (40%)
2. Rakes and disposes of leaves. (30%)
3. Shovels snow from walkways. (20%)
4. Paints fences and outside structures. (10%)

In most cases, however, functional tasks of a nonsequential job vary to some degree in skill level or importance. By presenting the most important or skilled tasks first in the job description, those which are vital to the job as a whole (regardless of the percentage of time spent in performing them) are highlighted so that the reader understands the job more quickly.

Important tasks are usually, but not always, the most highly skilled. The importance of a task is estimated by assessing the degree to which successful performance is necessary to meet the job's overall objective. The complexity of a task is determined by evaluating the skills, knowledge, abilities, judgments, and degree of responsibility required of the worker. To do this, the analyst informally rates each task for certain job analysis components, such as GED and Worker Functions, and compares the ratings to establish relative levels of complexity.

GROUPING SIMILAR WORK ACTIVITIES INTO TASKS

Activities similar in purpose or function are often separated by intervals of time, during which dissimilar activities are performed. For example, a Lunch-Counter Attendant serves several customers at once and shifts rapidly from one activity to another. An analyst, taking notes, might list the activities for serving each customer in the order observed:

1. Greets customer.
2. Provides customer with menu.
3. Positions napkin and glass of water on counter in front of customer.
4. Takes customer's order and fills out check by recording name and price of each item ordered.
5. Selects proper eating utensils according to items ordered and places on napkin.
6. Prepares beverages, such as coffee, tea, and soft drinks.
7. Prepares sandwiches, salads, and hamburgers.
8. Prepares ice cream products, such as floats and sundaes.
9. Serves food, beverages, and ice cream products to customers.
10. Takes orders for additional items, such as desserts.
11. Computes and records tax on check and totals check.
12. Collects payment from customer.
13. Operates cash register to record payment, deposit payment, and remove change.
14. Returns change to customer.
15. Clears away used dishes and utensils.
16. Wipes counter or booth with damp cloth.

One way to organize these activities into tasks is as follows:

- (1 & 2) Greets customer and provides menu. (A distinct activity, performed in some establishments by a host or hostess. Worker Functions: Comparing, Serving, and Handling. Work Field: Accommodating.)
- (3 & 5) Provides customer with napkin and water prior to taking order and with appropriate utensils after taking order. [Both activities are arranging the place setting; the fact that some items are placed before the order is taken and some afterwards does not justify separating the arranging of the place setting into two tasks. The Worker Functions Comparing, Serving, and Handling and the Work Field Accommodating are similar to those of Task 1.) Tasks 1 and 2 could be combined into a single task if the time percentage of one or both is too low to justify separating them as shown here.]
- (4 & 10) Takes initial customer order and additional orders, such as order for dessert, and records name and menu price of each item on customer check. (Identical activities although performed at different times. Worker Functions: Compiling, Serving, and Handling. Work Field: Numerical Recording-Record Keeping.)

- (6, 7, & 8) Prepares food requiring short preparation time, such as sandwiches, salads, hamburgers, and ice cream sundaes; and beverages, such as coffee, tea, and soft drinks. (Since the preparation of various types of food and beverages, although involving different techniques, procedures, and equipment, is similar enough in function and purpose to be assigned identical work performed ratings, all food-and-beverage-preparation activities can be combined into a single major task. Worker Functions: Compiling, Serving, and Manipulating. Work Field: Cooking-Food Preparing.)
- (9) Serves food and beverages to customer. (Retained as a distinct task; this activity can be performed by another worker. Worker Functions: Comparing, Serving, and Handling. Work Field: Accommodating.)
- (11) Totals prices on check, computes tax or determines tax from chart, records total amount, and hands check to customer. (Retained as a distinct task. Worker Functions: Computing, Serving, and Handling. Work Field: Numerical Recording-Record Keeping.)
- (12, 13, & 14) Collects payment from customer, operates cash register to record sale, and returns change. (Integrally related activities that form a distinct task; not consolidated with previous Task 6 because many establishments have separate workers performing these activities, e.g., Cashier and Waiter/Waitress. Worker Functions: Computing, Serving, and Operating-Controlling. Work Field: Numerical Recording-Record Keeping.)
- (15 & 16) Clears away used dishes and utensils and wipes countertop or booth table with damp cloth. (Both activities are elements of an overall cleaning function and form one task. Worker Functions: Comparing, Taking Instructions-Helping, and Handling. Work Field: Cleaning.)

