

WAGE AND SALARY ADMINISTRATION: A JOB EVALUATION SYSTEM

SUMMARY

Job evaluation is the process of determining the value of a job within a firm relative to all other jobs in that firm. Job evaluation provides a reliable base on which wage rates may be established. Inherent in the job evaluation process is consideration of each compensable factor and characteristics on a logical, reasonable and systematic basis. In this respect, job evaluations should consider only the inherent characteristics and duties of the job and exclude extraneous factors such as supply and demand of labor, current local wage rates and geographic location.

Properly developed and administered job evaluation systems provide distinct and useful contributions:

- They provide the basis for establishing wage rates for each job.
- They provide a job comparison process that can be understood and discussed throughout the organization.
- They create equitable value differentials for each job relative to other jobs in the organization.
- They provide a systematic process by which new jobs can be introduced into the job structure with minimum disruption to the organization.
- They provide meaningful data for other functions such as workforce development, employee placement, recruitment and selection and manpower planning.
- They provide a basis for external wage survey comparisons.
- They help identify wage rate discrepancies within jobs of similar value.

COMPENSABLE FACTORS

Regardless of the method of evaluation, management must first decide what elements or characteristics exist within a job, that they are willing to pay for. These job characteristics or compensable factors then form the basis for establishing pay practices and the job evaluation process. Since job evaluation determines the relative ranking of jobs within the firm, the compensable factors should be broad and general enough so they are identified as existing in varying degrees within all jobs. However, they should not be so broad that they result in hazy and vague meanings that are overlapping.

The job rating system described in this BMA, outlines the four primary compensable factors that exist in most jobs.

These are skill, effort, responsibility and working conditions. Within each primary factor, from two to four sub-factors are identified, for a total of eleven sub-factors as shown in this BMA. The factors and sub-factors then are broken down into one of five degrees of expected expertise and experience, with each degree and factor being given a set numbers of points. The point value per degree and factors shown in Table I, are typical of those used in developing a factorial job rating system.

Using the total number of points accumulated, the job can then be grouped within a series of pay grades that are used to establish wage rates for all evaluated jobs. While wage rates may result from negotiated agreements, it is important that the job evaluation process not be compromised and that pay for similar rated jobs be uniform and consistent throughout the organization.

In establishing wage rates within each grade, it is recommended practice to establish a standard or job rate that represents meeting 100% of the job requirements. A rate range can then be established that provides step increases for employees working within the job classification. For non-exempt hourly rated jobs, a range of 30% is reasonable. This provides for 15% above or below the job standard rate. Pay levels at 85%, 90%, 95%, 100%, 105%, 110% and 115% can then provide for developmental or meritorious employee performance purposes. It is also suggested that the wage differential between successive grades be set at 7-1/2%. This allows an overlap between grades and provides for uniform progression where increasing skill levels exist within a job family.

To assist firms wishing to implement a job evaluation system, NTMA has available for purchase, a manual for developing job descriptions that meets the Americans with Disabilities Act of 1990 (ADA).

POINT VALUES OF FACTOR DEGREES

PRIMARY FACTORS	1st Degree	2nd Degree	3rd Degree	4th Degree	5th Degree
Skill:					
1. Education	14	28	42	56	70
2. Experience	22	44	66	88	110
3. Initiative Ingenuity	14	28	42	56	70
Effort:					
4. Physical Demand	10	20	30	40	50
5. Mental and Visual Demand	5	10	15	20	25
Responsibility:					
6. Equipment or process	5	10	15	20	25
7. Material or Product	5	10	15	20	25
8. Safety of Others	5	10	15	20	25
9. Work of Others	5	10	15	20	25
Job Conditions:					
10. Working Conditions	10	20	30	40	50
11. Unavoidable Hazards	5	10	15	20	25

DETERMINATION OF JOB GRADE

TOTAL POINTS	PAY GRADE
Up to 161	1
162-183	2
184-205	3
206-227	4
228-249	5
250-271	6
272-293	7
294-315	8
316-337	9
338-359	10
360 and higher	11

FACTOR NO. 1 - EDUCATION (OR TRADE KNOWLEDGE)

This factor appraises the basic knowledge or “scholastic content” essential as background or training preliminary to learning the job. It refers to knowledge normally secured or achievable in a formal course in a public or private school, or in an organized training course before assignment to the job. Consideration is given to such requirements as reading, writing, the use of mathematics, drawings, and measuring instruments, and formal trades or business training. Specialized knowledge of procedures and practices in a particular department or company is usually learned through work experience and should be evaluated in the Experience factor.

