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

CLASSIFICATION STANDARD

# ENGINEERING AND SCIENTIFIC SUPPORT

## Technical Category

Canada

CONTENTS


| | PAGE |
|---|---|
| INTRODUCTION | 1 |
| CATEGORY DEFINITION | 3 |
| GROUP DEFINITION | 5 |
| RATING SCALES | 6 |
| BENCH-MARK POSITION DESCRIPTION INDEX | 19 |

## INTRODUCTION

The classification standard for the Engineering and Scientific Support Group is a point-rating plan consisting of an introduction, definition of the Technical Category and the occupational group, rating scales and bench-mark position descriptions.

Point rating is an analytical, quantitative method of determining the relative values of jobs. Point-rating plans define characteristics or factors common to the jobs being evaluated, define degrees of each factor and allocate point values to each degree. The total value determined for each job is the sum of the point values assigned by the raters.

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.

### Factors

The combined factors may not 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 worth of jobs. five factors are used in this plan.

### Factor Weighting and Point Distribution

The weighting of each factor reflects its relative importance. Similarly, points are distributed to the factors or elements in an arithmetic progression.

### Rating Scales

In the rating plan the following factors, factor weights and point values are used.

| Factors | Factor Weights | Point Values Minimum | Point Values Maximum |
|---|---|---|---|
| (1) Knowledge | 35% | 35 | 350 |
| (2) Technical Responsibility | 33% | 30 | 330 |
| (3) Responsibility for Contacts | 8% | 8 | 80 |
| (4) Conditions of Work | 12% | | |
| Concentration | 3% | 10 | 30 |
| Physical Effort | 3% | 10 | 30 |
| Environment | 3% | 6 | 30 |
| Hazards | 3% | 6 | 30 |
| (5) Supervision | 12% | 5 | 120 |

Bench-mark Positions

Bench-mark position descriptions are used to exemplify degrees of factors. Each description consists of a list of the leave in duties with the percentage of time devoted to each and specifications describing the degree of each factor to which the position is rated. The bench-mark positions have been evaluated and the degree and point values assigned for each factor are shown in the specifications.

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

Use of the Standard

There are six steps in the application of this classification standard.

1. The position description is studied to ensure understanding of the position as a whole. The relation of the position being rated to positions above and below it in the organization is also studied.

2. Allocation of the position to the category and the group is confirmed by reference to the definitions and the descriptions of inclusions and exclusions.

3. Tentative degrees of each factor in the position being rated are determined by comparison with degree definitions in the rating scales. Uniform application of degree definitions requires frequent reference to the description of factors and the notes to raters.

4. The description of the factor in each of the bench-mark positions exemplifying the degree tentatively established is compared with the description of the factor in the positron being rated. Comparisons are also made with descriptions of the factor in bench-mark positions for the degrees above and below the one tentatively established.

5. The point values for all factors are added to determine the tentative total point rating.

6. The position being rated is compared as a whole with positions to which similar total point values have been assigned, as a check on the validity of the total rating.

Determination of Levels

The ultimate objective of job evaluation is the determination of the relative values of jobs in each occupational group. Jobs that fall within a designated range of point values will be regarded as of equal difficulty and will be assigned to the same level.

LEVEL AND LEVEL BOUNDARIES

| | | | |
|---|---|---|---|
| 1 | 1 | - | 169 |
| 2 | 170 | - | 249 |
| 3 | 250 | - | 339 |
| 4 | 340 | - | 419 |
| 5 | 420 | - | 529 |
| 6 | 530 | - | 699 |
| 7 | 700 | - | 849 |
| 8 | 850 | - | 1,000 |

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.

## KNOWLEDGE FACTOR

This factor is used to measure the difficulty of the work in terms of the knowledge required to perform the duties of the position.

### Definitions

"Knowledge" refers to the understanding and application of principles, methods, techniques, procedures and practices required to perform the duties. This knowledge can be obtained by formal training, courses of instruction, in-house or on-the-job training and experience and by working in related and progressively more complex or responsible jobs.

### Notes to Raters

The degrees of the knowledge factor assigned to the bench-mark positions have been established by comparative ranking. The degrees of the factor are not directly related to years of training instruction and experience, but indicate the relative knowledge requirements of positions within the occupational group.

When establishing the degree of knowledge required to perform the duties of a position, raters are to consider such characteristics as the variety and novelty of equipment used, the improvisation required to perform the work, the need to administer projects, services or resources, the number of different methods, procedures and approaches, the diversity and nature of the analyses performed, and the requirement for in-depth knowledge and awareness of trends and developments in the subject matter field.

The bench-marks demonstrate a range of knowledge and expertise from: entry level; knowledge of techniques and testing procedures; knowledge of concepts to interpret results and identify problems; knowledge of a discipline; in-depth knowledge of a discipline with experience in a wide range of applications; in-depth knowledge vith the application of "state-of-the-art" procedures and knowledge of project management.

Points may be awarded as appropriate under this factor for: the knowledge required to monitor the progress or activities of students, consultants and contractors; and for knowledge of pedagogy, in the case of training positions.

The degree tentatively selected is to be confirmed by comparing the duties and requirements of the position being rated with the duties and specifications of the bench-mark positions that best exemplify that degree.

RATING SCALE - KNOWLEDGE

| Degree of Knowledge | | | Points |
|---|---|---|---|
| 1 | | | 35 |
| 2 | 1 | Lab Technician Engineering Training | 80 |
| 3 | 2 | Laboratory Technician, Environmental Toxicants | 125 |
| | 3 | Lab Technician, Bacteria Analysis, Fish Products | |
| | 4 | Laboratory Assistant, General Hospital | |
| | 5 | Accredited Seed Analyst | |
| 4 | 6 | Water Conservation and Development Technician | 170 |
| | 7 | Lab Technician, Animal Pathology | |
| | 8 | Materials Testing Technician | |
| | 9 | Fisheries Research Technician | |
| | 10 | Weather Station Manager | |
| | 12 | X-Ray and Ultra Sound Technician | |
| | 13 | Field Bean Breeding and Genetics Technician | |
| | 15 | Forest insect and Disease Survey Technician | |
| | 16 | Migratory Birds Research Technician | |
| 5 | 11 | Project Design Technician, Construction and Maintenance | 215 |
| | | Legal Land Survey, Regulatory Technician | |
| | 14 | Meteorology Instructor | |
| | 17 | Hydrographic Survey Technologist | |
| | 18 | Chemical Protection Technician | |
| | 19 | | |
| 6 | 20 | Dental Therapist | 260 |
| | 21 | Chemical Research Technologist | |
| | 22 | Gas Chromatograph - Mass Spectrometer Data Systems - Technician | |
| | | Technical Inspector | |
| | 23 | Research and Design Technician, Test Equipment | |
| | 24 | Shift Supervisor, Major Weather Office | |
| | 25 | Underwater Weapons Technician | |
| | 26 | Oilseeds Breeding Supervisor | |
| | 29 | | |
| 7 | 27 | Senior Project Officer, Construction and Maintenance | 305 |
| | 28 | Senior Architectural Technician | |
| | 30 | Regional Supervisor, Electrical Facilities | |
| | 31 | Head, Materials Laboratory | |
| | 32 | Supervisor, Building Services and Contracts | |
| | 33 | Zone Environmental Health Officer | |
| 8 | 34 | Chief, Construction Specifications | 350 |
| | 35 | Chief, Aircraft Maintenance | |

## TECHNICAL RESPONSIBILITY

This factor is used to measure the difficulty of the work in terms of the scope for initiative and judgement, and the impact of action taken or decisions made.

### Definitions

"Scope for initiative and judgement" refers to the freedom to take particular courses of action or make decisions within the framework of guidelines, directives and procedures or precedents established for a project or to support the provision of a service.

"Impact of action taken or decisions made" refers to the effect that the work will have on the support service provided and the user of the service, on the project undertaken or on the decisions made by others.

### Notes to Raters

In evaluating positions under the Scope for Initiative and Judgement element, the availability of direction or supervision and the degree of authority delegated by superiors are to be considered. In determining the requirements of a position to adapt, develop and evaluate procedures, methods or standards as defined in the "Scope for Initiative and Judgement" element, raters should assess the availability of and the requirement to select and use information from authoritative sources related to the work.

The Impact element degree levels are not defined, but examples are provided in the bench-mark descriptions. Raters are to take into consideration such characteristics as:

1. The effect of actions taken or decisions made upon the work and requirements of others.
2. The effect of an error in judgement on the use of resources, the achievement of objectives and the operations of the users of the service provided.
3. The extent to which the incumbent is the authorized and effective recommending authority, which is usually influenced by with the structure of the organization and the responsibilities assigned to related positions in the organization.

Any one characteristic is only an indication of impact and the whole context within which the work is performed is to be considered.

Points may be awarded as appropriate under this factor for:

monitoring the progress or activities of students, consultants and contractors;

for pedagogy skills and initiative and judgement to handle classroom situations, in the case of training positions.

The degrees of the two elements of the Technical Responsibility factor tentatively selected are to be confirmed by comparing the duties of the positions being rated with the duties and specifications of the benchmark positions that exemplify those degrees tentatively selected.

RATING SCALE - TECHNICAL RESPONSIBILITY

| Impact of Action Taken or Decisions Made, and Degree | Scope for Initiative and Judgement, and Degree | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | The work is performed according to specific instructions and by applying standard procedures and practices. It requires some initiative and judgement. | | | The work is performed according to general instructions and by applying standard procedures and practices requiring interpretation, and the selection of courses of action. This requires a moderate degree of initiative and judgement. | | | The work is performed according to general guidelines and instructions and requires the development or modification of plans, procedures, standards or practices involving a considerable degree of analysis, initiative and judgement. | | | The work is performed according to broad guidelines and direction permitting considerable scope for freedom of action. The evaluation of project plans, techniques and procedures or the advancement of novel concepts and/or complex projects, processes or systems requires a significant degree of initiative, judgement and innovation. | | | |
| | A | | | B | | | C | | | D | | | | |
| 1 | 30/ | 1.1 | 2.1 | 81/ | 7.2 | 8.1 | 132/ | | | | | | | |
| | | 3.2 | 6.2 | | 9.2 | 11.2 | | | | | | | | |
| 2 | 80/ | 4.1 | 5.2 | 131/ | 12.1 | 13.2 | 182/ | 17.1 | 19.2 | 233/ | | | | |
| | | 10.2 | | | 14.2 | 15.1 | | 21.2 | 22.2 | | | | | |
| | | | | | | | | 24.2 | 28.2 | | | | | |
| | | | | | 16.2 | 18.2 | | | | | | | | |
| 3 | 130/ | | | 181/ | 20.2 | 23.2 | 232/ | 25.2 | 26.2 | 283/ | 32.2 | | | |
| | | | | | 27.2 | | | 29.2 | 30.2 | | | | | |
| | | | | | | | | 31.2 | | | | | | |
| 4 | | | | 231/ | | | 280/ | 33.2 | | 330/ | 34.2 | 35.2 | | |

## RESPONSIBILITY FOR CONTACTS

This factor is used to measure the difficulty of the work in terms of the purpose and nature of the contacts and the level of persons contacted.

### Definition

"Officials" refers to managerial, professional or administrative personnel with the authority to influence the projects or services provided or required by the position being evaluated.

### Notes to Raters

Only those contacts which are significant and an integral and essential aspect of the work which result from duties assigned or sanctioned by management, are to be considered. Contacts with subordinates, peers, or supervisor in the work group of the subject position are to be rated Al. (The work group is the organizational unit controlled by the position's immediate supervisor.)

If the duties require more than one combination of the contact elements, the point value of the highest combination is to be assigned. Only the highest point value contact is described in the bench-mark specifications.

Points for contacts in written form may be assigned to the position whose incumbent researches and composes the correspondence, whether or not signing authority is given, but there is no credit for contacts by form or pattern letters.

RATING SCALE - RESPONSIBILITY FOR CONTACTS

| PURPOSE | | PURPOSE AND NATURE OF CONTACTS, AND DEGREE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Level of persons contacted and degree | | To provide or exchange information relating to the work being performed, the area under study, or the methods and techniques used. | | | To provide explanations and interpretations of analytical studies or reviews; to discuss the suitability of methods, techniques, equipment or services. | | | To discuss such matters as techniques, procedures and priorities significantly affecting a major portion of projects or services when different points of view are anticipated, with authority to agree on or to recommend changes. | | |
| | | A | | | B | | | C | | |
| Such persons as employees in own work group, service and sales representatives and employees of own department other than officials. | 1 | 8/ | 1.2<br>3.2 | 2.2<br>7.2 | 27/ | 13.2 | | 46/ | | |
| Such persons as officials in own department; employees other than officials of other departments, other levels of government, outside agencies, companies and associations; and members of the general public. | 2 | 26/ | 4.2<br>6.2<br>10.2<br>15.2 | 5.2<br>8.2<br>12.2 | 45/ | 9.2<br>16.2<br>18.2<br>20.2<br>22.2<br>26.2 | 11.2<br>17.2<br>19.2<br>21.2<br>24.2 | 64/ | | |
| Such persons as officials of other departments, outside agencies, companies, associations and other governments. | 3 | 44/ | 14.2 | | 63/ | 23.2<br>28.2<br>30.2<br>32.2 | 25.3<br>29.2<br>31.2 | 80/ | 27.2<br>34.2 | 33.2<br>35.2 |

## WORKING CONDITIONS

This factor is used to measure the demands of work in terms of effort, exposure to disagreeable conditions and hazards.

### Notes to Raters

Raters are to consider the kind, frequency and duration of attention, concentration, mental-sensory coordination and muscular exertion, the requirement to use precision instruments, equipment and tools, the weight of objects handled and the work positions.

In rating positions under the Environment element, raters are to consider the working environment in terms of the kind and severity of disagreeable conditions and the frequency and duration of exposure to them during the performance of the work.

In rating positions under the Hazards element, credit shall be allowed only for probable occurrences of injury or ill health and not for those that are remotely possible. Raters should also consider the nature of the materials being handled or equipment used, the ability to control the hazard and the requirement to employ safety devices and protective equipment and clothing. If the duties require more than one combination of the two degrees of the Hazards element, the higher point value will be assigned.

The degree value tentatively selected for each element is to be confirmed by comparing the duties and specifications of the bench-mark positions that exemplify that degree.

All positions will receive at least minimum points under these elements.

RATING SCALE - CONCENTRATION

"Concentration" refers to the kind, frequency and duration of attention and concentration or mental - sensory coordination requirements.

| MENTAL | DEGREE | POINTS | BENCH-MARKS | |
|---|---|---|---|---|
| The work requires some attention and concentration, or mental-sensory coordination for most of the duties with an occasional requirement for increased attention. | 1 | 10 | 1.2<br>14.2<br>32.2<br>34.3 | 4.2<br>27.2<br>33.3<br>35.2 |
| The work continually requires moderate attention and concentration, or mental-sensory coordination. Some duties may occasionally require greater attention for short periods. | 2 | 20 | 2.2<br>6.2<br>8.2<br>10.2<br>12.2<br>15.2<br>17.2<br>19.2<br>23.2<br>26.2<br>29.2<br>31.2 | 3.2<br>7.2<br>9.2<br>11.2<br>13.2<br>16.2<br>18.2<br>20.2<br>25.3<br>28.2<br>30.2 |
| The work requires a high level of ,attention and concentration for sustained periods, or a high level of mental-sensory coordination. | 3 | 30 | 5.2<br>22.2 | 21.2<br>24.2 |

## RATING SCALE - PHYSICAL EFFORT

"Physical Effort" refers to the kind, frequency and duration of muscular exertion and the weight of objects and tools handled.

| PHYSICAL | DEGREE / POINTS | BENCH-MARKS | |
|---|---|---|---|
| The work requires intermittent standing, walking or handling of light-weight objects. The duties occasionally require greater physical effort for short periods. | 1 10 | 1.2 | 2.2 |
| | | 3.2 | 4.2 |
| | | 5.2 | 7.2 |
| | | 11.2 | 14.2 |
| | | 19.2 | 21.3 |
| | | 22.3 | 24.2 |
| | | 25.3 | 26.2 |
| | | 28.3 | 29.2 |
| | | 30.2 | 31.3 |
| | | 32.2 | 34.3 |
| | | 35.2 | |
| ÎThe work requires continual standing or walking, where only limited periods of relief are possible, or continually !handling light-weight objects. The duties occasionally require greater physical effort for short periods. | 2 20 | 9.2 | 10.2 |
| | | 12.2 | 13.2 |
| | | 16.3 | 17.2 |
| | | 20.2 | 23.2 |
| | | 27.2 | 33.3 |
| The work requires frequent climbing, working from ladders, handling medium weight objects or working in a difficult position. | 3 30 | 6.2 | 8.2 |
| | | 15.2 | 18.2 |

## RATING SCALE - ENVIRONMENT

"Environment" refers to the kind and severity of disagreeable conditions and the frequency and duration of exposure to them during the performance of the work. Examples of disagreeable conditions include:

- exposure to dust, dirt, heat, cold, obnoxious odours, noise or vibration,
- the requirement to wear cumbersome protective clothing or equipment, and
- the requirement to be away from home frequently or for significant periods.

| WORK ENVIRONMENT AND DEGREE | | POINTS | BENCH-MARKS | |
|---|---|---|---|---|
| Few disagreeable conditions. | 1 | 6 | 1.2<br>25.3<br>30.2<br>35.2 | 14.2<br>28.3<br>34.3 |
| Significant exposure to one disagreeable condition, or occasional exposure to several disagreeable conditions or to one very disagreeable condition. | 2 | 13 | 2.2<br>4.2<br>7.2<br>11.2<br>13.2<br>19.3<br>21.3<br>23.2<br>29.3<br>32.3 | 3.2<br>5.2<br>10.2<br>12.2<br>17.2<br>20.2<br>22.3<br>24.3<br>31.3 |
| Significant exposure to several disagreeable conditions or to one very disagreeable condition. | 3 | 20 | 6.2<br>9.2<br>27.3 | 8.2<br>26.2<br>33.3 |
| Significant exposure for extended periods to several very disagreeable conditions. | 4 | 30 | 15.2<br>18.2 | 16.3 |

RATING SCALE - HAZARDS

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

| Degree of Exposure | | PROBABLE SEVERITY OF ILLNESS OR INJURY AND DEGREE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Minor injuries or illness such as cuts, abrasions and bruises. | | | Lost time injuries such as fractures, sprains, hernias, or illness resulting from exposure to chemicals, pesticides etc. | | | Incapacitating injuries or illness such as loss of limbs; or other permanent impairment. | | |
| | | A | | | 8 | | | C | | |
| Occasional | 1 | 6/ | 14.2<br>29.3 | 25.3<br>35.2 | 15/ | 10.2<br>17.2<br>22.3<br>26.3<br>30.3<br>32.3<br>34.3 | 11.3<br>21.3<br>23.2<br>28.3<br>31.3<br>33.3 | 24/ | 15.2 | 16.3 |
| Frequent | 2 | 14/ | 1.2<br>13.3 | 5.3<br>20.2 | 23/ | 2.2<br>4.2<br>7.3<br>9.3<br>27.3 | 3.2<br>6.2<br>8.2<br>12.2 | 30/ | 18.3<br>24.3 | 19.3 |

## SUPERVISION

This factor is used to measure the responsibility of the position for the work and guidance of other staff as indicated by the nature of the supervisory responsibility.

### Definitions

"Nature of supervisory responsibility" refers to the extent to which supervisory positions have such responsibilities as controlling the quantity and quality of work, assigning work, allocating staff, evaluating staff performance, and training and disciplining staff.

"Staff" refers to the individuals for whom the position exercises line supervisory responsibility directly or through subordinate supervisors.

"Formally evaluates" refers to the authority of the position to formally appraise and sign the appraisal as the immediate supervisor.

### Notes to Raters

In all positions there is some requirement for showing others how to perform tasks or duties; therefore, no position will be assigned less than 5 points (1) under this factor.