The above task descriptions while based largely on functional considerations are arranged more or less sequentially to reflect the work cycle for serving an individual customer. This arrangement presents a clear picture.

GROUPING SEQUENTIAL WORK ACTIVITIES INTO TASKS

In order to identify the tasks of sequential, short-cycle jobs, it is necessary to determine the points in the work cycle where activities or groups of activities can be separated into tasks. The example below shows the sequential elements of a Power-Press Tender and one way in which they can be grouped into tasks. The rationale for each task is stated based on some of the considerations for task identification previously discussed.

1. Picks up metal ring from tray.
2. Picks up wood mop handle from carton.
3. Examines ring and mop handle for obvious surface irregularities and discards defective ones.
4. Inserts ring onto narrowed tip of mop handle.
5. Positions ringed end of mop handle onto jig of power press.
6. Depresses treadle to actuate power-press ram that crimps ring to handle and forms partial thread on ring.
7. Rotates mop handle one-half turn to position ring for completion of thread.
8. Depresses second treadle to actuate power-press ram that forms remainder of thread on ring.
9. Removes mop handle from jig and places into cart.
10. Reads counter on press at end of workshift and records readings on production ticket.
11. Sweeps floor around press at end of workshift, using broom and dustpan.

12. Oils press once daily, using oilcan.

These activities could be grouped as follows into a three-task description:

- Task 1: (Elements 1, 2, 3, and 4) Inserts metal ring onto end of mop handle. (Rationale: The fitting of the ring onto the end of each mop handle is an activity that prepares the product for a machine operation; it could be done by another worker as a nonmachine activity. The elements are integrally related and inseparable.)
- Task 2: (Elements 5, 6, 7, 8, and 9) Tends power-press to stamp threads on metal ring and to crimp metal ring onto end of mop handle. (Rationale: The elements beginning with the feeding of the mop-handle assembly into the machine and ending with the removal of the finished handle comprise the machine-related part of the job: tending the power-press. The elements of this task are performed in rapid succession during which time the worker's hands never leave the product.)
- Task 3: (Elements 10, 11, and 12) Performs miscellaneous activities. (Rationale: These infrequently performed activities are incidental to the main purpose of the job, fabricating mop handles, and are best consolidated into a "miscellaneous" task, thus placing the two more important tasks in better perspective in the final job description.)

APPENDIX B

DETERMINING DETAIL NEEDED IN JOB AND TASK DESCRIPTIONS

CONSIDERATIONS

Job descriptions vary in detail from brief, generally worded task statements to element-by-element task descriptions that approach but fall short of the specificity of a motion study. Insufficient detail leaves the user with broad statements too vague to be useful. Excessive detail forces the user to sift through superfluous facts for pertinent data. Not everything in an analyst's notes needs to go into the job description. By eliminating, summarizing, or selectively highlighting data, the job descriptions can be more usable. Considerations in deciding how much detail to include are:

1. Type of job studied.

Descriptions of factory, clerical, service, technical, and craft jobs are usually written in terms of specific actions performed. Professional and managerial jobs typically require carefully selected Data/People action verbs in order to reflect adequately the responsibilities and duties performed.

2. Relative time percentages of tasks.

A task that is performed a significant percentage of the worker's time is usually written in more detail than it would be if it were performed infrequently. For example, an occasional machine-feeding task (performed 5% of the time) may be described as follows:

Feeds machines: Feeds stacks of paper blanks into feed racks of automatic cup-forming machines to maintain supply of blanks in each machine of battery.

The same task performed a significant percentage of time, perhaps 20% or more, would require more descriptive detail as shown below:

Feeds machines: Grasps stack of paper cup body blanks from bin and carries blanks to feed rack of cup-forming machine. Examines blanks for curvature and defects, such as short size, missing print or ink color, cracks, creases, wrinkles, and dirt. Bends curved blanks in opposite direction to straighten, if necessary, to prevent jamming in machine. Holds stack of blanks in one hand and fans edges with other hand to separate stuck edges and to dislodge loose paper scrap. Removes and discards defective blanks and notifies supervisor if quantity of blanks affected exceeds specified amount. Places stack onto machine feed rack behind previously fed blanks and brushes line of liquid emulsion along top and bottom edges of stack, using paintbrush and container of emulsion located next to feed rack, to soften top and bottom edges of cup bodies, to facilitate formation of rims and bottoms, and to prevent paper from cracking. Patrols work area and repeats feeding procedure to maintain sufficient supply of blanks in feed racks of machines.