Education together with Experience represent the normal minimum requirement necessary for a satisfactory performance of the job.

First Degree

This degree covers work which requires a knowledge of reading, writing and the use of simple arithmetic using whole numbers. Because it is the lowest degree of the factor, it covers jobs which are equivalent in education to anything less than the second degree. It includes the understanding of spoken or written English, including general rules and practices and specific written or oral instructions pertaining to the work. It may involve reading information such as part numbers, names, quantities, and change letters from paperwork, charts, drawings, and specifications.

It includes a knowledge of arithmetic involving whole numbers, and of weights and measures and the ability, to take readings from simple gauges, meters, or linear scales. It may involve the counting and sorting of parts to check against accompanying paperwork or to issue and receive material and the entering of such data on a simple form or record.

It includes the use of fixed gauges or other gauges when used as comparators or for such purposes as checking concentricity or backlash, It may also involve the use of a machine dial for a repeating operation which is carried out to the same point or points on the dial.

It includes knowledge of the use of simple tools such as files, scrapers, and hand drills. It also includes the operation of office equipment such as adding or duplicating machines.

Second degree

This degree covers work which requires a knowledge of, arithmetic involving decimals and fractions, and its application to the reading of drawings, the use of variable measuring

instruments, or the calculating and recording of business transactions. It also covers work requiring limited specialized knowledge or elementary business training.

It includes the use of measuring instruments of the variable type such as micrometers and vernier calipers which require computations involving decimals to check dimensions, or the use of machine dials requiring such computations as figuring adjustments to obtain dimensions within tolerances allowed. It also includes the use of a dial indicator gauge to determine the amount of material to be removed and to check until the part is within specified limit.

It includes reading and understanding simple drawings, such as sketches on operation sheets, to obtain fractional or decimal readings. It may also involve reading simple tool, machine, or assembly drawings, or wiring and schematic drawings.

It includes the recurrent use of a specified formula involving only arithmetical computations.

The degree covers work which requires a limited knowledge of a specialized field. It might entail a short course before assignment to the job to provide a working knowledge of general procedures and specialized terminology.

The degree covers work requiring an elementary business training. It includes jobs which are chiefly clerical in nature and require basic training in clerical methods and office routines in order to work with a variety of forms or records, classify or allocate items or data to established categories, complete simple reports from readily available material, and make arithmetical calculations. It also includes jobs which require an elementary knowledge of typing to work from prepared copy and to process forms.

It includes duties which require an elementary knowledge of basic store-keeping methods together with the use of arithmetic in order to store a variety of items, determine stock arrangement, maintain proper level of stock on hand, take inventories, and maintain files and records. It also includes duties which require an elementary knowledge of shop practices, routing and scheduling in order to expedite material through manufacturing processes and maintain the necessary progress records.

Third degree

This degree covers work requiring a well-rounded knowledge in a specialized field or process including the use of the drawing and specifications, shop mathematics and/or formulas, and measuring instruments associated with the field in order to apply the general methods, practices, and procedures to a variety of assignments and problems. It also covers work which requires general business or commercial training. The degree involves educational or training requirements equivalent to a minimum of 2 years high school plus 2 to 3 years' trades training or 4 years industrial arts, technical, or commercial high school training with specialization in the particular trade or field in some cases, it also may involve additional short specialized courses.