Supervision, such as that performed during absences of the supervisor on annual or sick leave, is not to be rated.

For the purpose of this standard, "staff supervised" includes the following:

1. Employees in the department or agency for whom the position has continuing responsibility.

2. Casual, part-time and seasonal staff supervised by the position.

Points may be awarded as appropriate under Knowledge and/or Technical Responsibility factors, but not under supervision, for:

monitoring the progress or activities of students, consultants and contractors;

pedagogy skills and initiative and judgement to handle classroom situations, in the case of training positions.

In evaluating positions all the characteristics of each degree of Supervisory Responsibility must be considered.

The rating scale shows the point values assigned to five degrees of the Nature of Supervisory Responsibility Factor.

## SUPERVISION

| NATURE OF SUPERVISORY RESPONSIBILITY | DEGREE | POINTS | BENCH-MARKS | |
|---|---|---|---|---|
| Shows other staff how to perform tasks or duties. | 1 | 5 | 1.2 | 2.2 |
| | | | 3.3 | 4.2 |
| | | | 5.3 | 6.3 |
| | | | 7.3 | 11.3 |
| | | | 12.2 | 14.2 |
| | | | 15.2 | 17.2 |
| | | | 19.3 | 20.2 |
| | | | 21.3 | 22.3 |
| | | | 23.2 | 26.3 |
| | | | 27.3 | |
| Assigns work, checks on completion and reports on staff performance. | 2 | 15 | 8.2 | 9.3 |
| | | | 13.3 | 16.3 |
| | | | 18.3 | 24.3 |
| Organizes and controls the work of staff on a ?continuing basis and formally evaluates staff ;performance. | 3 | 60 | 10.3 | 25.3 |
| | | | 28.3 | 29.3 |
| | | | 30.3 | 31.3 |
| | | | 32.3 | 33.3 |
| | | | 34.3 | |
| Through subordinate supervisors, organizes and controls the work on a continuing basis. | 4 | 90 | | |
| Through subordinate unit heads, organizes and controls the work of a large organization, on a continuing basis, where there is a requirement to coordinate a variety of activities or functions and to allocate resources. | 5 | 120 | 35.2 | |

BENCH-MARK POSITION DESCRIPTIONS

| B.M. No. | Title | Level | K | TR | CO | C | PE | E | H | SU |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Lab Technician, Engineering Training | 1 | 2 | Al | Al | 1 | 1 | 1 | A2 | 1 |
| 2 | Laboratory Technician, Environmental Toxicants | 2 | 3 | Al | Al | 2 | 1 | 2 | B2 | 1 |
| 3 | Lab Technician, Bacteria Analysis, Fish Products | 2 | 3 | Al | Al | 2 | 1 | 2 | B2 | 1 |
| 4 | Laboratory Assistant, General Hospital | 3 | 3 | A2 | A2 | 1 | 1 | 2 | 82 | 1 |
| 5 | Accredited Seed Analyst | 3 | 3 | A2 | A2 | 3 | 1 | 2 | A2 | 1 |
| 6 | Water Conservation and Development Technician | 3 | 4 | Al | A2 | 2 | 3 | 3 | B2 | 1 |
| 7 | Lab Technician, Animal Pathology | 3 | 4 | B1 | Al | 2 | 1 | 2 | B2 | 1 |
| P | Materials Testing Technician | 4 | 4 | B1 | A2 | 2 | 3 | 3 | B2 | 2 |
| 9 | Fisheries Research Technician | 4 | 4 | B1 | B2 | 2 | 2 | 3 | B2 | 2 |
| 10 | Weather Station Manager | 4 | 4 | A2 | A2 | 2 | 2 | 2 | B1 | 3 |
| 11 | Project Design Technician, Construction and Maintenance | 4 | 5 | B1 | B2 | 2 | 1 | 2 | B1 | 1 |
| 12 | X-Ray and Ultra Sound Technician | 4 | 4 | B2 | A2 | 2 | 2 | 2 | B2 | 1 |
| 13 | Field Bean Breeding and Genetics Technician | 4 | 4 | B2 | B1 | 2 | 2 | 2 | A2 | 2 |
| 14 | Legal Land Survey, Regulatory Technician | 5 | 5 | B2 | A3 | 1 | 1 | 1 | Al | 1 |
| 15 | Forest Insect and Disease Survey Technician | 5 | 4 | B2 | A2 | 2 | 3 | 4 | C1 | 1 |
| 16 | Migratory Birds Research Technician | 5 | 4 | B2 | B2 | 2 | 2 | 4 | Cl | 2 |
| 17 | Meteorology Instructor | 5 | 5 | C2 | B2 | 2 | 2 | 2 | B1 | 1 |
| 18 | Hydrographic Survey Technologist | 5 | 5 | B2 | B2 | 2 | 3 | 4 | C2 | 2 |
| 19 | Chemical Protection Technician | 5 | 5 | C2 | B2 | 2 | 1 | 2 | C2 | 1 |
| 20 | Dental Therapist | 6 | 6 | B3 | B2 | 2 | 2 | 2 | A2 | 1 |
| 21 | Chemical Research Technologist | 6 | 6 | C2 | B2 | 3 | 1 | 2 | B1 | 1 |
| 22 | Gas Chromatograph - Mass Spectrometer Data Systems - Technician | 6 | 6 | C2 | B2 | 3 | 1 | 2 | B1 | 1 |
| 23 | Technical Inspector, Building Systems | 6 | 6 | B3 | B3 | 2 | 2 | 2 | B1 | 1 |
| 24 | Research & Design Technician, Test Equipment | 6 | 6 | C2 | B2 | 3 | 1 | 2 | C2 | 2 |
| 25 | Shift Supervisor, Major Weather Office | 6 | 6 | C3 | B3 | 2 | 1 | 1 | Al | 3 |
| 26 | Underwater Weapons Technician | 6 | 6 | C3 | B2 | 2 | 1 | 3 | B1 | 1 |
| 27 | Senior Project Officer, Construction and Maintenance | 6 | 7 | B3 | C3 | 1 | 2 | 3 | B2 | 1 |
| 28 | Senior Architectural Technician | 6 | 7 | C2 | B3 | 2 | 1 | 1 | B1 | 3 |
| 29 | Oilseeds Breeding Supervisor | 6 | 6 | C3 | B3 | 2 | 1 | 2 | Al | 3 |

| B.M. No. | Title | Level | K | TR | CO | C | PE | E | H | SU |
|---|---|---|---|---|---|---|---|---|---|---|
| 30 | Regional Supervisor, Electrical Facilities | 7 | 7 | C3 | B3 | 2 | 1 | 1 | B1 | 3 |
| 31 | Head, Materials Laboratory | 7 | 7 | C3 | B3 | 2 | 1 | 2 | B1 | 3 |
| 32 | Supervisor, Building Services and Contracts | 7 | 7 | D3 | B3 | 1 | 1 | 2 | B1 | 3 |
| 33 | Zone Environmental Health Officer | 7 | 7 | C4 | C3 | 1 | 2 | 3 | B1 | 3 |
| 34 | Chief, Construction Specifications | 8 | 8 | D4 | C3 | 1 | 1 | 1 | B1 | 3 |
| 35 | Chief, Aircraft Maintenance | 8 | 8 | D4 | C3 | 1 | 1 | 1 | A1 | 5 |

DESCENDING LIST OF BENCH-MARK POSITIONS

| B.M. No. | Title | K | TR | CO | C | PE | E | H | SU | Total Points |
|---|---|---|---|---|---|---|---|---|---|---|
| 35 | Chief, Aircraft Maintenance | 8 | D4 | C3 | 2 | 1 | 1 | A1 | 5 | 912 |
| 34 | Chief, Construction Specifications | 8 | D4 | C3 | 1 | 1 | 1 | B1 | 3 | 861 |
| 33 | Zone Environmental Health Officer | 7 | C4 | C3 | 1 | 2 | 3 | B1 | 3 | 790 |
| 32 | Supervisor, Building Services and Contracts | 7 | D3 | B3 | 1 | 1 | 2 | B1 | 3 | 759 |
| 31 | Head, Materials Laboratory | 7 | C3 | B3 | 2 | 1 | 2 | B1 | 3 | 718 |
| 30 | Regional Supervisor, Electrical Facilities | 7 | C3 | B3 | 2 | 1 | 1 | B1 | 3 | 711 |
| 29 | Oilseeds Breeding Supervisor | 6 | C3 | B3 | 2 | 1 | 2 | A1 | 3 | 664 |
| 28 | Senior Architectural Technician | 7 | C2 | B3 | 2 | 1 | 1 | B1 | 3 | 661 |
| 27 | Senior Project Officer, Construction and Maintenance | 7 | B3 | C3 | 1 | 2 | 3 | B2 | 1 | 644 |
| 26 | Underwater Weapons Technician | 6 | C3 | B2 | 2 | 1 | 3 | B1 | 1 | 607 |
| 25 | Shift Supervisor, Major Weather Office | 6 | C3 | B3 | 2 | 1 | 1 | A1 | 3 | 607 |
| 24 | Research and Design Technician, Test Equipment | 6 | C2 | B2 | 3 | 1 | 2 | C2 | 2 | 585 |
| 23 | Technical Inspector, Building Systems | 6 | B3 | B3 | 2 | 2 | 2 | B1 | 1 | 577 |
| 22 | Gas Chromatograph, Mass Spectrometer Data Systems Technician | 6 | C2 | B2 | 3 | 1 | 2 | B1 | 1 | 560 |
| 21 | Chemical Research Technologist | 6 | C2 | B2 | 3 | 1 | 2 | B1 | 1 | 560 |
| 20 | Dental Therapist | 6 | B2 | B2 | 2 | 2 | 2 | A2 | 1 | 558 |
| 19 | Chemical Protection Technician | 5 | C2 | B2 | 2 | 1 | 2 | C2 | 1 | 520 |
| 18 | Hydrographic Survey Technologist | 5 | B2 | B2 | 2 | 3 | 4 | C2 | 2 | 516 |
| 17 | Meteorology Instructor | 5 | C2 | B2 | 2 | 2 | 2 | B1 | 1 | 515 |
| 16 | Migratory Birds Research Technician | 4 | B2 | B2 | 2 | 2 | 4 | C1 | 2 | 455 |
| 15 | Forest Insect and Disease Survey Technician | 4 | B2 | A2 | 2 | 3 | 4 | C1 | 1 | 436 |
| 14 | Legal Land Survey, Regional Technician | 5 | B2 | A3 | 1 | 1 | 1 | A1 | 1 | 427 |
| 13 | Field Bean Breeding and Genetics Technician | 4 | B2 | B1 | 2 | 2 | 2 | A2 | 2 | 410 |
| 12 | X-Ray and Ultra Sound Technician | 4 | B2 | A2 | 2 | 2 | 2 | B2 | 1 | 408 |
| 11 | Project Design Technician, Construction and Maintenance | 5 | B1 | B2 | 2 | 1 | 2 | 131 | 1 | 404 |
| 10 | Weather Station Manager | 4 | A2 | A2 | 2 | 2 | 2 | B1 | 3 | 404 |
| 9 | Fisheries Research Technician | 4 | B1 | B2 | 2 | 2 | 3 | B2 | 2 | 394 |
| 8 | Materials Testing Technician | 4 | B1 | A2 | 2 | 3 | 3 | B2 | 2 | 385 |
| 7 | Laboratory Technician, Animal Pathology | 4 | B1 | A1 | 2 | 1 | 2 | B2 | 1 | 330 |
| 6 | Water Conservation and Development Technician | 4 | A1 | A2 | 2 | 3 | 3 | B2 | 1 | 324 |

| B.M. No. | Title | K | TR | CO | C | PE | E | H | SU | Total Points |
|---|---|---|---|---|---|---|---|---|---|---|
| 5 | Accredited Seed Analyst | 3 | A2 | A2 | 3 | 1 | 2 | A2 | 1 | 303 |
| 4 | Laboratory Assistant, General Hospital | 3 | A2 | A2 | 1 | 1 | 2 | B2 | 1 | 292 |
| 3 | Laboratory Technician, Bacterial Analysis, Fish Products | 3 | Al | Al | 2 | 1 | 2 | B2 | 1 | 234 |
| 2 | Laboratory Technician, Environmental Toxicants | 3 | Al | Al | 2 | 1 | 2 | B2 | 1 | 234 |
| 1 | Laboratory Technician, Engineering Training | 2 | Al | Al | 1 | 1 | 1 | A2 | 1 | 163 |

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 1 Level: 1

Descriptive Title: Laboratory Technician, Engineering Training Point Rating: 163

| | % of Time |
|---|---|
| Reporting to the Superintendent, Engineering Training: | |
| Reviews experiments and sets up the required equipment as requested by various subject teachers. Studies and maintains an understanding of the aims of the Canadian Coast Guard College, the general outline of the courses taught and the operation and function of the laboratory equipment used. | 50 |
| Maintains the laboratory and equipment, including audio visual aids, in satisfactory condition for immediate use in experiments and demonstrations. Reads and follows instructions in manufacturers manuals for the care and operation of delicate and complex equipment such as is used in the measurement of fluid mechanics and strength of materials testing. | 20 |
| Develops tolerances and limits for each major piece of equipment by using it as directed by the manual and discussing its functions with the subject teachers. Finds new applications for standard laboratory equipment appropriate to the subjects taught. | 20 |
| Establishes and maintains an inventory of equipment and supplies, checks it after completion of experiments and orders supplies as necessary from current catalogues. Unpacks and sets up new equipment, verifying invoices. Assists subject teachers in evaluating students attitude and application during laboratory sessions. | 10 |

**Specifications** Degree/ Points

Knowledge 2 / 80

The work requires knowledge of the methods used to set up routine laboratory experiments in fluid mechanics, strength of materials and metallurgy and to set up audiovisual equipment.

Experience is required to determine new applications for equipment and to develop tolerances and limits for lab equipment.

This knowledge is normally acquired through in-house training and study of basic physics and metallurgy. Familiarity with the nature and subject matter of courses taught by the college is also required.

Technical Responsibility Al / 30

The setting up of classroom and laboratory equipment, including audio visual aids, is carried out according to instructions from the teaching staff. Some initiative and judgement is required in the assessment of equipment functions and limitations and in the maintenance of adequate supplies.

Degree/
Points

The tolerance checks on equipment are reviewed by the instructors. A shortage of supplies for experiments or incorrect preparation of equipment could result in wasted time for the teaching staff and students.

Responsibility for Contacts Al / 8

The work requires contacts with teachers to determine experiment requirements and to provide information regarding the availability and limitations of equipment.

Working Conditions

Concentration 1 / 10

The work requires some attention and concentration when setting up lab experiments, and when cleaning, oiling and adjusting lab and audio-visual equipment.

Physical Effort 1 / 10

The work requires intermittent standing and walking in the laboratory while checking the progress of experiments for each of the students. Light weight boxes of chemicals, metals and equipment are carried to and from the storage area and placed on shelves for use as required. Occasionally, medium weight boxes may be handled requiring greater physical effort for short periods.

Environment 1 / 6

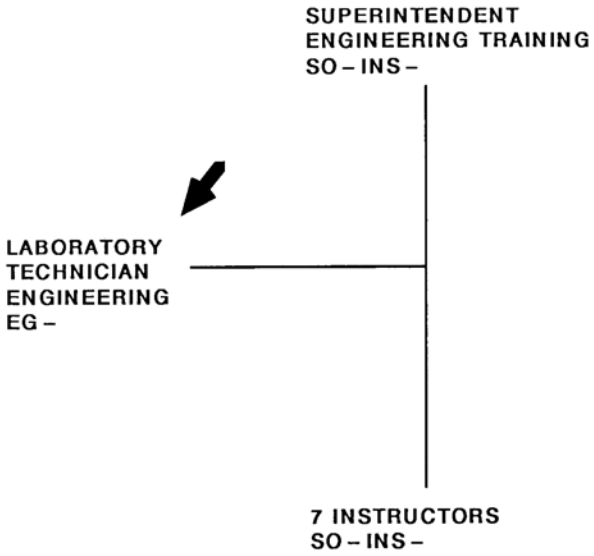
The setting up and conduct of experiments is performed in a well-lighted and ventilated teaching laboratory where students are shown how to use laboratory equipment and perform tests in fluid mechanics and the strength of materials.

Hazards A2 / 14

Minor injuries such as cuts and bruises could occur when frequently setting up equipment or carrying out tests.

Supervision 1 / 5

The work requires the demonstration of new equipment to teaching staff.




## CANADIAN COAST GUARD COLLEGE
## ENGINEERING TRAINING

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 2 Level: 2

Descriptive Title: Laboratory Technician, Environmental Toxicants Point Rating: 234

| | % of Time |
|---|---|
| Reporting to a senior laboratory technician: | |
| Conducts analyses of air, material and biological samples to determine the trace concentration of such environmental toxicants as lead, mercury and arsenic in humans and for use in field research studies. Determines, in discussion with the laboratory technician, the procedures, equipment and material to be used in the analyses, prepares concentrations of chemical standards and reagents and calibrates and checks the performance and operating reliability of the instruments to be used. Checks and prepares the calibration and sampling equipment that are used in the collection of air samples and biological specimens. Uses laboratory equipment such as spectrometers, microbalances, mercury monitors, cell homogenizers and pH meters. Homogenizes blood samples and determines the hematocrit level. Homogenizes urine samples and determines the creatinine content. Washes, cuts and weighs hair samples and ensures the longitudinal alignment is maintained throughout the process. Identifies and resolves technical problems encountered in the analyses and calculates analysis results using a programmable calculator. | 75 |
| Conducts quality control tests to evaluate the performance and reliability of instruments against known standards, records the results in log books, and reports major defects or significant deviations from the standards. Arranges for major repairs to be carried out by the supplier company. Maintains a stockroom of consumable supplies and equipment spare parts and determines the minimal acceptable quantities to be stored in the stockroom. | 25 |

| **Specifications** | Degree/ Points |
|---|---|
| Knowledge | 3 / 125 |
| The work requires knowledge of standard chemical and biological analytical techniques such as spectrometry, polarography and titrimetry and mathematics in order to analyse air, material and biological samples. | |
| Experience is required to resolve technical problems, to maintain consumable supplies and to arrange for repairs. This knowledge is normally acquired through on-the-job training. | |
| Technical Responsibility | Al / 30 |
| Initiative and judgement are required to identify and resolve technical problems encountered in the analyses, to adjust and carry out minor repairs to instruments and equipment and to maintain spare parts at an acceptable level. The conduct of these standard chemical and biological analyses is carried out according to specific instructions following discussions with a more senior technician. The instruments are evaluated against known standards and the need for major repairs reported to a service representative. | |

Degree/
Points

The results of the analyses affect the conclusions of reports and the recommendations provided by the Occupational Health Unit. Errors in recording data or the incorrect calibration and use of instruments could result in wasted time and material to perform repeat analyses, but these errors can normally be detected by comparing results obtained from duplicate determinations.

Responsibility for Contacts — Al /8

The work requires contacts with other technical and scientific personnel performing similar work to exchange information and discuss analytical and technical problems. There is a requirement to contact service representatives of equipment supplying companies to arrange for equipment repairs and obtain information regarding new products.

Working Conditions

Concentration — 2 / 20

The work requires moderate attention and concentration when calibrating, checking performance and operating analytical instruments, when preparing precise concentrations of analytical chemical standards and analytical reagents and when resolving technical problems encountered during analysis.

Physical Effort — 1 / 10

The work requires standing or sitting at a work bench and the handling of analytical glassware and instruments.

