Treasury Board of Canada Secretariat
Secrétariat du Conseil du Trésor du Canada

CLASSIFICATION STANDARD

SHIP REPAIR

OPERATIONAL CATEGORY

Canada

Classification Standard

SHIP REPAIR

RECORD OF AMENDMENTS

Amendment No.	Date	Inserted by	Remarks
1	8/73	T. B.	

DATE: July 22, 1985

TO: Chiefs of Classification and
Heads of Bargaining Agents

SUBJECT: Amendment to the Definition
for the Ship Repair Group

Attached is an amendment to the definition for the Ship Repair Group approved under TB 797233, effective 1 March 1985.

At conversion, a separate group was created for employees of National Defence engaged in Ship Repair at the Halifax and Esquimalt Dockyards. The main reasons for a separate group were the long history of labour/ management relations between the employing department and the Dockyard Trades and Labour Council and traditional pay relativities. Other positions engaged in the repair of ships were allocated to the General Labour and Trades Group.

This amendment clarifies the application of the classification standard.

DATE: le 22 juillet 1985

AUX: Chefs de la classification et
chefs d' agents négociateurs

OBJET: Modification de la définition du
Groupe de la réparation des navires

Est jointe une modification de la définition du Groupe de la réparation des navires approuvée en vertu de la délibération CT 797233 prenant effet le ler mars 1985.

Lors de la transposition, un groupe distinct a été établi dans le cas=des employés de la Défense nationale qui se consacrent à la réparation de navires aux chantiers maritimes de Halifax et d'Esquimalt. Les principales raisons de l'établissement d'un groupe distinct sont les longs antécédents des relations patronales/syndicales entre le ministère employeur et le Conseil des métiers et du travail des chantiers maritimes, ainsi que la relativité traditionnelle sur le plan salarial. D'autres emplois afférents à la réparation de navires ont été attribués au Groupe des manoeuvres et hommes de métier.

Cette modification précise l'application de la norme de classification.

Departments are requested to make any additional copies required as the standard is not scheduled for republishing.

Il est demandé aux ministères de faire toutes les photocopies qu'il faudra, étant donné qu'il n'est pas actuellement prévu de nouvelle publication de la norme.

Le secrétaire adjoint,
Division de la classification, de la paie
et des systèmes d'information sur les ressources humaines.

Lise Ouimet,
Assistant Secretary,
Classification, Pay and Human Resources Information,
Systems Division.

Treasury Board of
Canada Secretariat

Ottawa,
Canada K1A
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TO: Directors of Personnel
Chiefs of Classification

AUX : Directeurs du personnel
Chefs de la classification

SUBJECT: Amendments to the Ship Repair Classification Standard

OBJET : Modifications à la norme de classification Réparation des navires

The Treasury Board Secretariat has received approval under Treasury Board Minute 822612 dated March 16, 1995, to amend the Ship Repair Classification Standard by creation of the Ship Repair Apprentice (SR-APP) sub-group and approval of job reclassification to compensate apprentice skill progression to journeyman (trade worker) level in the Ship Repair Trades.

Le Secrétariat du Conseil du Trésor a reçu, en vertu de la décision du Conseil du Trésor no 822612, du 16 mars 1995, l'autorisation de modifier la Norme de classification - Réparation des navires, par la création du sous-groupe des apprentis en réparation de navires (SR-APP), et de reclassifier les postes comme mode de rémunération des apprentis à chacune des étapes qui leur permettront d'atteindre le niveau d'ouvrier spécialisé dans les corps de métier de la réparation des navires.

A copy of the Ship Repair Apprentice sub-group definition has been included on page 12, number 20 of the English version of the standard; the new SR-Level Determinants are on page 12A.

Une copie du texte de la définition du sous-groupe des apprentis en réparation des navires a été jointe à la page 12, numéro 20, de la version anglaise de la norme. Les nouveaux déterminants de niveaux (SR

In the French version of the standard the amended pages are 12 and 12A. Please insert the attached documentation into the Ship Repair Classification Standard Operational Category.

niveau) se trouvent à la page 12A de la version anglaise. Dans la version française de la norme, les modifications se trouvent aux pages 12 et 12A. Veuillez insérer les documents ci-joints dans la Norme de classification - Réparation des navires - Catégorie de l'exploitation.

Additional copies of the amendment may be obtained from:

Heather Anne Massey
Publications/Administration

Coordinator

Classification Simplification Group

Treasury Board Secretariat 3rd Floor, West Tower L'Esplanade Laurier 300 Laurier Avenue West
Ottawa, Ontario K1A OR5

Pour obtenir des copies supplémentaires du texte des modifications, prière de vous adresser à

Heather Anne Massey Coordonnatrice des publications/de l'administration

Groupe de la simplification de la classification

Secrétariat du Conseil du Trésor 3e étage, Tour ouest L'Esplanade Laurier 300, avenue Laurier ouest Ottawa (Ontario) K1A OR5

Le secrétaire adjoint par intérim,
Division de la classification, de la parité salariale et de l'adminis

Enclosure

Pièce jointe

CONTENTS

September, 1969
Amended August 1973

MEMORANDUM OF' UNDERSTANDING

The Treasury Board of Canada

- and -

The Federal Government Dockyards Trades
and Labour Council

1. Without prejudice to any position it may take with respect to similar questions in the future the Treasury Board agrees to transfer Messrs. R. Zeitz and L.D. Annear back to the Ship Repair Group from the General Labour and Trades Group.

2. The Federal Government Dockyards Trades and Labour Council agrees to withdraw its application under section 18 of the **Public Service Staff Relations Act** re membership of Mssrs.
R. Zeitz and L.D. Annear, Royal Canadian Mounted Police Board file no. 148-2-117.

3. The foregoing is without publicity and without creating a precedent.

Sheila Ray, W. Knight

Counsel for Treasury/Board

J. Kearney

For the Federal Government. Dockyards Trades and Labour Council.

INTRODUCTION

This standard describes the rating plans to be used to evaluate positions allocated to the Ship Repair Group. In consists of an introduction, definitions of the Operational Category, the occupational group and sub-groups, a basic point-rating plan for all positions at or below the Charge hand level including bench-mark position descriptions, and a level description rating plan for all management excluded positions.

The level description method of classification is a non-quantitative method of determining the relative difficulty of jobs. The level descriptions are reflective of the demands of jobs found at each level.

All methods of job evaluation require the exercise of judgement and the orderly collection and analysis of information in order that consistent judgements can be made. The point-rating method facilitates rational discussion and resolution of differences in determining the relative values of jobs.

Sub-grouping

This occupational group is divided into 19 sub-groups, which are defined in the standard.

Factors

The combined factors do not necessarily describe all aspects of jobs. They deal only with those characteristics that can be defined and distinguished and that are useful in determining the relative values of jobs.

Four factors are used in the basic plan. Each factor is defined in terms of related elements.

Point Values

The maximum point value assigned to each factor in the basic plan reflects its relative importance. Similarly, point values have been assigned to the degrees of the elements in the basic plan.

In the basic plan, the point values for the degrees of the elements of each factor increase arithmetically. With two exceptions, the minimum point value assigned to each element is one-fifth of the maximum. In the Hazards element of the Working Conditions factor, the minimum point value is one-tenth of the maximum. In the Specific Vocational Training element of the Skill and Knowledge factor the minimum point value is one-fifteenth of the maximum.

Ship Repair

Rating Plans (trade)

in the basic rating plan following factors, elements, weights and point values are used:

Factor	Element	Percentage of total points	points values Minimum	Maximum
Skill and knowledge		60		
	Basic knowledge		24	120
	Comprehension and judgement		36	180
	specific vocational training		20	300
Effort		15		
	mental effort		15	75
	physical effort		15	75
Responsibility		15		
	resources		20	50
	Safety of others		10	100
Working conditions		10		
	Environment		12	40
	Hazards		4	60
		100		

Supervisory

In the supervisory rating plan, positions are evaluated by comparing the duties and responsibilities with the level descriptions.

Bench-mark

Bench-mark positions descriptions are used to exemplify degrees of elements. Each descriptions consists of a brief summary, a list of the principal duties with the percentage of time devoted to each, and a specification describing each of the elements as it appears in the position. The bench-mark positions have been evaluated , and the degree and, where applicable, the point values assigned to each element are shown in the specifications.

The rating scales identify the bench-mark position descriptions that exemplify each degree. These descriptions are an integral part of the rating plans and are used to ensure consistency in applying the rating scales.

Use of the Standard

There are eight steps in the application of this standard.

1. Allocation of the position to the category and the group is confirmed by reference to the definitions and the descriptions of inclusions and exclusions.
2. Allocation of the position to the sub-group is confirmed by reference to the sub-group definitions and to the bench-mark position descriptions.
3. The position description is studied to ensure understanding of the position as a whole and its relation to positions with similar duties and to positions above and below it in the organization.
4. The tentative degree of each element in the position being rated is determined by comparison with degree definitions in the rating scales. The Specific Vocational Training and the Resources elements do not have degree definitions, and for these the tentative degree is determined by the comparative ranking of the position being rated with the bench-mark positions.
5. The description of the element in each of the bench-mark positions exemplifying the degree tentatively established is compared with the description of the element in the position being rated. Comparisons are also made with descriptions of the element in bench-mark positions for the degrees above and below the one tentatively established.
6. The point values for all elements are added to determine the tentative total point rating in the basic plan.
7. The position being rated is compared as a whole to positions in the same sub-group or in other sub-groups to which similar total point values and degree co-ordinates have been assigned, as a check on the validity of the total rating.
8. The supervisory position must meet the sub-group definition and the level determinants.

Determination of Levels

The ultimate objective of job evaluation is the determination of the relative values of positions in each occupational group or sub-group. Non-supervisory positions that fall within a designated range of points in terms of the point values assigned using the basic plan will be regarded as of equal difficulty and will be allocated to the same level.

CATEGORY DEFINITION

Occupational categories were repealed by the Public Service Reform Act (PSRA), effective April 1, 1993. Therefore, the occupational category definitions have been deleted from the classification standards.

GROUP DEFINITION

For occupational group allocation, it is recommended that you use the Occupational Group Definition Maps, which provide the 1999 group definition and their corresponding inclusion and exclusion statements. The maps explicitly link the relevant parts of the overall 1999 occupational group definition to each classification standard.

SUB-GROUP DEFINITIONS

1. Elemental

The performance of routine duties where adherence to rigid standards or specifications is not required and where little or no latitude exists for judgement.

This sub-group includes such occupations as labourer, and trades helper.

2. Machine Tending

The performance of duties that require starting, stopping and observing the functioning of machines and equipment where the worker must be alert in changing guides, adjusting timers and temperature controls, turning valves, pushing buttons, flipping switches, and making other minor adjustments. There is no requirement for precision set-up of equipment.

This sub-group includes such occupations as air-compressor operator and sandblast operator.

3. Manipulating

The performance of duties that require the dexterous use of hands, hand tools or special devices to work, move, guide or place objects or materials where some latitude exists for judgement in selecting appropriate tools, objects, or materials, in determining work procedure and conformance to standard, and in improvising to meet special conditions, although all of these requirements are fairly obvious. The work most frequently occurs away from a machine-oriented environment and is prevalent in bench-crafts and structural work.

This sub-group includes such occupations as armature winder, caulker, chipper and caulker, cementer (underlay), cradleman, lagger, ody-acetylene flame burner, riveter, and welder.

4. Machine Driving - Operating

The performance of duties that require starting, stopping and moving the controls of machines that must be steered or guided in order to transport people or move tools, equipment or materials. The work is usually performed at the given signals of others.

This sub-group includes such occupations as gantry and hammerhead-crane operator.

5. Machine Operating - Controlling

The performance of duties that require setting up, starting, adjusting, watching and stopping machines and equipment to fabricate or process materials or products. Typically the worker operates one kind of machine or equipment and is concerned

with selecting and installing tools and holding devices, with observing the functioning of the machine and making necessary adjustments to allow for such variables as temperature changes, flow of material or things, and angles or cut, with removing materials or products from the machine and verifying their accuracy with measuring devices, and with making minor repairs to the machine. Considerable latitude exists for judgement in determining conformance to standards.

This sub-group includes such occupations as air-compressor-station engineer, metal-cutting-machine operator, pantograph operator, and punch-press operator.

6. Ship Painting and Surface Protecting

The performance of duties that require the preparation of surfaces, the removal of grease, rust, scale, dirt and old finish, the application of solvents, primers, fillers and a variety of surface protecting materials, the mixing and matching of colours to achieve specified decorative effect, and the installation and weather-proofing of glass.

This sub-group includes such occupations as painter, brush; painter, finish; painter, spray; and painter, glazier.

7. Precision Working

The performance of duties that require skilful working with hands, hand tools or work aids according to prescribed standards. Although the techniques and procedures are established, the responsibility for achievement of the ultimate goal rests with the individual worker. Considerable latitude exists for judgement in determining the work procedures, selecting tools and materials, and modifying techniques to meet varying job requirements.

This sub-group includes such occupations as battery man, canvas worker, glazier, life-raft repairman, painter and rigger.

Skilled Trades, Journeyman and Higher

(This definition applies to the following sub-groups).

The performance of duties that require fabricating, processing, inspecting or repairing materials, equipment, products or structural units, including the lay-out of work, the set-up of equipment and the operation of precision tools and instruments. The work performed requires the application of an organized body of knowledge related to materials, tools and principles associated with skilled crafts and a thorough knowledge of machine capabilities, properties of materials and craft practices. Workers plan the order of successive operations, use manuals and technical data to position work, adjust machines, establish datum points, verify accuracy, and assume responsibility for the completion of each assignment.

8. Instrument Maintaining

This sub-group includes such occupations as instrument mechanic, optical and navigational instrument repairman.

9. Machinery Maintaining

This sub-group includes such occupations as air-conditioning and refrigeration mechanic and millwright.

10. Engine and Mechanical Equipment Maintaining

This sub-group includes such occupations as fitter (mechanical), gasoline and diesel and steam engine mechanics.

11. Boiler making - Blacksmithing

This sub-group includes such occupations as blacksmith, boilermaker, Hammersmith and platter.

12. Electrical and Electronics Working

This sub-group includes such occupations as electrical-instrument repairman, electrician, electric motor repairman and tester, electronic communications technician, electronic component technician, electronic mechanic, electronic systems technician and fire-control electrician.

13. Pipefitting

This sub-group includes such occupations as coppersmith, pipe fitter, plumber and steamfitter.

14. Sheet-metal Working

This sub-group includes such occupations as sheet-metal workers.

15. Woodworking

This sub-group includes such occupations as boat builder, cabinet-maker, joiner, lofts man, patternmaker (wood) and shipwright.

16. Machining and Tool making

This sub-group includes such occupations as fitter (armament), machinist, mechanical systems component mechanic, tool-machine set-up operator and toolmaker.

17. Quality Control and Weapon Examining

The provision of technical advice to shop management on the degree to which equipment systems conform to specifications. Work includes running repairs, pre-refit assessment and sea trials. This sub-group also includes occupations in the examination and sentencing of weapons.

18. Planning - Estimating

The formulation of job plans and detailed estimates for the installation, maintenance, repair or modification of systems and equipment in ships and other vessels. This includes determining and assessing work to be performed, describing procedures in the correct sequence, estimating time and material requirements, portraying network diagramming, assigning job stages, and compiling pertinent information into logical job plans.

19. Ship Repair Management Sub-Group

Positions included in this sub-group are designated as management supervisors engaged in planning, allocating, coordinating, controlling and assessing the effectiveness of the resources required to facilitate the repair, modification and refit of vessels and their equipments in Department of National Defence Dockyards

20. Sub-Group Definition
This sub-group includes positions in a recognized apprenticeship program for trades personnel in the Ship Repair group.

LEVEL DETERMINANTS

SR-APP LEVEL DETERMINANTS	
Duties commensurate with the criteria for apprenticeship responsibilities performed at the rates of the journeyman level responsibilities indicated below, for any designated trade or occupation.	
LEVEL	**PERCENTAGE (%)**
1	50
2	55
3	60
4	65
5	70
6	75
7	80
8	90

Note: Criteria for the establishment of the above levels will be in accordance with provincial standards.

SHIP REPAIR TRADES

Electronic
Machinist
Electrician
Pipefitter
Mechanical Fitter
Hydraulic Fitter
Shipwright
Mechanic - Plant Maintenance
Mechanic - Refrigeration
Lagger
Rigger
Painter
Ship Plater/Boilermaker
Oil Burner
Engine Fitter
Sheet Metal
Welder
Armament Fitter

BASIC POINT RATING PLAN

RATING SCALES

SHIP REPAIR GROUP (Trades)

BASIC KNOWLEDGE	120
COMPREHENSION AND JUDGEMENT	180
SPECIFIC VOCATIONAL TRAINING	300
MENTAL EFFORT	75
PHYSICAL EFFORT	75
RESOURCES	100
SAFETY OF OTHERS	50
ENVIRONMENT	60
HAZARDS	40
	1,000

SKILL AND KNOWLEDGE

This factor is used to measure the basic knowledge, comprehension and judgement, and specific vocational training required to perform the duties.

Definitions

"Basic knowledge" refers to the language, mathematical and other requirements of the work.

"Comprehension and judgement" refers to the need to understand instructions and principles and to make judgements.

"Specific vocational training" refers to the relative amount of training required to learn the techniques and develop the facility to perform the duties of the position.

"A set of relevant principles and methods" used in the Comprehension and Judgement element refers to the general facts and rules governing the working of a machine or a system, or the properties of substances and materials, and the systematic and regular ways of achieving desired results.

Notes to Ratters

The skill and knowledge to which the Basic Knowledge and the Comprehension and Judgement elements refer is acquired by various combinations of formal and private study and experience.

In rating positions under the Comprehension and Judgement element raters are to consider the understanding needed, the nature of the guide-lines, instructions, principles and practices that govern the work, and the latitude allowed in their interpretation.

The skill and knowledge to which the Specific Vocational Training element refers is acquired by one or more of the following means:

1. Vocational education in a technical school or vocational institute.
2. Apprentice training for apprenticeable jobs.
3. In-plant training given by an employer in the form of organized study.
4. On-the-job training under the instruction of qualified workers.
5. Training in related work that has provided the essential skill and knowledge.

As the first four degrees of the Specific Vocational Training element imply relatively short periods and the last five degrees imply relatively long periods, two separate arithmetic progressions are used to reflect the difference.

The degrees of the Specific Vocational Training element that are assigned to the bench-mark positions have been established by the comparative ranking of key positions in the occupational group. The degree tentatively selected in rating a position is to be confirmed by direct comparison of the position being rated with the duties and specifications of the bench-mark positions.

RATING SCALE - SKILL AND KNOWLEDGE

BASIC KNOWLEDGE

Basic Knowledge and Degree		Points	Bench-mark Position Descriptions	Page
The work requires reading, writing, speaking, adding or subtracting.	1	24	Labourer, General Helper., Trades	47 49
The work requires recording information, writing simple symbols or code numbers, or making calculations using multiplication, division or fractions.	2	40	Machine Operator, Sandblasting Cementer, Underlay Air-compressor-station Engineer	54 59 75
The work requires transposing information using tables, graphs or charts, reading simple drawings, keeping records, or making calculations using decimals.	3	56	Flame Burner Riveter and Steel-plate Caulker Crane Operator, Gantry and Hammerhead Crane Canvas Worker, Lead hand Rigger	62 65 70 90 94
The work requires maintaining a system of inventory records, reading moderately difficult drawings, preparing and presenting reports, or making calculations using ratios or percentages.	4	72	Fitter, Engine Pipe fitter	112 162
The work requires projecting time and material requirements, reading difficult drawings, or making calculations using elementary algebra or geometry.	5	88	Sheet-metal Worker Boat builder and Shipwright Joiner	172 178 182
The work requires preparing and presenting comprehensive reports, reading complex drawings, or making calculations using technical data and elementary trigonometry.	6	104	Electrician, Rotating Machinery, Charge hand Section Foreman, Pipefitting and Lagging Patternmaker, Wood Fitter, Armament	136 167 185 192
The work requires making comprehensive cost, establishment or production estimates, implementing cost control systems, and making calculations requiring application of technical data and elementary trigonometry.	7	120	Shop Foreman, Mechanical Fitting Shop Foreman, Electronics	121 157

RATING SCALE - SKILL AND KNOWLEDGE
COMPREHENSION AND JUDGEMENT

Comprehension and Judgement and Degree		Points	Bench-mark Position Descriptions	Pagc
The work requires sufficient understanding to carry out one- or two-step instructions and allows little latitude for Judgement.	1	36	Labourer, General Helper, Trades Cementer, Underlay	47 49 59
The work requires sufficient understanding to carry out detailed written or oral instructions and occasionally allows some latitude for judgement.	2	64	Machine Operator, Sandblasting	54
The work requires sufficient understanding to work within established practices and instructions and allows some latitude for judgement in their application.	3	93	Flame Burner Crane Operator, Gantry and Hammerhead Crane Air-compressor-station Engineer Canvas Worker, Lead hand	62. 70 76 90
The work requires some under standing of relevant principles and methods and allows some latitude for judgement in interpreting instructions or in solving problems.	4	121	Boilermaker Pipe fitter	126 162
The work requires a thorough understanding of a set of relevant principles and methods and allows latitude for judge-ment in interpreting instructions or in solving problems.	5	150	Fitter, Engine Fitter, Mechanical Electrician, Marine Electronic Systems Technician Patternmaker, Wood Machinist Toolmaker	112 116 132 140 186 200 204
The work requires a thorough understanding of a number of sets of relevant principles and methods and allows latitude for judgement in interpreting instructions or in solving problems.	6	180	Shop Foreman, Mechanical Fitting Electrician, Rotating Machinery, Charge hand Section Foreman, Fire Control Shop Foreman, Electronics	121 136 153 157

RATING SCALE - SKILL AND KNOWLEDGE

SPECIFIC VOCATIONAL TRAINING

Degree of Specific Vocational Training	Point Points	Bench-mark Position Descriptions	Page
1	20	Labourer, General	47
2	40	Helper, Trades	50
3	60	Cementer, Underlay	59
		Flame Burner	62
		Riveter and Steel-plate Caulker	66
		Crane Operator, Gantry and Hammerhead Crane	70
		Machine Op., Metal Fabrication	78
4	80	Painter, Finish	86
		Canvas Worker, Lead hand	90
		Rigger	94
5	124	Fitter, Engine	112
		Boilermaker	126
		Pipe fitter	162
		Boat builder and Shipwright	178
		Joiner	182
6	168	Electrician, Marine	132
		Patternmaker, Wood	186
		Fitter, Armament	192
		Machinist	200
7	212	Electrician, Rotating Machinery, Charge hand	136
		Electronic Sys. Tech., Lead hand	144
		Electronics Technician, Components	148
		Section Foreman, Pipefitting and Lagging	167
		Instrument Repairman, Mechanical	196
8	256	Shop Foreman, Mechanical Fitting	121
		Section Foreman, Fire Control	153
		Toolmaker	204
9	300	Shop Foreman, Electronics	157

EFFORT

This factor is used to measure the demands of the work in terms of the mental and physical effort required to perform the duties.