The use of drawing and specifications may include the reading and interpretation of complicated drawings, engineering metal drafts or complicated schematic diagrams and

the understanding of the views, symbols and terminology used in order to obtain the required information such as locations, reference points, and dimensions. It may also involve the interpretation of complicated assembly drawings showing the inter-relationship of a number of detail parts of the interpretation of technical charts or specifications and manufacturers' handbooks.

The shop mathematics may include the use of algebra, geometry and/or trigonometry, and the selection and use of handbook formulas involving such advanced shop mathematics.

The measuring instruments may include the use of a variety of precision instruments such as size blocks, vernier height gauges and calipers, sine bars, surface plate, and the various types of micrometers.

The degree covers work which requires a general business or commercial training with specialization on a particular field such as stenography or bookkeeping. It includes jobs requiring a broad background in clerical work covering office methods and practices, filing systems, and the use of office equipment in order to plan and coordinate various types of clerical activities. It also includes jobs which require a general background in business operation and procedures covering both shop and office activities in order to plan and coordinate the work of a group performing a function such as scheduling or expending for various other departments.

Fourth degree

This degree covers work which requires a broad shop trade knowledge together with the use of complicated drawings and specifications, advanced shop mathematics and a variety of precision measuring instruments. It involves a comprehensive knowledge of a highly skilled trade covering both theory and practice and including an understanding of allied fields in order to deal with the various aspects of diversified problems and perform all manual and technical operations. It also includes the full understanding and use of all of the elements of advanced shop mathematics, complicated drawings and specifications and a variety of precision measuring instruments. The degree involves educational or training requirements equivalent to a minimum of 4 years high school plus 4 years formal training in a highly skilled trade.

Fifth Degree

This degree covers duties which require a broad technical background in order to deal with complicated and involved problems in an engineering or scientific field. It involves educational requirements equivalent to a minimum of 4 years of technical university training.

FACTOR NO. 2 - EXPERIENCE

This factor appraises the length of time typically required by an individual with the specified educational qualifications to learn to meet minimum job standards. The amount of

experience required is in addition to the time needed to acquire trade knowledge or similar specialized training which is covered under the Education factor.

The factor includes any necessary previous experience on related work within the organization or outside, together with the “breaking-in time” or period of adjustment and adaptation on the specific job itself. “Breaking-in time” is considered as time spent under competent supervision or continuous and intensive training on the job.

First Degree

- Up to three months.

Second Degree

- Over three months, up to one year.

Third Degree

- Over one year and up to three years.

Fourth Degree

- Over three years and up to five years.

Fifth Degree

- Over five years,

FACTOR NO. 3 - INITIATIVE AND INGENUITY

This factor appraises the requirements of the work for independent action. The exercise of judgment, the making of decisions and the use of planning, originality, and foresight, taking into account the complexity of the duties and the effect of precedent or standard practices on the work.

The appraisal of the duties reflects only the demands of the job. Volume and/or variety in themselves do not affect the scoring of this factor; however, the character of the elements resulting from volume and/or variety are evaluated separately under the appropriate factors.

First Degree

This degree covers duties requiring the following of specific verbal or written instructions which are readily understandable without a prior knowledge of the job in order to carry out tasks which are repetitive and simple in nature, or are performed under very close supervision on short work assignments. The duties may include the use of simple equipment.

The work is standardized and limited in the number and kind of decisions, If any decisions need to be made they are of relatively little importance involving, as a rule, a minor adjustment of details based on familiarity acquired through repeated performance of routine duties. Deviations from the established methods and procedures are referred to others for decision.

Second Degree

This degree covers duties which require working from detailed instructions and making minor decisions requiring

some judgment. The method of work is specified and the equipment provided, but the duties require some discrimination and care so as to meet quality standards, recognize the need for and to make adjustments, and check work or data. The duties involve making comparisons, recognizing errors, and exercising care in the performance of the job rather than planning and selecting a course of action, and may consist of a number of elements of some duration. Although all courses of action are not completely covered by job instructions, decisions are limited in scope and are usually controlled by precedent.