Environment — 2 / 13

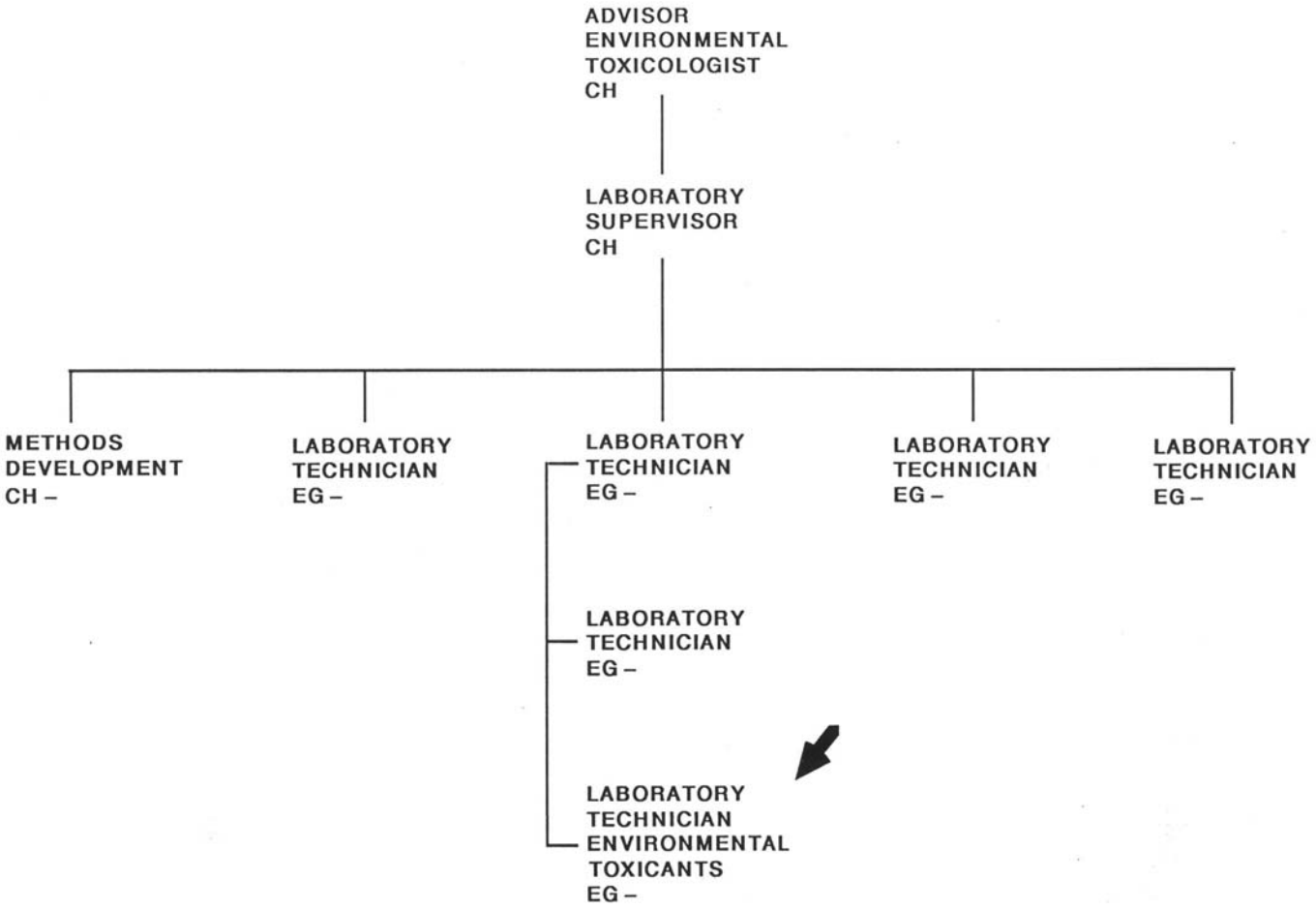
The analysis of samples requires exposure to corrosive and toxic liquids, chemical fumes in a well lighted and ventilated laboratory.

Hazards — B2 / 23

The frequent handling of human blood and urine samples and chemical solutions could result in exposure to lost time illness in a laboratory with established safety standards and methods of operation.

Supervision — 1 /5

There is a requirement to show other employees how to perform tasks and to demonstrate analytical procedures to other technical and scientific staff.




## OCCUPATIONAL HEALTH BRANCH

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 3 Level: 2

Descriptive Title: Laboratory Technician, Bacteria Analysis, Fish Products Point Rating: 234

% of Time

Reporting to the Senior Microbiologist Technician:

Performs bacteriological analysis procedures on samples of fish, fish products and shellfish to determine the quality of the commodity, to ensure its safety for human consumption, and to assess the effectiveness of processing-plant sanitation. Completes analysis procedures such as standard plate counts, coliform counts and coagulase-positive staphylococcus counts. Weighs samples to the tenth of one gram, adds sterile liquids, grinds into a homogeneous slurry, and dilutes for subsequent analysis, using aseptic techniques throughout. Adds prepared slurry to appropriate selective media using pipette, loop or needle, and streaks on agar plates to determine the presence of bacteria that are of public health significance. Applies the membrane filter technique by filtering samples through membranes of limited porosity that prevent passage of bacteria and incubates membranes on selective culture media to permit the growth of bacteria that may have been deposited on the membrane during filtration. Applies appropriate enrichment and pre-enrichment techniques and transfers to selective media to isolate the pathogenic organism salmonella. Tests samples such as heat-sterilized canned fish to determine whether the product is effectively sterile. Uses laboratory equipment such as microscopes, test and data recording instruments and sterilizing equipment. 65

Maintains accurate and comprehensive records of tests and analysis, including the conversion of results into charts and statistical formats. Keeps properly constituted and controlled culture media and reagents available for use. Cleans and sterilizes equipment and work areas, and disposes of dangerous and infectious material to keep the laboratory free from sources of contamination likely to invalidate analysis results. 35

**Specifications** Degree/ Points

Knowledge 3 / 125

The work requires knowledge of bacteriological laboratory techniques and methods; the membrane filter technique and the enrichment and pre-enrichment techniques. Knowledge is also required of the growth characteristics of bacteria which are responsible for food poisoning.

Experience is required to perform special tests and bacteriological analysis.

This knowledge is normally acquired through on-the-job training in an inspection laboratory and the understanding of laboratory procedures and the study of basic microbiology.

Degree/
Points

Technical Responsibility — Al / 30

The preparation of samples and the performance of bacteriological analysis is carried out under the supervision of the senior microbiological technician, and with strict adherence to standard testing laboratory procedures. Some judgement is required in making observations and in determining whether or not test results are valid for the purpose set out.

Failure to apply any part of the process could nullify the analysis or result in extensive re-sampling or the contamination of the food being tested.

Responsibility for Contacts — Al / 8

The work requires contacts with other microbiology technicians in the laboratory to give and obtain information on tests, sampling schedules, progress and other procedural matters such as the amount and shelf-life of reagents on hand. There are occasional enquiries to other laboratories in own department regarding the use or loan of equipment needed for special tests.

Working Conditions

Concentration — 2 / 20

The work requires moderate attention and concentration when indexing and placing in order, the multi-tube tests of various samples, preserving and recognizing the identify of incubated tubes and plates, using a microscope, inoculating samples, examining cultures, studying and observing bio-physical changes in media, pipetting and weighing to 10th of a gram. Moderate mental-sensory coordination is required when adjusting and reading instruments, dials and scales, maintaining aseptic conditions and handling toxic bacteria.

Physical Effort — 1 / 10

The work requires the carrying and setting up of light weight laboratory equipment such as glassware and water distilling apparatus. There is an occasional requirement to carry cases of canned fish weighting up to 20 Kg.

Environment — 2 / 13

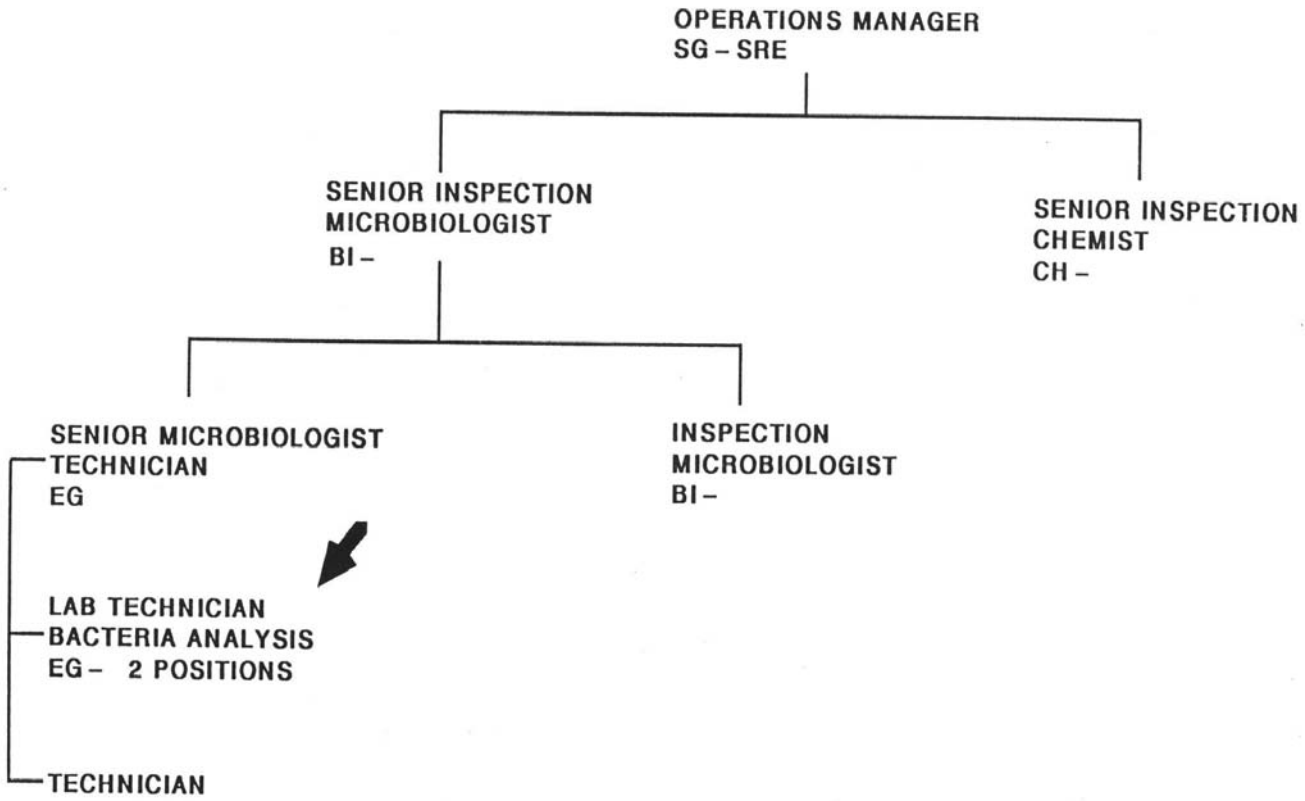
The laboratory must be kept exceptionally clean and as aseptic as possible to ensure the purity of the food samples, but there is some exposure to spoiled fish products and fumes from chemicals used in the tests and in cleaning the equipment. Above-average temperatures are produced by the sterilizing oven, washing machines and working procedures.

Hazards — B2 / 23

In a laboratory with well established safety standards and methods of operation, there is continuous exposure to pathogenic bacteria and infectious diseases which could result in lost-time illness.

| | Degree/ Points |
|---|---|
| Supervision | 1 / 5 |

There is a requirement to show other employees how to perform tasks, and to demonstrate techniques and procedures to other technical and scientific staff.




## FIELD SERVICE BRANCH

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 4 Level: 3

Descriptive Title: Laboratory Assistant, General Hospital Point Rating: 292

| | % of Time |
|---|---|
| Reporting to the Chief Technologist: | |
| Collects blood and urine specimen to be used in the diagnosis and treatment of patient diseases. Arranges patient appointments, explains preparatory requirements and methods of specimen collection and ensures supplies of specimen collection materials are available. Ensures the preparatory requirements have been met by the patients and collects the specimens in accordance with established techniques and physician requisitions. Discards all used needles and syringes. Numerically identifies urine specimens and records the number on the corresponding requisition. Centrifuges urine samples, determines the pH, protein, sugar and blood concentrations and examines the extent of sedimentation. Conducts acetone tests on the remainder of the specimen, measures the specific gravity and records the values obtained. | 60 |
| Prepares specimens for dispatch to referral laboratories, ensures urgent orders receive priority treatment and receives and processes incoming test reports. Maintains records of outgoing specimens and incoming reports and ensures the reports are delivered to the physician. Notifies the Chief of any abnormal findings. | 20 |
| Carries out electrocardiograms and pulmonary function tests, attaches the electrodes to the patient's body and ensures good contacts are made. Adjusts and operates electro cardiogram equipment and ensures a tracing of high quality is obtained. Mounts the tracing, indicates the patient's name and number and forwards the file to the patient's physician and cardiologist. Notes, and informs the Chief of, any abnormal or irregular heart rhythm patterns. Informs the physician when the patient is ready for exercise testing and modifies standard test procedures to suit the patient's age and weight. | 20 |

**Specifications**

| | Degree/ Points |
|---|---|
| Knowledge | 3 / 125 |
| The work requires knowledge of standard blood and urine collection and testing techniques; electro-cardiogram and exercise testing procedures and specimen identification methods. | |
| Experience is required to work with and reassure patients and to modify exercise tests to meet individual patients' needs. | |
| This knowledge is normally acquired through in-house training in a medical laboratory and study of basic medical terminology and use of lab and electro-cardiogram equipment. | |
| Technical Responsibility | A2 / 80 |
| The collection and testing of blood and urine specimens and the carrying out of electro-cardiograms are performed according to the specific requirements of physicians and cardiologists and by the application of a limited number of standard medical | |

Degree/
Points

laboratory procedures and practices. Rigid adherence to procedures governing the identification of specimens and the recording of test results is essential to prevent incorrect diagnosis. Initiative and judgement are required to identify abnormalities and select the appropriate anticoagulants.

The work has a direct and immediate impact on patients who may suffer discomfort and concern while being tested and whose feeling of well-being must be fostered by the technician. The results of the work support the diagnosis by the physician. Irregular test patterns or abnormal findings are reported to the Chief Technologist. Errors could result in the waste of time and materials, the need for additional tests and a delay in diagnosis.

Responsibility for Contacts — A2 / 26

The work requires contacts with patients and medical staff to arrange appointments, explain the pre-test requirements, collect specimens and report results.

Working Conditions

Concentration — 1 / 10

The work requires attention and concentration when explaining test requirements to patients and mental-sensory coordination when collecting blood specimens and performing electro-cardiograms and pulmonary function tests.

Physical Effort — 1 / 10

The work requires standing for short periods of time when drawing blood, and using the test equipment at a laboratory work bench. Most of the work requires little physical effort when preparing and labelling samples, maintaining records and delivering test records.

Environment — 2 / 13

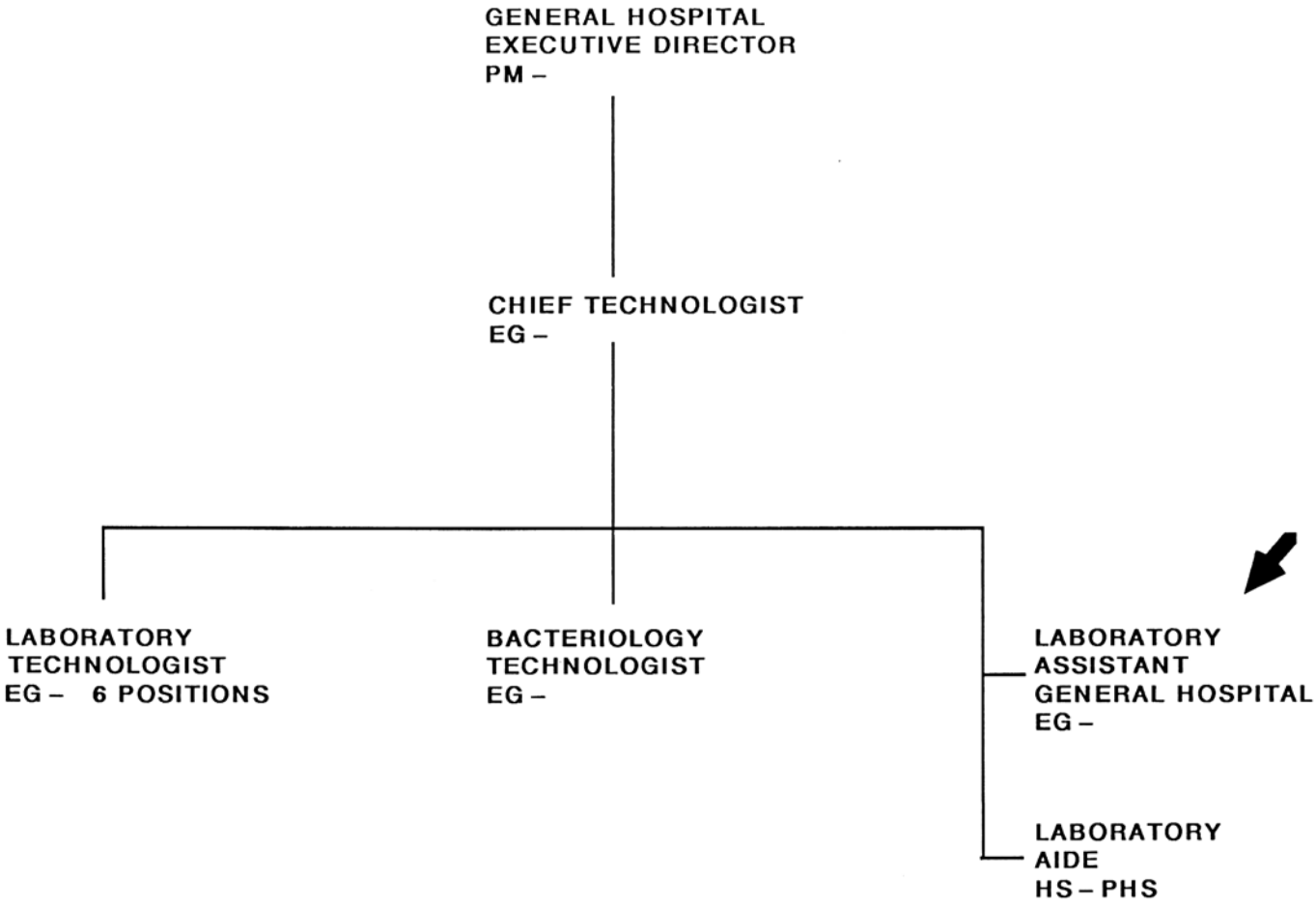
The testing of urine specimens requires exposure to obnoxious odours, chemical fumes, noise and vibration within a well-lighted and ventilated laboratory setting.

Hazards — B2 / 23

In a laboratory or hospital setting with well established safety procedures and methods of operation, the frequent handling of contaminated body fluids and contacts with patients could result in lost time injuries or a variety of contagious diseases.

Supervision — 1 / 5

There is no requirement to supervise the work of others.




## MEDICAL SERVICES

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 5 Level: 3

Descriptive Title: Accredited Seed Analyst Point Rating: 303

% of Time

Reporting to a supervisor Seed Analyst:

Carries out purity and germination tests as required under the National Seed Program to establish the quality of seed lots. Receives seed samples, verifies the purpose of the test and determines which test should be used. Prepares a representative working sample, separates the various species of seed present, quantifies the number and weight of weed seeds, other group seeds and inert material and determines the physical condition of the seed. Compares the component percentages and the number of seeds per unit weight against grade standards and records the results on Certificates of Analysis. Carries out the grading of seed to meet Canada Seed regulations. Classifies other crop seeds, noxious weed seeds and other impurities, identifies the presence of insect larvae or nematods, compares such characteristics as germination, pure living seed, total weed seed, etc., and assigns a grade. Uses such equipment as dissecting microscopes and seed blowers. Verifies the grade obtained against the grade assigned by Branch Inspectors and commercial seed analysts. 60

Prepares growth media, preconditions seeds for planting, determines the growing conditions, places seed in a growth chamber and monitors the performance of the sample during incubation. Evaluates seedlings according to morphological factors, identifies the causes of abnormalities or the effects of improper testing and judges the ability of the seedlings to survive under field conditions. Compares the results of the tests obtained from replicated sub-samples to determine the reproducibility of results and the degrees of variability. 30

Instructs branch and commercial seed analysts on purity, germination and testing methods and prepares training samples. Assists in the preparation of training material and in the compilation of material to be used in training manuals. 10

**Specifications** Degree/ Points

Knowledge 3 / 125

The work requires knowledge of standard Canadian and international seed testing and grading procedures and regulations; seed germination, cultivation and testing methods and seed, insect and disease identification techniques.