Notes to Ratters

In rating positions under the Mental Effort element ratters are to consider the fatigue caused by the attention, concentration, perception and mental-sensory co-ordination required by the work.

In rating positions under the Physical Effort element ratters are to consider the fatigue caused by the kind, frequency, intensity and duration of muscular exertion, the work positions, and the weight of objects handled.

RATING SCALE - EFFORT
MENTAL EFFORT

Mental Effort and Degree		Points	Bench-mark Position Descriptions	Page
The work requires a normal level of attention, which causes only limited fatigue.	1	15	Labourer, General	47
			Cementer, Underlay	60
The work requires a moderate level of attention or mental-sensory co-ordination, with short periods of concentration.	2	30	Flame Burner	62
			Air-compressor-station Engineer	76
			Machine Operator, Metal Fabrication	78
			Rigger	9 4
			Fitter, Engine	112
The work requires a high level of attention or mental-sensory co-ordination, with frequent short periods of concentration.	3	45	Crane Operator, Gantry and Hammerhead Crane	70
			Canvas Worker, Lead hand	90
			Sheet-metal Worker	172
The work requires a high level of attention or precise mental-sensory co-ordination, with sustained periods of concentration.	4	60	Refrigeration and Air-conditioning Mechanic	106
			Electrician, Rotating Machinery, Charge hand	137
			Electronics Tech., Components	148
			Fitter, Armament	192
			Machinist	200
The work requires both an exacting degree of attention and concentration and precise mental-sensory co-ordination such as would be needed for planning, visualizing or laying out very complicated work.	5	75	Shop Foreman, Mechanical Fitting	121
			Electronic Systems Technician	140
			Shop Foreman, Electronics	158
			Section Foreman, Pipefitting and Lagging	168
			Patternmaker, Wood	186
			Toolmaker	204

RATING SCALE - EFFORT
PHYSICAL EFFORT

Physical Effort and Degree		Points	Bench-mark Position Descriptions	Page
The work requires little physical effort, such as intermittent standing, walking or handling of light-weight objects. The duties occasionally require greater physical effort for short periods.	1	15	Flame Burner	62
			Instrument Repairman, Optical and Navigational	100
			Shop Foreman, Mechanical Fitting	122
			Shop Foreman, Electronics	158
			Patternmaker, Wood	186
			Toolmaker	204
The work requires moderate physical effort, such as continual standing or walking where only limited periods of relief are possible, or continual handling of light-weight objects. The duties occasionally require greater physical effort for short periods.	2	30	Cementer, Underlay	60
			Air-compressor-station Engineer	76
			Canvas Worker, Lead hand	90
			Refrigeration and Air conditioning Mechanic	106
			Fitter, Engine	112
			Joiner	182
			Machinist	200
The work requires considerable physical effort, such as frequent climbing, working from ladders, handling of medium-weight objects, or working in a difficult position. The duties occasionally require greater physical effort for short periods.	3	45	Labourer, General	48
			Helper, Trades	50
			Fitter, Mechanical	117
			Pipe fitter	163
The work requires great physical effort, such as frequent handling of heavy-weight objects in a difficult work position. The duties occasionally require greater physical effort for short periods.	4	60	Riveter and Steel-plate Caulker	66
			Boilermaker	186
The work requires great physical effort, such as continual handling of heavy-weight objects.	5	75	Rigger	94

RESPONSIBILITY

This factor is used to measure the responsibility for resources used and for the safety of others.

Definition

"Responsibility for safety of others" refers to the responsibility for the exercise of care to prevent injury to other people, and the usual extent of that injury.

Notes to Ratters

The degrees of the Resources element that are assigned to the bench-mark positions have been established by the comparative ranking of key positions in the occupational group. In selecting a tentative rating for a position under this element the following characteristics of the work are to be considered:

1. The nature and value of the resources used.
2. The extent to which the description of the position implies accountability.
3. The consequences of an error in judgement.

Any one of these characteristics is only an indication of the degree of responsibility in this element, and the whole context within which the work is performed is to be considered. The degree tentatively selected for a position is to be confirmed by direct comparison of the position being rated with the duties and specifications of the bench-mark positions.

In rating positions under the Safety of Others element only the injuries that are probable are to be considered, and not those that are only remotely possible.

RATING SCALE - RESPONSIBILITY
RESOURCES

Degree of Responsibility for Resources		Points	Bench-mark Position Description	Page
Limited	1	20	Helper, Trades	50
			Cementer, Underlay	60
			Canvas Worker, Lead hand	90
Moderate	2	46	Flame Burner	62
			Air-compressor-station Engineer	76
			Refrigeration and Air-conditioning Mechanic	106
			Fitter, Engine	112
			Fitter, Mechanical	117
			Boilermaker	126
			Electrician, Marine	133
			Sheet-metal Worker	173
			Toolmaker	205
Significant	3	72	Instrument Repairman, Optical and Navigational	101
			Electronic Systems Technician	141
			Electronic Systems Technician, Lead hand	145
			Patternmaker, Wood	186
Major	4	100	Shop Foreman, Mechanical Fitting	122
			Section Foreman, Pipefitting and Lagging	168

RATING SCALE - RESPONSIBILITY
SAFETY OF OTHERS

Responsibility for Safety of Others, and Degree		Points •	Bench-mark Position Descriptions	Page
There is little possibility of injury to others. Work is performed in relative isolation, or no heavy objects are handled.	1	10	Cementer, Underlay	60
			Painter, Finish	86
			Instrument Repairman, Optical and Navigational	101
			Refrigeration and Air-conditioning Mechanic	107
			Fitter, Engine	112
			Fitter, Mechanical	117
			Patternmaker, Wood	186
			Fitter, Armament	193
			Machinist	200
			Toolmaker	205
Reasonable care is required to prevent injury to others. When injuries occur they are of a minor nature.	2	23	Flame Burner	62
			Electrician, Marine	133
			Pipe fitter	163
			Joiner	183
Special care is required to prevent injury to others. When injuries occur they are of a "lost-time" nature, such as serious burns, eye injuries, or crushed body members.	3	36	Air-compressor-station Engineer	76
			Electrician, Rotating Machinery, Charge hand	137
			Electronic Systems Technician	141
			Electronic Systems Technician, Lead hand	145
			Section Foreman, Fire Control	134
Extreme care is required to prevent injury to others. When injuries occur they are of a "permanent impairment" nature.	4	50	Crane Operator, Gantry and Hammerhead Crane	71
			Rigger	94

WORKING CONDITIONS

This factor is used to measure the disagreeable conditions of the work as indicated by the environment in which the duties are performed and the exposure to hazards.

Definitions

"Environment" refers to the disagreeable conditions under which the duties are performed such as

- exposure to dust and dirt, or to extremes of heat, cold, obnoxious odours, noise, wet or vibration,
- the required wearing of cumbersome protective clothing or equipment.

"Hazards" refers to the requirement to work under conditions that may result in sickness or injury to the employee, although usual safety measures have been taken.

Notes to Ratters

In rating positions under the Environment element only those conditions that make the work disagreeable are to be considered. Ratters are to consider the frequency of the exposure and the severity of the disagreeable conditions.

In rating positions under the Hazards element only the hazards that are probable are to be considered, and not those that are only remotely possible. Ratters are to consider the frequency of the exposure and the probable severity of the injury.

RATING SCALE - WORKING CONDITIONS
ENVIRONMENT

Environment and Degree		Points	Bench-mark Position Descriptions	Page
Good working environment with few disagreeable conditions.	1	12	Canvas Worker, Lead hand	91
			Instrument Repairman, Optical and Navigational	101
			Electronic Systems Technician	141
			Electronic Systems Technician, Lead hand	145
			Patternmaker, Wood	186
			Toolmaker	205
Fair working environment, such as significant exposure to one disagreeable condition, or occasional exposure to either several disagreeable conditions or to one very disagreeable condition.	2	28	Cementer, Underlay	60
			Air-compressor-station Engineer	76
			Machine Operator, Metal Fabrication	78
			Refrigeration and Air-conditioning Mechanic	107
			Fitter, Engine	113
			Boat builder and• Shipwright	179
			Joiner	183
Poor working environment, such as significant exposure to several disagreeable conditions or to one very disagreeable condition.	3	44	Helper, Trades	50
			Machine Operator, Sandblasting	55
			Flame Burner	63
			Fitter, Mechanical	117
			Pipe fitter	163
Very poor working environment, such as constant exposure to several very disagreeable conditions.	4	60	Labourer, General	48
			Riveter and Steel-plate Caulker	66
			Boilermaker	127

HAZARDS

Frequency of Unavoidable Exposure to Hazards, and Degree		Probable Severity of Injury, and Degree		
		Minor injuries such as cuts, bruises or burns.	"Lost-time" injurie such as serious burns, eye injuries or loss of finger.	Incapacitating injuries such as those resulting in serious permanent impairment.
		A	B	C
Occasional	1	41 Instrument Repairman, Optical and Navigational 101 Shop Foreman, Electronics 158	161 Helper, Trades 5 Fitter, Engine 113 Fitter, Mech. 11 Pipe fitter 16 Patternmaker, Wood 187 Toolmaker 20	29 Electrician, Marine 133 Electronic Systems Tech. 141 Electronic Systems Tech., Lead hand 145
Frequent	2	15 Labourer, General 48 Cementer, Underlay 60 Canvas Worker, Lead hand 91	27 Flame Burner 63 Air-compressor station Eng. 7 Joiner	40 Rigger 95

SHIP REPAIR MANAGEMENT SUB-GROUP

Sub-Group Definition

Positions included in this sub-group are designated as management supervisors engaged in planning, allocating, coordinating, controlling and assessing the effectiveness of the resources required to facilitate the repair, modification and refit of vessels and their equipments in Department of National Defence Dockyards.

The duties of positions included in this sub-group require:

- accountability for ensuring resource capability, quantity and quality performance and effective use of resources,
- the supervision of journeymen, unskilled and semiskilled tradesmen including charge hands, and
- responsibility for dealing with grievances at the first level.

Level 1 Shop Foreman Responsibility

A level 1 supervisor meets the sub-group definition, and is in charge of a work centre, and reports directly to a level 2 supervisor

or

is responsible for providing a specialized service such as a precision shop requiring the employment of highly skilled tradesmen and reports directly to a level 3 supervisor or equivalent,

or

is responsible for a total systems service during the major refit of a boat or ship, such as the Hull Coordinator on a submarine refit.

Typical Position Characteristics

Assignments are received in the form of specific job orders which contain technical specifications and performance standards such as target dates, man-hour expenditures and equipment operating performance standards that form the basis for a review on completion of the job. Supervision is also received in the form of directives regarding such matters as management policy, labour relations policy, or safety standards.

Supervision is exercised through a varying number of charge hands and lead hands dependent upon the size and complexity of the work area. Supervision is exercised over a work group which consists of a single trade or a group of various related tradesmen which may be required to fulfill the shop's function. Supervises the training of charge hands
and lead hands and employees in the Apprenticeship program and the Trades Helper or Technical Training program.

Responsible for personnel management activities which include identifying needs for and making recommendations on: promotions; demotions; performance ratings; infractions of discipline; suspensions; dismissals and training requirements. Participates in the hiring and trades testing of staff and identifies the requirements and participates in the staffing of the Trades Helper or Technical Training Program. Provides liaison and follow-up with other shops on multi-trade jobs when designated as the control shop for a job.

Responsible for planning, organizing and controlling the detailed operations of the shop and the efficient distribution and scheduling of assignments in his work area. Responsible for the efficient use of men, material resources, facilities, tools and shop layout, and the maintenance of quality control standards. Advises on the estimates for man-hour requirements for specific jobs and arranges with the Base Supply Officer for required materials. Certifies work quality and ensures that work quality output is maintained and defined methods and procedures are used. Implements safety programs and follows-up with lectures and reviews with staff.

Responsible for maintaining a current knowledge of technological advances in the trades supervised and providing on-the-job training for all junior supervisors, journeymen, apprentices, trade helpers and other personnel. Acts as the senior trade authority in his area of responsibility. Provides detailed technical direction to subordinates and advises level 2 supervisor in his area of specialization.

Level 2 Group Foreman Responsibility

A level 2 supervisor meets the sub-group definition and is in charge of at least two work centres which are responsible for providing related trade activities; and reports to a level 3 supervisor.

Typical Position Characteristics

Assignments are reviewed on completion for compliance with performance standards, technical specifications and effective systems integration. Direction is received as to implementation of changes to the reporting and control systems of the Dockyard. Work is reviewed for compliance with; estimated completion dates, documentation, and limitation of indirect and non-productive labour charges.

Supervision is normally exercised through at least two level 1 supervisors. Full responsibility is exercised in the administrative and technical training of level 1 supervisors. Supervision is exercised over the apprenticeship program and the Trades Helper or Technical Training Program.

Responsible for the personnel management activities which include approving or making recommendations on and submitting reports on: promotions; demotions; suspensions; infractions of discipline; performance ratings; and training requirements by initiating these actions or responding to recommendations from level 1 supervisors. Responsible for the overall group implementation of the Trades Helper or Technical Training Program, the Apprenticeship Program and for the hiring of and trades testing of staff within his group. Manages the on-going contract administration in the area supervised such as assignment of dirty work, dealing with threatened walkouts and trade demarcation and jurisdictional disputes. Administers the implementation of changes to organization, dockyard reporting and control systems and policy directives. Ensures efficient distribution, scheduling and completion of work through the Audit of Dockyard reporting and control systems, operating systems, target date schedules and utilization statistics. Briefs level 3 supervisor on production status of shops under his direction. Responsible for safety programs and for contact with the Base Supply Officer on material requirements for multi-trade, multi-shop jobs.

Responsible for maintaining a current knowledge of technological advances and systems developments in the ship building and repair industry and ensuring that all level 1 supervisors and journeymen are kept current in

trades knowledge and expertise. Provides technical advice to lower level supervisors related to production schedules and inter-trade coordination and advises level 3 supervisor on the management of the area under his supervision. Responsible for the efficient use and allocation of all resources under his supervision, the initiation of layout changes to increase productivity, the requisitioning of maintenance for machinery and plant facilities, and for ensuring that quality control standards are maintained.

Level 3 Assistant Production Officer/Superintendent Responsibility

A level 3 supervisor meets the sub-group definition and is in charge of a total systems service, organized into work centres, such as the hull, electrical or mechanical services in a Dockyard. A level 3 supervisor reports to the Production Officer.

Typical Position Characteristics

Policy direction is received from the Production Officer on work priorities and on the administration of collective agreements, personnel relations and personnel development. Assignments are reviewed on completion for compliance with performance requirements and total systems integration. Direction is received on the need for special studies or reviews of Dockyard management procedures and systems. Direction is only received on projects of high urgent priority and which require alteration to any shops normal workload schedule. Review is made of the overall productivity of the services provided.

Supervision normally is exercised through three or four level 2 supervisors. Administration of the work force requires the implementation of policies pertaining to training and personal development of subordinate supervisors.

Responsible for the personnel management activities which include making decisions on: promotions; demotions; suspensions; dismissals; infractions of discipline; reinstatements; and training requirements by initiating these actions or responding to reports and recommendations from level 2 and level 1 supervisors. Manages the Apprenticeship Program and the Trades Helper or Technical Training Program within the area supervised. Provides direction in the implementation in safety and security programs, personnel regulations, and the reporting, control and operating systems of the Dockyard MANAGEMENT. Arranges for shift work in consultation with the union and is the final arbiter for such things as "dirt pay" assignment. General administration of the collective agreement is carried out and job and man relocation problems are resolved. Carries out liaison with customers on sea trials and tests of repaired equipment. Contacts the Base Administration Officer on security and police matters, the Base Civilian Personnel Officer on staffing and other personnel matters, other bases regarding facility or equipment loans and the Queens Harbor Master on Harbor traffic movement. Informs senior Dockyard Management on the status of production, taking action on behalf of the Production Officer on all incoming correspondence related to the area of responsibility, conducting labour/management meetings to discuss and resolve potential problems and adjudicating on breaches of discipline and awarding punishment.

Responsible for maintaining a current knowledge of technological advances and systems and management developments in the shipbuilding and repair industry to ensure that the most effective techniques, equipments and materials are used, and all level 2 supervisors are appropriately trained. Oversees the technical and administrative training of all employees in his area of supervision. Provides general technical advice to superiors in Dockyard Management on project management and technical problems. Establishes the overall level of and ensures the application of; standards of productivity, work flow, and methods and procedures. Identifies problem trends in plant and method efficiency and initiates corrective action.

SCHEDULE A

SHIP REPAIR MANAGEMENT SUB-GROUP
SHIP REPAIR GROUP
CLASSIFICATION STRUCTURE

Effective Date March 26, 1973

SHIP REPAIR MANAGEMENT SUB-GROUP

Level	Alpha Code	Numeric Code
1	SRMGT	66100-01
2		-02
3		-03

C.C. R. Perry
Circulation
File
D. Slader
Staff Relations
G.L. Tomlison
J.W. Smallwood

Our File: 8165-1/661 formerly:
84.21(611)-R

October 16, 1073.

Mr. T.G. Morry,
Associate Assistant Deputy
Minister (Personnel),
Department of National
Defence
Ottawa Ontorio.
K1A OK2

dear Mr. Morry:

Re: Ship repair Management Sub-Group
Ship Repair Group

I am pleased to advise that the new management sub-group evaluation plan together with a revised pay plan and amendment to the terms and conditions of employment have been approved effective March 26, 1973 under Treasury Board minute 722613 dated September 26, 1973.

The Classification structure for the new sub-group is attached as Appendix A. Attached also are3 copies of the revisions to the classification standard, the new pay plan , and the amendments to the terms and conditions of employment for this group of totally excluded employess..

Copies of the revised Classification Standard will be forwarded , upon completion of printing.

Yours sincerely,

ORIGINAL S!GN BY
T. N. PARROTT

A SiGNÉ l'original
T.N. Parrott,
Director,
Compensation Policy Division.

Attachment

SHIP REPAIR MANAGEMENT

Annual Ratas of Pay

A- Effective March 26, 1973

B- Effective March 25, 1974

WEST COAST		$13,359	13,966	14,573	15,180
LEVEL 1		14,362	15,015	15,667	16,320
B					
2	A	14,696	15,364	16,032	16,700
	B	15,805	16,523	17,241	17,960
3	**A**	16,166	16,901	17,635	18,370
	B	17,380	18,170	18,960	19,750
EAST COAST					
LEVEL 1	A	$11,802	12,225	12,647	13,070
	B	12,566	13,137	13,708	14,280
2		1.2,989	13,579	14,169	14,760
		14,203	14,849	15,494	16,140
3	**A**	16,166	16,901	17,635	18,370
		17,380	18,170	18,960	19,750

WEEKLY AND HOURLY RATES OF PAY

"Weekly rate of pay" means an employee's annual rate of pay divided by 52.176.

"Hourly rate of pay" means: (a) in the case of an employee at the SR-MGT-1 or SR-MGT-2 level his weekly rate of pay divided by forty (40) hrs.

(b) in the case of an employee at level SR-MGT-3 his weekly rate of pay divided by thirty-seven and one half (37?) hours.

Conversion Procedures

Present incumbents of levels 1 and 2 to be converted at maximum rates.

Present incumbents of level 3 to be converted to the rate corresponding to their present relationship to the pre-conversion maximum.

TERMS AND CONDITIONS OF EMPLOYMENT

SHIP REPAIR MANAGEMENT SUB-GROUP

The terms and conditions of employment as set out in Treasury Board Minutes 665757 (amended), 692208, 696470 and 707635 shall apply except as amended hereunder.

1. HOURS OF WORK

The normal work week, unless otherwise specified by the Deputy Minister, for SR-MCT 1 and SR-MGT 2 shall be forty (40) hours from Monday to Friday inclusive and the normal work day shall be eight (8) hours.

The normal work week, unless otherwise specified by the Deputy Minister, for SR-MGT 3 shall be thirty-seven and one half (372) hours, and the normal work day shall be seven and one half (72) hours.

2. VACATION LEAVE (effective April 1, 1973)

By replacing subsections 22(l) (a) and 22(l) (b) with the following subsections 22(1) (a) and 22(1) (b) and adding new subsections 22(3) and 22(4).

22 (1) (a) three (3) weeks per fiscal near if he has completed less than fifteen (15) years of continuous employment;

22(1) (b) four (4) weeks per fiscal year if lie has completed fifteen (15) years of continuous employment, except that an employee who has received or is entitled to receive furlough leave shall accumulate three (3) weeks only per fiscal year between his twentieth (20th) and twenty-sixth (26th) years of continuous employment;

22(1) (c) five (5) weeks per fiscal year if he has completed thirty (30) years of continuous service.

22(3) If an employee ceases to be employed or dies, he or his estate shall be paid, in lieu of the unused vacation leave which he has earned, an amount which is equal to the amount he would have been paid had he been granted the unused vacation leave on the day he ceased to be employed or died.

22(4) An excluded employee whose employment is terminated by reason of a declaration that he has abandoned his position is entitled to receive the payment referred to in 22(3) if he requests it within six (6) months following the date upon which he ceased to be employed.