Third Degree

This degree covers duties which require the planning and performing of work of some complexity, involving a sequence of operations, and the analysis of facts to determine what action should be taken within the limits of standard practices or recognized methods. It involves judgment in selecting and using available equipment and, tools and in planning or altering the method of work, layout, or setup for various work assignments. Somewhat difficult decisions are required in such matters as choosing a course of action from various, alternative methods and procedures, within standard practice, or determining corrective action or disposition in cases involving borderline variations from specified quality.

Fourth Degree

This degree covers duties requiring the planning and performing of unusual and difficult work where only general operation methods are available and the making of decisions involving the use of considerable ingenuity, initiative, and judgment. The duties require the interpretation of broad instructions and the application of general knowledge and procedures in the field to known choices of action, supply missing information, select or improvise tools, equipment, and methods, and diagnose and correct difficulties. Resourcefulness and skill are required in carrying out complicated assignments and making difficult decisions in the absence of clear-cut procedures.

Fifth Degree

This degree covers duties requiring independent planning, originality, and imagination to devise and develop tools, equipment, and methods for performing involved and complicated jobs, using or modifying not only known methods but contriving new techniques as needed. The results desired are outlined in general terms and the employee proceeds alone with only a minimum of supervision. The scope of the duties includes related areas of work and involves a thorough analysis of any phase of the project from design to completion.

FACTOR NO. 4 - PHYSICAL DEMAND

This factor appraises the amount and continuity of physical effort required. Consideration is given to the amount of muscular effort required by the weight handled, force exerted,

or the strain of the work position, to the frequency, duration, and regularity of such effort, and to compensating factors such as the periods of unoccupied time in the work cycle or the mechanical aids or other assistance provided. Items relating to mental and visual effort, working conditions, or hazards are excluded from this factor.

On work requiring manual lifting, the weight of the items handled is an important consideration in determining the physical demand. In order to have a common reference point for the general terms used in the degree definitions, the following weight ranges have been established:

- Up to 15 Lbs Light
- Weight 16 - 40 Lbs Medium (average)
- Weight Over 40 Lbs Heavy Weight

Related to the weight are the method of handling, including any assistance from other employees or mechanical aids which reduce the equivalent weight actually handled, the ease of handling (size and shape, external holding devices, and surface conditional), and the distance lifted or carried.

Physical effort may involve exerting force to perform various manual operations such as using hand tools, holding parts against routing wheels, pushing or pulling materials, or operating office equipment.

The work position such as sitting, standing, stooping, working in strained positions or in confining quarters, is also considered in the analysis of this factor.

The duration, frequency, and regularity of occurrences of the physical exertion or muscular effort is considered in relation to periods of recovery time.

All of the above phases of physical effort are considered in order to appraise the total physical demand of the work. Relatively brief periods of unusual activity are not emphasized in making the overall appraisal.

First Degree

This degree includes duties in which the physical activities require little exertion.

It includes work which is largely clerical in nature or other light work which is performed while sitting and requires the intermittent use of arm or hand to turn or manipulate small or light weight material or equipment or to operate office machines.

It includes intermittent walking or standing while observing, checking, making slight adjustments to controls or switches. It also includes sporadic lifting or carrying of light weights.

Second Degree

This degree includes duties requiring light physical effort in the manual handling of light or, occasionally, heavier weights or the operation of equipment or tools. It also includes the operation of machine tools when the machine time exceeds the handling time.

It includes duties performed either while sitting or standing and which require lifting, turning, positioning, loading,

or otherwise exerting light effort to work with hand tools, equipment, or materials which are generally light in weight. It includes equivalent effort handling heavier weights with assistance or mechanical devices which reduce manual exertion. It also includes the operation of office equipment such as typewriters or calculating machines for a major portion of the work time. Although intervening time is generally present between periods of activity, such time may be very short when the activity itself calls for the expenditure of little muscular force.

It includes the operation of machine tools when the machine time exceeds the time required to handle parts or tools. A considerable part of the machine time may be spent in operating machine controls or handling light checking instruments if such activities require little muscular effort.