Experience is required to qualitatively analyse the viability of seedlings and the grade of seed and to instruct branch and commercial seed analysts on testing methods.

This knowledge is normally acquired through on-the-job training and the study of plant morphology and physiology.

Degree/
Points

Technical Responsibility A2 / 80

Initiative and judgement are required when verifying sample descriptions and selecting test procedures when duplicating and evaluating tests conducted in other laboratories. The evaluation and grading of seed samples are carried out in accordance with specific instructions provided by the supervising analyst and by comparing test results to standards and regulations. The work requires the use of established techniques. The preparation of samples and growing media and the cultivation of seedlings requires the use of standard procedures.

The results of the test establishes the grade of the seed and affects the acceptance or rejection of imported seed or the issuance of export certificates. Errors in determining the quality of the sample, in comparing the results to standards or in the assigning of grades would be difficult to detect without conducting additional tests and could result in poor quality seed entering the country and being misrepresented in the market place. Errors in training seed analysts on behalf of the department and private companies could result in poor future output by these trainees. The position reports to the supervising Seed Analyst (EG).

Responsibility for Contacts A2 / 26

The work requires contacts with commercial seed analysts studying for departmental accreditation and with branch seed analysts to provide instruction on seed testing techniques.

Working Conditions

Concentration 3 / 30

The work requires a high level of concentration and attention for sustained periods when reviewing seeds and identifying the components e.g. crop kind, weed seed, inert material, other crop kind, the condition of the seed weathered, damaged, immature. (A wheat sample of 25,000 individual seeds would be examined in 45 min. or nine seeds/second. 400 to 500 species are rapidly identified). A high-level of mental-sensory coordination is required when evaluating the outcome of germination testing, classifying seedlings by morphological features and reporting on fungi.

Physical Effort 1 / 10

The work requires little or no physical effort when testing samples for purity, assigning grades and carrying out germination tests.

Environment 2 / 13

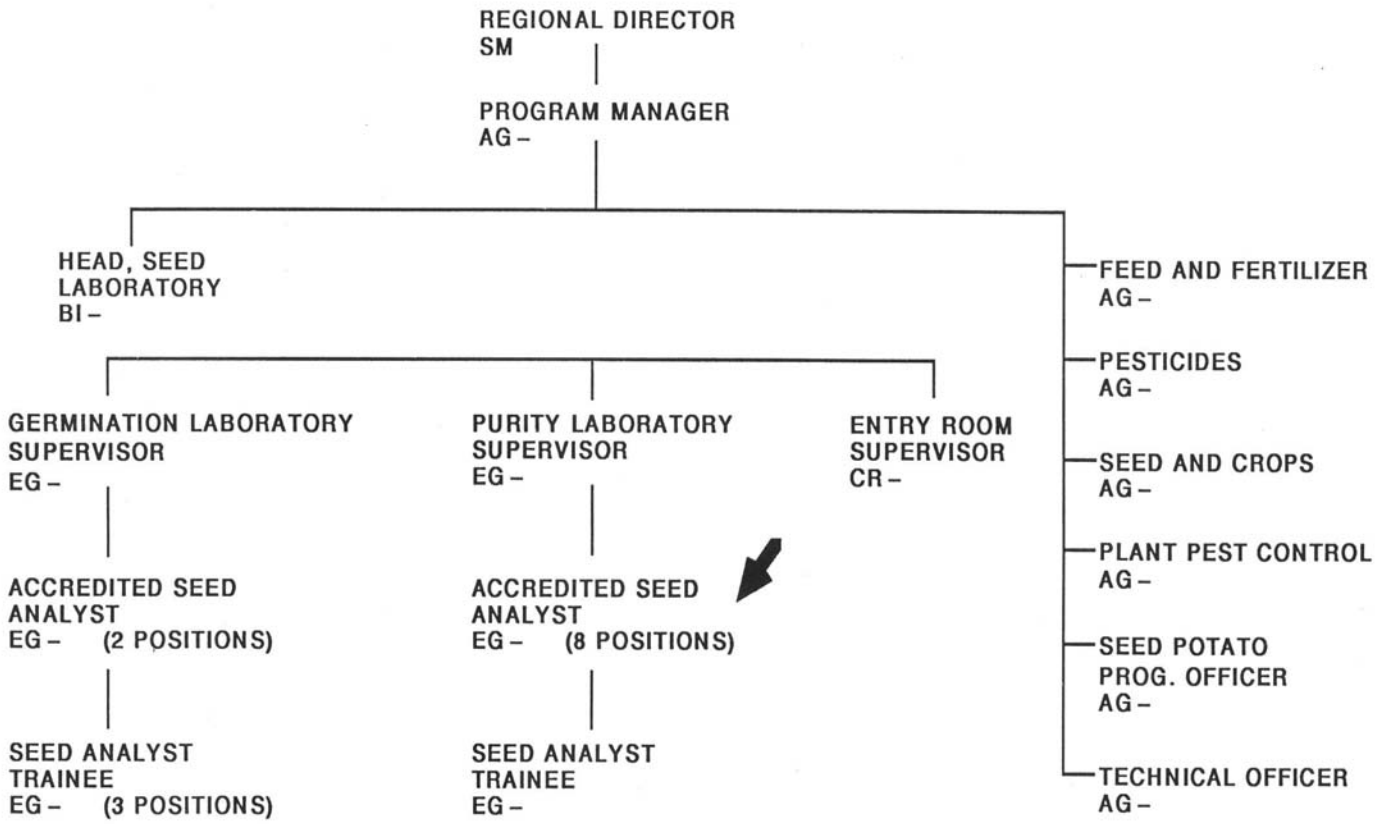
The classification of seed particles and the use of a seed blower requires exposure to dust and fine particles and the use of a face mask. The grading of seed and the conduct of germination tests are carried out in a well lighted and ventilated laboratory.

| | Degree/ Points |
|---|---|
| Hazards | A2 / 14 |

Minor illness, or cuts could occur while frequently handling seed samples, most of which are treated with pesticide products.

| | |
|---|---|
| Supervision | 1 / 5 |

There is no requirement to supervise other employees.




## FOOD PRODUCTION AND INSPECTION

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 6 Level: 3

Descriptive Title: Water Conservation and Development Technician Point Rating: 324

| | % of Time |
|---|---|
| Reporting to an Engineer or Senior Technician: | |
| Conducts engineering surveys for use in the development, design, operation and maintenance of water control, conservation and irrigation structures. Uses electronic distance measuring instruments, theodolites, levels and other survey and precision testing equipment. Locates or establishes elevation marks, reference marks and monuments, control lines and traverses and the profiles and cross-sections of valleys, stream channels, etc. Establishes reservoir outlines and cross-sections. Interprets aerial photographs, locates topographic details and selects cross-section locations. Establishes survey control during construction, determines the exact measurements of structures and the volume of material to be moved and provides such information to contractors. Measures angles and distances from known references and completes closures to ensure accuracy. Establishes horizontal and vertical control for test holes and to existing features such as public utilities, fences and trees. Maintains survey records for use in calculating quantities and in preparing as-constructed plans. | 50 |
| Inspects concrete structures and earthworks during construction to ensure that formworks, embedded materials, waterstops, block outs are correctly secured, aligned and located; that materials of specified quality, uniformity, gradation, density and thickness are correctly located and used; that water and sewer pipes are correctly aligned, graded, bedded, etc.; and that roads and streets are properly graded, backfilled and compacted. Prepares reports on the quality and quantity of materials and work performed and discusses their content with the supervisor. Exchanges information on methods, standards and material usage with departmental technicians and engineers. | 50 |

**Specifications**

| | Degree/ Points |
|---|---|
| Knowledge | 4 / 170 |

The work requires knowledge of surveying techniques and survey records, of techniques for construction drawings, of procedures for inspection and quality control and tests and methods for report preparation.

Experience is required to inspect on-site construction progress and assess output, to discuss findings with contractors, and to estimate the quality and quantity of materials used in construction.

This knowledge is normally acquired through study of surveying techniques and mathematics and on-the-job training.

Degree/
Points

Technical Responsibility A1 / 30

Initiative and judgement are required to examine aerial photographs and locate topographic details, to control measurements during construction and to identify unsatisfactory materials used or work performed. The conduct of surveys and the inspection of structure are carried out according to specific instructions provided by a more senior technician or engineer in charge of the project. The work requires the application of standard surveying techniques and practices and the checking of materials used and work performed against survey measurements, specifications and accepted building standards.

The results of surveys and inspections affect the decisions of the project supervisor and the way in which the work is carried out on-site. Errors in measurement or in the calculating of dimensions and quantities could affect the selection of the site, the progress of the project and result in waste of time and material.

Responsibility for Contacts A2 / 26

The work requires contacts with contractors to provide information regarding structure dimensions, material quality and usage, quantities of material to be moved and the procedures to be followed.

Working Conditions

Concentration 2 / *20*

The work requires moderate attention and concentration when locating elevation marks, establishing outlines and cross sections, measuring angles and distances, and interpreting aerial photographs. Moderate attention is also required when inspecting concrete structures and earthworks.

Physical Effort 3 / 30

The work requires frequently standing and walking while carrying heavy survey instruments over rough terrain. On site inspections frequently require climbing structures which may be under construction.

Environment 3 / 20

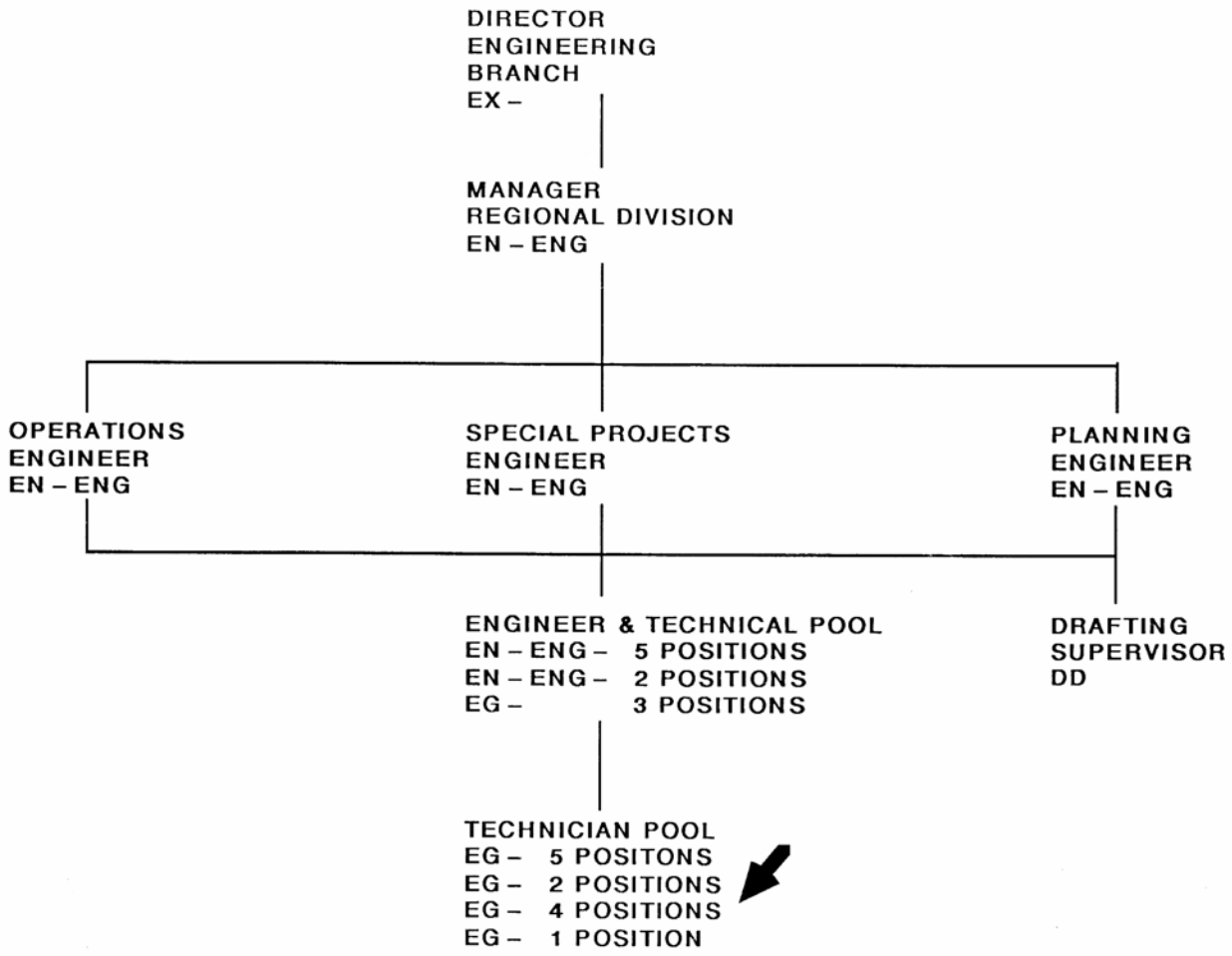
While frequently conducting surveys and inspecting structures during construction there is significant exposure to several disagreeable conditions such as adverse weather, dust, dirt, and noise. There is a requirement to wear safety glasses and protective headgear while on construction sites.

Hazards B2 / 23

Lost time injuries such as sprains, hernias or fractures could occur when frequently carrying and using survey instruments over rough terrain and when frequently climbing within and over construction sites.

| | Degree/ Points |
|---|---|
| Supervision | 1 / 5 |

The work requires showing other employees how to operate and set up survey equipment and test instruments.




PRAIRIE FARM REHABILITATION ADMINISTRATION

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 7 Level: 3

Descriptive Title: Laboratory Technician, Animal Pathology Point Rating: 330

| | % of Time |
|---|---|
| Reporting to the Laboratory Animal Veterinarian: | |
| Carries out histological and histochemical procedures on pathologic specimens to aid in the diagnosis of disease in animals and to evaluate the changes caused by the research methods and the toxic substances and drugs applied to the animals. Operates and maintains laboratory equipment such as spectrophotometer, spectrofluorometers and Coulter Counters. | 15 |
| Prepares and maintains the necropsy rooms, kills the animals and identifies and preserves necropsy specimens. Records lesions, identifies special features in tissue specimens and prepares slides for histological examinations. Also performs post-mortem evaluations on animals to determine the cause of death, the effects of chemicals on the health of animals and to identify latent infections that may affect experimental results. | 50 |
| Performs immunological tests to detect the presence or absence of infectious agents in animal colonies. Isolates, identifies and maintains cultures of micro-organisms from the animals and their housing and feeding facilities to ensure animal good health. Inoculates the animals with specific organisms to study their pathogenicity and maintains records of the procedures used. | 10 |
| Identifies and isolates external and internal parasites, analyzes stool and urine samples and examines fur and external organs to determine the genus and species of the parasites. Collects blood samples and determines the hemotocrit values, hemoglobin amounts, white and red cell counts, sedimentation, bleeding and clotting times and the presence of blood parasites. Collects urine samples, observes the characteristics of the sample and determines the biochemical parameters. Maintains records of test results and maintains the input of such data to the laboratory animal data bank. | 25 |

| Specifications | Degree/ Points |
|---|---|
| Knowledge | 4 / 170 |

The work requires knowledge of micro and ultra-micro quantitative analysis of immunological testing, of histological and histochemical methods and procedures, and of post mortem evaluation techniques.

Experience is required to determine if methods of human and biological analysis are appropriate for use in a research setting, to interpret test results and to handle and painlessly kill animals.

This knowledge is normally acquired through on-the-job training in a research or diagnostic lab and understanding of biochemistry technology, chemistry, microbiology, haematology and parasitology.

Degree/
Points

Technical Responsibility B1 / 81

Initiative and judgement are required to select, modify and use staining procedures for tissue specimen analysis, to adapt recognized methods used in veterinary medicine to laboratory animal science needs and to recognize problems of imprecision and inconsistency or the affect of instrumentation in the results of examinations. The performance of immunological tests, and post-mortem evaluations are conducted according to clinical laboratory methods and in accordance with instructions provided by the Veterinarian. Difficulties encountered in diagnosing infectious organisms or their antibiotic sensitivity are referred to the Veterinarian.

The accuracy of the analytical and test data provided could affect and delay the work of the veterinarian, other scientists and other users of the information. Errors could result in waste of time and the spread of disease in the laboratory animal colonies. The position reports to the Laboratory Animal Veterinarian (VS).

Responsibility for Contacts Al / 8

The work requires contacts with technicians and scientists from other branches and departmental diagnostic laboratories to exchange information on the submission of samples and new equipment and methods. The work requires meeting with representatives of commercial companies to appraise equipment and supplies and provide advice to the veterinary specialist.

Working Conditions

Concentration 2 / 20

The work requires mental-sensory coordination when preparing slides, performing immunological tests, preparing cultures, collecting blood and urine samples and inoculating animals.

Physical Effort 1 / 10

The work requires standing or sitting at a workbench and the handling of glassware and chemicals and the operating of instruments. The collection of samples from animals or the animal rooms within the Institute requires walking and the lifting of small animals. There is an occasional requirement to handle large liquid filled flasks or boxes containing samples.

Environment 2 / 13

The identification of parasites in animal stools and the analysis of urine samples requires exposure to obnoxious odours and chemical fumes in a well lighted and ventilated laboratory. The handling and killing of animals is carried out in specially constructed animal containment rooms.

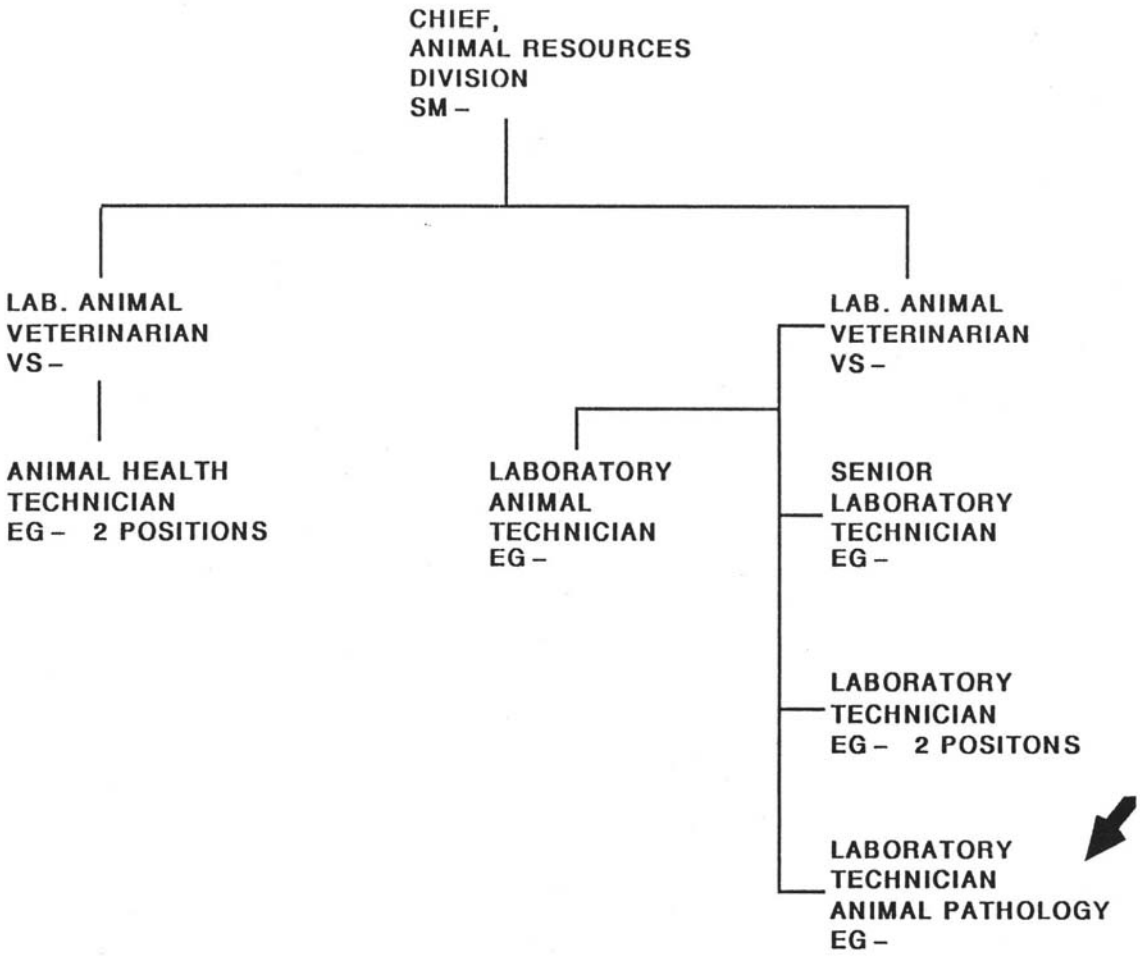
Degree/ Points

Hazards 82 / 23

The monitoring of animal colonies and the handling of animals, the identification of infectious organisms and the handling of pathogenic samples could result in exposure to a variety of diseases and bites and scratches with infectious implications. The exposure could occur frequently during duties carried out in a diagnostic laboratory with well established safety standards and methods of operation.