3. Relative importance or skill level of tasks.

Important job tasks often require more detail than less important tasks, even when they take but a small percentage of the time. A worker may spend 80% of the time watching a machine for warning lights and automatic stoppage caused by problems with machine or raw material, but only 10% of the time adjusting the machine settings to prepare for operation and 10% on diagnosing malfunctions and taking corrective action. The latter two tasks, because they involve a higher degree of skill and are more important to successful performance, require detail comparable to that in the first task.

Another example is that of two workers performing the same activity: duplicating printed material on a photocopy machine. For one worker, Duplicating Machine Operator, who spends virtually 100% of the time on the activity, a detailed task description would be warranted; for the other worker, General Office Clerk, who only occasionally performs the activity, less detail would suffice.

4. Type of work activity.

Some work activities are commonplace and need not be described in specific detail to convey a clear picture of what is being done. In such tasks as, "Sweeps sawdust from floor, using broom and dustpan", and "Hammers nails to seal lid on crate, using hammer", the actions involved are obvious. However, a specialized task, such as "Measures thrust-load capacity of ball bearings, using mechanical preload gauge", gives no clear depiction of how the worker does this; more detail is needed to enable the reader to understand the specific skills and actions involved, such as "Manually places ball bearing into fixture of preload gauge. Lifts and releases handle of gauge to allow attached weight to fall onto bearing. Reads dial indicator on gauge to determine if bearing's capacity to withstand impact is within prescribed tolerance range. Places acceptable and rejected bearings into separate trays."

EXAMPLES OF EXCESSIVE DETAIL IN WORK-ACTIVITY DESCRIPTIONS

Once it is decided that a detailed job or task description is needed, care must be taken to avoid creating a motion study description. For example, an element in a description of a Small-Parts Inspector might read: "Feels edges of machined metal part to detect burrs." It would be giving an excessive amount of detail to state: "Raises right hand one foot to table height, superimposes hand over metal part, and by depressing first and second fingers onto part and moving arm slowly sideways about six inches, feels with fingertips for snags and rough spots that are indicative of surface irregularities."

A job description is not a motion study, nor is it a training manual to teach a worker to perform the job through step-by-step work instructions. Excessive detail overwhelms the reader and obscures the features that distinguish that job from all others. The following example shows how one task of a Wire-Cloth Weaver can be written either as part of a job description or as a work procedure.

For Job Description in the DOT perhaps,
or in a Job Summary Statement:

Installs specified arrangement of cams in loom for production of twilled-weave wire cloth, using handtools and following written instructions.

For Job Procedure:

To produce twilled-weave in loom:

1. Install a #1 cam on the #1 treadle centered above the cam follower.
2. Install a #2 cam on the #2 treadle, rotated 90 degrees to the rear of the #1 cam.
3. Install a #3 cam on the #3 treadle directly opposite the #1 cam.
4. Install a #4 cam on the #4 treadle opposite the #2 cam and toward the front the loom.
5. Repeat above cam-installation procedures on the other side of the heddle frames.
6. Connect #1 to #3 heddle frame by means of support chains.
7. Connect #2 to #4 heddle frame by means of support chains.

It is evident that most of the detail in the above work procedure is superfluous in a task description. Training manuals are available to evaluate job data, but the specificity of the final task description needs to be based on the considerations just discussed. A detailed account of every step of the job or movement of the worker in a photographic or documentary fashion is not a useful description of tasks for a JAR.

APPENDIX C

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

The importance of Machines, Tools, Equipment, and Work Aids (MTEWA) cannot be overemphasized. Often an analyst brings confusion to JAR-users by neglecting to enter information here which helps place the job in perspective. The analyst is urged to include information in this item needed to give JAR users the best understanding of the job and its relation to the process or service in which it was observed.

All MTEWA which are commonly known to the general population, such as saws, hammers, and adding machines, should be listed but do not need to be defined.

Considerable latitude is allowed in preparing descriptions of MTEWA, but ordinarily the descriptions must include the following information:

1. Statement of the function of the device.
2. Description of the physical appearance of the device and its essential parts.
3. Description of the operation of any machines or equipment as they relate to the worker.

Only essential features of mechanical equipment should be included in these descriptions. Structural details, such as gear ratio, types of power drive, and similar technical features, need not be included unless the worker has some specific task to perform in relation to them. The analyst should assume the place of an observer who stands beside the machine, and should tell what the observer sees and what would have to be known to understand what was being done on the machine. The description of an automatic machine should be simpler than the description of one that requires a worker's constant attention.