It covers work in which part of the duties require little physical effort but other phases of the work include varying degrees of physical exertion.

Third Degree

This degree includes duties requiring moderate physical effort for sustained periods in the manual handling of light and medium weights or the operation of equipment or tools.

It includes duties which require lifting, carrying, pushing, or hauling small parts in quantities without mechanical assistance; or involves continuity of effort handling heavy material with assistance or mechanical devices which reduce manual exertion.

It includes short-cycle work requiring energetic action without intervening time for rest, such as jobs in which the flow of work or paced production requires constant handling of a large volume of lightweight parts.

It includes the preparation, and/or operation of a machine tool involving manual handling of medium or heavy parts and tools when the exertion required offsets a long cycle machine operation; or the operation of several machine tools when the total handling time is equivalent to or exceeds the total machine time.

It includes continuity of effort in exerting substantial force or pressure to use hand tools or equipment, or in holding objects which are generally light in weight against a rotating surface.

The degree includes some muscular strain to hold equipment steady while completing exacting work or to work intermittently in an awkward position. The occasional exertion of considerable effort such as using heavy tools or manually lifting heavy material may also be included.

Fourth Degree

This degree includes duties requiring considerable physical effort and vigorous exertion for a major part of the work time in the manual handling of medium or heavy weights, or the operation of equipment or tools. It also includes duties involving continuous strain from a difficult work position.

It includes the continuous manual handling of medium-weight equipment or material. It also includes the regular manual handling of heavy material or the exertion of consid-

erable force in the use of heavy tools and equipment, when intervals of lighter effort or rest are provided during the work cycle.

It includes physical strain caused by a cramped or awkward work position required to perform the work and must be continued for long stretches without rest or relaxation.

Fifth Degree

This degree includes the continuous manual lifting or moving of heavy equipment or material, or other hard work involving constant physical strain, with little or no work of a lighter nature or periods of inactivity. It may also include intermittent severe strain in exerting extreme effort.

FACTOR NO. 5 - MENTAL AND VISUAL DEMAND

This factor appraises the application of duration and intensity of mental and visual attention. It does not measure the degree of mental development or skill, but rather the extent of the mental and visual application or attention required.

All levels of attention having job significance require some employment of mental faculties aided by perception, principally vision. Mental and visual demands are, therefore, considered as related aspects of the job requirement of attention rather than as separate and independent job characteristics, and are, evaluated as a single factor. Consideration is given to both the intensity and duration of the mental aspect of this factor. The intensity of such application varies in different jobs depending upon the work requirements. For example, simple work with a few variations becomes practically automatic through repetition requiring little thought, while complicated work may require mental concentration in solving complex problems or meeting changing situations. Similarly, consideration is given to the duration and continuity of the alertness, attention, or thought required.

The visual aspect of the factor varies with regard to the duration of the visual application, although the intensity of such application is a significant element on jobs requiring unusually close and exacting visual attention and the exercise of a high degree of manual dexterity.

First Degree

This degree covers duties which require only intermittent visual attention and little mental application since the work is simple or practically automatic.

Second Degree

This degree covers duties requiring frequent focusing of mental and visual attention or which require continuous visual attention with little mental application.

It includes duties involving an intermittent flow of work, or relatively short work assignments with frequent intervals between assignments, or work in which the employee is intermittently required to issue or receive materials or tools. It also includes the operation of a machine or process which

requires attention at the beginning and end of the operation cycle, but during which there is a substantial waiting period requiring watchfulness at intervals.

It includes simple tasks such as walking, cleaning, handling materials, using simple tools for rough work in which the visual requirements may be continuous but, because of the simplicity of the work, little mental application is required.

Third Degree

This degree covers duties which require constant alertness or continuous application of mental and visual attention.

It includes short cycle repetitive operations requiring continuous attention and the use of coordination to operate shop or office machines and equipment or to perform manual operations involving the use of various types of tools or gauges. It also includes longer cycle operations during which continuous application of mental and visual attention is required for the entire work cycle or constant alertness is necessary to take prompt action in the event of certain problems or to properly time and carry out steps in an operation sequence.