Supervision 1 /5

There is a requirement to show other employees how to perform tasks and to demonstrate techniques and methods to other technical and scientific staff.




## HEALTH PROTECTION BRANCH

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 8 Level: 4

Descriptive Title: Materials Testing Technician Point Rating: 385

| | % of Time |
|---|---|
| Reporting to the Laboratory Supervisor: | |
| Conducts a number of laboratory tests to compile data for use in foundation design, quality control and engineering evaluations. Conducts classification, consolidation, triaxial and unconfirmed compression tests on disturbed and undisturbed soils. Performs asphalt, concrete and aggregate acceptance tests and assists in the design of asphalt and concrete mixes. Performs quality control tests on asphalt mix samples. Tabulates the test data, performs calculations and provides results to engineering and design staff. Supervises a laboratory technician. | 50 |
| Conducts geotechnical site investigations of buildings, bridges, highways and marine structures to determine the density, shear strength and other engineering properties of underlying soil strata. Reviews test boring requirements with the Soils Engineer and operates the rotary test boring rig and associated equipment. Records test data, identifies soil types and describes the sub-soil strata, ground water conditions, extent of permafrost and ice concentrations. Sends soil samples to a laboratory for analysis. Inspects paving projects and concrete and earthwork constructions and carries out Benkleman Bean deflection surveys. Operates a pavement or concrete boring rig, impact hammers and probe gun, and assists in the installation of scientific test instruments. Compiles test data and calculates and reports results to the resident engineer or Clerk of Works and advises on actions to be taken. Calibrates the test equipment and assists in the design, modification, maintenance and repair of equipment. | 50 |

**Specifications**

| | Degree/ Points |
|---|---|
| Knowledge | 4 / 170 |
| The work requires knowledge of the methods for classification, consolidation, triaxial and unconfirmed compression tests; asphalt, concrete and aggregate acceptance tests; quality control tests in the field and lab; and geotechnical site investigation techniques (buildings, bridges, highways and marine). | |
| Experience is required to advise technical staff from other levels of government of the remedial actions to be taken in response to inspection results and to use and control human resources. | |
| This knowledge is normally acquired through in-house training in a materials testing lab, the study of basic motor mechanics, laboratory testing and quality control and on-the-job training. | |
| Technical Responsibility | B1 / 81 |
| Initiative and judgement are required to vary the amount and scope of field testing, to change sub-soil data requirements as site work progresses, to propose changes to bore hole locations as site conditions warrant and to develop asphalt and concrete mix. The | |

Degree/
Points

laboratory tests and geotechnical site investigations are carried out according to general instructions provided by the Laboratory Supervisor (EG) or under the direction of the Soils Engineer. The work requires the application of standard laboratory, acceptance and field quality control procedures and participation in the design and modification of test equipment.

The results of the tests and site inspections affect the decisions made by design staff and contractors. Errors or discrepancies in field quality control data, the inaccurate location and logging of bore holes or the improper use of sampling procedures could result in project delays, increased construction costs and claims submissions. Most errors would be detected as work is reviewed by design staff or contractors.

Responsibility for Contacts — A2 / 26

The work requires contacts with the Clerk of Works and engineering staff of other levels of government to provide test results and to advise on remedial actions to be taken.

Working Conditions

Concentration — 2 / 20

The work requires moderate concentration when reading dials, making continued close measurements, and conducting laboratory and field quality control work. Moderate mental-sensory coordination is required when assessing types of formations through the 'feel' of drill and drill advance during drilling investigations.

Physical Effort — 3 / 30

The work requires frequent walking over rough terrain, the lifting of heavy objects such as drill augers and impact hammers and the manoeuvring of small drill rigs. The laboratory work requires long periods of standing and the lifting of equipment and samples weighing up to 35 kilograms.

Environment — 3 / 20

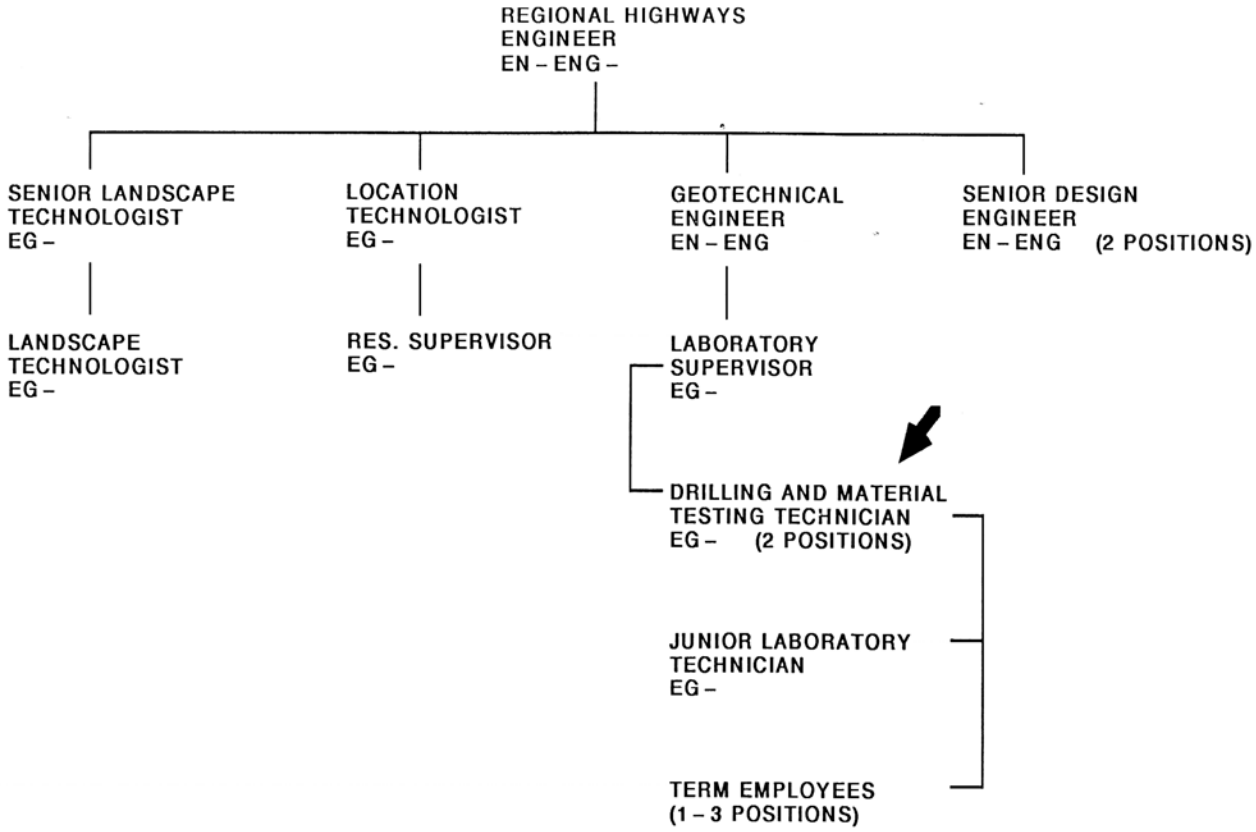
The conduct of field and test bore operations requires exposure to all weather conditions, dirt, biting insects, and the fumes from heavy construction machinery. Visits to work sites could require living in bush camps for periods of up to four weeks and the wearing of safety helmets, safety glasses and protective clothing.

Hazards — B2 / 23

Lost time injuries such as fractures, sprains or hernias could occur when frequently handling heavy drill augers and stems or when working in the vicinity of heavy construction equipment.

Supervision — 2 / 15

The work requires supervising the activities of a laboratory technician and one or two casual employees during field operations. The duties include the providing of guidance and direction on work methods, the allocating of work assignments, the checking of work and the establishing of work priorities.




## ARCHITECTURAL AND ENGINEERING SERVICES WESTERN REGION

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 9 Level: 4

Descriptive Title: Fisheries Research Technician Point Rating: 394

| | % of Time |
|---|---|
| Reporting to a Research Scientist, Biologist: | |
| Performs field related studies involving biological and related sampling at fishing ports, aboard commercial fishing vessels or aboard inshore or offshore research vessels on specialized cruises to provide material on which scientific staff conduct fish stock assessments, oceanographic research and related biological studies. The employee may serve as technician-in-charge of onshore field parties or a cruise of one of the stations inshore research vessels. On inshore cruises, liaises with ship's captain to ensure efficient attainment of cruise objectives. On offshore research or chartered vessels, serves as assistant to the scientist or senior technician-in-charge and may assume supervision of a watch of full-time or part-time technicians. Prepares inventory list of all equipment needed for field trips or cruises, ensures loading and unloading of samples and maintains record* and correct sampling and preserving of specimens. Ensures provision is made for special sampling requests. Monitors watch to ensure that the appropriate biological and oceanographic procedures and data recording protocols are being followed and that cruise objectives are met. Assists in the preparation of cruise reports. | 30 |
| Conducts various lab related biological, physical and histo-chemical analyses on samples involving dissection, preparation and examination for aging, morphometrics, meristics, sex, fecundity, maturity, parasites, condition, feeding, taxonomy, histology and other factors ensuring that all data obtained there from are fully recorded. The work requires the use of equipment such as trawls, gill-nets, echosounders, bathythermographs, deep sea water samplers and thermometers, weighing devices, MBT's, XBT's, plankton samplers, bottom grabs, meter wheels, microscopes, scale projectors, histological equipment, chemical analytical equipment, fume hoods, and power tools. | 50 |
| Compiles, checks, tabulates and codes data in a form suitable for automatic processing. Checks data recorded by other technicians. Analyzes data by hand and computer program to produce graphical and numerical results. Uses mathematical formulae to fit age and growth curves and other linear regressions. | 20 |

| **Specifications** | Degree/ Points |
|---|---|
| Knowledge | 4 / 170 |

The work requires knowledge of biological and oceanographic sampling techniques, of the use and operation of field and laboratory equipment, of standard statistical methods and of the use of calculators and data management software programs. Knowledge is also required of biology and commercial fishery for the species under investigation.

Experience is required to collect, preserve and record data; to measure, weigh and examine specimens and to tag live animals.

Degree/
Points

This knowledge is normally acquired through on-the-job training in a fisheries research laboratory and the study of biology, taxonomy, ecology, biochemistry, physiology, histology and chemistry.

Technical Responsibility 81 / 81

Initiative and judgement are required to select cruise tracks, determine the position of site collection, identification, presentation and analysis of specimens, and modify procedures and gears for field sampling. The conduct of biological sampling onshore or aboard inshore research vessels and the supervision of a watch on offshore research vessels are carried out according to general instructions provided by the supervising Research Scientist or Biologist.
Errors in the work performed could result in the need to repeat survey work, in wasted time and material.

Responsibility for Contacts B2 / 45

Contacts are also with employees of outside agencies such as Fishery Officers, fish plant managers and plant employees, commercial vessel captains, fishermen and others to discuss equipment and services for data gathering, gear deployment, tag returns, vessel logs, landing statistics. Contacts are with other technical and scientific personnel in the laboratory or with technical, maintenance or sales companies externally to discuss field, laboratory or computing problems, procedures, availability of equipment.

Working Conditions

Concentration 2 / 20

The work requires moderate concentration when operating precise scientific equipment under unfavourable conditions and when aging fish otoliths at the microscope. Attention is also required when collecting and recording biological data and when preparing hazardous chemicals and samples.

Physical Effort 2 / 20

Sea duties require much standing, walking, maintaining one's balance under heaving seas, handling of nets, outboard engines or small boats and netting, deployment and retrieval of equipment of various sizes and weights and carrying baskets and boxes of specimens up to 40 kg.

In the lab, the work requires standing or sitting at a workbench, fume hood, or desk for extended periods with the occasional requirement to carry boxes of fish weighing up to 40 kg.
c

Environment 3 / 20

The performance of laboratory duties require exposure to preservatives and chemical fumes while working in a well lighted and ventilated laboratory.

Degree/
Points

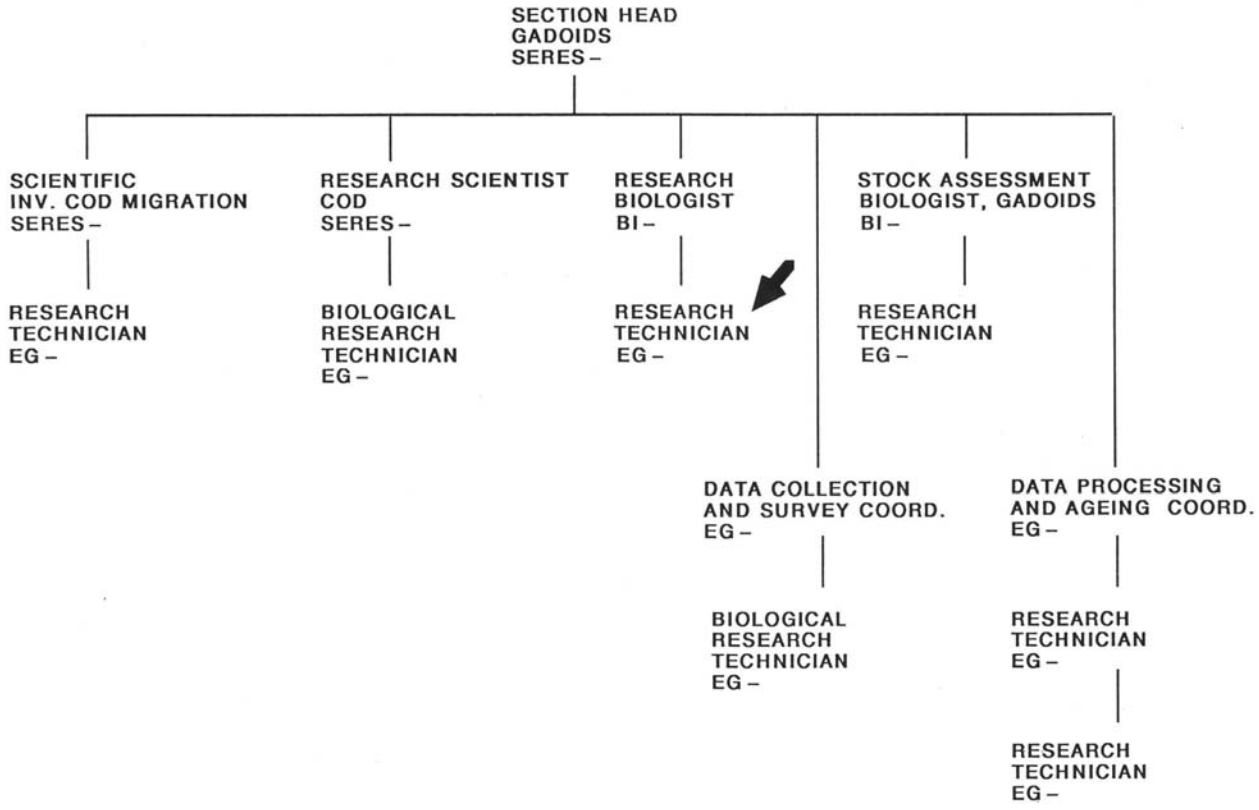
The conduct of field work requires travelling on a small boat or working at fish processing or collection facility for up to 4 weeks at a time and up to 100 days per year. The work requires exposure to adverse weather, dampness, motion and odours from fish. The work requires wearing cumbersome protective clothing.

Hazards B2 / 23

The work requires frequent exposure to lost time injuries when conducting field projects in small power boats or working on the deck of larger vessels in rough seas with entangling nets, wires and ropes. There is exposure to hazardous chemicals when conducting analyses in the laboratory.

Supervision 2 / 15

In the lab and field, supervises one to three technicians and student/term employees by demonstrating and explaining the various methods used, and by checking the quality of work. Reports on staff performance.




ATLANTIC FISHERIES SERVICE

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 10 Level: 4

Descriptive Title: Weather Station Manager Point Rating: 404

| | % of Time |
|---|---|
| Reporting to the Regional Superintendent of Station Operations: | |
| Supervises the activities of 3 subordinate Weather Service Observers engaged in the observation, recording, encoding and transmission of weather information. Prepares shift schedules, assigns work to meet operational requirements, prepares an expenditure budget and develops a work plan for approval by the Regional Superintendent. Arranges for the maintenance of buildings and facilities. Interprets and implements new codes and procedures. Discusses the implementation of new codes and procedures with other weather stations and the Regional Office. Prepares attendance, leave and pay reports and records equipment and material invoices and requisitions. Checks work for adherence to standards, provides on-the-job training and formally evaluates performance of subordinates. | 60 |
| Sets and adjusts instruments, replaces charts, lamps, wicks, muslins and inking pens, oils motors, cleans contacts and climbs standard masts to free or repair anemometer cups. Notifies a technician when telecommunications or non-meteorological equipment fails or become deficient. | 5 |
| Participates in observing, recording, encoding, etc. of synoptic and hourly weather conditions and in the observation and recording of specialized meteorological parameters. Notes and reports changes in weather conditions at the station and transmits weather information through tape perforator or by teletype. Relays meteorological information to the public, aircraft operators and civil and government agencies, maintains a display of current and forecast weather information and prepares special weather abstracts and monthly summaries for local use. Acts as the local Atmospheric Environment Service representative, determines user needs and arranges with department outlets for the provision of this service. | 35 |

**Specifications**

| | Degree/ Points |
|---|---|
| Knowledge | 4 / 170 |

The work requires knowledge of weather observation, weather recording and weather reporting techniques. Knowledge is also required of departmental administrative procedures.

Experience is required to provide a meteorological service to the public; to control an operational budget and human resources for the weather station.

This knowledge is normally acquired through formal study of basic meteorology, and study of physics and mathematics.

Degree/
Points

Technical Responsibility A2 / 80

Initiative and judgement are required when planning schedules. The observation and reporting of meteorological parameters are carried out in accordance with prescribed schedules and standard procedures established for use in weather stations throughout the Region.

The accuracy of the weather stations observations affect the reliability of weather information provided. This is one of several positions reporting to the Regional Superintendent of Station Operations (EG). The impact of an error of judgement could affect the use of resources and the productivity of subordinates. An error in data provided may adversely affect the decisions of users (farmers, pilots etc.).