3. RECALL FROM VACATION LEAVE

By adding the following subsection 22(5) to section 22

22(5) When, during any period of vacation leave, an employee is recalled to duty, he shall be reimbursed for reasonable expenses, as normally defined by the Employer, that he incurs: -

(a) in proceeding to his place of duty, and

(b) in returning to the place from which he was recalled if he immediately resumes vacation upon completing the assignment for which he was recalled,

after submitting such accounts as are normally required by the Employer.

The employee shall not be considered as being on vacation leave during any period in respect of which he is entitled to be reimbursed for reasonable expenses incurred by him.

4. SICK LEAVE

By adding the following subsection (3) to section 36

36(3) If an employee becomes ill during a period of compensatory leave and such illness is supported by a medical certificate, the employee shall be granted sick leave with pay, in accordance with section 31, and his compensatory leave credits shall be restored to the extent of any concurrent sick leave granted.

5. SPECIAL LEAVE

By replacing Section 39 with the following section 39 -

39 The deputy head may grant special leave with pay in amounts he considers appropriate under the following circumstances:

a. when there is illness or death in the employee's family;

b. when the employee is to be married;

c. when circumstances not directly attributable to the employee prevent his reporting to duty; or

d. on the occasion of the birth of his child.

By replacing Section 40 with the following Section 40 -

40 When an employee ceases to be subject to these special leave provisions:

a. any special leave credit which he may have earned prior to becoming subject to these provisions shall be restored to him;

b. any special leave with pay granted to him while he was subject to these provisions shall not be charged against, his restored special leave credits.

6. INJURY-ON-DUTY LEAVE

By replacing section 62 with the following section 62:

62. An employee may be granted injury-on-duty leave with pay for such reasonable period as may be determined by the Employer where it is determined by a Provincial Workmen's Compensation Board that he is unable to perform his duties because of:

(a) personal injury accidentally received in the performance of his duties and not caused by the employee's wilful misconduct, or

(b) sickness resulting from the nature of, his employee t,

(c) over exposure to radioactivity or other hazardous conditions in the course of his employment,

if the employee agrees to pay to the Receiver General of Canada any amount received by him for loss of wages in settlement of any claim he may have in respect of such injury or sickness except in respect of a benefit received from a personal disability policy for which the employee or his agent has paid the premium,

7. OTHER LEAVE WITH PAY

By adding a new section 46(d) as follows:

46(b) who is called as a witness by an appellant or by a Board described in paragraph (a);

(c) who is acting as a representative of an appellant before a Board described in paragraph (a); or

(d) who is appearing on his own behalf before the Public Service Staff Relations Board.

8. TRANSPORTATION

When an excluded employee is required to return to work or remain at work beyond his regularly scheduled hours he shall be reimbursed for actual and reasonable expenses incurred in travelling between his

9 MEAL ALLOWANCE

Amend meal allowance as set out in Treasury Board Minute 696470 dated April 7, 1960 as follows:

(a) An excluded employee who works three or more hours proceeding or following his scheduled hours of work shall be reimbursed his expenses for one meal in the amount of two (2) dollars.

(b) An excluded employee who works at least three but less than eight hours on his day of rest or on a designated holiday shall be reimbursed his expenses for one meal in the amount of two (2) dollars. An employee who works more than eight hours on his day of rest or on a designated holiday shall be reimbursed his expenses for two meals in the amount of two (2) dollars each.

10. SEVERANCE PAY

Amend 44A - Severance Pay on Retirement as follows:

On termination of employment, an employee who is entitled to an immediate annuity or an annual allowance under the Public Service Superannuation Act ... etc ..

By adding a new section 43(3) as follows:

43(3) In no case shall the total amount of severance pay exceed twenty-eight weeks' pay regardless of the number of times an excluded employee is laid off.

By adding new sections 44C, 44D and 44E as follows: 44C

Severance Pay on Rejection for Cause

(1) An excluded employee who was about to be laid off but instead was immediately reappointed, and then subsequently ceases to be employed by reason of rejection for cause during the probationary period immediately following the date of his reappointment, shall be paid severance pay as provided for an employee who is laid off. The severance pay to which an excluded employee is entitled under this paragraph shall be calculated on the rate that he was entitled to on the day immediately prior to his reappointment.

(2) An excluded employee who has two or more years of continuous employment and who ceases to be employed for reason of rejection for cause during the probationary period immediately following his transfer or promotion may, at the discretion of the deputy head, be paid severance pay as pay which may be granted to an employee who is laid off. The severance pay which may be granted to an employee under this paragraph shall be calculated on the rate being paid to him immediately prior to the termination of his employment.

44D Severance Pay when an excluded employee is released on grounds of Incompetence or Incapacity

(1) An excluded employee who has ten or more years of continuous employment and who is released on grounds of incompetence or incapacity pursuant to section 31 of the Public Service Employment Act, may at the discretion of the deputy head, be paid severance pay - equal to the amount obtained by multiplying half his weekly rate of pay on separation by the number of completed years of his continuous employment (to a maximum of twenty-six years less any period in respect of which he was granted severance pay, retiring leave or a cash gratuity in lieu of retiring leave).

As a guide in determining whether or not severance pay is warranted under this provision, it is suggested that there must be clear evidence of inability to cope with the work because of intellectual or physical limitations and not because of lack of willingness, motivation, or other reasons.

44E For Severance Pay purposes the weekly rate of pay shall not include "Acting Pay" unless the deputy head certifies that the duties in respect of which the employee is being paid "Acting Pay" were assigned to him on a continuing basis or for a period of more than two (2) months.

11. CALL-BACK PAY

By replacing benefit as set out in Proposal 2(b) of Treasury Board Minute *696470*, dated April *7, 1970*, with the following:

(a) When an employee, after having completed his normal hours of work, has left the Employer's premises and is subsequently called back to work, he shall be paid the greater of:

(i) compensation equivalent to four *(4)* hours pay at his hourly rate of pay, or

(ii) compensation at the applicable overtime rate,

provided that the period of overtime worked is not contiguous to the employee's normal hours of work.

12. RATES OF PAY ON A DAY OF REST OR ON A DESIGNATED PAID HOLIDAY

(a) an excluded employee who is required to work on a day of rest shall be paid at time and one-half (1z) for all hours worked on the first day of rest and at double (2) time for all hour, worked on a second or subsequent day of rest provided that the days of rest fall on consecutive and contiguous calendar days, or

(b) an excluded employee who works on a designated paid holiday shall be paid holiday pay plus double (2) time for all hours worked.

NOTE: sections (a) and (b) are a consolidation of existing benefits as set out in Treasury Board Minutes 692208 dated October 2, 1969 and 696470 dated April 7, 1970.

13. OVERTIME

1. (a) Overtime in the case of excluded employees means authorized work performed in excess of eight (8) hours per day or forty ,(40) hours per week Monday to Friday inclusive.

(b) An excluded employee who is required to work overtime shall be entitled to compensation at time and one-half (12) for all overtime hours worked.

2. (a) Overtime shall be compensated in cash except where, upon - mutual agreement between the, employee and Employer, overtime may be compensated in compensatory leave with pay at times convenient to both the employee and Employer.

(b) Compensatory leave with pay not used by the end of a twelve (12) month period, to be determined by the Employer, will be paid for in cash.

14. TRAVELLING PAY

By replacing section 15A as set out in Treasury Board Minute 707635 dated September 23, 1971 with the following section 15A; and adding a new section 15B:

15(A) When an employee is required by the Employer to travel outside of his Headquarters area and on government business as these expressions are normally defined by the Employer, and such travel is approved by the Employer, his method of travel shall be determined by the Employer and he shall be compensated in the following manner:

(a) On a normal working day on which he travels but does not work, the employee shall receive his regular pay for the day.

(b) On a normal working day on which he travels and works, the employee shall be paid:

(i) his regular pay for the day for a combined period of travel and work not exceeding eight (8) hours, and

(ii) at the applicable overtime rate for additional travel time in excess of an eight (8) hour period of work and travel, with a maximum payment for such additional travel time not to exceed eight (8) hours' pay at the straight-time rate in any day.

On a day of rest or on a designated paid holiday, the employee shall be paid at the applicable overtime rate for hours travelled to a maximum of eight (8) hours' pay at the straight-time rate.

15(B) Clause 15A above does not apply to an employee required to perform work in any type of transport in which he is travelling. In such circumstances, the employee shall receive the greater of:

(a) On a normal working day, his regular pay for the day, or

(b) Pay for actual hours worked.

15. LEAVE - GENERAL

(a) When the employment of an employee who has been granted more vacation, sick or special leave with pay than he :.as earned is terminated by death, the employee is considered to have earned the amount of leave with pay granted to him.

(b) When the employment of an employee who has been granted more vacation or sick leave with pay than he has earned is terminated by lay-off, he is considered to have earned the amount of leave with pay granted to him if, at the time of his lay-off, he has completed two (2) or more years of continuous employment.

16. CANCELLATION

Proposal 2(c) of Treasury Board Minute 696470 dated April 7, 1970 pertaining to Shift Premium is hereby cancelled.

BENCH-MARK POSITION DESCRIPTION INDEX

In Sub-group and Alphabetical Order

SUB-GROUP	BENCH-MARK POSITION NO.	DESCRIPTIVE TITLE	TOTAL POINTS	DEGREE OF SUPERVISION	PAGE
Elemental	1	Labourer, General	258		47
	2	Helper, Trades	278		49
Machine Tending	3	Machine Operator, Sandblasting	354		53
Manipulating	4	Cementer, Underlay	254		59
	5	Flame Burner	394		61
	6	Riveter and Steel plate Caulker	455		65
Machine Driving - Operating	7	Crane Operator, Gantry and Hammerhead Crane	450		69
Machine Operating - Controlling	8	Air-compressor station Engineer	410		75
	9	Machine Operator, Metal Fabrication	369		77
Ship Painting and Surface Protecting	10	Painter, Charge hand	476	C_4	81
	11	Painter, Finish	404		85
Precision Working	12	Canvas Worker, Lead hand	361	B_3	89
	13	Rigger	514		93
Instrument Maintaining	14	Instrument Repairman, Optical and Navigational	654		99
Machinery Maintaining	15	Refrigeration and Air-conditioning Mechanic	612		105

Ship Repair

SUB-GROUP	BENCH-MARK POSITION NO.	DESCRIPTIVE TITLE	TOTAL points	DEGREE OF SUPERVISION	PAGE
Engine and Mechanical Equipment Maintaining	16	Fitter, Engine	506	E_7	111
	17	Fitter, Mechanical	643		115
	18	Shop Foreman, Mechanical Fitting	785		119
Boiler making Blacksmithing	19	Boilermaker	594		125
Electrical and Electronics Working	20	Electrician, Marine	622	C_3	131
	21		710	B_2	135
	22	Electrician, Rotating Machinery,	705	D_4	139
	23		705	E_5	143
	24	Charge hand	677		147
	25	Electronic Systems Technician, Lead hand	797		151
	26	Technician Electronics Technician, Components Section Foreman, Fire Control Shop Foreman, Electronics	829		155
Pipefitting	27	Pipe fitter	536	D_6	161
	28	Section Foreman, Pipefitting and Lagging	740		165
Sheet-metal Working	29	Sheet-metal Worker	524		171

SUB-GROUP	BENCH-MARK POSITION NO.	DESCRIPTIVE TITLE	TOTAL POINTS	DEGREE OF SUPERVISION	PAGE
Woodworking	30	Boat builder and Shipwright	532		177
	31	Joiner	532		181
	32	Patternmaker, Wood	622		185
Machining and Tool making	33	Fitter, Armament	643		191
	34	Instrument Repairman, Mechanical	654		195
	35	Machinist	623		199
	36	Toolmaker	684		203
Quality Control and Weapon Examining	37	To be developed			
Planning-Estimating	38	To be developed			

BENCH-MARK POSITION DESCRIPTION INDEX

In Ascending Order of Point Values

BENCH-MARK POSITION DESCRIPTIONS

SUB-GROUP: ELEMENTAL

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 1

Level:
Sub-group: ELEMENTAL

Descriptive Title: LABOURER, GENERAL

Basic Point Rating: 258
Supervisory Rating: n/a

Summary

Under the supervision of a lead hand or charge hand, performs work such as digging, lifting and carrying materials, and assisting in the heavy work of trades; carries out a variety of cleaning tasks; and performs other duties.

Duties	% of Time
- Lifts, carries and moves a variety of material such as furniture lumber, paper and refuse.	25
- Assists tradesmen and trades helpers in a variety of heavy work such as carrying fire brick, loading and unloading work materials, mixing mortar and cranking winches to raise masts and antennae.	25
- Carries out a variety of cleaning tasks such as heavy-duty cleaning, and white-washing walls, sidewalks and curbs.	25
- Performs other duties such as digging ditches, sowing grass seed, mowing lawns, weeding gardens, sweeping yards and shovelling snow.	25

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading warning and safety notices and communicating orally with the supervisor and fellow workers.	1	24
Comprehension and Judgement - The work requires understanding and following explicit instructions and selecting one of a few simple tools.	1	36
Specific Vocational Training - The skills required can normally be learned from demonstrations by a lead hand or an experienced worker.	1	20
Effort		
Mental - The work requires performance of tasks involving neither detail nor precision.	1	15

	Degree	Points
Physical - The work requires frequent shovelling; lifting and carrying furniture, lumber, fire-bricks and other materials; and mixing mortar, cranking winches and shovelling snow.	3	45
Responsibility		
Resources - The work requires the effective use and care of tools such as picks and shovels and the proper handling of heavy and bulky items and materials to avoid damaging them.	1	20
Safety of Others - The work requires that care be taken to avoid injury to fellow workers from swinging, drop ping or throwing tools and materials.	2	23
Working Conditions		
Environment - The work requires continual exposure to a variety of conditions such as extremes of weather, noise, wetness and dust while performing outdoor duties in all weather, and performing heavy labour duties in a variety of trade areas.	4	60
Hazards - The work requires frequent exposure to abrasions and bruises from tools and materials handled by the employees and to strains from shovelling and lifting.	A2	15

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 2

Level:
Sub-group: ELEMENTAL

Descriptive Title: HELPER, TRADES

Basic Point Rating: 278
Supervisory Rating: n/a

Summary

Assists tradesmen in a variety of tasks such as carrying tools and material, holding materials in position or mixing materials, and cleaning work area; and performs related work.

Duties	% of Time
- Assists a tradesman in a variety of tasks - by carrying tools selected by the tradesman to the work area, - by carrying materials and components selected by the tradesman to the work site, - by fetching tools requested, - by climbing ladders and staging and holding plates, flanges, pipes, slings and other material in position as instructed by the tradesman for marking out, bolting or other operation, - by mixing materials such as deck coverings and underlay or caulking compounds, and - by cleaning parts, materials or equipment, work area and tools as instructed.	70
- Performs related work such as removing and cutting gaskets, filing burrs, removing paint, cutting material to a specified size, threading pipes and rods, and drilling and tapping holes in plates and flanges, using hand tools such as paint scrapers, hammers, wrenches, files, hole punch, hack-saw, taps and dies.	30

specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading warning and safety signs and communicating orally with the tradesman being assisted.	1	24
Comprehension and Judgement - Verbal instructions for tasks such as holding, carrying and cutting are given on a step-by-step basis. Tools and methods to be used are prescribed.	1	36

Ship Repair
B.M.P.D. No. 2

	Degree	Points
Specific Vocational Training - The skill required, such as the use of wrenches, hammers, chisels and other hand tools, are normally learned from demonstration and some experience.	2	40
Effort		
Mental - Care is required when measuring and cutting material to a specified size or when selecting and using tools such as taps and dies.	2	30
Physical - The work requires climbing ladders or scaffolding and handling and holding a variety of objects such as pipes, plates, flanges and tools, frequently from difficult work positions.	3	45
Responsibility		
Resources - Mistakes in the work are readily detected by the tradesmen, but would cause a small loss of time and material and some inconvenience.	1	20
Safety of Others - The work requires working with others. It also requires cleaning the work site of debris, materials or tools, and failure to do so could cause accidents.	2	23
Working Conditions		
Environment - Normally the work requires exposure to dust, dirt, noise and, when working outdoors, extremes of weather.	3	44
Hazards - There is occasional exposure to injuries when cutting material, lifting and moving tools and components, and helping others. Loss of work time is characteristic of this type of injury.	B [1]	16

BENCH-MARK POSITION DESCRIPTION

SUB-GROUP: MACHINE TENDING

Ship Repair
B.M.P.D. No. 3

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 3 Level:

Sub-group: MACHINE TENDING

Descriptive Title: MACHINE OPERATOR, SANDBLASTING

Basic Point Rating: 354
Supervisory Rating: n/a

Summary

Under the supervision of a lead hand or charge hand, and occasionally receiving technical direction from a tradesman, removes rust, paint and dirt from a variety of surfaces and items, using portable and stationary sandblasting equipment; and performs other duties.

Duties	% of Time
- Removes scale, rust, paint, tar, grease and dirt from ships' hulls, from a variety of components such as armament parts, anchors, tanks, air vents and radar screens, and from stocked items such as plate, bars, and boats' davits according to established practice and special instructions - by setting up work and operating portable sandblasting equipment, - by assembling equipment and positioning items to be cleaned, - by selecting grade of abrasive and air pressure and adjusting mixture of air and abrasive according to the surface to be cleaned, - by masking vulnerable surfaces to protect them from sand damage, - by directing blast of sand toward the object to be cleaned, adjusting the position and direction of the hose to obtain desired finish, and - by blowing off sand and removing masking on completion of cleaning.	70
- Operates wheelabrators to blast such items as anchor cables, bars and castings by placing items in the chamber, by loading the hopper with shot, by setting the machine to operate for a specified interval and removing articles on completion of blasting.	10
- Operates vacu-blast machines to blast surfaces such as decks prior to painting or laying tile and treads.	10
- Performs other duties such as blasting small electrical and gun parts in a vacu-blast cabinet, and maintaining and repairing blasting equipment.	10

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires recording job numbers, quantities of items, and quantities of abrasive used and calculating quantities of masking material and abrasive required for each job.	2	40
Comprehension and Judgement - The work requires an understanding of the effect of a number of different abrasives under variations in air pressure on a variety of materials and surfaces, and the exercise of judgement in ensuring that finished surfaces are masked for protection against abrasives.	2	64
Specific Vocational Training - The work requires training and experience in the operation of portable and stationary sandblasting equipment and in the use ob abrasives on various materials and surfaces.	3	60
Effort		
Mental - The work requires masking exposed portions of polished surfaces or other vulnerable items, the careful application of sandblast to surfaces of thin or soft material, and adjusting air pressure and air abrasive mixture according to the condition and type of material.	2	30
Physical - The work requires connecting hoses and filling abrasive hoppers when setting up equipment and continually directing the pressure hose at the work surface, frequently working from staging during the sand-blasting operation.	3	45
Responsibility		
Resources - The work requires the effective use of equipment and materials. Poor workmanship results in loss of time and material and inconvenience to others.	2	46
Safety of Others - Sandblasting is normally done remote from other workers.	1	10

	Degree	Points
Working Conditions		
Environment - The work normally requires exposure to extremely dusty and dirty conditions and the wearing of uncomfortable protective clothing and equipment.	3	44
Hazards - The work requires continual exposure to abrasions, cuts and bruises while setting up and operating equipment.	A2	15

BENCH-MARK POSITION DESCRIPTIONS

SUB-GROUP: MANIPULATING

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 4	Level: Sub-Group: Manipulating
Descriptive Title: CEMENTER, UNDERLAY	Basic Point Rating : 254 Supervisory Rating: n/a

Summary

Under the supervision of a lead hand, prepares metal decks for the installation of titles; mixes, transports and applies specified underlay materials and cement; and performs other duties.

Duties	% of Time
- Prepares metal decks for the installation of vinyl-asbestos, quarry and other titles to ensure a good bond and a smooth surface finish.	
- by treating metal surfaces already cleaned by others, with a compound specially related to the metal and underlay material to be used,	
- by gathering together and mixing, by hoe, specified material mixes, and by transporting mixed materials to the work site,	
- by trowelling material into place, levelling and smoothing uneven surfaces, and by shaping, by hand, irregular corners and deck boundaries..	50
- Mixes cement by hoe, and transports and lays mix for emergency repairs to hulls of ships.	35
- Performs other duties as assigned.	15

Specifications Skill and Knowledge	Degree	Points
Basic Knowledge – The work requires using multiplication and division in the following of mixing instructions and other specifications, and in keeping a count of materials used.	2	40
Comprehension and judgment – The work requires understanding simple and explicit instructions, and selecting ways of doing the work from a few straightforward alternative.	1	36
Specific vocational training – The work requires training and experience in the mixing and application of special underlay materials and cement to ensure a smooth level surface for bonding tiles in heavy traffic areas.	3	40

	Degree	Points
Effort		
Mental - The work requires care in reading instructions and a normal level of attention during application of metal treatment and underlay material. Work is not finished to precise standards.	1	15
Physical - The work requires standing, lifting material and containers, and mixing, transporting and applying underlay material.	2	30
Responsibility		
Resources - The work requires care of tools such as mixing boxes, shovels, hoes and trowels, and of inexpensive materials.	1	20
Safety of Others - The work requires marking the area to warn against slipping on a wet surface, but the possibility of injury to others is limited.	1	10
Working Conditions		
Environment - The work requires exposure to wet and occasional dirt, noise and bad weather.	2	28
Hazards - The work requires frequent exposure to cuts and bruises.	A2	15

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 5

Level:

Sub-group: MANIPULATING

Descriptive Title: FLAME BURNER

Basic Point Rating: 394
Supervisory Rating: n/a

Summary

Under the supervision of a charge hand, makes a variety of shapes, using oxy-acetylene burning and cutting equipment; removes corroded nuts, bolts and other items; heats items of metal to facilitate removal, bending or straightening; and performs other duties.