It, includes duties requiring continuous mental and visual attention to check quality of work, both visually and through the use of various types of gauges and equipment, or to perform various clerical activities such as posting, checking, and filling records.

It includes diversified work requiring continuous attention to carry out various tasks and may require a moderate amount of planning before performing the details of the work.

It includes work in which mental and visual concentration on complex operations or problems is occasionally required, but the majority of the duties require only continuous alertness or attention.

Fourth Degree

This degree covers duties which require the concentration of mental and visual attention for extended periods in planning and laying out complex work; or require sustained and close visual and mental attention together with a high degree of manual dexterity.

It includes duties in which a considerable part of the time is spent in analyzing the requirements of complicated tasks and determining the best methods or procedures to plan in advance a large number of steps or details; in laying out work to close limits; and in diagnosing and correcting difficulties.

It includes duties which require close attention and the exercise of very precise muscular coordination and control for long periods.

Fifth Degree

This degree covers duties which require an exacting and sustained concentration of mental and visual attention on highly difficult and complicated problems, such as visualizing, planning, and laying out to close limits very involved

and complex work. The duties require a continual concentration on various problems of this type, and, in most cases, the actual carrying out of the work is assigned to others.

FACTOR NO. 6 - RESPONSIBILITY FOR EQUIPMENT OR PROCESS

This factor appraises, in terms of dollar values, the employee's responsibility to exercise care in preventing damage to the tools, equipment, and processes through which his or her skill is applied to the material which is being worked. The damage considered is restricted to the items worked with and does not include secondary losses. Secondary losses are those which might conceivably occur as a result of a chain of events started from the error but which are virtually impossible to evaluate, such as loss of production or failure to meet deliveries.

The factor evaluates the damage normally expected from a mishap occurring through failure, to observe prescribed standards of care in the use of the equipment or processes specified for the job. The cost of the labor and/or materials and parts necessary to restore the items damaged to working order is considered rather than complete replacement value, unless salvage or repair is impractical.

The factor does not include periodic maintenance or replacement costs resulting from ordinary wear or deterioration.

First Degree

Probable damage to equipment or process is seldom over \$5.

Second Degree

Probable damage to equipment or process is seldom over \$25.

Third Degree

Probable damage to equipment or process is seldom over \$250.

Fourth Degree

Probable damage to equipment or process is seldom over \$1,000.

Fifth Degree

Probable damage exceedingly high, reaching several thousand dollars.

FACTOR NO. 7 - RESPONSIBILITY FOR MATERIAL OR PRODUCT

This factor appraises, in terms of dollar values, the employee's responsibility to exercise care in preventing damage to items which are transported, handled, processed, assembled, inspected, tested, or maintained, or in avoiding

loss from clerical errors. Secondary losses are not included in the estimate when prescribed quality control, shop practices, or clerical procedures would normally furnish adequate provision for detection of errors or prevention of damage.

The monetary value assigned comprises the loss normally expected from an error, considering such items as the value of the typical parts handled or worked on, the probable extent of the damage, and the possibility of salvage. The amount is based on the value of the purchased parts, material, and/or labor required to repair or replace a specific item or items to the point of damage, or to rectify clerical errors, omitting any additional indirect charges which may be assigned for costing purposes.

First Degree

Probable loss due to damage or scrapping of material or product is seldom over \$10.

Second Degree

Probable loss due to damage or scrapping of material or product is seldom over \$100.

Third Degree

Probable loss due to damage or scrapping of material or product is seldom over \$250.

Fourth Degree

Probable loss due to damage or scrapping of material or product is seldom over \$500.

Fifth Degree

Probable loss of material which may be damaged or scrapped is very high, up to several thousand dollars.