Responsibility for Contacts A2 / 26

The work requires contacts with the general public and the users of the service to provide weather information and information relating to the nature of services available under the Atmospheric Environment Service.

Working Conditions

Concentration 2 / 20

The work requires a moderate level of concentration and attention when maintaining a continuous weather watch especially during periods of fluctuating weather conditions and when selecting, coding and transmitting meteorological information.

Physical Effort 2 / 20

The work requires a significant amount of standing and walking when observing weather, reading outdoor instruments and determining the thickness of ice and snow. There is a requirement to climb a wind tower to maintain the correct operation of anemometer cups and the lifting of cartons and moving of cylinders of helium gas, weighing up to 65 kilograms is periodically required. The administration of the weather station and the preparation of reports and weather data requires little physical effort.

Environment 2 / 13

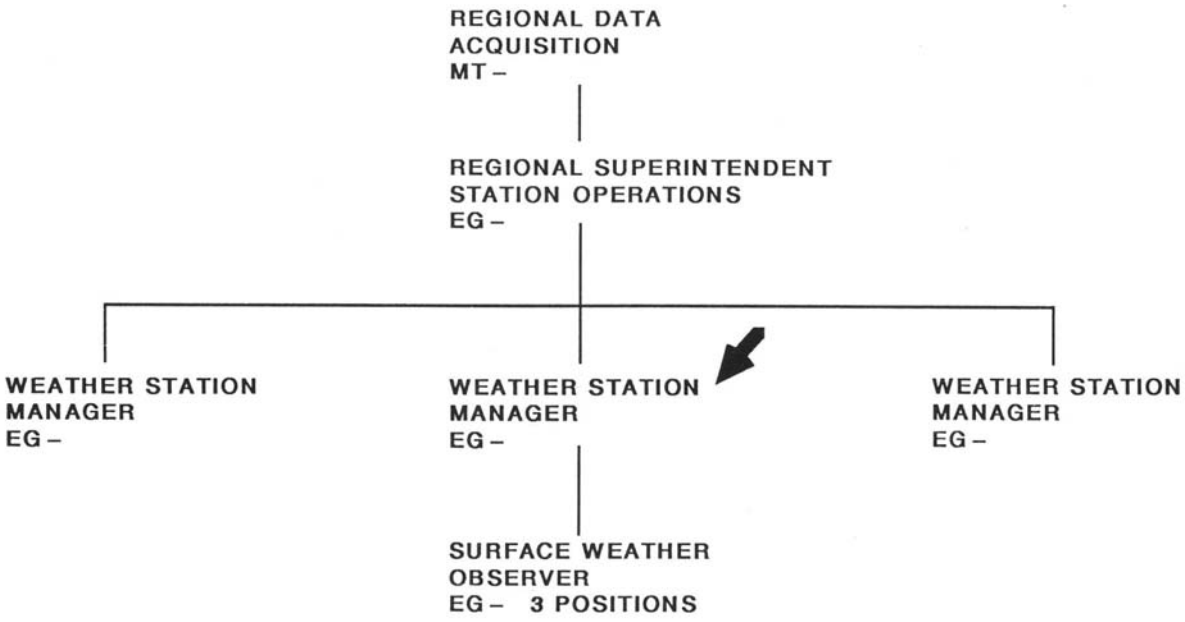
The observation of weather and the reading of instruments requires exposure to all kinds of weather conditions and during inclement or cold weather the wearing of protective clothing is necessary. The administrative work is carried out in a well-lighted and ventilated weather station.

Hazards B1 / 15

Injuries such as hernias, or sprains could occur while occasionally moving cartons or high pressure tanks of helium gas.

| | Degree/ Points |
|---|---|
| Supervision | 3 / 60 |

The work requires the supervision of three subordinate weather observation technicians operating on a rotational shift basis. There are requirements to prepare shift schedules, assign and check work for accuracy, prepare personnel records and reports, formally appraise employee performance and develop and submit a station work plan for Regional office approval.




ATMOSPHERIC ENVIRONMENT SERVICE
CENTRAL REGION

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 11 Level: 4

Descriptive Title: Project Design Technician, Construction and Maintenance Point Rating: 404

Reporting to the Engineering Design Officer:

Provides mechanical, electrical and civil design services for new construction, repair and maintenance projects for which the design authority rests with the local office or the National Headquarters units of construction and maintenance. Visits the work site to assess the scope of the project and conditions which affect the design, procedures, materials required and labour costs of the work. Discusses with the user or client the accommodation and systems required, including air temperatures, velocity of circulation and humidity of air. Studies technical data such as the Canadian Plumbing Code, National Building Code, CSA Electrical Code and Fire Code to determine parameters of design. Calculates the capacity and power of mechanical systems such as plumbing, heating and air conditioning needed to satisfy the specifications. Evaluates and selects equipment, ensuring that it conforms to relevant codes, by-laws and departmental regulations. Produces working drawings for the project which are sufficiently detailed to enable the drafting unit to produce the final project drawings. Projects include the design of structural and finishing materials, grounds and landscaping, interior plumbing and wiring layouts, and fixtures, controls and circuits. Reviews designs with clients and representatives of governmental agencies such as fire chiefs and safety officers. Signs the prepared project drawings as an indication of completeness and accuracy prior to review and approval by the chief designer and an engineer. Prepares detailed cost estimates of the project, including items for land acquisition, site preparation, legal and consultant fees, labour, materials and contributed costs of work done by other units of the department or outside agencies. 75

Conducts technical studies and evaluations to solve operational and maintenance problems, prepares project synopses and briefs engineering consultants regarding the scope of the project. 15

Prepares documents such as project authorization forms, work request forms, requisitions for materials, contract demand forms and reports on equipment. Provides advice on designs and specifications to contract inspectors, civilian contractors, site supervisor and consultants. Operates computer to input and retrieve project data. 10

| Specifications | Degree/ Points |
|---|---|
| Knowledge | 5 / 215 |

The work requires the knowledge of on-site analysis of construction design requirements, of techniques for estimating cost, writing specifications, drafting and designing electrical, mechanical and architectural systems. Knowledge is also required of inspection methods to confirm quality, expenditure and conformity to plans.

Experience is required to diagnose and resolve problems related to the operation and maintenance of engineering base equipment, buildings and works, and to maintain a current awareness of building codes and manufacturer's data.

Degree/
Points

This knowledge is normally acquired through on-the-job training in mechanical and electrical installation techniques, construction materials and regulations and standards such as the National Building Code, CSA, Electrical and Fire Codes, and the study of mechanical or civil engineering technology.

Technical Responsibility B1 / 81

Initiative and judgement are required to select the most suitable site, material, equipment and procedures to ensure best performance at least cost, to ensure compliance with plans and specifications and when recommending the acceptance or rejection of project drawings. The projects and the repeated work site inspections are performed according to general instructions.

The work results in the preparation of design layout sketches and production of detailed drawings. Although the work is reviewed by the Chief Designer and the engineering staff, undetected errors could result in inadequate and uneconomical systems installed. Undetected errors in contract work, while in progress could result in construction delays, waste of material, and contract adjustments. The position reports to the Engineering Design Officer (EC).

Responsibility for Contacts B2 / 45

The work requires contacts with engineering staff and construction crews of contracting companies, and with engineers from own and other departments to discuss project facilities, the suitability of design layouts, materials, estimates and construction methods.

Working Conditions

Concentration 2 / 20

The work requires moderate attention and concentration when establishing engineering (mechanical, electrical civil) requirements, performing engineering calculations, reviewing and correcting construction drawings, and designing interior wiring systems.

Physical Effort 1 / 10

The planning, design and report preparation duties are performed at a desk. The inspection of work sites requires the occasional climbing of ladders or the crawling into cramped areas.

Environment 2 / 13

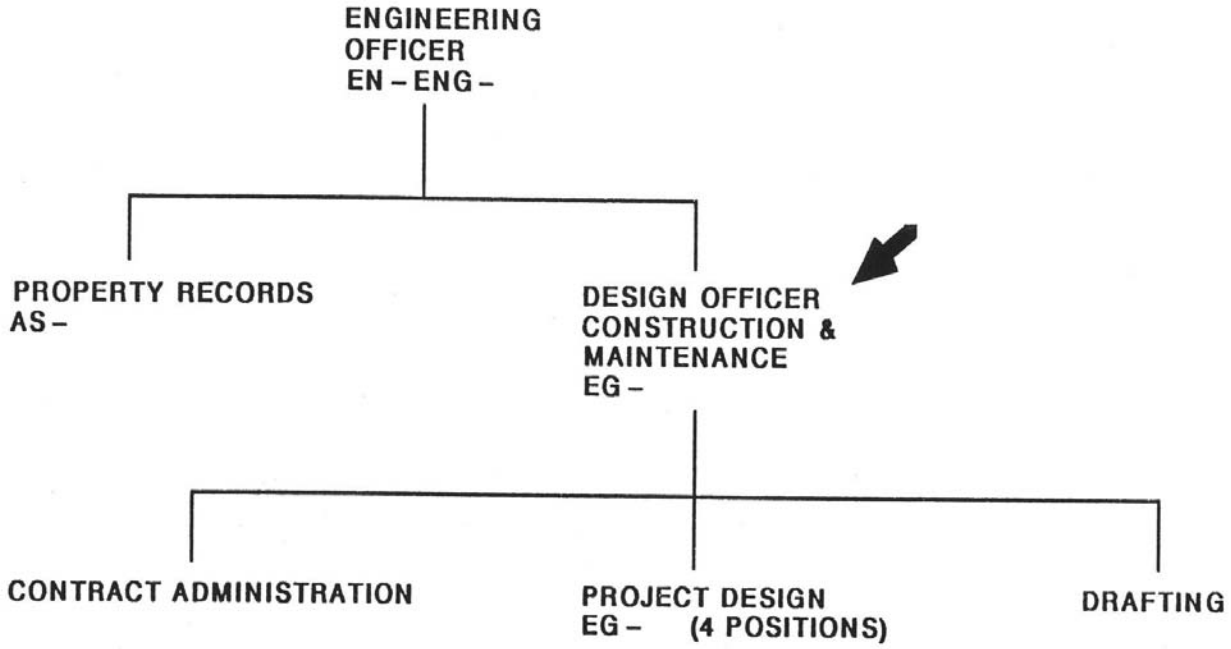
When occasionally visiting the work site there is exposure to several disagreeable conditions such as noise, dirt, dust, adverse weather and the requirement to wear protective headgear and safety glasses.

| | Degree/ Points |
|---|---|
| Hazards | B1 / 15 |

Lost time injuries such as sprains could occur due to insecure footing or from falling objects during occasional work site inspections.

| | |
|---|---|
| Supervision | 1 / 5 |

There is no requirement for the continuing supervision of subordinates.




## CONSTRUCTION AND MAINTENANCE

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 12 Level: 4

Descriptive Title: X-Ray and Ultra-Sound Technician Point Rating: 408

| | % of Time |
|---|---|
| Reporting to a Senior X-Ray Technician: | |
| Performs radiological and ultra sound examinations of patients in the X-Ray department, on the wards and in operating theatres. Arranges appointments for patients and provides information on examination preparation to doctors and nurses throughout the region. Sets up, operates and maintains stationary and mobile equipment and maintains material supplies. Reviews requisitions received from medical staff, obtains historical information from the patients and files, determines the condition of the patient and the type of examination required and explains the procedures to the patient. Transports and manoeuvres patients into comfortable and desired positions to obtain the best examination results, selects and positions film holders, attaches cones and adjusts collimators and aligns the X-Ray tube for distance, angle and position. Ensures films are correctly marked and that the film-patient identification marks are complete. Positions lead shields to protect the patients from excessive radiation. Determines voltage, amperage and exposure time from guidelines and exposure charts to suit the position and characteristics of the body under examination, operates the equipment and develops film of diagnostic quality. | 60 |
| Mixes contrast material for use in gastro-intestinal examinations and carries out gastrointestinal procedures and cystograms. Introduces and removes rectal enema tips and colostomy catheters, urinary bladder catheters and intra-venous needles. Takes exact measurements of body parts such as the bi-parietal diameters of fetal heads using electronic callipers and assists obstetricians during special procedures. | 40 |

| Specifications | Degree/ Points |
|---|---|
| Knowledge | 4 / 170 |

The work requires knowledge of radiology and ultra sound examination procedures, catheter and gastro-intestinal procedures, cystrogram procedures and special obstetrical procedures. Knowledge is also required of techniques to interview patients for their "patient history".

Experience is required to adapt X-ray and ultra sound approaches to the individual needs of the patient, and to reassure and position patients.

This knowledge is normally acquired through in-house training in a hospital and study of radiology, anatomy, physiology, pathology and physics. Knowledge is also require of electrical terminology.

Technical Responsibility B2 / 131

Initiative and judgement are required to determine the most suitable method of examination, to select, adjust and position equipment and to modify techniques and procedures when working with the critically ill, injured or uncooperative patients.

Degree/
Points

Guidelines are normally available for the preparation of patients and the performance of X-Ray and ultra sound examinations. Judgement is required to interpret standards and guidelines to meet physicians' requirements, or to meet previous examination approaches.

The results of the examinations affect the diagnosis and decisions of physicians. Errors in performing the X-Ray and ultra sound examinations could result in delays **in** the diagnosis and treatment of patients as well as waste of time and materials. The work has a direct and immediate impact on patients who may suffer discomfort and concern while being examined and whose feelings of well being must be encouraged by the technician.

Responsibility for Contacts A2 / 26

The work requires contacts with members of the general public when obtaining information from patients during examinations in order to select and adjust equipment to meet the requirements of their condition.

Working Conditions

Concentration 2 / 20

Moderate attention and concentration are also required when adapting standard x-ray techniques to suit special patient condition and when assembling and using specialized equipment. Occasionally greater attention is required for short periods when inserting enema tips or colostomy catheters and performing barium enemas and when using electronic callipers for exact measurement such as fetal head diameters.

Physical Effort 2 / 20

The work requires standing and walking when operating equipment and visiting wards. There is a requirement to manoeuvre patients, assist feeble patients on to and off the examination table, to move mobile equipment and files and to transport patients in wheelchairs.

Environment 2 / 13

The processing and development of film requires exposure to chemicals and unpleasant odours. Heavy protective lead aprons and clothing must be worn when operating the mobile X-Ray unit and during fluoroscopic examinations.

Hazards B2 / 23

The frequent handling of patients in a hospital setting could result in lost time accidents such as back strain or exposure to contagious diseases. There is a risk of lost-time illness due to over-exposure to radiation despite well-established safety procedures and methods of operation.

Supervision 1 / 5

There is no requirement to supervise the work of others.


## HEALTH AND WELFARE

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 13 Level: 4

Descriptive Title: Field Bean Breeding and Genetics Technician Point Rating: 410

| | % of Time |
|---|---|
| Reporting to a Research Scientist: | |
| Plans and conducts a bean breeding project to advance and select plant lines, obtain genetic information, increase the yield of breeders stock and maintain pure viable supplies of varieties and plant introductions. Develops planting plans for cross fertilization experiments in conjunction with the scientist, grows and selects promising specimens and carries out the fertilization process. Grows and identifies valuable hybrids and harvests first generation results for further increase or genetic study. Coordinates the various field trial activities in several locations and evaluates entries for agronomic traits. Records field trial data, analyzes results and prepares reports for the scientist's consideration. Supervises seasonal employees and summer students (approximately 2 person-years) involved in plot maintenance, seed cleaning and harvesting activities and advises growing station supervisors on the proper care of experimental plants and on land preparation and plot maintenance techniques. | 45 |
| Inoculates bean varieties and selections with Rhizobium and assists a plant physiologist to examine modulation and determine the nitrogen level at the various stages of plant development. Assists a plant pathologist in the conduct of screening tests for disease and pest resistance, crosses disease and herbicide tolerant and susceptible plant strains for inheritance studies and examines the relationship between plant type and yield and the effects of recurrent selection or agronomic traits. Prepares and maintains inoculum, inoculates or sprays plants with bacterial spores or viruses, assesses the susceptibility of plants to disease and identifies the most resistant plants for recurring selection. Maintains a collection of germ plasm and breeder stock seed and purifies and increases promising advanced lines. Receives and prepares seed entries for analytical and quality testing in government and private laboratories and ensures an adequate stock of laboratory supplies and equipment is maintained. Uses equipment such as microscopes, haemocytometers, electrophoresis apparatus, incubators, protein analysers, computer and farm equipment. | 55 |

**Specifications**

| | Degree/ Points |
|---|---|
| Knowledge | 4 / 170 |
| The work requires knowledge of genetics and hybridization techniques, computer entry methods, screening test procedures, basic statistical analysis techniques and experimental field crop management practices and laboratory techniques. | |
| Experience is required to plan and conduct bean breeding projects, to use and control materiel and human resources, to maintain breeder stock, and to qualitatively analyse and select the preferred seedlings. | |

Degree/
Points

Experience is also required to advise growing station supervisors on procedures, equipment and plot maintenance techniques.

This knowledge is normally acquired through on-the-job training and study of genetics, hybridization, plant pathology, mathematics and statistics.

Technical Responsibility B2 / 131

Initiative and judgement are required to identify valuable hybrids, to select promising crosses, coordinate the various field trial activities and assess the susceptibility of plants and future plant generations to disease, and to search the literature for new techniques. The planning and conduct of the project are carried out according to general instructions, or to meet the requirements of scientists and technicians involved in plant pathology or physiology. The work requires the application of standard breeding and cross fertilization methods such as bulk, pedigree, single seed descent and emasculation.

The results of the yield and disease tests affect the decisions of scientists regarding the varieties to be licensed and recommended to growers. Errors in the identification of viable seed or the misinterpretation of results could result in the premature release or delay of varieties onto the market, additional tests and analyses and the waste of considerable time, material and human resources. The position reports to a Research Scientist.

Responsibility for Contacts 131 / 27

The work requires contacts with scientists and technicians from within the station to discuss work and project requirements and the suitability of methods to be used and to provide explanations and interpretations of the tests results. There is a requirement to inform supervisors at the growing stations of the proper handling of experimental plants and of land preparation and plot maintenance techniques.

Working Conditions

Concentration 2 / 20

The work requires moderate mental-sensory coordination when identifying valuable hybrids using various marker characteristics, when inoculating bean varieties and when maintaining germ-plasm collections.

Physical Effort 2 / 20

The work requires long periods of standing and walking during the growing season when examining plants for yield or resistance to disease. The planning of project activities, the analysis and compilation of test results and the writing of reports requires little physical effort.