Duties	% of Time
- Makes a variety of shapes such as flanges, sections and gusset plates from cast iron and rolled and forged steel plate up to four inches thick, so that the finish is smooth and to a tolerance of ± 1/16 inch - by marking shapes on the material to be used, following single line drawings or sketches or verbal instructions, using trammel, rule and centre punch, - by selecting suitable burning tip, oxygen and acetylene gas pressures according to the thickness and nature of the material to be cut, in accordance with established practice or shop manual instructions, and - by preheating the material to red heat and, by using higher oxygen pressure and volume, burning through the material, following the marked line.	50
- Removes rivets, bolts, nuts, studs an other metal items that have become corroded and resist movement, as directed by tradesmen, and with minimum damage to adjacent materials - by inspecting the work site, searching for exposed wires and other flammable materials, taking precautions against possible presence of gas and arranging satisfactory ventilation, - by moving oxy-acetylene equipment to the site, and - by preheating the item to be removed and, by using higher pressure and volume of oxygen, burning out the required item.	35
- Heats a variety of metal parts, such as gear wheels, shafts and pipe, to facilitate their removal, bending or straightening.	10
- Performs other duties such as cleaning equipment and the work area.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading single line drawings, keeping records of gas quantities used, and using instructional tables concerning burning tips and gas pressure to be used under different circumstances.	3	56
Comprehension and Judgement - The work is done in accordance with established practices and instructions. Judgement is required in determining the right flame to be used and positioning the flame to ensure effective work.	3	93
Specific Vocational Training - The work requires training and experience in using oxy-acetylene burning and cutting techniques, determining the right burning tip for unusual jobs, and finishing work smoothly and to tolerances of + 1/16 inch.	3	60
Effort		
Mental - The work is carried out to fairly broad tolerances, but care must be taken when burning out rivets, studs and other items to prevent damage to adjacent materials.	2	30
Physical - The work normally requires little physical effort; occasionally it requires hauling equipment to work sites on board ship.	1	15
Responsibility		
Resources - Errors in cutting or burning will result in wasted material and labour, and the replacement of damaged items. Care has to be taken to prevent burning of gas hoses.	2	46
Safety of Others - Care has to be taken to ensure that molten metal and red-hot pieces of metal do not fall on, and burn other workers.	2	23

	Degree	Points
Working Conditions		
Environment - The work requires using high-temperature oxy-acetylene flame, with resulting heat, fumes and spattering of molten metal. Burners' glasses, helmet and heavy gloves need to be worn.	3	44
Hazards - There is frequent exposure to burns caused by molten metal and flame.	B2	27

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 6 Level:

Sub-group: MANIPULATING

Descriptive Title: RIVETER AND STEEL-PLATE

CAULKER

Basic Point Rating: 455
Supervisory Rating: n/a

Summary

Under the supervision of a lead head or charge hand, rivets steel plates and aluminums sheets together, and metal parts on the ships' hulls and other structures; caulks seams between metal plates and chips plate in preparation for welding; tests compartments for leaks; and performs other duties.

Duties	% of Time
- Rivets steel plates and aluminums sheets together and parts such as castings and structural members onto ships' hulls, boilers, decks and other structures, using a portable pneumatic hammer, by cleaning and aligning rivet holes, inserting die in hammer, placing rivet into the rivet hole, placing die against rivet shank and hammering to shape rivet head, to ensure a secure mechanical joint.	60
- Caulks seams between steel plates on ships' hulls and other metal structures and chips plates in preparation for welding, using a portable pneumatic caulking or chipping hammer, by setting up equipment, inserting chisel in hammer socket, positioning chisel on edge of seam and pounding edge of seam into surface of adjoining plate to ensure a watertight seam.	20
- Tests compartments for leaks, using standard pneumatic and hydrostatic test equipment and methods, to ensure that the finished job is in accordance with specifications.	15
- Performs other duties such as chamfering steel plates, insulating plate laps and grinding tool bits.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading plating drawings to determine where caulking is required	3	56
Comprehension and Judgement - The work is done in accordance with trade practices. Judgement is required in aligning work pieces to ensure satisfactory work completion, in determining the amount of caulking needed, and in assessing hydrostatic testing.	3	93

	Degree	Points
Specific Vocational Training - The work requires training and experience in riveting and caulking methods used in ship repair and in the use of a few hand tools and pneumatic riveting and caulking hammers.	3	60
Effort		
Mental - The work is carried out to fairly broad tolerances, although the testing of caulked seams requires close observation of the work to detect leakage.	2	30
Physical - The work requires handling heavy awkward plates, parts and tools, often in a difficult work position.	4	60
Responsibility		
Resources - Defective riveting and caulking requires re-work and additional costs for re-testing of seams.	2	46
Safety of Others - The work requires riveting members of ships' hulls and other metal structures with the help of a holder-on, and often in conjunction with others.	2	23
Working Conditions		
Environment - The work requires riveting steel plate in the boiler shop and on site as well as working on ships' hulls out of doors with constant exposure to noise, extremes of climate and vibration. Goggles and heavy gloves are also frequently worn.	4	60
Hazards - The work requires using a pneumatic hammer to set hot rivets and to chip and caulk steel plate in boilers, in the boiler shop and on ships' hulls from scaffolding, decking and ground level. Eye injuries resulting from falls from scaffolds would cause a loss of work time.	B_2	27

BENCH-MARK POSITION DESCRIPTION

SUB-GROUP: MACHINE DRIVING-OPERATING

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 7

Level:

Sub-group: MACHINE DRIVING OPERATING

Descriptive Title: CRANE OPERATOR, GANTRY AND HAMMERHEAD CRANE

Basic Point Rating: 450
Supervisory Rating: n/a

Summary

Under the supervision of a rigger charge hand, hoists and moves a variety of heavy and awkward loads; operates and maintains marine railway to haul out and launch boats; carries out routine maintenance tasks on cranes; and performs other duties.

Duties	% of Time
- Hoists and moves a variety of heavy and awkward loads such as engines, turbines, structural components, guns and supplies and also lifts workmen in a boatswain's chair, using an electrically operated gantry or hammerhead crane - by observing load hook-up, the nature of the load, wind strength and direction, location of lift and visibility, - by selecting and moving one or more of **six** levers to regulate the speed, travel and position of the crane and hoist movement in response to hand signals given by a rigger on a ship's deck or on the dock, and - by adjusting speed and travel of the load to avoid obstacles such as antennae, masts and rigging, to compensate for the effect of wind, ship's movement, weight of load and momentum, to ensure that all movements are made carefully and safely.	50
- Operates and maintains the marine railway to haul boats on slip-ways to the shipwright shop or to launch boats on completion of repairs - by observing the security of the boat on the carriage, carriage hook-up and the condition of the railway, and by taking necessary safety precautions during movement of the carriage, - by selecting and manipulating switches and levers to start and stop and to control the speed and direction of the carriage, - by greasing and oiling mechanical components of winches, - by inspecting the marine railway for wear and defective parts, and - by notifying the charge hand of any mechanical or electrical malfunction.	30

	% of Time
- Carries out maintenance tasks on the crane used - by cleaning and lubricating components according to standard procedure and by applying grease or oil to approximately 450 specified points, - by inspecting the crane for defective components such as sprockets, brake linings, cables, sheaves, gears, bearings and track, and - by recording details of mechanical or electrical defects, wear and general condition of the crane in the daily log, and notifying the charge hand.	15
- Performs other duties such as keeping work areas clean.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires recording and reporting operating data in a daily log and determining lead and boom limits, using load charts and arithmetic.	3	56
Comprehension and Judgement - The work requires understanding of the effects of such conditions as wind, ship movement and momentum of a load on the crane and of marine railway operation. Regulations and instructions are supplied for the operation of the crane and marine railway, but the operator determines the rigging, speed of operation and other adjustments for each job. Judgement is required in selecting the type of rigging and speed of operation.	3	93
Specific Vocational Training - The work requires training and experience in operating the controls of electric motors, diesel or gasoline engines driving heavy mechanical equipment, in rigging heavy and bulky objects for lifting and moving, and in keeping daily work logs.	3	60
Effort		
Mental - The work requires frequent periods of close attention to load capacities, ship, crane and load movement hand signals, and proximity of obstacles to the load.	3	45

	Degree	Points
Physical - The work requires considerable physical effort for prolonged periods in operating the crane controls. Work such as adjusting the crane boom for different hoists, carrying out repair and maintenance tasks, rigging heavy steel cables, and securing large heavy boats on the marine railway imposes severe strains and frequently must be done in difficult work positions.	3	45
Responsibility		
Resources - Equipment must be used and maintained properly to prevent a failure that can cause damage to equipment or load and loss of time. Miscalculations in speed of operation could result in damage to equipment, to adjacent property or to the object being moved.	2	46
Safety of Others - Misinterpretation of hand signals can result in workers being pinned or crushed by the load. Heavy tools and components dropped during maintenance could also cause serious injury.	4	50
Working Conditions		
Environment - Control cabs affect protection from the elements, but the work requires exposures to noise, vibration and engine fumes. Repair and maintenance work is carried out without any protection and occasionally in extreme weather conditions.	2	28
Hazards - The work requires frequent exposure to injuries such as cuts, bruises, falls and strains when servicing equipment or handling heavy components.	B_2	27

BENCH-MARK POSITION DESCRIPTIONS

SUB-GROUP MACHINE OPERATING-CONTROLLING

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 8

Level:
Sub-group: MACHINE OPERATING CONTROLLING

Descriptive Title: AIR-COMPRESSOR-STATION ENGINEER

Basic Point Rating: 410
Supervisory Rating: n/a

Summary

Under the supervision of a charge hand, operates and maintains the compressed-air systems and associated controls supplying compressed air to the armament shop in the dockyard; and performs other duties.

Duties	% of Time
- Operates two electrically driven 4-stage high-pressure air compressors rated at 60 h.p., 3,500 p.s.i., one electrically driven 2-stage air compressor rated at 75 h.p., 100 p.s.i., and a control panel for a high-pressure air distribution system with a number of outlets - by starting and stopping the compressors, - by observing the operation of the system and keeping an operating and maintenance log, - by adjusting control valves to regulate air flows, - by charging high-pressure air cylinders when empty, and maintaining correct pressure in a battery of 48 high-pressure air cylinders, - by exchanging and charging compressed air cylinders from aqualung diving equipment, and - by performing regular maintenance tasks such as checking oil and coolant levels, cleaning filters, draining condensation from air receivers, checking lines for leaks, and removing and installing minor components.	90
- Performs other duties such as assisting in major repairs in the system.	10

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires recording and reporting operating data in a daily log, making calculations using multiplication and division, and reading tables and gauges.	2	40

	Degree	Points
Comprehension and Judgement - The work requires an understanding of the application of established practices and instructions concerning the operation of the equipment of a high-pressure air-compressing station and its systems. Judgement is required in operating the compressors and control panel and in charging empty cylinders.	3	93
Specific Vocational Training - The work requires training and experience in operating high-pressure air compressors, large electric motors, and the control of a high-pressure air distribution system and in maintaining a supply of dry clean air to meet the requirements of the station.	4	80
Effort		
Mental - The work requires frequent observing and recording of gauge readings, and short periods of concentration when operating control valves and observing the distribution system.	2	30
Physical - The work requires opening and closing of hand valves and frequent lifting of compressed-air cylinders.	2	30
Responsibility		
Resources - The station equipment must be maintained and operated properly to prevent damage. Incorrect operation of control valves can also damage equipment.	2	46
Safety of Others - The work requires careful operation of the high-pressure distribution system to ensure that all pipe joints are properly coupled when air pressure is turned on and that air pressure is turned off when uncoupling cylinders from the system. Careless operation can cause injuries to the eyes and other "lost-time" accidents.	3	36
Working Conditions		
Environment - The work requires exposure to noise and, during periodic repair work, to some dirt, grease and oil.	2	28
Hazards - The work requires frequent exposure to "lost-time" injuries.	B_2	27

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 9 Level:

Sub-group: MACHINE OPERATING CONTROLLING

Descriptive Title: MACHINE OPERATOR, METAL FABRICATION

Basic Point Rating: 369
Supervisory Rating: n/a

Summary

Under the supervision of a lead hand or charge hand, and occasionally receiving technical direction from a tradesman, cuts, bends and forms metal plates and sheets, using a variety of machines; and performs other duties.

Duties	% of Time
- Cuts, bends and forms metal plates and sheets as specified by instructions or as marked on the material - by operating metal-fabricating machines such as brakes, rolls, shears, saws and heavy-duty presses according to standard practices, - by positioning and clamping dies, blades, cutters and fixtures into machines, using rule, square and shims, - by positioning and clamping guides and stops to control positioning of work, - by adjusting rolls and blades, and machine speed to provide a finished product in conformance with requirements, and - by positioning the work piece manually or by signalling the crane operator.	85
- Performs other duties such as tending a furnace in which metal parts are heated to relieve stress, recording quantities of items produced and material used, cleaning, greasing and oiling machines, reporting machine, defects and keeping the work area tidy.	15

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading simple line drawings and sketches; recording job numbers, time spent on each job, number of items produced and quantity of material used; and using decimals in set-up work.	3	56

	Degree	Points
Comprehension and Judgement - The work requires an understanding of the application of shop practices in the operation of bending brakes, rolls, shears and saws to cut, bend and form metal plates in accordance with instructions, and of how to perform simple set-up work.	3	93
Specific Vocational Training - The work requires training and experience in the use of bending brakes, shears, and saws to cut, bend, and form metal plates.	3	60
Effort		
Mental - The work requires attention to detail in setting up various metal cutting and forming machines, but co-ordination is not critical in the operation of machines by manipulation of hand and foot controls.	2	30
Physical - The work requires assembling and mounting dies, blades and cutters in machines and positioning guides and stops, using hand tools. Machines are operated by hand and foot switches and pedals.	2	30
Responsibility		
Resources - The work requires the effective use of machines and materials. Ineffective operation of machines results in lost time, wasted material and inconvenience to others.	2	46
Safety of Others - The work requires the operation of various machines, normally remote from other workers.	1	10
Working Conditions		
Environment - The work normally requires exposure to dust and noise associated with workshop activities.	2	28
Hazards - The work requires occasional exposure to injuries to the hand and eye from operating metal bending and cutting machines. Loss of time can result from such injuries.	B_1	16

BENCH-MARK POSITION DESCRIPTIONS

SUB-GROUP SHIP PAINTING AND SURFACE PROTECTING

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 10 Level:

Sub-group: SHIP PAINTING AND SURFACE PROTECTING

Descriptive Title: PAINTER, CHARGE HAND

Basic Point Rating: 476
Supervisory Rating: C_4

Summary

Under the direction of the section foreman, co-ordinates and controls a part of the paint workshop; supervises 33 painters and brush hands; and performs other duties.

Duties	% of Time.
- Co-ordinates and controls a part of a paint shop applying primer and protective and decorative finishes to a variety of surfaces in ships and workshops ashore - by reviewing work orders, noting need for and initiating requests for work to be done by other trades workshops, - by assessing work progress, discussing progress with lead hands, and determining need for additional manpower, overtime or adjustments to the daily work schedule to ensure that production targets are met, or to advise the senior supervisor they cannot be met, - by determining the most effective method of work and the resources required, - by discussing problems with subordinates, such as methods to be used, deviations from specifications and performance standards, - by studying specifications to check for errors and for compatibility of finish and surface, and reporting inconsistencies to supervisors, - by inspecting work produced for quality and quantity, and - by advising stores personnel of the requirement for scarce items, and by substituting materials according to specifications.	70
- Supervises, through two lead hands, approximately 33 painters, brush hands, helpers and labourers - by assigning work to tradesmen according to its nature and complexity, - by instructing tradesmen in new techniques, - by evaluating employee performance and reviewing ratings with employees and the workshop supervisor, - by enforcing safety rules and warning offenders, and - by recommending vacation schedules to the supervisor, and considering employee preferences within the limitations of the work schedule.	25

	% of Time
- Performs other duties such as examining all work sites for unsafe conditions or hazards and maintaining time and material records.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires calculating paint coverage through interpolation of specification data, determining time and material requirements for specific jobs, and maintaining time and material records.	3	56
Comprehension and Judgement - The work requires an understanding of trade practices and of administrative and supervisory procedures in organizing and control ling the work of a group of painters. It also requires judgement in determining work methods, assigning tradesmen, evaluating work performance and assessing the quality of work produced.	4	121
Specific Vocational Training - The work requires training and experience in the preparation of surfaces and the application of various decorative and protective finishes. Experience is required in evaluating pro-duction quality and worker performance, in instructing in work methods and techniques, and in surveying work and estimating work orders.	5	124
Effort		
Mental - The work requires examining specifications, reviewing work orders, assigning employees to work areas, and appraising employee performance and work quality.	4	60
Physical - The work is performed in the workshop or at various work sites and requires considerable walking and standing.	2	30
Responsibility		
Resources - The work requires the effective deployment of approximately 33 painters and brush hands, and control of the quality of production. Errors cause loss of the time and materials and inconvenience to others.	2	46

	Degree	Points
Safety of Others - The work requires maintaining safe working conditions on all work sites.	2	23
Working Conditions		
Environment - The work is normally carried out in the shop and at work sites aboard ships, with little exposure to disagreeable conditions.	1	12
Hazards - The work does not normally require exposure to hazards.	A_1	4
Supervision		
The work requires assessing the complexity of jobs; appraising the performance of approximately 33 workers; assigning work according to its complexity, priority and with a view to worker development; overseeing progress to ensure that completion dates are met, and resolving disciplinary problems.	$^C4$	

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 11
Level:
Sub-group: SHIP PAINTING AND SURFACE PROTECTING
Descriptive Title: PAINTER, FINISH

Basic Point Rating: 404
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, applies a variety of primer and finish coats to wood, metal, plastic, glass and other surface, using standard and specialized materials and methods of application; and performs other duties.

Duties	% of Time
- Primes, paints and finishes wood, metal, plastic, glass and other surfaces - by inspecting surfaces for cleanliness, condition and preparation, - by removing old finish, cleaning and filling surface if required, - by mixing paints according to specifications and instructions, occasionally blending paints to match previous coat or other decorative finish, - by applying specified primer and materials, such as paint, varnish, lacquer, shellac, polyurethane and epoxy type finishes, - by using standard and specialized methods of application, and - by sanding and applying additional coats to obtain the desired finish.	90
- Performs other duties, such as polishing and waxing furniture, applying gold leaf to plaques and honour boards, applying new material, and using new equipment and methods of application for testing purposes.	10

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires measuring areas to be painted either in situ or from drawings and interpolation of specification data, to determine time and material requirements for specific jobs.	3	56

	Degree	Points
Comprehension and Judgement - The work requires an understanding of trades practices and of the application of specifications and general instructions to individual assignments. Certain aspects of the work require independent judgement.	3	93
Specific Vocational Training - The work requires training and experience in mixing, blending and matching paints, applying gold leaf, using the tools of the trade, and preparing surfaces for the application of primers and finishes.	4	80
Effort		
Mental - The work requires matching and mixing paints, painting narrow strips and awkward corners, and applying gold leaf to intricate patterns.	3	45
Physical - The work requires scraping, sanding and painting deck heads and bulkheads, frequently from ladders and scaffolds, with continual arm and hand motion while using the other hand for support or to hold paint.	3	45
Responsibility		
Resources - The work requires the effective use and care of brushes and equipment and the effective use of material. Errors result in some waste of time and material.	1	20
Safety of Others - The work requires the handling of lightweight objects, normally remote from other workers.	1	10
Working Conditions		
Environment - The work requires exposure to paint and thinner fumes, frequently in small cabins and compartments with little or no ventilation.	2	28
Hazards - The work requires exposure to falls from ladders and scaffolds. There is also a continual exposure to health-damaging fumes. These injuries are of a "lost-time" nature.	B[2]	27

BENCH-MARK POSITION DESCRIPTIONS

SUB-GROUP: PRECISION WORKING

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 12 Level:

Sub-group: PRECISION WORKING

Descriptive Title: CANVAS WORKER, LEAD HAND

Basic Point Rating: 361
Supervisory Rating: B_3

Summary

Under the general supervision of a charge hand, makes, repairs and installs canvas items; makes drapes and slip covers and upholsters furniture; makes and repairs leather items; supervises a group of canvas workers and helpers; and performs other duties.

Duties	% of Time
- Makes, repairs and installs canvas sails, awnings and tarpaulins, and covers for guns, torpedoes, funnels, boats and ammunition trucks - by examining the equipment to be covered or the items to be repaired, measuring dimensions, making sketches and studying blueprints, and by laying out dimensions according to blueprints or sketches, and cutting material to size with shears or knife, - by sewing sections together using a sewing machine, and by installing metal grommets, fittings and fasteners according to trade practice, - by splicing, inserting and hemming manila or wire rope in edges to relieve strain, and - by installing and fitting the completed product on shipboard, making adjustments such as cutting and binding holes for such items as ladders.	45
Makes drapes and slip covers, and upholsters and repairs upholstery on ships' furniture by selecting, measuring, cutting, sewing and installing material, and by stuffing mattresses and cushions with kapok or foam rubber to obtain proper resilience.	15
- Makes and repairs leather items such as gun seats and backs and instrument cases, using leather-working tools and following standard trade practice.	15
- Supervises approximately 17 canvas workers and trades helpers by assigning work to tradesmen, checking on work performance, work progress and quality of work produced, and by instructing new workers in the use of sewing machines, threads and materials, in the placing of grommets, cringles and other fittings, and in splicing rope or wire according to standard trade practice.	15
- Performs other duties such as making rope rigging, scramble nets, fenders and similar items.	10

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading sketches, drawings and charts, laying out plans and determining material requirements for the fabrication and repair of canvas, leather and upholstered articles.	3	56
Comprehension and Judgement - The work requires an understanding of established practices in the canvas, leather-working and upholstery trades. Judgement is required in selecting material and designing covers to fit various-shaped objects.	3	93
Specific Vocational Training - The work requires training and experience in canvas, leather and rope working and upholstering techniques, and in the use of materials and their application to the fabrication and repair of such articles as furniture, covers, cases, tampons, nets and fenders.	4	80
Effort		
Mental - The work requires measuring and laying out patterns against which material is cut or marked for riveting, sewing and other fitting work. The placing of such fittings as grommets and fasteners requires frequent periods of concentration.	3	45
Physical - The work requires lifting, unrolling, cutting hand stitching and sewing bulky and awkward material on power-operated machines. The work also requires climbing such structures as funnels and gun mounts to take measurements for covers and other canvas work.	2	30
Responsibility		
Resources - Materials are cut to patterns, and fitting must meet instructions. Errors in work cause some loss of material and work time for correction of the errors.	1	20
Safety of Others - The work requires cutting material and splicing wire rope assisted by a helper or other tradesman, who runs little risk of injury.	1	10

	Degree	Points
Working Conditions		
Environment - The work is normally carried out in the shop, with exposure to few disagreeable conditions.	1	12
Hazards - The work requires continual exposure to scratches, cuts and abrasions from frayed cable, rough material, hardware, furniture and springs.	A 2	15
Supervision		
Because this is one of the very few workshops where canvas workers can learn the trade, there is an important requirement to train and develop new workers, in addition to the need for quality and quantity production control.	B_3	

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 13

Level:
Sub-group: PRECISION WORKING

Descriptive Title: RIGGER

Basic Point Rating:
514
Supervisory Rating:

Summary

Under the general supervision of a lead hand, lifts and moves heavy equipment on board ship; makes wire and cordage equipment and apparatus; performs hazardous climbing; assembles moorings and buoys; and performs other duties.