FACTOR NO. 8 - RESPONSIBILITY FOR SAFETY OF OTHERS

This factor appraises the employee's responsibility for exercising care in the performance of his or her work to prevent physical injury to others. This responsibility is measured by the degree of care required and by the probable extent of injury to others as a direct result of inattention or carelessness by the person performing the job. Taken into account are the nature of the work, the work position, the equipment and material used, the proximity of other employees, the extent to which they are protected by safety measures or may act to safeguard themselves, and the frequency of exposure and the probability of injury. Consideration is given to the type of accident which may occur through such carelessness or inattention and the probable injury. It is assumed that the other workers are observing the safety rules and that all safety devices for which the employee is not directly responsible are fully operative. The factor does not include possible injuries to others as a result of actions not directly connected with the

performance of the job or contrary to general shop rules, such as smoking in unauthorized areas, "horseplay," or running. Any assigned responsibility for instructing others in the safe way to do the work is included in this factor.

This factor does not include injury to the employee performing the job which is considered under Unavoidable Hazards.

First Degree

This degree covers work which involves little responsibility for the safety of others. The employee usually works in an isolated location or handles very light material or equipment and there is little probability of injuring others.

Second Degree

This degree covers work which requires the exercise of reasonable care to prevent injuries to others, and injuries, if they should occur, would generally be minor in nature, such as cuts, abrasions, bruises and minor burns or sprains.

Third Degree

This degree covers work requiring the exercise of care to prevent lost-time injuries to others. A lost-time injury is one which causes a temporary disability preventing an employee from performing any regularly established job on his or her next regular shift.

The degree includes injuries such as a crushed hand or foot, loss of fingers, eye injury from flying particles, or burns.

Fourth Degree

This degree covers work requiring a sustained high degree of care to prevent permanently disabling injuries (partial or total to others), such as loss of arms or legs, or permanently disabling burns, but in which the other persons generally have an opportunity to act to prevent being injured.

Fifth Degree

This degree covers work involving considerable and direct responsibility for the lives of others and depends entirely on the correct action of the employee performing the work. Inattention or carelessness in carrying out the duties may result in fatal injury to others with little opportunity for other individuals to avoid injury.

FACTOR NO. 9 - RESPONSIBILITY FOR WORK OF OTHERS

This factor appraises, in terms of numbers of people, the responsibility placed in a job for directing or instructing company employees; and for assigning and checking work in accordance with organizational standards.

This factor includes responsibility for maintaining the flow of work within a group, for informing employees of the work requirements, for instructing in methods and procedures, for checking work, and for assisting in resolving difficulties. It

includes responsibility for instructing and directing employees in a lower classification in the same occupation.

It does not include responsibility temporarily delegated to another employee, such as informing a new employee of the work or cooperative work of two or more employees where one may temporarily direct the work of the group.

First Degree

Responsible only for own work.

Second Degree

Responsible for instructing and directing one or two helpers 50% or more of the time.

Third Degree

Responsible for instructing, directing, or setting up for a small group of seldom over 10 persons.

Fourth Degree

Responsible for instructing, directing, and maintaining the flow of work for a group of seldom over 25 persons.

Fifth Degree

Responsible for instructing, directing, and maintaining the flow of work for a large group, usually over 25 persons.

FACTOR NO. 10 - WORKING CONDITIONS

This factor appraises the physical conditions under which work must be performed, in terms of the relative amount and continuity of exposure to the unpleasant conditions ordinarily present in the work or work area and the extent to which this exposure makes the job difficult.

Consideration is given to atmospheric contaminants, temperature conditions, vibration, noise, and the substances with which the employee is in contact, such as oil, grease, or paint, taking into account the effect of any protective equipment or clothing which the employee is required to wear. The intensity and duration of exposure to these elements, and whether they are present simultaneously or alternately, are included in the appraisal.

First Degree

This degree covers work performed in clean surroundings and which does not usually subject the employee to any of the disagreeable elements associated with shop work.

Second Degree

This degree covers work performed under usual shop conditions involving continuous exposure of the employee to various disagreeable elements in minor degree or intermittent exposure to such elements in moderate degree.