Environment 2 / 13

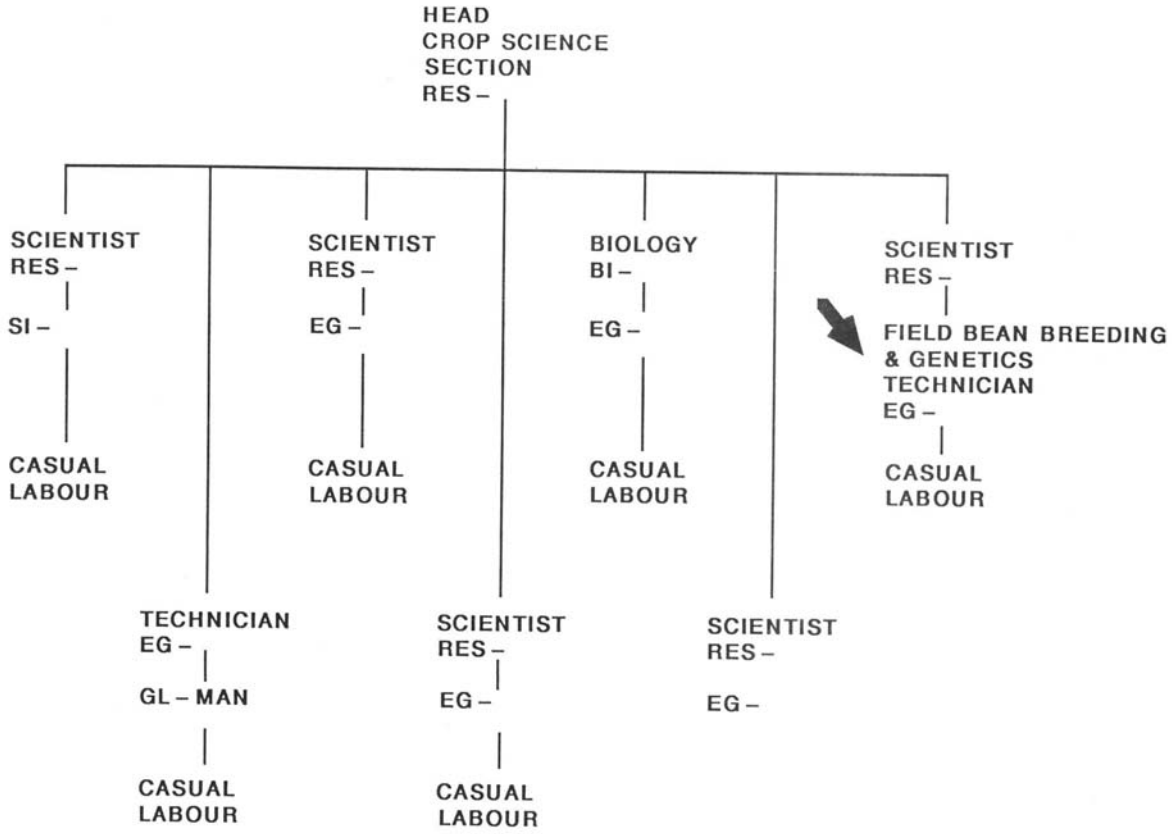
The observation of plants at the five off-station locations requires some travelling and occasional exposure to adverse weather conditions, dust, dirt and chemical/fertilizer fumes.

| | Degree/ Points |
|---|---|
| Hazards | A2 / 14 |

Minor injuries such as cuts, abrasions and bruises could occur when frequently operating equipment during harvesting, carrying out field work.

| | |
|---|---|
| Supervision | 2 / 15 |

There is a requirement to assign work and check the quality and completeness of work performed by seasonal employees and summer students assigned to the project.




## RESEARCH BRANCH

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 14 Level: 5

Descriptive Title: Legal Land Survey, Regulatory Technician Point Rating: 427

| | % of Time |
|---|---|
| Reporting to the Head, Survey Regulations. | |
| Prepares instructions relating to legal land surveys and preliminary, engineering and photo-control surveys for use by licensed land surveyors surveying Canada Crown, Provincial Crown and Privately owned lands. Clears issuance of instruction with the administering department, determines the pertinence and impact of the requested survey, determines the statutory authority and type of plan to be prepared and prepares specifications and standards, survey authorization and title and technical information and data. Examines plans and title documents of new or proposed Crown Land and prepares correspondence for the supervisors signature informing the acquiring department of location and size, boundary definitions and demarcation and of the adequacy of plans and descriptions. | 35 |
| Examines legal land surveys to determine the mathematical, technical and legal correctness of field work and documentation. Contacts personnel from all levels of government to obtain legal and survey information, maps and charts. Reviews all the survey and legal information, maps, charts and photographs obtained from all levels of government. Determines if the survey and plan conforms to instructions, boundary depiction, format, field work and aerial interpretation. Documents survey errors and deficiencies or prepares correspondence for the Supervisors signature indicating the suitability of the plan. Prepares contracts for private sector surveyors working on Canada Crown Lands. Compiles instructions, survey materials and documents for cost estimating purposes, drafts survey requirements for surveyors and reviews and assesses the returned estimates. Submits the most acceptable estimate proposal for approval. | 35 |
| Prepares legal descriptions of parcels of land included in land transaction documents, investigates land survey problems and exchanges information on legal survey matters with interested parties in all levels of government and with engineering and surveying personnel in both the public and private sector. | 30 |

| **Specifications** | Degree/ Points |
|---|---|
| Knowledge | 5 / 215 |

The work requires knowledge of survey techniques, of legal documentation, of cost estimating methods, of record searching and contract analysis techniques.

Experience is required to solve surveying problems, to verify the accuracy of field work and the correctness of survey documentation and to recommend new procedures and approaches.

This knowledge is normally acquired through in-house training and the study of plane and spherical trigonometry, mensuration, geometry, land survey technology and basic photogrammetry geodetic and topographic surveying and town planning.

Degree/
Points

Technical Responsibility B2 / 131

Initiative and judgement are required to assess the accuracy and correctness of surveys and plans, to identify errors and discrepancies, to administer and review the work carried out by contractors and private sector surveyors and assist in determining the impact of a requested survey upon the department or agency concerned. The preparation of survey instructions and the review of the field work and documentation are carried out according to precedent and general instructions.

The preparation of survey instructions and the review of survey results and documentation have an effect upon the manner in which surveyors carry out their work and the quality of surveys produced. The assessment of surveyor competency and the review of estimates affect the selection and approval of contractor proposals. Errors in the examination of survey information, or in calculation or interpretation could result in failure to detect inaccurate or deficient surveys and returns. Errors in contract control could result in considerable lost of financial resources due to client dispute.

Responsibility for Contacts A3 / 44

The work requires contacting officials of the departments and the surveying industry to clear the issuance of survey instructions and engineering, surveying and survey records.

Working Conditions

Concentration 1 / 10

The work requires some attention and concentration when reviewing legal land survey documents for technical and legal correctness and when writing instructions for issue to licensed land surveyors.

Physical Effort 1 / 10

The work requires little physical effort and is normally performed sitting at a desk.

Environment 1 / 6

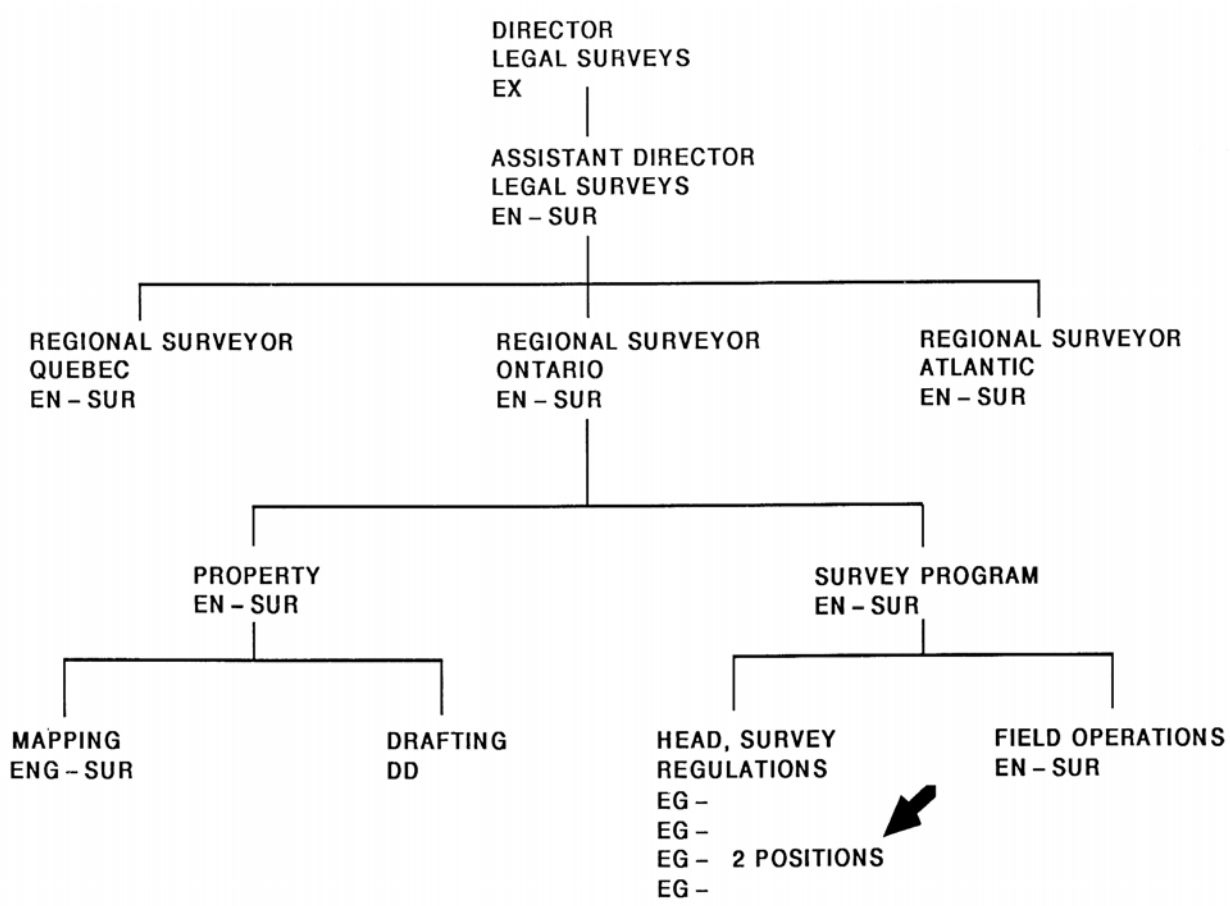
The preparation of instructions and the examination of survey results is normally carried out in a well-lighted and ventilated office.

Hazards Al / 6

There is little or no exposure to hazards while preparing instructions and examining survey returns.

Supervision 1 / 5

There is no requirement for the supervision of subordinates. Occasionally shows others how to perform tasks.




SURVEYS AND MAPPING BRANCH

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 15 Level: 5

Descriptive Title: Forest Insect and Disease Survey Technician Point Rating: 436

| | % of Time |
|---|---|
| Reporting to a Supervising Ranger: | |
| Works as a member of a team, involved in the determination of the insect and disease condition of forest stands and shade trees in a number of districts in the Central Ontario survey region. Carries out ground and air surveys to detect and identify insect and disease problems. Determines the effect of the problem and prepares maps indicating the extent and type of infestation and damage. | 45 |
| Investigates unusual and damaging pest problems in cooperation with government and private sector forest management personnel and provides advice on appropriate pest control and forest management measures. | 15 |
| Advises on the appropriate scheduling for pesticide spraying. Also carries out special entomological and pathological assignments and surveys and contacts forest managers to obtain information for use in provincial newsletters. | 25 |
| Assists in the preparation of an annual information report and informs extension foresters and other interested parties in government, the private sector and universities on forest pest conditions throughout the region. | 15 |

**Specifications** Degree/ Points

Knowledge 4 / 170

The work requires knowledge of field and laboratory procedures, forest survey techniques, and entomological and pathological analysis. A knowledge is also required of the methods of report preparation.

Experience is required to devise ad hoc sampling techniques, to adjust work plans to meet field conditions, to advise foresters and other interested parties in government, and the private sector on pest control and forest management practises, and to establish times for aerial spraying.

This knowledge is normally acquired through on-the-job training on a survey team and study of forest entomology and pathology, taxonomy, morphology, biology, and the life histories of forest insects and pathogenic fungi, and the effect of weather on forests.

Technical Responsibility B2 / 131

Initiative and judgement are required to devise ad hoc sampling techniques for specific cases until more reliable methods are available, to adjust the work plans in response to demands from provincial authorities, the industry and private land owners. The conduct of forest pest and disease surveys and the identification of infestation or other

Degree/
Points

problems are carried out according to general annual instructions and by the use of standard field and laboratory survey methods and techniques to ensure consistency of reporting throughout the region.

The early recognition of pest or disease problems, and the accurate interpretation of survey data affect the extent of control actions and the decisions of industry and provincial forest managers. Special observations and explanations could result in the avoidance of disruption to the production schedules of the forest industry. Errors could lead to the spread of pests and disease, the waste of considerable time and resources in additional or unnecessary control measures and the loss of forest products. The position reports to a senior Technician (EG).

Responsibility for Contacts A2 / 26

The work requires informing federal, provincial, municipal and private sector forest managers of the results of the surveys, the extent of pest problems and of appropriate control and forest management measures. Contact is required with provincial government personnel regarding the procurement of aircraft for use in surveys.

Working Conditions

Concentration 2 / 20

The work requires moderate concentration when "sketch mapping" pest damage to forest from aircraft that are frequently changing direction and when transposing observations to a map. Attention is also required while performing quantitative sampling and evaluation procedures.

Physical Effort 3 / 30

The work requires walking long distances over rough terrain, the carrying of survey tools, equipment and samples weighing up to 30 kilograms, the paddling of canoes and the observing of forest conditions from the confined space of fixed or rotary-winged aircraft. The requirement to occasionally conduct surveys during the winter season requires greater physical effort due to the presence of ice and snow on the ground.

Environment 4 / 30

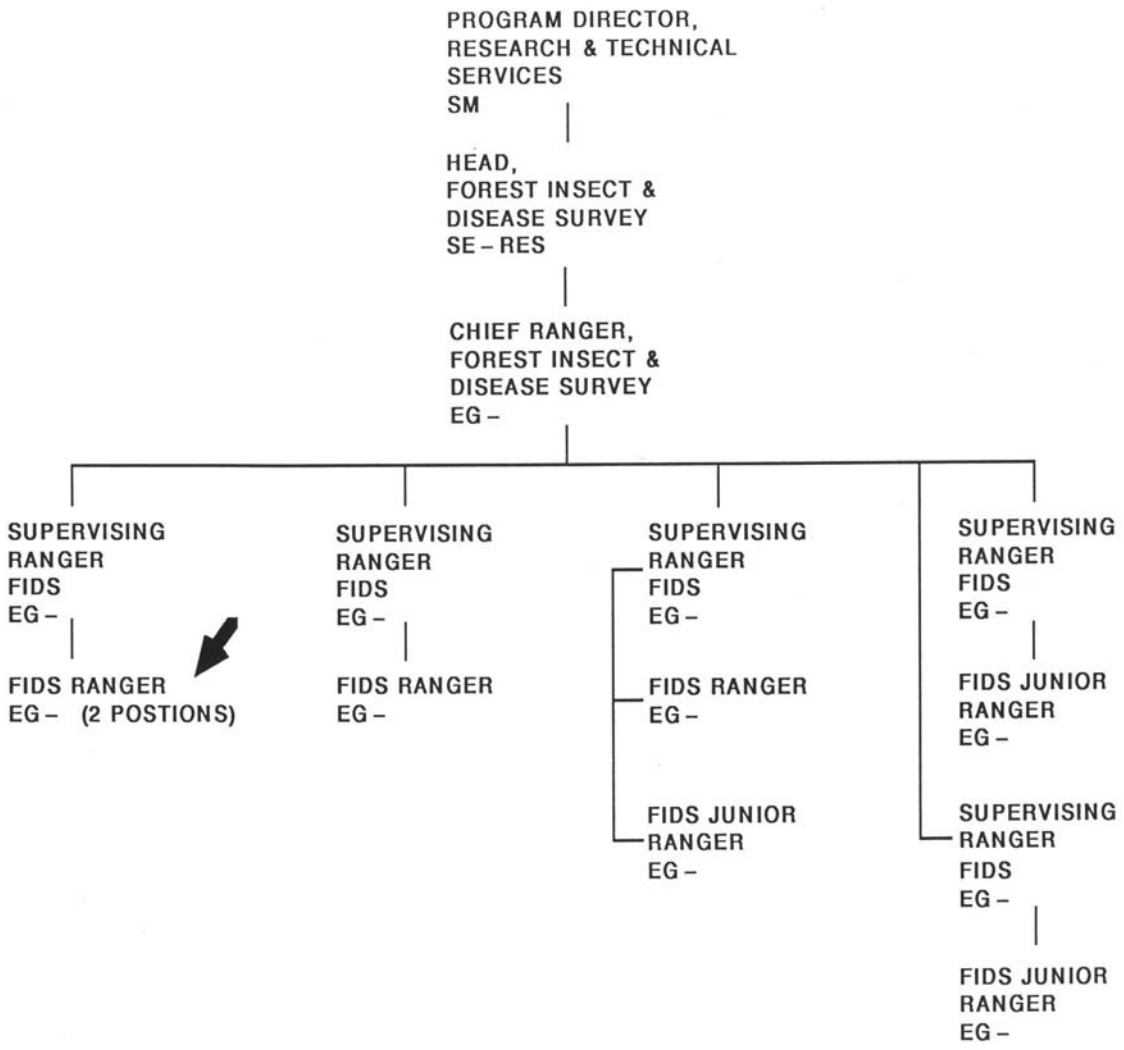
The conduct of field surveys and observations requires exposure to all kinds of weather conditions, biting insects and poisonous plants for extended periods. During the field season, the work requires prolonged absences from home.

Hazards C1 / 24

Incapacitating injuries could occur when occasionally operating chain saws or using axes when felling or limbing trees during survey activity.

Supervision 1 / 5

There is no requirement for the supervision of subordinates. There is an occasional requirement to train new team members on methods and equipment operation.




CANADIAN FORESTRY SERVICE

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 16 Level: 5

Descriptive Title: Migratory Birds Research Technician Ontario Region Point Rating: 455

| | % of Time |
|---|---|
| Reporting to a wildlife biologist: | |
| Participates in the planning of and conducts studies on the status of migratory bird populations and on the effect of man-induced habitat changes on bird communities. Selects study areas and specific study plots based on representative habitat, land use changes and project objectives; selects, implements and modifies survey techniques to meet project objectives. Arranges for and conducts aerial surveys, often acting as pilot's navigator, of selected sites. Gathers and analyzes bird census data, vegetation description data and prepares accurate summaries and tabulations, maps and figures used in the publication of scientific papers and serves as junior author on various notes and publications. | 40 |
| Administers and controls all field activities and supervises the operation of a large field tent camp (up to 10 people) in relatively isolated locations in Northern Ontario, for up to 5 months. Supervises staff (summer students and/or casual staff) in the collection of complex data sets at a variety of sites. Devises and ensures rigid adherence to sampling protocols and maintenance of quality control. Is responsible for scheduling the activities of all staff; the maintenance and repair of field equipment and vehicles (ATV's, snowmobiles, outboard motors, boats/canoes, recording equipment); the purchase of goods and services including helicopters. Instructs staff, summer students or other technicians in sampling techniques to quantify composition density and structure of vegetational communities, bird and mammal identification and methodologies and procedures for assessing bird populations. | 30 |
| Participates in the planning and conduct of other field projects for the Canadian Wildlife Service. Carries out lirinological studies in support of CWS acid rain projects including detailed descriptions and profile analyses of water basins, quantitatively sampling insect and other aquatic invertebrate populations, collecting water samples and sampling fish populations. Proposes sampling regimes for trapping and assesses small mammal populations. Plans and conducts waterfowl surveys from helicopters, fixed-wing aircraft and on ground. Captures and collects bird specimen for banding, food habit, physiological or immunological studies. | 15 |
| Provides advice to scientists and other users, within the region, on use of and technical EDP problems in their particular projects. Determines applications of suitable EDP techniques and analyses problems. Designs aids to determine the processing steps necessary for the computer solving of scientific or data processing problems (eg: decision tables, logic flow charts, etc.). Test programs and/or systems to ensure that they meet requirements. | 10 |

**Specifications** Degree/ Points

Knowledge 4 / 170

The work requires a knowledge of biology and forestry particularly in ornithology, ecology, botany, limnology, and mathematics; habits and habitat requirements of various species of migratory birds; programming and job control languages; statistical methods; standard laboratory procedures; game management principles, game populations and hunting regulations; aerial navigation methods; and of land survey techniques and surveying equipment.

Experience is required to review the effectiveness of population survey techniques, to adjust work plans to meet field conditions, to plan surveys and to control human resources, and to estimate the impact of the environment (agricultural, industrial and social) on the migratory bird population.

This knowledge is normally acquired through the study of biology, pathology and species habitats and in-house training.