Duties	% of Time
- Lifts and moves heavy equipment and spars on board ship - by estimating weight of the load and inspecting the area in which the lift is to be made, to determine the method and ensure the safety of the lift, - by selecting slings, cables and falls, - by assembling necessary equipment such as gin poles, tripods and clamps, and by signalling a crane into position, - by securing the load with cables or slings, selecting lift points, and attaching hoisting hook to lifting lugs or eye bolts, - by hoisting the load with block and tackle or by signalling to the crane operator to hoist and move the load in the desired direction and at the right speed, and by pulling on a lead chain to guide and control the load movement, and - by standing under heavy loads to apply stoppers, extra slings and shackles.	50
- Makes a variety of wire and rope slings, rope ladders, scramble nets, rigging, fenders, and other apparatus - by referring to line drawings and specifications, - by tying knots, bends and hitches, and splicing wire and cordage, using a marline-spike, serving mallet and other tools, and - by melting and pouring zinc to form rope fittings.	20
- Performs hazardous work - by laying and retrieving moorings and buoys, - by climbing and working aloft on ships' masts and funnels, and shore-based flag poles, and - by greasing boom sheaves on dockyard jetty cranes.	15
- Assembles moorings and buoys by cutting cable and chain to specified length and by securing shackles to anchors and buoys.	10

% of Time

- Performs other duties such as testing cranes and assembling and securing swinging stages and boatswains' chairs.

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires estimating the weight of loads, selecting suspension points and the appropriate number and type of slings to carry the load safely, and reading simple drawings.	3	56
Comprehension and Judgement - The work requires an understanding of lifting equipment, to select, set up and operate apparatus for lifting and moving materials. Instructions are general enough to require the exercise of some independent judgement within the limits of established practices.	3	93
Specific Vocational Training - The work requires training and experience in setting up lifting apparatus, controlling load movements by signalling crane operators, in constructing such cordage and wire rope items as slings, rigging and fenders.	4	80
Effort		
Mental - The work requires attention when controlling crane movement by signalling a crane operator and when measuring and cutting rope and wire cable.	2	30
Physical - The work requires setting up gin poles and tripods, securing lifting cables, and hoisting loads with block and tackle, as well as splicing wire rope and assembling, laying and retrieving moorings and buoys.	5	75
Responsibility		
Resources - If lifting apparatus fails, valuable stores can be damaged, with resultant waste of material and loss of time.	2	46
Safety of Others - The work requires setting up lifting apparatus, lifting and moving loads in proximity to other workers. Defective work can result in serious	4	50

	Degree	Points
Working Conditions		
Environment - The work requires working outside regardless of weather conditions, in noisy, confined spaces on board ship and in noisy shop surroundings.	3	44
Hazards - The work requires climbing and working at heights, working on buoys from small boats, and moving under or close to heavy loads. There is frequent exposure to serious accidents.	C_2	40

BENCH-MARK POSITION DESCRIPTION

SUB-GROUP: INSTRUMENT MAINTAINING

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 14

Level:
Sub-group: INSTRUMENT MAINTAINING

Descriptive Title: INSTRUMENT REPAIRMAN, OPTICAL AND NAVIGATIONAL

Basic Point Rating: 654
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, repairs and calibrates optical, mechanical and electro-mechanical instruments and measuring devices; diagnoses trouble in, repairs, tests and modifies mechanical components of fire control instrumentation; makes replacement parts; and performs other duties.

Duties	% of Time
- Repairs and calibrates such optical and mechanical instruments as binoculars, telescopes, theodolites, transits, sextants, compasses, chronometers and tachometers, and servo mechanisms, using collimators, lens coating machine and other instrument-maker tools - by dismantling defective instruments and devices and examining the mechanism for worn or broken parts and improper adjustment, - by repairing or replacing worn or broken parts, reassembling components, and - by testing and adjusting completed assembly to specifications.	35
- Diagnoses trouble in, repairs, tests and modifies mechanical components of such fire-control equipment as gyro units, elevation and train receivers and receiver regulators, stabilizers, sights, data computers and dead-reckoning analysers - by testing faulty equipment, studying defect characteristics and determining the causes of mechanical faults in fire-control systems, - by dismantling defective components, to identify faulty parts or improper adjustment, - by reassembling units, replacing worn or broken parts, adjusting clearances on bearings and moving parts to specified tolerances, and - by testing and adjusting the completed assembly to specifications, using such equipment as gyro balancers.	35
- Makes parts when not available from stock, according to blueprints, specifications and sketches, by taking and applying precision measurements and by using precision hand tools and machines such as jewellers' taps and dies, surface gauges, fitters' blocks, watchmakers' latches, shapers, milling machines and drills.	20

	% of Time
- Maintains, repairs and calibrates shop test-equipment such as lens coating machine and collimators.	5
- Performs other duties such as assisting in trials and mortar calibration, using theodolite, and recording fall of shot.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading complex drawings and schematic diagrams of precision equipment and applying a knowledge of the physical laws and mathematical formulae used in adjusting and calibrating a variety of precision optical instruments and measuring devices	6	104
Comprehension and Judgement - The work requires a thorough understanding of the physical laws of optics as applied to testing, repairing, modifying and calibrating precision optical instruments and measuring devices. Instructions are general in nature, and the work requires independent judgement. Specifications provide minimum acceptable performance levels as a quality standard.	5	150
Specific Vocational Training - The work requires training and experience in the repair of optical instruments and fire-control-system components of military-type equipment and in the use of very sensitive optical instruments requiring deft handling.	7	212
Effort		
Mental - The work requires making and fitting small gears or fitting very small bearings in instruments very close tolerances, and assembling and adjusting delicate instruments.	5 to	75
Physical - The work requires handling small parts and light tools associated with instrument making and repair.	1	15

	Degree	Points
Responsibility		
Resources - Mistakes in calibrating precision instruments and measuring devices are not readily detected and would result in incorrect functioning of a system. Errors in work will delay test completion, waste skilled labour, and disrupt the work schedules of other trades' workshops.	3	72
Safety of Others - The work is performed in relative isolation, no heavy objects are handled, and there is little possibility of injury to others.	1	10
Working Conditions		
Environment - The work is performed in an instrument shop with little, if any, exposure to disagreeable conditions.	1	12
Hazards - There is an occasional possibility of injuries such as minor cuts or bruises.	A1	4

BENCH-MARK POSITION DESCRIPTION

SUB-GROUP: MACHINERY MAINTAINING

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 15

Level:

Sub-group: MACHINERY MAINTAINING

Descriptive Title: REFRIGERATION AND AIR-CONDITIONING MECHANIC

Basic Point Rating: 612
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, inspects and identifies the faulty operation of, and repairs, assembles and tests, refrigerating and air-conditioning equipment; and performs other duties.

Duties	% of Time
- Inspects and identifies faulty operation of a variety of refrigerating and air-conditioning equipment on board ship and in workshops ashore to determine condition and need for repair - by observing equipment under normal operating conditions, testing for leakage, and noting unusual noises and vibrations, - by noting temperature and pressure readings at various points in the system and the effects of changing load and control settings, and by comparing actual performance against specifications, and - by checking oil levels, pressure reading, and the parts and components of the system.	45
- Repairs, assembles and tests refrigerating and air-conditioning equipment to ensure that it meets performance requirements, and according to trouble identified - by removing and dismantling components such as bearings, pistons, crankshafts, and valve plates, - by examining parts for wear, using precision measuring devices, - by refitting or replacing worn and damaged parts and adjusting fits to meet specifications, - by charging the system with refrigerant and dehydrates according to specified procedures. - by establishing and setting valves and other controls, and - by conducting static tests and assisting in the conduct of heat input and other operating tests.	45
- Performs other duties such as modifying equipment according to drawings and specifications, testing and preparing brine solutions, and operating an assortment of machine and hand tools, and test apparatus.	10

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading complex drawings, manuals and specifications. Knowledge of shop mathematics is also needed to calculate equipment requirements and to balance integrated mechanical and electrical systems, where the operating limits of these systems are precise.	6	104
Comprehension and Judgement - The work requires a thorough understanding of the use of precision machine tools and measuring devices and the operating principles of air-conditioning systems and equipment. The work allows considerable latitude for the exercise of judgement when making adjustments to complicated systems.	5	150
Specific Vocational Training - The work requires training and experience in using machine and hand tools and precision and other measuring devices, in the operating characteristics of air-conditioning and refrigeration equipment and systems, and in the repair of air compressors, pumps, evaporators, condensers and other mechanical items. The work also requires fitting parts to precise tolerances in the mechanical, electrical and refrigerating systems.	6	168
Effort		
Mental - The work requires close attention in reading and interpreting complex drawings and specifications, in the setting up and use of machine and hand fitting tools and precision measuring devices, and in testing to identify faults in the systems.	4	60
Physical - The work requires walking, standing and stooping and handling light to medium-weight objects, occasionally in awkward positions.	2	30
Responsibility		
Resources - The work requires the effective use of materials, precision tools and instruments in the repair and fitting of parts. Errors result in waste of material, machine time and labour.	2	46

	Degree	Points
Safety of Others - The work is carried out with the aid of a trades helper, or alone, and the possibility of injury to others is remote.	1	10
Working Conditions		
Environment - The work requires occasional exposure to obnoxious and dangerous fumes, and there is frequent exposure to dirt in the form of oil and grease.	2	28
Hazards - There is occasional exposure to "lost-time" injuries while working on high-pressure piping systems and around heavy motors, pulleys and belts.	B_1	16

BENCH-MARK POSITION DESCRIPTIONS

SUB-GROUP: ENGINE AND MECHANICAL EQUIPMENT MAINTAINING

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 16

Level:

Sub-group: ENGINE AND MECHANICAL EQUIPMENT MAINTAINING

Descriptive Title: FITTER, ENGINE

Basic Point Rating: 506
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, inspects, tests and repairs a wide variety of gasoline and diesel engines and air compressors, in ships and ashore; and performs other duties.

Duties

% of Time

- Inspects, tests and repairs gasoline and diesel engines varying from 2 1/2 to 1,400 h.p., to determine their condition and need of repair, and to renew to meet the required standards of performance
  - by observing engines under operating conditions and by reviewing reports of trouble such as loss of power, excessive noise or vibration, high fuel consumption and lack of response in controls,
  - by checking observations and taking measurements, using such instruments as pressure gauges, tachometers and thermometers,
  - by analysing trouble to determine the most probable cause,
  - by carrying out standard load tests before and after completion of repairs,
  - by dismantling the equipment and removing components such as superchargers, fuel and coolant pumps, heat exchangers and parts such as pistons, piston rings, valves and bearings,
  - by examining components and parts for wear and other defects, comparing dimensions and fits against specifications and determining the need for repair or replacement,
  - by grinding valves and shimming bearings to obtain proper fit, adjusting valve timing, fuel flow and ignition, and calibrating fuel pumps and injectors,
  - by reassembling components and engines after repair, according to manual instructions and established practice,
  - by testing repaired engines, using dynamometer and other instruments to measure power output, speed and fuel consumption, and
  - by installing repaired equipment.

95

	of Time
- Performs other duties such as attending sea trials, carrying out standard load tests on board ship, and operating engines during generator trials.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading electrical and mechanical drawings and performance specifications, measuring clearances and diameters, interpreting readings of test equipment, and following operating and repair manual instructions.	4	72
Comprehension and Judgement - The work requires an understanding of the operating principles of internal combustion and diesel engines and air compressors. Maintenance and operating handbooks are available, but judgement is required in diagnosing faults and in carrying out repairs effectively.	5	150
Specific Vocational Training - The work requires training and experience in repair techniques for internal combustion and diesel engines, including the use of specialized diagnosis equipment in repairing engines to meet performance standards and in working bearing surfaces to close tolerances, e.g. ± .005 inch.	5	124
Effort		
Mental - The work requires attention in the disassembly and replacement of parts, and periods of concentration when making precise fits and using test equipment.	2	30
Physical - The work requires standing, sitting and stooping, and occasionally lifting and holding heavy components and working in awkward positions.	2	30
Responsibility		
Resources - Errors in the use of spare parts or in rejecting parts that can be repaired can result in increased costs and loss of production time.	2	46
Safety of Others - The work is performed in relative isolation from others; ordinary care is required when starting engines for test purposes.	1	10

	Degree	Points
Conditions of Work		
Environment - The work requires exposure to dirty, greasy and oily parts, to carbon deposits, and occasionally to the noise of engines undergoing dynamometer and load tests.	2	28
Hazards - The work requires frequent exposure to cuts and abrasions caused by slipping tools and, occasion ally during load testing, to "lost-time" accidents from contact with moving parts.	B_1	16

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 17

Level:

Sub-group: ENGINE AND MECHANICAL EQUIPMENT REPAIRING

Descriptive Title: FITTER, MECHANICAL

Basic Point Rating: 643
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, inspects, tests, repairs and replaces a wide variety of mechanical equipment in ships and ashore; and performs other duties.

Duties	% of Time
- Inspects, tests and repairs mechanical equipment such as steam turbines, reciprocating steam engines, compressors, steering gear and hydraulic systems, variable pitch propellers, antennae gearing and workshop machinery to determine their condition and need for repair, and to renew them to meet the required standards of performance, working in a ship during trials, at dock-side or in a workshop - by observing the functioning of equipment and by reviewing reports of trouble such as loss of power, excessive noise or vibration, improper response to controls, and wide fluctuations in governed speed, - by checking observations and taking measurements, using such instruments as micrometers, dial indicators, pressure gauges and tachometers, - by analysing trouble to determine the most probable cause, - by recording details of fits, clearances, run out or visible defects such as cracked, loose or damaged turbine blades and worn gears and bearings, - by installing engines in test beds and carrying out standard tests, - by carrying out hydrostatic and proof tests on compressed-air cylinders, and other standard tests, - by dismantling the equipment and removing components and parts, - by pressing out bushings and pins, removing bearings, valves, keys and blades, examining parts for wear and other defects, comparing dimensions against specifications, and determining the need for repair or replacement, - by grinding, scraping, honing and fitting parts to meet specified tolerances, using hand stones, scrapers, and other hand and machine tools	95

of Time

- by reassembling components and mechanical equipment after repair, according to manual instructions and established practice,
- by aligning, balancing, adjusting and calibrating components, using hand tools and precision measuring devices,
- by cleaning, testing and repacking condensers, heat exchangers and oil coolers,
- by applying static and dynamic balancing tests to rotating machinery,
- by testing repaired equipment against performance specifications, and
- by installing repaired equipment,

- Performs other duties such as machining gun mounting rings, within close tolerances, to the ship's datum by using a deck ring planer and clinometers. 5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading drawings and specifications in repairing parts and components of a wide variety of mechanical equipment. It also requires a knowledge of shop mathematics, handbook formulae and elementary trigonometry to carry out static and dynamic balancing of rotating machinery, to achieve the degree of accuracy required in machining gun-mounting rings and to carry out other work.	6	104
Comprehension and Judgement - The work requires thorough understanding of the operating principles of different mechanical systems and of the effects of improper clearance, wear, balance and damage in mechanical systems. Judgement is required when diagnosing faults, assessing the need for repair, and determining the most effective method to achieve required standards of performance.	5	150
Specific Vocational Training - The work requires training and experience in repair techniques for a variety of mechanical equipment, in the fitting of bearings and parts by hand and machine to precise tolerances, e.g., ± .001 inch, and in the use of balancing equipment and other measuring devices.	6	168

	Degree	Points
Effort		
Mental - The work requires frequent reference to mechanical drawings; it also requires the use of precise tools and measuring devices. Great care must be taken in determining the amounts of metal to be removed and the extent of adjustment to be made so that the total system when reassembled will operate within the specified tolerance.	4	60
Physical - The work requires lifting and holding heavy components, frequently in awkward working positions.	3	45
Responsibility		
Resources - The work requires fitting expensive parts and using precision instruments. Mistakes cause loss of time, damage to instruments, and waste of material.	2	46
Safety of Others - The work is usually carried out alone or with the assistance of a trades helper or apprentice, in relative isolation from others.	1	10
Working Conditions		
Environment - The work is performed in a wide variety of locations on board ship, as well as in a workshop, in confined spaces, with exposure to dirt, drafts, noise, and, at times, to the elements.	3	44
Hazards - There is frequent exposure to cuts and abrasions caused by tool slippage, and occasional exposure to back strain when shifting and aligning heavy mechanisms.	B_1	16

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 18

Level:

Sub-group: ENGINE AND MECHANICAL EQUIPMENT MAINTAINING

Descriptive Title: SHOP FOREMAN, MECHANICAL FITTING

Basic Point Rating: 785
Supervisory Rating: E_7

Summary

Under direction of the Assistant Production Officer (M), plans, organizes and controls the operations of the mechanical fitting shop engaged in ship repair; supervises, trains and develops staff; provides advice to management and staff; and performs other duties.

Duties	% of Time
- Plans, organizes and controls the operations of the mechanical fitting workshop in the installation, repair and maintenance of a wide variety of mechanical equipment aboard naval ships and auxiliary vessels and in dockyard workshops, to ensure the safe and effective use of the accommodation and facilities provided	
- by participating with the dockyard production officers and other foremen in establishing work schedules and priorities, and other criteria associated with the dockyard cost control system,	50
- by maintaining a production schedule to meet priorities and plans directed by management, frequently adjusting the schedule to accommodate emergency requirements, coordinating work between shops, and ensuring that standard procedures are employed in scheduling, close-off and job numbering,	
- by reviewing work commitments and required priorities, allocating work and priorities to workshop sections, and delegating to section supervisors the responsibility for detailed planning and scheduling of work, to ensure correct phasing of work within the workshop,	
- by reviewing work orders to ensure correct estimating of time, material and financial requirements for the work described and returning incorrect orders to the respective section for revision,	
- by reviewing work progress and quality of work, and maintaining a work force to meet present and projected commitments,	

of *Time*

- by co-ordinating inter-shopped work with other workshops,
- by approving demands for material and equipment and authorizing the movement of men and materials from the dockyard to carry out ship repair work elsewhere,
- by reviewing periodically, and implementing changes in shop layout and in routines that do not affect other shops or departments,
- by directing the maintenance of inventories covering shop furniture, machinery and equipment and by initiating demands for repair or replacement of defective items, and
- by conducting interdepartmental correspondence.

- Supervises through subordinate supervisors, and trains and develops a staff of approximately 105 fitter tradesmen and apprentices, riggers, helpers and a crane operator
  - by assigning work to subordinate supervisors and reviewing its progress,
  - by appraising the performance of subordinate supervisors and discussing the appraisals with them, and reviewing ratings made by subordinates,
  - by assessing present training programs and recommending training programs to meet future requirements, 30
  - by directing the development and updating of apprentice ship training syllabi and instructing apprentice counsellors,
  - by composing and marking examinations for upgrading employees,
  - by conducting a safety training program through lectures and films,
  - by reviewing leave and training schedules,
  - by taking and recommending disciplinary and promotion action, and
  - by reviewing and recommending changes to the establishment.

- Provides advice to superiors, subordinates and others on all matters concerning shop management and production
  - by initiating meetings with other foremen, shop stewards, and the assistant production officer,
  - by assessing need for new or modified machinery and making recommendations to management,
  - by maintaining liaison with other departments and shops and with suppliers for exchange of technical information, 15
  - by obtaining and maintaining up-to-date technical publications and drawings for *use* in work assignments, and
  - by investigating equipment and material failures of a recurring nature for design fault and making recommendations to authorities on preventive or corrective measures to be taken.

	% of Time
- Performs other duties such as enforcing security regulations on classified materials and interviewing and selecting job applicants.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires participation in determining and recommending equipment, establishment training and financial requirements of the mechanical fitting workshop; calculating remaining life of tools and equipment, and assessing economic advantages of repair or write-off; estimating job costs in terms of tradesmen man-hours, machine time, and use of facilities; scheduling work to meet priorities and implementing the cost and work control systems. This work requires using technical data of an advanced nature in the resolution of workshop problems.	7	120
Comprehension and Judgement - The work requires a thorough understanding of the practical application of mechanical principles and of administrative and supervisory procedures in the planning, organizing and control of a workshop. It also requires judgement in calculating and assessing production, quality worker and workshop performance, equipment, establishment and training requirements, future workloads and workshop requirements, and in making recommendations to management on workshop management problems.	6	180
Specific Vocational Training - The work requires training and experience in applying the principles, techniques and practices of the mechanical fitting trades, and administrative and supervisory procedures; in evaluating production quality and workshop performance; in assessing equipment and establishment needs and training requirements; in determining future work loads and related workshop requirements; and in resolving personnel problems.	8	256
Effort		
Mental - The work of scheduling production, estimating costs, adjusting schedules to meet changing priorities and to compensate for unforeseen delays, and resolving difficult and highly technical problems requires the highest level of care, attention and concentration.	5	75

	Degree	Points
Physical - The work is normally performed in the office and physical demands are light.	1	15
Responsibility		
Resources - The work requires the control of an expensively equipped workshop employing approximately 105 tradesmen and the safe and effective use of facilities and staff.	4	100
Safety of Others - The work requires supervision of the implementation of the fire and accident prevention program to ensure the safety of the workers.	2	23
Working Conditions		
Environment - The work is normally performed in an office, with frequent visits to workshops or work sites.	1	12
Hazards - The work does not require exposure to hazards.		4
Supervision		
The work requires participation in load planning and work phasing in establishing schedules, priorities and other cost control criteria for the workshop and for a staff approximately 105. It requires determining staff requirements for the maintenance of scheduled output and allocating staff; reviewing work progress with subordinate supervisors and adjusting schedules; ensuring implementation and modification, as required, of such program as apprentice training and fire and accident prevention; and resolving personnel and management problems.	E_7	

BENCH-MARK POSITION DESCRIPTION

SUB-GROUP: BOILER MAKING-BLACKSMITHING

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 19

Level:

Sub-group: BOILER MAKING - BLACKSMITHING

Descriptive Title: BOILERMAKER

Basic Point Rating: 594
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, fabricates parts for, and repairs boilers and other pressure vessels and such structures as uptakes, stacks and baffles; dismantles and reassembles boilers and other pressure vessels; and performs other duties.