It includes work involving continuous exposure to usual shop noise and vibration, detectable presence of atmospheric contaminants such as dust, fumes, and smoke, some soiling of hands and work clothes, heat in summer and lack of uniformity in heating and ventilation in winter.

It includes work involving intermittent exposure to oil or coolant on hands and forearms from machining operations, noise and vibration from hammering or riveting, metal chips or filings from hand burning or scraping operations.

It includes duties requiring the employee to travel about or work in various parts of the shop and be exposed to usual shop working conditions, provided that the duties do not in themselves involve considerable exposure to one or more disagreeable elements. It also includes intermittent outdoor work with occasional exposure to inclement weather conditions.

It includes work where some of the duties involve a more marked exposure to one or more disagreeable elements, but other duties require little exposure to such elements.

Third Degree

This degree covers work which involves exposure of the employee to various disagreeable elements with one of the elements continuously present in considerable degree or several intermittently present in considerable degree.

It includes machining operations in which the operator is continuously exposed to a flow of disagreeable coolant such as heavy cutting oil on the hands and arms or is exposed to oil fumes and splashing of coolant on the face, hands, and clothing.

It includes operations such as polishing, which involves continuous exposure to vibration and dust and/or flying particles, but which exposure is not severe or is considerably alleviated by dust removal equipment or guards.

It includes various types of processing or service work involving continuous exposure to one type of disagreeable element in considerable degree or intermittent exposure to several such elements in considerable degree. This latter category includes continuous outdoor work with frequent exposure to inclement weather conditions.

Fourth Degree

This degree covers work involving continuous exposure of the employee to one disagreeable element in any extreme degree or to several such elements present in considerable degree.

It includes work where the employee is continuously exposed to a high noise level very near the harmful range or to noises of such level which are repeated at short intervals as, for example, in drop hammer work. It also includes work in which the employee is continuously exposed to intense heat.

It includes operations such as polishing which involve severe vibration and considerable exposure of the face, hands, and clothing to dust and/or flying particles.

It includes various types of work where the employee is continuously exposed to several disagreeable elements such as the heat, fumes, and the necessity of wearing heavy protective equipment involved in hand fusion welding.

Fifth Degree

This degree covers work which involves continuous and intensive exposure of the employee to several disagreeable elements which are present in an extreme degree.

FACTOR NO. 11 - UNAVOIDABLE HAZARDS

This factor appraises the unavoidable hazards to which an employee is subjected in the performance of his or her work. These hazards are evaluated in terms of the probable extent of injury resulting from accidents or health hazards associated with the work or work areas. Taken into account are the nature of the work, the work position, the equipment and material used, the hazards arising from the work being performed by other employees in the adjacent area, the extent to which the employee is protected, the frequency of exposure to the hazards, and the probability of injury. Consideration is given to the type of accident which may occur and to the health hazards even though all safety precautions are observed by the employee and all safety devices are fully operative. The factor does not include possible injuries or health hazards resulting from actions not required in the performance of assigned work or contrary to general shop rules, such as smoking in unauthorized areas, "horseplay," or running.

First Degree

This degree covers work which in itself has negligible accident and health hazards and which does not involve additional exposure to more serious hazards from adjacent operations or processes.

Second Degree

This degree covers work involving exposure to minor accident hazards and negligible health hazards, injuries resulting from accidents would generally be minor in nature such as cuts, abrasions, bruises, and minor burns or sprains.

Third Degree

This degree covers work involving exposure to lost-time accidents and/or health hazards which may result in injury or temporary disability sufficient to prevent an employee from performing any regularly established job on his or her next regular shift.

The degree includes work where such injuries as crushed hand or foot, loss of fingers, or burns or occupational diseases are likely to result in lost time.

Fourth Degree

This degree covers work involving exposure to accident and/or health hazards which may result in a permanent partial disability of such severity as loss of arm or leg or very severe burns or occupational diseases.

Fifth Degree

This degree covers work involving exposure to accident and/or health hazards which may result in permanent total disability or death.

This BMA was reviewed by Jim Wallbeoff, Education Consultant for NTMA.