To clarify certain operations that are mentioned in the description of duties, it is often desirable to follow a piece of work through the machine or equipment. The description in Item 14 should be written in a manner that presents a clear picture of the relationship between the MTEWA and the performance of the worker's tasks. Any special features of, or attachments to, the machine or equipment should be mentioned if they have any definite relationship to the worker.

For simpler devices, particularly handtools, it is only necessary to include a definition of the device rather than a complete description. However, the purpose for which the device or machine is used must be explained.

In the description of the job, it is better to use the generic names of machines and other devices than to use their trade names unless there is no appropriate, commonly understood generic name. For example, "automatic screw machine" should be used in preference to "Acme Machine". When describing the machines in Item 14 of the JAR, the generic name should be followed by a parenthetical explanation, giving the trade name of the machine, the name and address of the manufacturer, and any other identifying information that can be obtained, such as model number or size. This enables persons who may later write from the data contained in the JAR's to request catalogs and photographs from the manufacturers, if necessary. Where a drawing has been included with the JAR and where it is practicable and desirable, an equipment or machine description may be tied in with the drawing by placing letters appearing on the drawing in parentheses after the parts of the device mentioned in the description.

A convenient technique for composing the best type of description or definition of an item (MTEWA) is for the analyst to be guided by the following general outline:

1. State the name of the item.
2. Place the item in its general category, e.g., a floor-mounted, electrically powered machine.
3. State the function of the item.
4. Describe its physical appearance, makeup, and essential parts.

The following is an example of an MTEWA thus described:

Edging Machine (Sommer & Maca Glass Machinery Co.; Chicago, Illinois; Auto Edger Model 4A): Floor-mounted, electrically powered machine approximately 30' long, 5' wide, and 7' high. An automatic, straight line, conveyor-type machine that grinds and polishes the bottom edges of rectangular glass by means of a series of spindle-mounted grinding and polishing wheels. The five spindle assemblies include four diamond wheels for grinding and seaming, and one rubber composition wheel for polishing. The diamond wheels use a water soluble coolant and the rubber composition wheel uses pumice and water as a polishing agent. The wheels are adjusted by turning a calibrated crank to control inward and outward movement. Ammeters indicate grinding loads of individual grinding wheels and need for grinding pressure adjustment. Glass is placed upright against an upper guide support on the endless conveyor belt. As glass advances toward grinding unit it is gripped and held by rubber blocks on parallel, endless chains. These blocks support glass as it is conveyed through grinding and polishing units. Glass is washed automatically as it advances beyond grinding unit and dried by blown air as it leaves washing unit.

folded cardboard strip; pumice; pallet; water hose; shovel; cleaning solution; rag

All MTEWA noted in Item 14 of the JAR must be mentioned in the description of tasks. For example, if a micrometer is defined in this section and if it does not appear in Item 16 of the JAR that the worker measures anything, the presumption is that the task of measuring has been omitted from the description of duties.

APPENDIX D

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APPENDIX E

AGENCY IDENTIFICATION NUMBERS FOR OCCUPATIONAL ANALYSIS

The following table contains numbers used within the cooperative Federal-State Occupational Analysis Program to identify the originator, State Employment Security Agency or Occupational Analysis Field Center (O AFC), of source material for Job Analysis Reports.

010	Alabama	280	Montana
020	Alaska	290	National Office
030	Arizona	300	Nebraska
040	Arkansas	310	Nevada
050	California	320	New Hampshire
060	Colorado	330	New Jersey
070	Connecticut	340	New Mexico
080	Delaware	350	New York
090	District of Columbia	360	North Carolina
100	Florida	362	North Carolina O AFC
110	Georgia	370	North Dakota
120	Guam	380	Ohio
130	Hawaii	390	Oklahoma
140	Idaho	400	Oregon
150	Illinois	410	Pennsylvania
160	Indiana	420	Puerto Rico
170	Iowa	430	Rhode Island
180	Kansas	440	South Carolina
190	Kentucky	450	South Dakota
200	Louisiana	460	Tennessee
210	Maine	470	Texas
220	Maryland	480	Utah
230	Massachusetts	482	Utah O AFC
232	Massachusetts O AFC	490	Vermont
240	Michigan	500	Virginia
242	Michigan O AFC	510	Virgin Islands
250	Minnesota	520	Washington
260	Mississippi	530	West Virginia
270	Missouri	540	Wisconsin
272	Missouri O AFC	550	Wyoming