Duties	% of Time
- Fabricates parts from metal tubing and stock shapes for the assembly and repair of boilers and other pressure vessels and such structures as uptakes, stacks and baffles - by using specifications, sketches and blueprints, and taking measurements of the required parts, - by marking out materials, using such tools as trammels, dividers and scales, - by making templates, forming moulds and patterns, - by bending tubes to template, using a tube bending machine, - by cutting, shaping and smoothing parts, using such machines and tools as squaring shears, rotary shears, punch press, bending rolls, brakes, do-all saw, grinders and sanders, and - by heating plates or shapes for hot-working and flanging parts, using flatters, fullers and sledge hammer.	65
- Repairs damaged boilers and other pressure vessels - by removing defective tubes, stays, and other parts as specified in the defect report, using cutting tool, hack-saw, hammer and chisel, - by replacing tubes in drums and headers, expanding and beading tubes, using portable pneumatic tools and flaring equipment, - by cutting away worn or damaged parts, using a cutting torch, and welding in new material, - by installing hand holes and manholes, valves, gauges and water- and steam-line connections, - by cutting gaskets for bolted flanges and refacing seating for hand hole and manhole covers, and - by chamfering edges of plates, using hammer and chisel, and by caulking rivets, stay bolts and seams, using a pneumatic caulking tool.	25

	% of Time
- Performs other duties such as pressure testing vessels by means of standard hydrostatic testing equipment, tightening joints, applying insulating and refractory material, and working as ship's platter.	10

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading blueprints, drawings and specifications in laying out work and estimating material requirements, and applying a knowledge of shop mathematics in making templates, patterns and moulds for complex shapes.	5	88
Comprehension and Judgement - The work requires some understanding of the general theory of the operation of pressure vessels and of trade practices, and the use of judgement in making templates and in laying out and cutting material for the repair of boilers and other pressurized vessels.	4	121
Specific Vocational Training - The work requires training and experience in using materials and tools and in applying trade practices in building and repairing boilers and pressure vessels.	5	124
Effort		
Mental - The work requires taking and transferring measurements from blueprints to patterns and materials and using various cutting and shaping power tools.	3	45
Physical - The work is performed in a variety of difficult positions, often in confined areas, and involves frequent handling of heavy objects such as boiler plates and tubes. Greater physical effort is occasionally required when hot-working heavy metal plates or shapes with a sledge hammer.	4	60
Responsibility		
Resources - Defective work results in loss of time to correct errors, a waste of material and inconvenience to others.	2	46
Safety of Others - Reasonable care is required to prevent injury to other workers from hot metal from the metal-cutting torch and cuts from sharp edges of newly cut plates and pieces.	2	23

	Degree	Points
Working Conditions		
Environment - The work is done in extremes of temperature and in cramped, dirty and wet areas with excessive noise. It also requires the wearing of protective clothing such as goggles or welding mask, and heavy gloves.	4	60
Hazards - The work requires continual exposure to injuries such as burns from hot metal or welding equipment, injuries from metal chips, and abrasions and bruises from heavy tools and parts. Loss of work time is a characteristic of these injuries.	B2	27

BENCH-MARK POSITION DESCRIPTIONS

SUB-GROUP: ELECTRICAL AND ELECTRONICS WORKING

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 20

Level:

Sub-group: ELECTRICAL AND ELECTRONICS WORKING

Descriptive Title: ELECTRICIAN, MARINE

Basic Point Rating: 622
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, installs and repairs electrical systems; checks out electrical systems and components; and performs other duties.

Duties	% of Time
- Installs, removes, repairs and modifies cable, fixtures and other electrical parts and components in all types of electrical systems, such as those serving gun controls and electronic systems aboard ships and in ship repair workshops	
- by wiring electrical systems according to blueprints, sketches and accepted practice, connecting wires to components such as slip-rings, junction boxes, lamp circuits and micro-switches, using electrician's hand tools and soldering iron, and by setting-up contacts in amplifier panels and adjusting micro-switches,	65
- by making up cable retaining clips, brackets and hangers, drilling gland nuts to receive cable, and replacing insulation pads,	
- by measuring and cutting lengths of cable and conduit, making templates for bends, and assembling and installing on hangers and brackets on bulkheads,	
- by fabricating panels in accordance with specifications and mounting components, using screwdrivers, pliers, drills and taps,	
- by winding and forming coils for such components as resistors, solenoids and transformers, using forming machines,	
- by disconnecting wires and removing components such as motors and switches,	
- by dismantling motors, cleaning commutators, reassembling parts, replacing brushes, coils and bearings as required, and by setting up brakes on training and elevation drive motors, and	
- by disconnecting and removing defective parts and materials, repairing them when it is economical to do so or is required, and replacing items removed with serviceable ones.	

	% of Time
- Checks out electrical systems and components to ensure that performance is in accordance with specifications by testing circuits for continuity and measuring such characteristics as voltage and resistance, using standard practices and test equipment, identifying and correcting faults, and, as a member of a team aboard ships and in shops ashore, by testing and tuning gun mountings and power drives.	30
- Performs other duties such as bench-testing motors to determine power output, and rebuilding such components as switches and ordering parts as required.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading blueprints, schematic drawings and specifications and applying a knowledge of shop mathematics, physical laws and formulae pertaining to electrical operations.	5	88
Comprehension and Judgement - The work requires a thorough understanding of the principles and characteristics of electrical circuits and their use in the installation, repair and modification of electrical circuits and components. Instructions are general in nature, and judgement is required in identifying defects and making repairs in accordance with general trade practices.	5	150
Specific Vocational Training - The work requires training and experience in applying electrical principles and trade practices in the installation and repair of electrical circuits and components. It also requires working to precise electrical tolerances.	6	168
Effort		
Mental - The work requires connecting and soldering multiple terminal circuits, as indicated by symbols in schematic diagrams, using coded cables and leads.	3	45
Physical - The work is performed standing, kneeling or in prone positions in confined quarters, passageways or crawl spaces. Normally, medium-weight objects are handled, but occasionally heavy objects are lifted or moved, with resulting greater physical effort for short periods.	3	45

	Degree	Points
Responsibility		
Resources - The work requires the effective use of tools and materials. Defective work causes loss of time, waste of materials and inconvenience to others.	2	46
Safety of Others - Care has to be taken to prevent injury to other workers from open panels, trailing wires, or bare or exposed portions of the system carrying electric current.	2	23
Working Conditions		
Environment - The work in ships requires exposure to dust, dirt and noise and sometimes is performed in confined quarters, passageways or crawl spaces.	2	28
Hazards - The work requires continual exposure to electrical shock while standing on wet steel decking. Some work is done on ladders and scaffolds. Occasionally, the exposure could cause a permanent impairment.	C1	29

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 21

Level:

Sub-group: ELECTRICAL AND ELECTRONICS WORKING

Descriptive Title: ELECTRICIAN, ROTATING MACHINERY, CHARGEHAND

Basic Point Rating: 710
Supervisory Rating: C_3

Summary

Under the direction of the section foreman, co-ordinates and controls the operation of a part of an electrical rotating machinery workshop; supervises 15 electricians, apprentices and helpers; and performs other duties.

Duties	% of Time
- Co-ordinates and controls the operation of a part of a workshop installing, maintaining and repairing electrical rotating machinery and associated equipment such as motors, generators, alternators, transformers, rectifiers, breakers and switches aboard ships and in workshops ashore	
- by reviewing work orders, noting need for and initiating requests for work to be done by other trades workshops,	
- by assessing work progress, discussing progress with lead hands, and determining need for additional manpower, overtime or adjustments to the daily work schedule to ensure that production targets are met, or to advise the senior supervisor that they cannot be met,	
- by determining the most effective method of work and the resources required,	70
- by discussing with subordinates problems connected with methods to be used, deviations from blueprints, performance standards and substitutions,	
- by studying blueprints to check for errors and for conformity of installation, and reporting inconsistencies to supervisors,	
- by inspecting work produced for quality and quantity, and checking complex jobs in detail,	
- by initiating the state of maintenance surveys and examining and reporting on information received, and	
- by advising stores personnel of the requirement for scarce items, and by substituting parts according to specifications.	
- Supervises, through two lead hands, approximately 15 electricians, apprentices and helpers	
- by assigning work to tradesmen according to its nature and complexity,	20

	% of Time
- by instructing tradesmen in new techniques, - by monitoring apprentice employment to ensure that apprentices are employed on work that will contribute to their training, - by evaluating employee performance and reviewing ratings with employees and workshop supervisors, - by enforcing safety rules and warning offenders, and - by recommending vacation schedules to the supervisor, considering employee preferences within the limitations of the work schedule.	
- Performs other duties such as examining all work sites for unsafe conditions or hazards, participating in trouble-shooting on major items requiring knowledge of associated trades, and maintaining time and material records.	10

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires using blueprints and schematic drawings needed in repairing, modifying and installing rotating machinery circuits and components. The work also requires a knowledge of electrical and mechanical theory in resolving technical problems.	6	104
Comprehension and Judgement - The work requires a thorough understanding of the principles and characteristics of electrical circuits, the mechanics of rotating machinery and administrative and supervisory procedures in planning, organizing and controlling the work of a group of tradesmen. It also requires judgement in assigning work to tradesmen, evaluating work performance, and assessing the quality of work produced.	6	180
Specific Vocational Training - The work requires training and experience in applying electrical principles and trade practices in the installation and repair of electrical rotating machinery and its associated equipment. Experience is also required in evaluating production quality and worker performance, in allocating work commensurate with worker ability, in instructing in work methods and techniques, and in surveying machinery and estimating work orders.	7	212

	Degree	Points
Effort		
Mental - The work requires planning and assigning work, assessing work progress, determining needs for additional manpower, adjusting the work schedule to meet over-all priorities, examining blueprints and specifications, resolving technical and personnel problems, and presenting technical reports orally or in writing.	4	60
Physical - The work is performed in the workshop or at various work sites and requires considerable walking and standing.		30
Responsibility		
Resources - The work requires the effective use of the facilities of the electric rotating machinery workshop and of approximately 15 tradesmen, and the quality and quantity control of production. Errors in judgement cause waste of materials, disruption of work schedules, and waste of time of skilled tradesmen.	3	72
Safety of Others - The work requires maintaining safe working conditions on all work sites.	3	36
Working Conditions		
Environment - The work is normally carried out in the shop and at work sites aboard ships, with little exposure to disagreeable conditions.	1	12
Hazards - The work does not normally require exposure to hazards.	A_1	4
Supervision		
The work requires assessing the complexity of work; appraising the performance of approximately 15 workers; assigning work according to its complexity, priority and with a view to worker development; overseeing progress to ensure that completion dates are met; and resolving disciplinary problems.	C3	

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 22

Level:
Sub-group: ELECTRICAL AND ELECTRONICS WORKING

Descriptive Title: ELECTRONIC SYSTEMS TECHNICIAN

Basic Point Rating: 705
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, repairs, tests, tunes and modifies sonar, radar, radio, communications electronic systems, or electronic fire-control systems; installs electronic equipment; calibrates instrumentation, tunes and aligns complete electronics systems; and performs other duties.

Duties	% of Time
- Calibrates instrumentation, tunes and aligns complete electronic systems in accordance with prescribed procedures and a knowledge of the peculiarities of the systems.	50
- Repairs, tests, tunes and modifies sonar, radar, radio, communications electronic systems, or electronic fire control systems - by observing component and system functioning and noting deviations from standard performance, - by studying such circuit characteristics as voltage, frequency, waveforms and standing wave ratios, using test equipment such as multimeters, oscilloscopes, signal generators, capacitance bridges and multi purpose test sets peculiar to each system, - by comparing observations to precedent, specifications and handbook data to determine causes of malfunction and to isolate defective components, - by removing and dismantling defective electronics components and by testing, replacing and reassembling parts such as condensers, resistors, transformers, transistors and diodes in accordance with standard procedures, - by reporting apparent errors and inconsistencies to the supervisor, and - by replacing, removing and installing parts and changing circuitry in accordance with modification specifications.	20
- Installs electronic and associated electrical equipment in systems in accordance with diagrams, specifications and standard procedures.	15

	% of Time
- Performs other duties such as repairing and testing repeaters, resolvers, plotting tables and servomechanisms associated with electronic systems, maintaining test equipment, and operating various types of machine tools.	15

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading circuitry diagrams of sonar, radar, radio and interior communications or electronic fire-control systems and applying a knowledge of mathematical formulae and technical data used in solving problems.	6	104
Comprehension and Judgement - The work requires a thorough understanding of the principles involved in testing, repairing, tuning and modifying integrated electronic communications or fire-control systems using mechanical and electronic components. Instructions are general in nature and the work requires the use of independent judgement in the solution of a wide range of problems. Specifications provide minimum acceptable performance targets but no guidance on the approach to problems.	5	150
Specific Vocational Training - The work requires training and experience in the repair and installation of military-type electronic equipment and systems, the use of a variety of precision electronic and mechanical measuring devices, the correlating of readings and measurements and their interpretation and use in diagnosing and identifying faults in electronic systems.	7	212
Effort		
Mental - The work requires using specialized tools and measuring instruments and testing, tuning and aligning complex electronic systems composed of several integrated components.	5	75
Physical - The work requires handling small electronic and electrical parts, often at a workbench.	1	15

	Degree	Points
Responsibility		
Resources - The work requires working with and maintaining electronic systems and test equipment. Errors in work will prejudice the success of firing trials, increase the cost of refit, and waste the time of highly skilled tradesmen.	3	72
Safety of Others - The work requires testing and adjusting electronic systems with the help of others under "power-on" conditions. Care is required to ensure safety of others from electric shock and from the movement of large components.	3	36
Working Conditions		
Environment - The work is normally performed in the electronics workshop or <u>in situ</u> on board ship, and involves little exposure to disagreeable conditions.	1	12
Hazards - The work requires working on very small parts in close proximity to high voltage electricity. Work is done while standing on steel decking or on scaffolds and ladders. Occasionally, the exposure could result in a permanent impairment.	C_1	29

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 23

Level:
Sub-group: ELECTRICAL AND ELECTRONICS WORKING

Descriptive Title: ELECTRONIC SYSTEMS TECHNICIAN, LEAD HAND

Basic Point Rating: 705
Supervisory Rating: B_2

Summary

Under the general supervision of a charge hand, repairs, tests, tunes and modifies sonar, radar, radio, communications electronic systems or electronic fire-control systems; installs electronic equipment; calibrates instrumentation, tunes and aligns complete electronics systems; leads a small group of workers; and performs other duties.

Duties	% of Time
- Calibrates instrumentation, tunes and aligns complete electronic systems in accordance with prescribed procedures and a knowledge of the peculiarities of the systems.	50
- Repairs, tests, tunes and modifies sonar, radar, radio, communications electronic systems or electronic fire control systems - by observing component and system functioning and noting deviations from standard performance, - by studying such circuit characteristics as voltage, frequency, waveforms and standing wave ratios, using test equipment such as multimeters, oscilloscopes, signal generators, capacitance bridges and multi purpose test sets peculiar to each system, - by comparing observations to precedent, specifications and handbook data to determine causes of malfunction and to isolate defective components, - by removing and dismantling defective electronics components and by testing, replacing and reassembling parts such as condensers, resistors, transformers, transistors and diodes in accordance with standard procedures, - by reporting apparent errors and inconsistencies to the supervisor, and - by replacing, removing and installing parts and changing circuitry in accordance with modification specifications.	20
- Installs electronic and associated electrical equipment in systems in accordance with diagrams, specifications and standard procedures.	15

	% of Time
- Supervises, as a lead hand, a small group of approximately five tradesmen and technicians by assigning work and checking it on completion to ensure that quality and quantity standards are maintained.	10
- Performs other duties such as repairing and testing repeaters, resolvers, plotting tables and servomechanisms associated with electronic systems, maintaining test equipment, and operating various types of machine tools.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading circuitry diagrams of sonar, radar, radio and interior communications or electronic fire-control systems and applying a knowledge of mathematical formulae and technical data used in solving problems.	6	104
Comprehension and Judgement - The work requires a thorough understanding of the principles involved in testing, repairing, tuning and modifying integrated electronic communications or fire-control systems having mechanical and electronic components. Instructions are general in nature and the work requires the use of independent judgement in the solution of a wide range of problems. Specifications provide minimum acceptable performance targets but no guidance on the approach to problems.	5	150
Specific Vocational Training - The work requires training and experience in the repair and installation of military-type electronic equipment and systems, the use of a variety of precision electronic and mechanical measuring devices, the correlating of readings and measurements and their interpretation and use in diagnosing and identifying faults in electronic systems.	7	212
Effort		
Mental - The work requires using specialized tools and measuring instruments and testing, tuning and aligning complex electronic systems composed of several integrated components.	5	75

	Degree	Points
Physical - The work requires handling small electronic and electrical parts, often at a workbench.	1	15
Responsibility		
Resources - The work requires working with and maintaining electronic systems and test equipment. Errors in work will prejudice the success of firing trials, increase the cost of refit, and waste the time of highly skilled tradesmen.	3	72
Safety of Others - The work requires testing and adjusting electronic systems with the help of others under "power-on" conditions. Care is required to ensure safety of others from electric shock and from the movement of large components.	3	36
Working Conditions		
Environment - The work is normally performed in the electronics workshop or in situ on board ship and involves little exposure to disagreeable conditions.	1	12
Hazards - The work requires working on very small parts in close proximity to high voltage electricity. Work is done while standing on steel decking or on scaffolds and ladders. Occasionally, the exposure could result in a permanent impairment.	C_1	29
Supervision		
The work requires co-ordinating the work of a small group of highly skilled tradesmen and technicians in order to meet the performance standards of integrated fire-control or communications systems. Problems are discussed with workers and adjustments recommended.	B_2	

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 24

Level:
Sub-group: ELECTRICAL AND ELECTRONICS WORKING

Descriptive Title: ELECTRONICS TECHNICIAN, COMPONENTS

Basic Point Rating: 677
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, repairs, tests, tunes and modifies components of sonar, radar, radio and communications or electronic fire-control systems: installs electronic equipment; and performs other duties.

Duties	% of Time
- Repairs, tests, tunes and modifies components of sonar, radar, radio, and communications or electronic fire-control systems, to ensure that each component meets the performance specifications	
- by observing component functioning and noting deviations from standard performance,	80
- by studying such circuit characteristics as voltage, frequency, waveforms and standing wave ratios, using test equipment such as multimeters, oscilloscopes, signal generators, capacitance bridges and multi purpose test sets peculiar to each system,	
- by comparing observations to precedent, specifications and handbook data to determine causes of malfunction and to isolate defective components,	
- by removing and dismantling defective electronic components and by testing, replacing and reassembling parts such as condensers, resistors, transformers, transistors and diodes in accordance with standard procedures,	
- by reporting apparent errors and inconsistencies to the supervisor,	
- by replacing, removing and installing parts and changing circuitry in accordance with modification specifications, and	
- by calibrating instrumentation in accordance with prescribed procedures.	
- Installs electronic and associated electrical components in systems in accordance with diagrams, specifications and standard procedures.	10

	% of Time
- Performs other duties such as testing and repairing motion picture projectors and weather map printing equipment, assisting in aligning antennae, or inspecting for and correcting distortion, friction, misalignment, and seizure to moving parts in mechanical systems such as mechanical coders and geneva-geared electrical clocks.	10

Specifications		Degree Points
Skill and Knowledge		
Basic Knowledge - The work requires reading circuitry diagrams of sonar, radar, radio, communications or electronic fire-control systems, and applying a knowledge of mathematical formulae and technical data used in solving problems.	6	104
Comprehension and Judgement - The work requires a thorough understanding of the application of electronic principles to the testing, repairing, tuning and modifying of the components of sonar, radar and various communications or electronic fire-control equipment. Instructions are general in nature and the work requires using independent judgement. Specifications provide the minimum acceptable performance targets, but not the details of methods or approaches to be used to resolve problems.	5	150
Specific Vocational Training - The work requires training and experience in the repair and installation of military-type electronic equipment, the use of a variety of precision electronic instruments, the correlation of readings and measurements and their interpretation and use in diagnosing faults in system components.	7	212
Effort		
Mental - The work requires cleaning, adjusting, wiring, repairing, soldering or joining small parts and wires in extremely close proximity to each other, using fine, specialized tools and equipment, and testing and tuning parts, and groups of parts, of the component.	4	60
Physical - The work requires handling small electronic and electrical parts, often at a workbench.	1	15

	Degree	Points
Responsibility		
Resources - The work requires working with and maintaining electronic components and test equipment. Errors in work will waste time of skilled labour, delay test completion and disrupt the work schedules of other trades workshops.	3	72
Safety of Others - The work requires testing and adjusting electronic equipment with the help of others under "power-on" conditions; care is required to ensure safety of others from electronic shock.	2	23
Working Conditions		
Environment - The work is normally performed in the electronics workshop, with little exposure to disagreeable conditions.	1	12
Hazards - The work requires working on very small parts in close proximity to high voltage electricity. Work is done while standing on steel decking or on scaffolds and ladders. Occasionally, the exposure could result in a permanent impairment.	C_1	29

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 25

Level:
Sub-group: ELECTRICAL AND ELECTRONICS WORKING

Descriptive Title: SECTION FOREMAN, FIRE CONTROL

Basic Point Rating: 797
Supervisory Rating: D_4

Summary

Under the direction of the shop foreman, plans, organizes and controls the operations of a section of the fire-control workshop; supervises, trains and develops staff; provides technical advice to management and staff; and performs other duties.

Duties

% of Time

- Plans, organizes and controls the detailed operations of a section of the fire-control workshop in installing, maintaining, modifying and repairing mechanical and electrical components of surface, anti-aircraft and underwater weapons fire-control systems aboard naval ships and in dockyard workshops, to ensure the safe and effective use of the accommodation and facilities provided

  - by estimating time, material and job costs and participating in establishing control schedules and priorities,
  - by scheduling work allocated to the shop according to changing priorities,
  - by establishing priorities for work in shop sections to ensure correct phasing in line with control priorities,
  - by checking production against schedules, by allocating manpower to meet deadlines, and by recommending the use of overtime when required,
  - by checking quality of work to ensure that standards of performance are maintained,
  - by prescribing or approving work methods consistent with the requirements of the work and the economical expenditure of funds, 45
  - by reviewing periodically, and implementing changes in section routines to improve work effectiveness,
  - by monitoring expenditure of funds and initiating requests for additional funds,
  - by maintaining contacts with foremen in other shops to exchange information concerning job priorities, phasing and other matters,
  - by informing the shop foreman of skill shortages in manpower resources and recommending training or recruiting of workers,

	% of Time
- by initiating corrective action on unsafe or hazardous conditions and enforcing safety rules, and - by reporting material shortages and demanding material and equipment required to meet work schedules.	
- Supervises, through charge hands and lead hands, and trains and develops a staff of approximately 40 instrument repairmen, electricians, apprentices and helpers - by assigning work through charge hands and reviewing work progress, - by appraising work performance of subordinate supervisors, discussing worker performance with their supervisors, and interviewing workers, - by implementing the apprentice training program and providing periodic progress reports on each apprentice, - by proposing training programs as a means of providing required skills, - by taking and recommending disciplinary action and counselling workers, - by scheduling section leave to ensure adequate staff to meet commitments, and - by signing out-passes for workers to work away from dockyard aboard ship.	30
- Provides technical advice to superiors, subordinates and others on all matters concerning shop management and production - by investigating test equipment requirements and recommending procurement of new or modification of old equipment, - by recommending substitute materials when specified or approved alternate material is not available, - by providing details of new stock items for inclusion in naval catalogues, - by recommending the retention or replacement of materials and parts and controlling stock of reusable items, - by supplying technical details in written reports to the foreman for inclusion in material failure reports, - by surveying equipment periodically to establish state of maintenance, repairs needed and equipment replacements required, and by estimating probable down-times and costs, and - by giving guidance on repair procedures to ship personnel and commercial shipyards.	20
- Performs other duties such as representing the section at production, safety and other meetings.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires participation in determining equipment, establishment, training and financial requirements for the section; monitoring production and expenditures and substantiating working of overtime and requirements for additional funds; scheduling work to meet priorities; maintaining adequate stocks of equipment and materials; providing technical details for cataloguing items; and surveying defective equipment and preparing work orders and estimates. The work also requires detailed knowledge of the technical aspects of the shop operations in solving technical problems.	6	104
Comprehension and Judgement - The work requires a thorough understanding of the practical application of methods and practices in the mechanical and electrical trades to a variety of fire-control components and systems, and of administrative and supervisory procedures in planning, organizing and controlling the section workshop operation. It also requires judgement in evaluating production quality and worker performance, in assessing equipment, establishment and training requirements, and in making recommendations on workshop management problems.	6	180
Specific Vocational Training - The work requires training and experience in the interpretation of blueprints and drawings, in the use of materials, machine and hand tools, and in machine shop practices used in the mechanical maintenance of armament systems. The work also requires experience in applying administrative and supervisory procedures; in estimating costs; in evaluating production quality and workshop performance; and in assessing equipment, establishment and training requirements.	8	256
Effort		
Mental - The work of scheduling production, estimating costs, adjusting schedules to meet changing priorities and to compensate for unforeseen delays, and resolving technical problems requires the highest level of care, attention and concentration.	5	75

	Degree	Points
Physical - The work is performed in the shop and in an adjacent office and requires continual standing and walking.	2	30
Responsibility		
Resources - The work requires the control and effective use of the facilities and staff of a section of the fire-control workshop.	4	100
Safety of Others - The work requires implementation and enforcement of accident and fire prevention programs to ensure the safe operation of the section, frequently under conditions where workers are exposed to moving mechanical parts and "power-on" electrical circuits.	3	36
Working Conditions		
Environment - The work requires spending most of the time in a clean workshop, with little or no exposure to disagreeable conditions.	1	12
Hazards - The work is normally performed remote from machines and hazardous conditions.	A_1	4
Supervision		
The work requires assessing the work content of tasks, assigning them to junior supervisors, and co-ordinating the output of 40 tradesmen in several sections of the fire-control workshop to ensure that quantity and quality standards and completion dates are met; implementing apprentice training and worker development programs; appraising worker performance; and formally recommending establishment changes and disciplinary action.	D_4	

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 26

Level:

Sub-group: ELECTRICAL AND ELECTRONICS WORKING

Descriptive Title: SHOP FOREMAN, ELECTRONICS

Basic Point Rating: 829
Supervisory Rating: E5

Summary

Under direction of the Assistant Production Officer (L), plans, organizes and controls the operations of dockyard electrical workshops engaged in ship repair; supervises, trains and develops staff; provides advice to management and staff; and performs other duties.

Duties

% of Time

- Plans, organizes and controls the operations of the dockyard radio, radar, cryptographic, and antenna workshops in the installation, repair and maintenance of all equipment aboard naval ships and auxiliary vessels and in the dockyard workshops, to ensure the safe and effective use of the accommodation and facilities provided

  - by participating with the dockyard production officers and other foremen in establishing work schedules and priorities, and other criteria associated with the dockyard cost control system,
  - by maintaining a production schedule to meet priorities and plans directed by management, frequently adjusting the schedule to accommodate emergency requirements, co-ordinating work between shops, and ensuring that standard procedures are employed in scheduling, close offs and job numbering,
  - by reviewing work commitments and required priorities, by allocating work and priorities to workshop sections, and by delegating to section supervisors the responsibility for detailed planning and scheduling of work, to ensure correct phasing of work within the workshop, 50
  - by reviewing work orders to ensure correct estimating of time, material and financial requirements for the work described and returning incorrect orders to the respective section for revision,
  - by reviewing work progress and quality of work, and maintaining a work force to meet present and projected commitments,
  - by co-ordinating work with other workshops when work is inter-shopped,
  - by approving demands for material and equipment and authorizing the movement of men and materials from the dockyard to carry out ship repair work elsewhere,

	% of Time
- by reviewing periodically, and implementing changes in shop layout and in routines that do not affect other shops or departments, - by directing the maintenance of inventories covering shop furniture, machinery and equipment and by initiating demands for repair or replacement of defective items, and - by conducting interdepartmental correspondence.	
- Supervises through subordinate supervisors, and trains and develops a staff of approximately 60 tradesmen, technicians, apprentices, helpers and labourers in the electronic and electrical trades - by assigning work to subordinate supervisors and reviewing its progress, - by appraising the performance of subordinate super visors and discussing the appraisals with them, and reviewing ratings made by subordinates, - by assessing present training programs and recommend ing training programs to meet future requirements, - by directing the development and updating of apprenticeship training syllabi and instructing apprentice counsellors, - by composing and marking examinations for upgrading employees, - by conducting a safety training program through lectures and films, - by reviewing leave and training schedules, - by taking and recommending disciplinary and promotion action, and - by reviewing and recommending changes to the establishment.	30
- Provides advice to superiors, subordinates and others on all matters concerning shop management and production - by initiating meetings with production officers, other foremen and shop stewards, - by assessing need for new or modified machinery and making recommendations to management, - by maintaining liaison with other departments and shops and with suppliers for exchange of technical information, - by obtaining and maintaining up-to-date technical publications and drawings for use in work assignments, and - by investigating equipment and material failures of a recurring nature for design fault and making recommendations to authorities on preventive or corrective measures to be taken.	18

	of Time
- Performs other duties such as enforcing security regulations on classified materials and interviewing and selecting job applicants.	2

Specifications		Degree Points
Skill and Knowledge		
Basic Knowledge - The work requires participation in determining and recommending equipment, establishment, training and financial requirements of a group of workshops; calculating remaining life of tools and equipment, and assessing economic advantages of repair or write-off; estimating job costs in terms of tradesmen man-hours, machine time, and use of facilities; scheduling work to meet priorities and implementing the cost and work control system. This work requires using technical data of an advanced nature in the resolution of workshop problems.	7	120
Comprehension and Judgement - The work requires a thorough understanding of the practical application of electronic principles and of administrative and supervisory procedures in the planning, organizing and control of a group of related workshops. It also requires judgement in calculating and assessing production, quality, worker and workshop performance, equipment, establishment and training requirements, future workloads and workshop requirements, and in making recommendations to management on workshop management problems.	6	180
Specific Vocational Training - The work requires training and experience in applying the principles, techniques, and practices of the electrical and electronic trades, and administrative and supervisory procedures; in evaluating production quality and workshop performance; in assessing equipment and establishment needs and training requirements; in determining future workloads and related workshop requirements; and in resolving personnel problems.	9	300

	Degree	Points
Effort		
Mental - The work of scheduling production, estimating costs, adjusting schedules to meet changing priorities and to compensate for unforeseen delays, and resolving difficult and highly technical problems requires the highest level of care, attention and concentration.	5	75
Physical - The work is normally performed in the office and physical demands are light.	1	15
Responsibility		
Resources - The work requires the control of two or more expensively equipped workshops employing approximately 50 tradesmen and technicians, and the safe and effective use of facilities and staff.	4	100
Safety of Others - The work requires supervision of the implementation of the fire and accident prevention programs to ensure the safety of the workers.	2	23
Working Conditions		
Environment - Much of the work is performed in an office, with frequent visits to workshops or work sites.	1	12
Hazards - The work does not require exposure to hazards.	A_1	4
Supervision		
The work requires participation in load planning and work phasing in establishing schedules, priorities and other cost control criteria for the workshop. It requires determining staff needed to maintain scheduled output and allocating staff; reviewing work progress with subordinate supervisors and adjusting schedules and a work force of approximately 60; ensuring implementation, and modification as required, of such programs as apprentice training, fire and accident prevention; and resolving personnel and management problems.	E_5	

BENCH-MARK POSITION DESCRIPTIONS

SUB-GROUP: PIPEFITTING

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 27

Level:
Sub-group: PIPEFITTING

Descriptive Title: PIPE FITTER

Basic Point Rating: 536
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, installs and repairs high- and low-pressure and gravity-feed steam, water, oil and gas piping systems; and performs other duties.

Duties	% of Time
- Installs high- and low-pressure and gravity-feed systems, using black iron, copper, galvanized seamless or drawn steel, and plastic pipe, and a variety of fittings such as valves, traps, faucets and gauges for the safe and effective distribution, control and measurement of steam, water, oil and gas	
- by examining blueprints and layout drawings to determine the specifications and dimensions of pipe and fittings, and route to be followed, for each specific job,	
- by measuring sections and lengths and sketching obstacles such as bulkheads, ducts and frames, and making wire templates of pipe bends needed to bypass obstacles,	
- by estimating quantity of pipe and number and types of fittings needed,	
- by cutting pipe to length and bending it to shape, using a variety of trade tools such as pipe cutters, hacksaws, pipe bending machines, pipe threaders, wrenches, and pipe dies,	50
- by cutting or drilling openings in countertops, decks and bulkheads to accommodate pipe, fittings and plumbing fixtures, by forming lead gutters, flashings and drain-boards, using soldering and brazing torches to join pieces of material and by making joints in accordance with standard trade practices,	
- by assembling pipe lengths and bends, flanges and couplings, valves, traps, supporting hangers and other fittings comprising the system, and	
- by testing and inspecting the system for leaks, correct functioning of valves and gauges, and by tightening joints, replacing gaskets and packing valves where necessary.	

	% of Time
- Repairs pipe systems and fittings in accordance with operating standards - by activating and testing systems for leaks and defects in lines and fittings, and by bleeding lines and securing controls to prevent inadvertent operation of the system during repair, - by inspecting system for, and by removing and replacing, worn, defective or plugged pipe sections, - by removing, dismantling, cleaning, reassembling, replacing, caulking and packing valves, traps, faucets and other fittings, - by clearing blocked sanitary drains, pipes and fixtures, and - by cleaning or replacing boiler coils, brazing cracked or replacement parts, and adjusting and setting controls according to maintenance or operating manual instructions.	45
- Performs other duties such as assisting the Naval Fire Department to inspect, test and repair fire hydrant and sprinkler systems; drilling holes in bulkheads and partitions for pipe bracket bolts; and installing grease fittings at various locations in specific systems.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading blueprints and drawings to determine the specifications, dimensions and quantity of pipe and the number and kinds of fittings to be used, and applying a knowledge of shop mathematics.	4	72
Comprehension and Judgement - The work requires some understanding of the general theory of different piping systems and the uses of piping materials and of pipefitting practices. Instructions are general enough to require some independent judgement within the limits of trade practices.	4	121
Specific Vocational Training - The work requires training and experience in the use of piping and associated materials in different systems and in the use of pipefitting tools, equipment and trade practices.	5	124

	Degree	Points
Effort		
Mental - The work requires transposing measurements and other specifications by referral to blueprints and drawings, or taking measurements and making templates at the site of installation, to cut and form pipe and install fittings.	3	45
Physical - The work requires handling varied lengths of pipe and using medium-weight tools, often in constricted spaces.	3	45
Responsibility		
Resources - The work requires the effective use of materials, tools and equipment. Ineffective work will show up on test, and correction will require additional work and sometimes waste of material.	2	46
Safety of Others - The work requires testing of pipe lines and fittings using live steam or high pressure air or water; care has to be taken to prevent injury to others.	2	23
Working Conditions		
Environment - The work on board ship is normally carried out in dirty, cold or hot, draftee places, often in restricted space.	3	44
Hazards - The work is often done in places where vision and movement are restricted or where there is the possibility of coming into contact with hot pipes and live steam. Injuries sustained could cause some loss of work time.	B_1	16

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 28 Level:

Sub-group: PIPEFITTING

Descriptive Title: SECTION FOREMAN,

PIPEFITTING AND LAGGING Basic Point Rating: 740

Supervisory Rating: D6

Summary

Under the direction of the shop foreman, plans, organizes and controls the operations of a section of the pipefitting and lagging workshop; supervises, trains and develops staff; provides technical advice to management and staff; and performs other duties.

Duties % of Time

- Plans, organizes and controls the detailed operations of a section of the pipefitting and lagging workshop in the installation, maintenance, modification and repair of high and low-pressure and gravity-feed piping systems aboard naval ships and in dockyard workshops, to ensure the safe and effective use of the accommodation and facilities provided

  - by estimating time, material and job costs and participating in establishing control schedules and priorities,
  - by scheduling work allocated to the shop according to changing priorities,
  - by establishing priorities for work in shop sections to ensure correct phasing in line with control priorities,
  - by checking production against schedules, by allocating manpower to meet deadlines, and by recommending the use of overtime when required,
  - by checking quality of work against standards to maintain standards of performance,
  - by prescribing or approving work methods consistent with the requirements of the work and the economical expenditure of funds, 45
  - by reviewing periodically, and implementing changes in section routines to improve work effectiveness,
  - by monitoring expenditure of funds and initiating requests for additional funds,
  - by maintaining contacts with foremen in other shops to exchange information concerning job priorities, phasing and other matters,
  - by informing the shop foreman of skill shortages in manpower resources and recommending training or recruiting of workers,

	% of Time
- by initiating corrective action on unsafe or hazardous conditions and enforcing safety rules, and - by reporting material shortages and demanding material and equipment required to meet work schedules.	
- Supervises, through charge hands and lead hands, and trains and develops a staff of approximately 100 tradesmen, apprentices and helpers - by assigning work through charge hands and reviewing work progress, - by appraising work performance of subordinate supervisors, discussing worker performance with their supervisors, and interviewing workers, - by implementing the apprentice training program and providing periodic progress reports on each apprentice, - by proposing training programs as a means of providing required skills, - by taking and recommending disciplinary action and counselling workers, - by scheduling section leave to ensure adequate staff to meet commitments, and - by signing out-passes for workers to work away from dockyard aboard ship.	30
- Provides technical advice to superiors, subordinates and others on all matters concerning shop management and production - by investigating test equipment requirements and recommending procurement of new or modification of old equipment, - by recommending substitute materials when specified or approved alternate material is not available, - by providing details of new stock items for inclusion in naval catalogues, - by recommending the retention or replacement of materials and parts and controlling stock of reusable items, - by supplying technical details in written reports to the foreman for inclusion in material failure reports, - by surveying equipment periodically to establish state of maintenance, repairs needed, equipment replacements required, and by estimating probable down-times and costs, and - by giving guidance on repair procedures to ship personnel and commercial shipyards.	20
- Performs other duties such as representing the section at production, safety, and other meetings.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires participation in determining equipment, establishment, training and financial requirements for the section; monitoring production and expenditures and substantiating working of overtime and requirements for additional funds; scheduling work to meet priorities; maintaining adequate stocks of equipment and materials; providing technical details for cataloguing items; and surveying defective equipment and preparing work orders and estimates. The work also requires detailed knowledge of the technical aspects of the shop operations in solving technical problems.	6	104
Comprehension and Judgement - The work requires a thorough understanding of the practical application of methods and practices in the mechanical and electrical trades to a variety of pipefitting and lagging components and systems, and of administrative and supervisory procedures in planning, organizing and controlling the section workshop operation. It also requires judgement in evaluating production quality and worker performance, in assessing equipment, establishment and training requirements, and in making recommendations on workshop management problems.	6	180
Specific Vocational Training - The work requires training and experience in the interpretation of blueprints and drawings, in the use of materials, machine and hand tools, and in machine shop practices used in the mechanical maintenance of armament systems. The work also requires experience in applying administrative and supervisory procedures; estimating costs; evaluating production quality and workshop performance; and assessing equipment, establishment and training requirements.	7	212

	Degree	Points
Effort		
Mental - The work of scheduling production, estimating costs, adjusting schedules to meet changing priorities and to compensate for unforeseen delays, and resolving technical problems requires the highest level of care, attention and concentration.	5	75
Physical - The work is performed in the shop and in an adjacent office and requires continual standing and walking.	2	30
Responsibility		
Resources - The work requires the control and effective use of the facilities and staff of a section of the pipefitting and lagging workshop.	4	100
Safety of Others - The work requires implementation and enforcement of accident and fire prevention programs to ensure the safe operation of the section.	2	23
Working Conditions		
Environment - The work requires spending most of the time in a clean workshop, with little or no exposure to disagreeable conditions.	1	12
Hazards - The work is normally performed remote from machines and hazardous conditions.	A	4
Supervision		
The work requires assessing the work content of jobs, assigning them to junior supervisors, and co-ordinating the output of 100 tradesmen in several sections of the pipefitting and lagging workshop to ensure that quantity and quality standards and completion dates are met; implementing apprentice training and worker development programs; appraising worker performance; and formally recommending establishment changes and disciplinary action.	D6	

BENCH-MARK POSITION DESCRIPTION

SUB-GROUP: SHEET-METAL WORKING

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 29

Level:

Sub-group: SHEET-METAL WORKING

Descriptive Title: SHEET-METAL WORKER

Basic Point Rating: 524
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand on board ship or in workshops ashore, fabricates and repairs a variety of sheet-metal articles; installs finished articles; and performs other duties.

Duties	% of Time
- Fabricates a variety of articles, such as ducting and trunking, for ventilating and air-conditioning systems, lockers, doors, fume hoods, tables, diffusers, radar reflectors, sinks and counter tops, from stainless steel, galvanized steel, aluminums and copper sheet of up to 1/8 inch in thickness - by taking measurements and angles from blueprints, specifications, sketches and samples or from the actual point and place of installation of the article, - by laying out work to plan transitions, laps, bends, seams, offsets and cones and to calculate the amount of materials required to produce the finished article, - by cutting, flanging, punching and forming pieces to the desired shape, using machines and hand tools such as bending brake, punch, hacksaw, hammer, shears and snips, - by riveting, soldering, brazing, welding and bolting or locking seams according to specifications and trade practice, to ensure that parts are assembled rigidly and seams are mechanically sound.	60
- Repairs a variety of sheet-metal articles - by patching ducts and replacing locks, hinges and handles on lockers, - by soldering, riveting or folding broken joints and seams, and - by removing, and replacing broken or worn sheet-metal articles with new or repaired items.	20
- Installs finished articles by fabricating and attaching supports, mounting them securely on the deck head, bulkhead or deck, aligning and bolting flanges, and inspecting fastenings and joints to ensure conformance with	15

	of Time
- Performs other duties such as removing and replacing ducting, turbine and pump covers, and cable guards to assist other tradesmen, and removing and replacing tank and box linings.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading sketches and blueprints and using shop mathematics in laying out geometric shapes and calculating amounts of materials required.	5	88
Comprehension and Judgement - The work requires an understanding of trade practices in fabricating, repairing and installing sheet-metal products according to specifications and instructions. Judgement is required in making items to fit actual places of installation and in determining methods to be used.	3	93
Specific Vocational Training - The work requires training and experience in the characteristics and use of a variety of metal sheet and fittings, in the use of hand and machine tools, and in the application of trade practices in fabricating, repairing and installing sheet-metal products.	5	124
Effort		
Mental - The work requires transposing measurements and other specifications from blueprints, sketches and samples or taking measurements at the site of the installation, laying out work and performing a variety of tasks to produce the desired article.	3	45
Physical - The work requires handling metal sheets of up to 1/8 inch in thickness and in various sizes, and installing finished products in spaces that often restrict movement.	3	45

	Degree	Points
Responsibility		
Resources - The work requires the effective use of materials, tools and equipment. Miscalculations and errors in workmanship cause loss of time and material and inconvenience to others.	2	46
Safety of Others - Fabricating and installing sheet-metal products, using hammer, torches and other trade tools, exposes helpers and others to minor injury.	2	23
Working Conditions		
Environment - The work frequently requires the use of welding gloves, shields or goggles; it is often performed under dirty, malodorous and other unpleasant conditions.	3	44
Hazards - The work is frequently performed in spaces that restrict movement and vision, and there is occasional exposure to burns and injuries that could cause loss of time.	B_1	16

BENCH-MARK POSITION DESCRIPTIONS

SUB-GROUP: WOODWORKING

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 30

Level:
Sub-group: WOODWORKING

Descriptive Title: BOAT BUILDER AND SHIPWRIGHT

Basic Point Rating: 532
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, builds wooden boats, rafts, pontoons and similar structures; repairs and modifies wooden boats; assists in the hauling of boats under 200 tons in weight for repair or refit; builds and repairs fibreglass reinforced plastic items; and performs other duties.

Duties	% of Time
- Builds wooden boats in accordance with blueprints and specifications - by laying out full-scale plans on mould-loft floor, striking-in reference lines and making up plan views to full size, using crayon, scales and protractor, - by making templates of parts or laying out work directly on lumber, cutting and forming parts such as ribs by means of tilting arbour, cut-off and band saws, planers and sanders, - by steaming lumber in steam-box and bending it to shape on moulds, - by securing moulded siding to the keel, or by securing the ribs to the keel and installing planking, or by other methods according to the type of construction, - by laying decking and building pilot houses, cockpits and cabins, - by building and installing masts, booms and ladders, wooden foundations for machinery, and rudders and rudder controls, - by aligning propeller shafts, stern tubes and A-brackets, fitting wooden shims and bolting down engines to correct alignment, and - by installing marine hardware and fittings.	25
- Builds rafts, pontoons, floats and similar structures in accordance with specifications, using standard materials and trade practices.	25
- Repairs and modifies all types of wooden boats, including harbour craft and auxiliary vessels - by removing and replacing damaged or deteriorated parts such as keel, stem, apron, hull planking, deck beams, comings and masts,	25

	% of Time
- by realigning A-frames, stern bearings and shafts, refitting wooden shims and bolting down engines to correct alignment, and - by replacing or changing components in accordance with modification specifications.	
- Assists in the hauling of boats under 200 tons in weight on marine railways or shipways for repairs or refit, by positioning keel and bilge blocks, cradles and shoring, and by setting bilge blocks after the vessel has settled on keel blocks and installing additional shoring as required.	13
- Builds and repairs fibreglass reinforced plastic items such as boats, canopies, buoyancy tanks and gun shields - by constructing wooden moulds in accordance with specifications, - by laying up and fabricating items on moulds, and - by cutting away damaged sections of plastic items and laminating new material in place, to the original shape and thickness.	10
- Performs other duties such as removing, replacing and repairing insulation on board ship and keeping the work area tidy.	2

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading blueprints, drawings and specifications and using shop mathematics, geometry and handbook to lay out and shape parts to full scale.	5	88
Comprehension and Judgement - The work requires an understanding of the characteristics of materials used and of boat construction techniques. Instructions are general and allow scope for judgement in the selection of materials to meet the specifications and in the work method to be followed.	4	121
Specific Vocational Training - The work requires training and experience in woodworking techniques and boat-building practices and in the use of boat-building materials, hand tools and such power tools as band saws, bench saws and planers.	5	124

	Degree	Points
Effort		
Mental - The work requires making templates from measurements taken at work locations or from blueprints, and cutting, shaping and fitting material.	3	45
Physical - The work requires the continual use of hand tools, and lifting and placing wooden components in the boat structure.	2	20
Responsibility		
Resources - The work requires the effective use of materials, tools and equipment. Errors in workmanship result in loss of work time and waste of materials.	2	46
Safety of Others - The work requires the construction and repair of boats, with the assistance of helpers and other tradesmen. Careless handling of power tools can be the cause of injury to others.	2	23
Working Conditions		
Environment - The work requires exposure to noise and dust when operating power tools and to dirt when removing deteriorated parts.	2	28
Hazards - The work requires frequent exposure to injury of a "lost-time" nature during the operation of shop power tools.	B_2	27

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 31

Level:

Sub-group: WOODWORKING

Descriptive Title: JOINER

Basic Point Rating: 532
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, fabricates and repairs a variety of wooden structures; installs vapour barrier and insulating materials, gaskets and floor covering; cuts, fits and installs glass; carries out routine maintenance of wood-working machinery and hand tools; and performs other duties.

Duties	% of Time
- Fabricates and repairs such wooden articles as desks, chairs, tables, lockers, chocks, plaques, gangways and partitions in shops and aboard ship - by studying blueprints, drawings and specifications, and determining the type and amount of material required, - by selecting stock according to direction and nature of grain and use, and planning surfaces to specified dimensions with allowance for distortion or subsequent sanding, - by dismantling items to be repaired, - by measuring, making templates and laying out parts and joint details according to blueprints or accepted trade practice, locating parts favourable to grain knots in non-critical areas, and suggesting modifications in design to strengthen parts, - by setting up work and operating such woodworking machines as table saws, radial saws, band saws, mortisers, tenoners, shapers, drill presses, planers, wood-turning lathes and sanders to cut and shape wooden parts to specifications, - by cutting and carving wood to shape, using hand tools such as planes, chisels, files, saws and spoke shaves, and - by gluing, clamping and fastening work pieces according to specifications and trade practices.	45
- Installs vapour barrier, insulating material, hardware and gaskets, vinyl and formica counter-tops, roll linoleum, tile and terrazzo tile floor covering in compartments and lockers, by cutting material to fit by means of a linoleum knife or special hand tools, applying underlay and adhesive, and grinding surface to a smooth finish as required.	40

	% of Time
- Cuts, fits and installs glass in skylights, doors, frames and chart tables, using glaziers' tools and standard procedures.	5
- Carries out routine maintenance on woodworking machinery and hand tools such as sharpening drill bits, saw and planer blades, chisels and gauges.	5
- Performs other duties such as machining wedges for submarine batteries and keeping the work area clean and tidy.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading blueprints, drawings and specifications in laying out work and to determine time and material requirements, and using shop mathematics and handbook in making patterns and calculating angles of cut.	5	88
Comprehension and Judgement - The work requires some understanding of the properties, characteristics and uses of materials. It requires the application of trade practices and the use of hand and power tools in fabricating and repairing wooden articles. Judgement is required in selecting materials and techniques for specific jobs.	4	121
Specific Vocational Training - The work requires training and experience in the use of materials and hand and shop tools and in the application of trade practices in fabricating and repairing wooden articles.	5	124
Effort		
Mental - The work normally requires trying out patterns and using power and hand tools for cutting, shaping and fitting wooden parts according to specifications.	3	45
Physical - The work is normally performed in a standing position and involves handling light-weight objects. Occasional periods of greater physical effort are required when working in awkward positions or moving heavy objects.	2	30

	Degree	Points
Responsibility		
Resources - The work requires the effective use of materials and power and hand tools. Ineffective work results in loss of work time and waste of materials.	2	46
Safety of Others - The work requires the use of power-operated tools, with the assistance of helpers and in proximity to other tradesmen. Careless handling of materials and tools could cause injuries to others.	2	23
Working Conditions		
Environment - The work requires exposure to noise and dust when fabricating and installing wooden structures and when fitting and installing other items such as insulation.	2	28
Hazards - The work requires operating a variety of power tools, with a frequent possibility of severing a finger or suffering eye injuries from flying splinters.	B_2	27

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 32 Level:
Sub-group: WOODWORKING

Descriptive Title: PATTERNMAKER, WOOD

Basic Point Rating: 622
Supervisory Rating: n/a

Summary

Under the general supervision of a shop foreman, plans and constructs patterns for use in casting shapes and pieces, from seven different metals; and performs other duties.

Duties	% of Time
- Plans, lays out and constructs patterns for sand moulds for use by civilian contractors in casting a wide variety of parts used in machinery repair, such as wheels, gears, liners, impellors and valve seats, in aluminums, bronze, brass, gunmetal, iron and steel - by studying sketches, broken or defective castings and machine drawings to determine the most effective way of constructing a pattern that can readily be removed from a mould to facilitate casting, - by making sketches and drawings showing the shapes, dimensions and other critical data to ensure accurate reproduction, - by determining work procedure, and the grain, hardness, workability, grade and size of stock required, - by setting up and operating woodworking machines and using a variety of hand tools to cut, form and finish wood to the desired shape, and - by fitting, finishing and assembling component parts of the pattern to conform with the drawings and good foundry practice.	70
- Performs other duties such as building wooden cases and boxes for patterns, crating patterns for despatch to a foundry, keeping informed on new foundry practices, and repairing used patterns.	30

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading complex drawings and specifications. It also requires knowledge of shop mathematics and drafting techniques used to demonstrate a variety of shapes, angles and other critical dimensions, of casting techniques, and of the use of instruments such as the scriber, shrink rule and square.	6	104

	Degree	Points
Comprehension and Judgement - The work requires a thorough understanding of the principles and methods of pattern making, the use of machine and hand woodworking tools, and the characteristics of a variety of woods. Judgement is required in selecting pattern wood with the right characteristics and in planning the construction of the pattern to ensure its most effective use in the foundry.	5	150
Specific Vocational Training - The work requires training and experience in using machine and hand woodworking tools and measuring devices, in selecting suitable material for patterns, in working wood, and in making patterns to meet foundry techniques and to provide accurate reproduction of castings.	6	168
Effort		
Mental - The work requires the visualization of space and form, in three dimensions, of the actual and mirror-image shape of complex parts.	5	75
Physical - The work requires standing, walking and stooping, and handling light-weight items and occasionally heavier objects such as completed patterns and wooden planks.	1	15
Responsibility		
Resources - Inaccurate patterns are not discovered until the casting is returned from the foundry. Errors require the rebuilding of the pattern and result in a loss of production time in the pattern shop and foundry and delays to other repair sections.	3	72
Safety of Others - The work is mostly done in relative isolation; possibility of injury to others when using woodworking machinery is remote, and injuries would be of a minor nature.	1	10
Working Conditions		
Environment - The work requires occasional exposure to the noise of woodworking machine tools, and some dust.	1	12

	Degree	Points
Hazards - The work requires handling small work pieces and sharp cutting tools, with frequent possibilities of cuts and abrasions. Occasionally, there is exposure to "lost-time" injury when using woodworking machinery.	B_1	16

BENCH-MARK POSITION DESCRIPTIONS

SUB-GROUP: MACHINING AND TOOL MAKING

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 33

Level:

Sub-group: MACHINING AND TOOL MAKING

Descriptive Title: FITTER, ARMAMENT

Basic Point Rating: 643
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, repairs and modifies mechanical components of such armament as small arms, guns, gun mountings and torpedoes; and performs other duties.

Duties	% of Time
- Repairs mechanical components of all small arms, guns, gun mountings, torpedoes, torpedo tubes, launchers, anti submarine mortars and mines - by dismantling components such as automatic-feed and gun-loading systems, torpedo engines and gearboxes, - by inspecting parts for surface wear or damage, using feeler gauges, dial indicators, verniers and micro meters, and by comparing measurements with drawings or specifications to determine fit and wear and reporting doubtful items to the supervisor, - by scraping, bluing and fitting bearings, drilling, reaming and doweling bearing mounts to align bearings, and rotating eccentric bearings or shimming quadrants to reduce backlash, - by replacing cams and gears on splined shafts and lapping and grinding valves, - by fitting sliding- and push-fit tolerances, and reassembling component parts, using such tools as files, scrapers, stones, taps, power drills and wrenches, and - by testing gearboxes for backlash, using dial indicators and weights and following standard procedures, comparing observations with specifications and adjusting or replacing components.	85
- Modifies components according to detailed drawings and instructions by laying out changes on components and making templates, and by hand finishing and fitting parts to close tolerances, using standard precision tools.	10
- Performs other duties such as levelling equipment to master datum on installation, using a clinometers, and recording results on test sheets; maintaining shop tools and equipment; and keeping the work area tidy.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading drawings and specifications in repairing and modifying mechanical components of a variety of small arms, gun mountings and armaments. It also requires knowledge of shop mathematics, elementary trigonometry and handbook formulae used to lay out changes, to make templates, to shim and align bearings and to calculate tooth stresses in a gear train.	6	104
Comprehension and Judgement - The work requires a thorough understanding of the principles of armament component operation and the effects of improper clearance and of backlash, wear and damage in a gear train. Instructions such as the general nature of a defect or stoppage are given, but judgement is required to determine the cause of the fault and the repairs required.	5	150
Specific Vocational Training - The work requires training and experience in the working of metals, by machine and hand, to precise tolerances, e.g., ± .001 inch, in the fitting of a variety of machined surfaces to extremely fine tolerances.	6	168
Effort		
Mental - The work requires the constant use of precision tools and measuring devices to ensure that the close tolerances demanded in the finished work are met.	4	60
Physical - The work requires lifting mechanical armament components such as gearboxes and breach blocks and is frequently carried out in awkward positions in confined spaces.	3	45

	Degree	Points
Responsibility		
Resources - The work requires the effective use of precision tools and of expensive parts. Miscalculations or errors in workmanship cause loss of time and material and inconvenience to others.	2	46
Safety of Others - The work is usually carried out alone, or with the assistance of a trades helper, in relative isolation from others.	1	10
Working Conditions		
Environment - The work is performed in ships under repair or refit, with exposure to dust, dirt, drafts and noise and in confined quarters, passageways or crawl-spaces. Some armaments, such as guns and torpedo launchers, are exposed to the elements.	3	44
Hazards - There is occasional exposure to injuries caused by slipping of tools and heavy gun parts, which, if incurred, would result in loss of time.	B_1	16

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 34

Level:

Sub-group: MACHINING AND TOOL MAKING

Descriptive Title: INSTRUMENT REPAIRMAN, MECHANICAL

Basic Point Rating: 654
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, inspects, repairs, modifies and tests mechanical parts and components of fire-control and gun-directional systems and servomechanisms; installs mechanical parts and components; and performs other duties.

Duties	% of Time
- Inspects mechanical parts and components of fire-control and gun-directional systems and servomechanisms to diagnose operating defects and determine requirements, - by referring to blueprints, drawings, diagrams, manuals and specifications, - by applying standard tests, using a variety of tools and equipment such as micrometers, dial indicators and tachometers, and comparing operation of equipment with performance specifications, and - by stripping components to examine for defects such as worn or burred gears, bent shafts, worn couplings, dust in gears, air in hydraulic systems, and excessive clearance in valves.	60
- Repairs and modifies parts, components and complete assemblies - by isolating defective parts on the basis of observations of performance and analysis of probable causes of defects, - by dismantling equipment to examine parts, such as shafts and bearings, springs, levers, gears and pins, for defects, using a variety of hand tools and precision measuring devices, - by applying standard tests and noting results on test sheets, and by calibrating instruments and gauges in accordance with specifications and standard procedures, - by making adjustments to springs, levers and suspensions, by balancing mirrors and gyros, and by fitting parts, - by replacing parts, valves and packing, and - by reassembling components.	25

	Degree	Points
Physical - The work requires handling small parts and delicate instruments, normally while seated at a workbench.	1	15
Responsibility		
Resources - The work requires the effective use of materials and precision instruments and tools in the repair and adjustment of fire-control and gun-directional system components. Errors in work delay completion of tests, waste the time of skilled tradesmen, and disrupt the work schedules of other trades' workshops.	3	72
Safety of Others - The work is performed at a workbench, normally remote from other workers.	1	10
Working Conditions		
Environment - The work is normally performed at a workbench in a clean shop, with little or no exposure to disagreeable conditions.	1	12
Hazards - The work requires occasional exposure to cuts, scratches and abrasions.	A_1	4

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 35

Level:

Sub-group: MACHINING AND TOOLMAKING

Descriptive Title: MACHINIST

Basic Point Rating: 623
Supervisory Rating: n/a

Summary

Under the general supervision of a lead hand or charge hand, makes parts from a variety of metals and stock shapes, using machine and hand tools; and performs other duties.

Duties	% of Time
- Makes parts and other items from a variety of metals, metal alloys and stock shapes to duplicate or to fit a sample, or according to blueprints, sketches, drawings and other specifications - by studying drawings, blueprints and specifications, noting tolerances and occasionally selecting tolerances to produce a sliding fit or push fit as specified, - by setting up the work piece in a machine and selecting tool feed, machine running speed, depth of cut, support for work, jigs and cutting tools, according to the material, finish and tolerances specified, - by making calculations such as angle of taper and index angles, - by turning, milling, boring, shaping, planning, grinding and finishing work pieces according to shop practices, - by inspecting and measuring work in progress and on completion, using micrometers, callipers and screw pitch gauges to ensure conformity of the product with the specifications, and - by referring unusual occurrences such as distortion of work piece to the supervisor.	95
- Performs other duties such as operating a metal spray equipment and a hydraulic press, and keeping the machines and work area clean and tidy.	5

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading blueprints and specifications and applying a knowledge of shop	6	104

	Degree	Points
mathematics, elementary trigonometry and handbook formulae to calculate angles of taper and to do lay-out work.		
Comprehension and Judgement - The work requires thorough understanding of the properties of materials used, selection of suitable material (when material is not specified) to meet the requirement of the job, and selection of machine speeds, tool feeds, tools and depth of cut according to the type of material.	5	150
Specific Vocational Training - The work requires training and experience in the layout of work and in the working of metals in a variety of alloys, shapes and sizes, to precise tolerances, e.g., ± .001 inch, using machine and hand tools such as lathes, mills, shapers, stones and files.	6	168
Effort		
Mental - The work requires machining and hand finishing parts, making precise measurements of the work in progress and upon completion, using micrometers and other precision measuring devices.	4	60
Physical - The work requires continual standing at the machine and occasional lifting of work pieces onto or off the machine.	2	30
Responsibility		
Resources - The work requires the effective use of materials, precision tools and equipment, and the machining of parts on which an error could result in waste of material, machine time and labour.	2	46
Safety of Others - The work requires the handling of light-weight objects, normally remote from other workers.	1	10

	Degree	Points
Working Conditions		
Environment - The work requires exposure to metal filings and chips, oil and grease, and the noise associated with machine-shop activities.	2	28
Hazards - The work requires frequent exposure to serious cuts from machines operated and to strains from lifting materials. These injuries are of a "lost-time" nature.	B_2	27

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 36

Level:

Sub-group: MACHINING AND TOOL MAKING

Descriptive Title: TOOLMAKER

Basic Point Rating: 684
Supervisory Rating: n/a

Summary

Under the general supervision of a shop foreman, makes a variety of tools, gauges and complex cutting devices for use in the dockyard workshops; inspects tools, gauges and measuring devices for accuracy; and performs other duties.

Duties

% of Time

- Makes a variety of tools, gauges, punches, dies, taps, measuring instruments and complex cutting and shaping tools such as hobs, broaches, spline cutters, gear cutters and wood knives according to specifications or own experience and knowledge of tool design and of the requirements of the tool being made
    - by studying drawings, sketches and specifications, and selecting material stock according to the required size and hardness,
    - by determining the work procedure and heat treating process required, selecting machines to be used to produce the required degree of accuracy and finish, and calculating dimensions, tapers and indices, using shop mathematics, formulae and handbook instructions, — 80
    - by measuring, marking and scribing metal stock; setting up for others to operate, or operating, machine tools such as lathes, milling machines, shapers and jig borers; specifying or adjusting feed, speed, indexing or tapering attachments, and
    - by selecting and using a variety of grinding and finishing tools according to the characteristics of the tool being made, and a comparator, to ensure that the finished product meets dimensional specifications, and
    - by tempering the finished tool to meet specifications of hardness.

- Inspects tools, gauges and measuring devices for accuracy, using precision standard equipment such as gauge blocks, optical comparators, verniers and micrometers. — 10

- Performs other duties such as sketching tools showing proposed dimensions and form, calculating and setting up gear trains for special jobs, and repairing damaged or used tools. — 10

Specifications	Degree	Points
Skill and Knowledge		
Basic Knowledge - The work requires reading drawings and specifications. It also requires knowledge of mathematics sufficient to calculate gear ratios, indexing angles and angles of taper and to use formulae and handbooks, and knowledge of the physical properties of a range of steels and of the use of precision measuring devices.	6	104
Comprehension and Judgement - The work requires a thorough understanding of the principles and methods of tool making, of the setting up and operating of a variety of machine and hand tools and measuring instruments for cutting, shaping, grinding, polishing and measuring work pieces, and of the processes involved in the tempering of metals. Judgement is required in selecting suitable material, interpreting drawings and specifications, and planning the production of the tool to meet the specifications.	5	150
Specific Vocational Training - The work requires training and experience in machine-shop practice, in the use of machine and hand metal-cutting and finishing tools, and precision measuring and comparator devices, and in the heat treating of metals. Work is produced to extremely high tolerances, e.g., :i .0002 inch.	8	256
Effort		
Mental - The work requires planning and carrying out unusual and difficult tasks that involve concentration and a precise degree of mental-sensory co-ordination.	5	75
Physical - The work is done mostly standing at a machine or a bench, and light-weight objects are handled.	1	15

	Degree	Points
Responsibility		
Resources - The work requires the effective use of material, precision tools and instruments. Errors result in loss of material, production and machine time.	2	46
Safety of Others - The work is performed in relative isolation, with little possibility of injury to others.		10
Working Conditions		
Environment - The work is performed in a toolmaker's shop, with occasional exposure to the noise of a grinding machine.	1	12
Hazards - The work requires setting up and working relatively small pieces on a variety of machine tools where there is an occasional possibility of incurring "lost-time" accidents.	B_1	16