Technical Responsibility B2 / 131

Initiative and judgement are required when planning waterfowl population and harvest surveys, improving survey techniques, testing EDP systems, designing improved traps, assessing the suitability of capture methods, selecting hunting and trap sites and coordinating the activities of survey crews. The planning and conduct of surveys are carried out according to general instructions to achieve the program's requirements. The work requires the selection and use of standard survey procedures and the use of established specimen analysis and preservation techniques.

The results of the surveys and analyses and the data provided have an effect upon the work of biologists studying waterfowl populations and habitats. The preparation of inaccurate or inconsistent data and trends could result in additional surveys and the waste of considerable time and resources or in the establishment of inappropriate regulations. Errors or anomalous data would be identified by reference to the reports of previous surveys and studies. The position reports to a wildlife biologist.

Responsibility for Contacts B2 / 45

The work requires contacting the employees of other agencies and levels of government to coordinate and plan survey activities. There is a requirement to explain survey techniques and methods to survey participants and departmental officers, and to interpret the survey results. Contacts are also required with landowners to obtain permission to visit and survey habitat areas, and with members of the general public and/or representatives for the purchase of services such as aircraft or helicopters.

Working Conditions

Concentration 2 / 20

The work requires moderate attention and concentration when planning and performing census, when identifying potential areas, conducting intensive ground surveys and directing aerial surveys of ground breeding population. Concentration is also required to compile, collate and analyze data.

| | Degree/ Points |
|---|---|
| Physical Effort | 2 / 20 |

The work requires standing and walking when conducting surveys and studying habitats, seasonal duties that occupy approximately five months of the year. The examination of bird specimens and biological samples, the compilation and analysis of survey data and the preparation of reports is carried out standing at a bench or sitting at a desk.

| | |
|---|---|
| Environment | 4 / 30 |

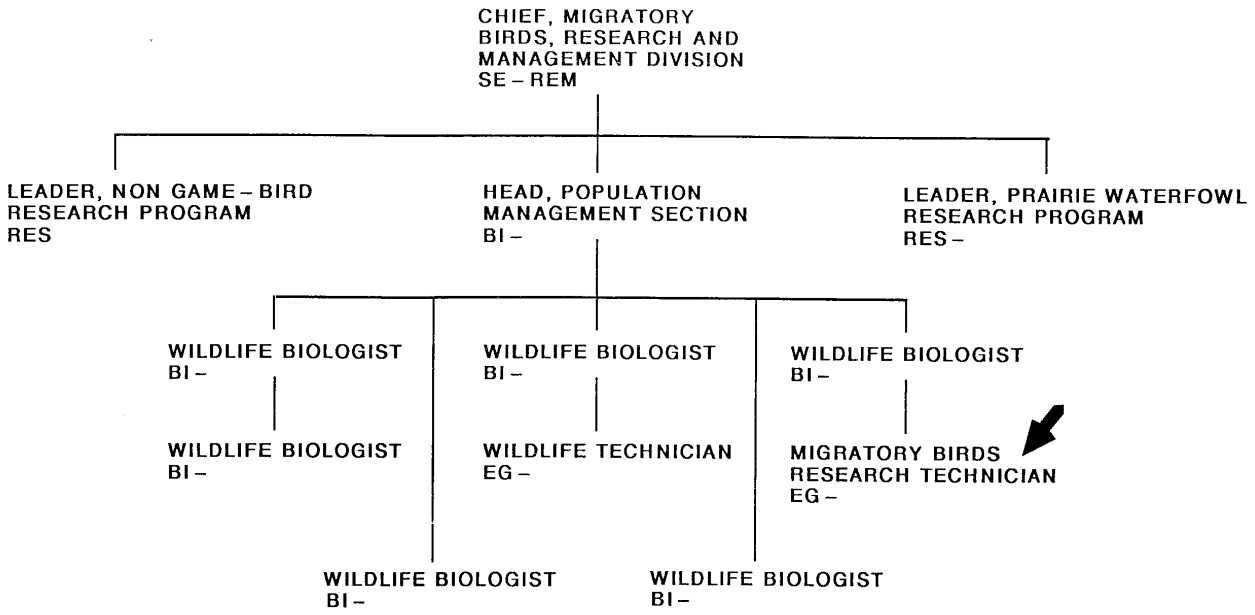
The preparation and analysis of biological samples requires exposure to chemical fumes and unpleasant odours while working in a well lighted and ventilated laboratory. The conduct of surveys and field studies requires travelling and absence from home for up to five months of the year and exposure to swampy terrain or wetlands, biting insects and inclement weather.

| | |
|---|---|
| Hazards | Cl / 24 |

Incapacitating injuries could result from accidents which occur during occasional low level survey flights in isolated areas or illness due to injuries where medical services are not readily available.

| | |
|---|---|
| Supervision | 2 / 15 |

There is a requirement to monitor the performance of staff from own department and other departments assigned to survey; to instruct employees in bird identification, in survey and data collection techniques; to monitor the quality of data gathered.




## CANADIAN WILDLIFE SERVICES

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 17 Level: 5

Descriptive Title: Meteorology Instructor Point Rating: 515

Reporting to a Senior Instructor:

Conducts the basic classroom instruction and operational training courses in meteorological theory and weather observing, coding, recording and transmitting procedures provided to meteorological technician recruits, flight service specialists, radio operators, and military and civilian air traffic controllers. Interviews students, identifies and diagnoses student difficulties and provides counselling and remedial instruction as required. Develops and administers tests and examinations and evaluates the performance of students under simulated observing office conditions. Interprets test and examination results in reference to course objectives and recommends remedial actions. Compiles reports and appraisals based on test and examination results, recommends future employment opportunities for the students and documents students' problems. 75

Drafts performance objectives and designs and develops lesson plans, study material, training aids and directed and programmed instruction modules in consultation with the departments which supply the students. Revises study materials to suit changing operational procedures, rules and codes and recommends changes to course content and administration to meet the needs of departments and the administrative staff. Assists the specialized instructors conducting advanced courses and in the preparation of specialized weather displays and training projects. 25

| Specifications | Degree/ Points |
|---|---|
| Knowledge | 5 / 215 |

The work requires knowledge of meteorological theory, rules and procedures for observing weather, and for recording, coding and transmitting weather information, of techniques to adjust and maintain standard meteorological instruments, and of course development techniques and teaching methods.

Experience is required to analyse and resolve teaching problems and to develop and update course material to reflect new trends in areas such as air traffic control and weather presentation. Experience is also required to administer courses and provide a classroom/lab instruction service.

This knowledge is normally acquired through in-house training and study of meteorology and pedagogy.

| | |
|---|---|
| Technical Responsibility | C2 / 182 |

Considerable initiative and judgement are required to develop study materials, tests, examinations and lesson plans to suit course requirements. There is a continual requirement for the modification and updating of instructional materials to accommodate changing technology, rules, codes procedures and instrumentation. Initiative and judgement are required to train and instruct students from a number of departments, to evaluate student performance and to recommend future employment opportunities for

Degree/
Points

students. The conduct of classroom instruction and operational training is carried out according to general guidelines provided by the Senior instructor and to conform to the overall objectives of the Training Institute.

The development and presentation of training material affects the extent to which students learn and the ability of students to perform effectively in the work environment. Errors in subject matter or instructional technique could have a negative impact on the reputation of the Institute. Inaccurate diagnosis and response to students' difficulties could result in wasted time and an inability to meet course requirements. The position reports to a Senior Instructor, Technical Training (EG).

Responsibility for Contacts B2 / 45

The work requires discussing training requirements, course content and student performance with training supervisors and line managers from the departments supplying the students to ensure their needs are understood and requirements met.

Working Conditions

Concentration 2 / 20

The work requires a moderate level of attention and concentration when conducting instruction in classrooms and in instrument and communications systems labs. Concentration is also required when designing and testing course and assessment tools.

Physical Effort 2 / 20

Classroom instruction and operational training requires frequent standing and walking and the climbing of stairs. There is an occasional requirement to climb 10 metre metal towers to service or replace instruments weighing up to 10 kilograms.

Environment 2 / 13

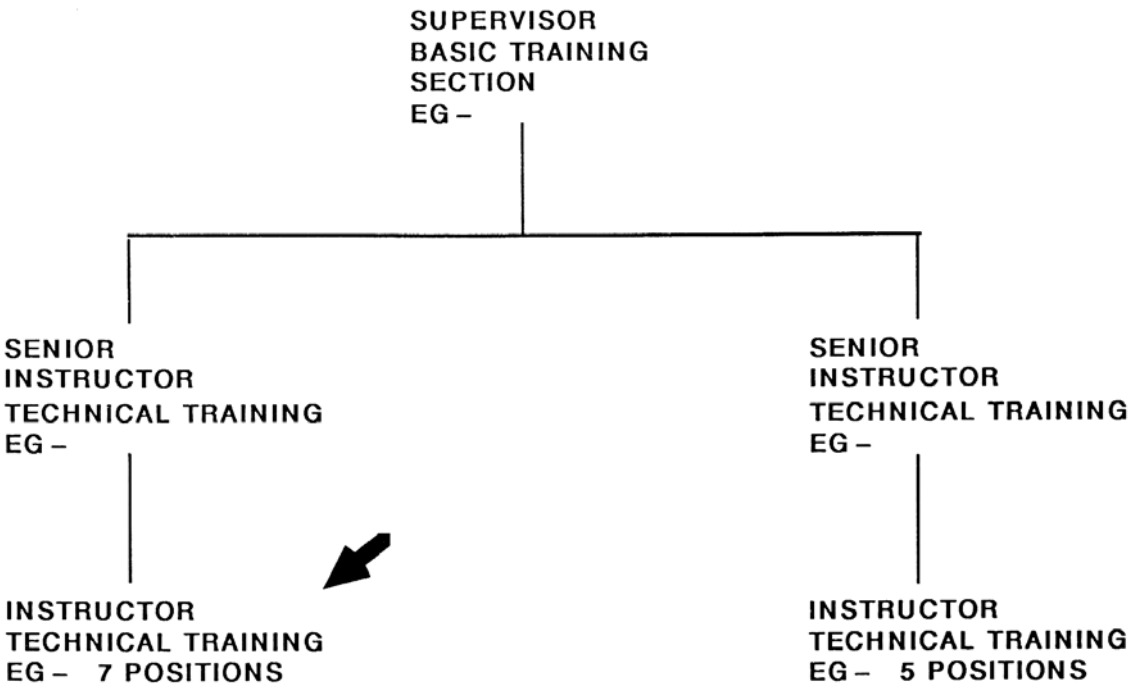
Operational training requires the instructor to be out of doors in all kinds of weather for extended periods of time so that each student has the opportunity to take instrument readings and make weather observations. During cold and inclement weather this requires the use of protective clothing. Classroom instruction is performed in a well-lighted and ventilated environment.

Hazards B1 / 15

Injuries such as fractures, hernias, or sprains could occur while occasionally climbing masts to service or replace instruments or when moving high pressure tanks of helium gas.

Supervision 1 /5

There is no requirement for the continuing supervision of subordinates.




## ATMOSPHERIC ENVIRONMENT SERVICE
## TRANSPORT CANADA TRAINING INSTITUTE

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 18 Level: 5

Descriptive Title: Hydrographie Survey Technologist Point Rating: 516

Reporting to the Hydrographer-in-Charge:

As a member of a major survey party, participates in the conduct of hydrographic and geodetic surveys or as a Senior Assistant Hydrographer on a minor survey party assists in the planning, operating and conducting of a hydrographic survey. Establishes primary and secondary horizontal and vertical control stations and sounding marks or the geographic location of the survey craft and observes and records soundings and geographic data when mapping seafloor details. Measures angles and distances with theodolites, tellurometers, chains, steel tapes and stadia and obtains precise instantaneous positions by use of electronic positioning equipment. Describes the location of signals and monuments, obtains tidal and water level data, plots observed data and runs the survey craft along a predescribed track. Carries out shore and ship based surveys of wharves and shoreline features and visually checks the shoreline against aerial photographs. Searches for and accurately positions shipping hazards and determines their exact depth in the water. Organizes the work of a sub-survey party carrying out hydrographic surveys from launches, helicopters, fixed wing aircraft or survey ships. Obtains place names, navigational condition information and access to private property from land owners. 50

Calibrates and performs the computations to calibrate the electronic positioning equipment and ensures the equipment is properly operated. Calibrates and operates the computer based data acquisition systems and compiles the hydrographic data obtained during the surveys. Draws sounding plots and echographs to obtain digital soundings. Verifies the accuracy of sounding calibration data and plots data for use in the preparation of field sheet bases and geodetic projections. Plots lattice and survey soundings, scales data from tidal or water level graphs and checks the soundings against known contours, overlaps and crosslines. Performs all the calculations and survey control adjustments for survey compilations and processes the data through the automated data logging system. Supervises up to four junior technicians and four launch crew employees during the field season. 50

**Specifications** Degree/ Points

Knowledge 5 / 215

The work requires knowledge of geodetic and hydrographic survey techniques, of navigation techniques, of automated data computing and compiling methods, and calibration procedures for electronic positioning and measuring equipment and echo-sounding and sonar equipment.

Experience is required to organize sub-survey parties and control materiel and human resources, to provide a mapping service and to adjust work plans to meet field conditions.

This knowledge is normally acquired through in-house training in hydrography and the study of survey or civil technology, physics, mathematics (differential and integral calculus).

Degree/
Points

Technical Responsibility B2 / 131

Initiative and judgement are required to carry out initial reconnaissance of the survey areas, to adjust plans to suit weather conditions or mechanical breakdowns in remote locations, to ensure the provision of materials and supplies for sub-party use and to select site and erect survey markers. The conduct of surveys, the organizing of sub-parties and the computation and compilation of hydrographic data is carried out according to general instructions provided by a senior hydrographer. The survey methods and procedures are defined in the Canadian Hydrographic Service Standing Orders and other Canadian Hydrographic publications.

Errors in the calibration of equipment, in the interpreting of other gathered data and in the plotting and compiling of information could result in inaccurate charts, additional surveys and the waste of considerable time, materiel and human resources. When leading detached survey sub-parties errors could cause damage, loss of life or injury. Survey errors could affect the accuracy of charts and the reliability of data locating shipping hazards. Although the work is checked, errors are difficult to detect.

Responsibility for Contacts B2 / 45

The work requires contacts with employees of other departments to discuss the suitability of survey methods and techniques and with survey crew to arrange for the supply and transportation of instruments and material to the survey site.

Working Conditions

Concentration 2 / 20

The work requires a moderate level of attention and concentration when calibrating or using electronic positioning equipment, drawing plots for use as guides for launch sounding operations, scaling echograms, and plotting soundings, shoals, depth contours, wrecks, navigation aides etc.

Physical Effort 3 / 30

The work requires the lifting and carrying of survey equipment and instruments weighing up to 20 kg over rough terrain and the standing in launches or on-board ship. There is a requirement to climb in and out of small boats and helicopters and to occasionally move 200 kg fuel drums.

Environment 4 / 30

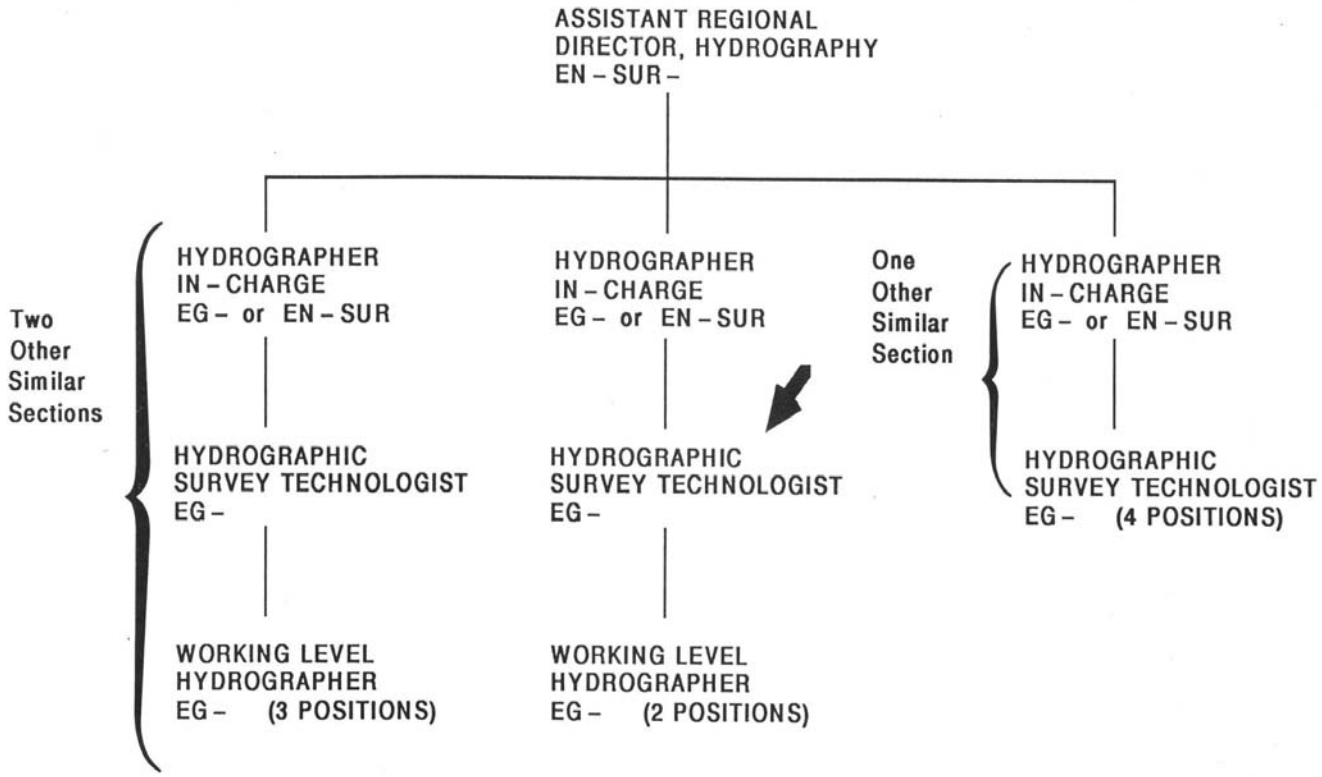
The conduct of surveys requires extended periods of exposure to all weather conditions ashore or at sea and to biting insects. During the field season the work requires prolonged absences of up to six months from home either aboard ship or at a base camp.

| | Degree/ Points |
|---|---|
| Hazards | C2 / 30 |

Incapacitating injuries could occur when transferring to/from ships to small unstable survey craft in rough sea conditions when searching for hidden hazards (shoals, rocks) while surveying the sea floor. Exposure to such injuries could occur during duties that are regularly performed and occupy most of the time.

| | |
|---|---|
| Supervision | 2 / 15 |

There is a continuing requirement to supervise the work of a detached *survey* sub-party and the launch crews.




## OCEAN SCIENCE AND SURVEYS

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 19 Level: 5

Descriptive Title: Chemical Protection Technician Point Rating: 520

| | % of Time |
|---|---|
| Reporting to the head, Chemical Protection Section: | |
| Carries out a number of prescribed performance tests and evaluation procedures on gas mask canisters, activated charcoal and charcoal impregnated fabrics and impermeable polymeric materials used in the manufacture of gas masks. Determines the degree of protection against war gases afforded by charcoal and the resistance to chemical warfare gases offered by polymeric materials. Receives requests for tests and evaluations from the supervisor and subjects the samples or specimens to a variety of apparatus, test or vacuum chambers, chemical processes, measuring and recording devices, sampling procedures and analytical methods. Records service times and results obtained, interprets test data, reports results or abnormal deviations to the scientist. | 65 |
| Develops equipment and methods to test canisters. Evaluates test requirements, determines the nature of equipment and methods and constructs and evaluates equipment to ensure requirements are met. Develops sampling and analytical methods and identifies, evaluates and adapts new techniques and methods to determine their relevancy to canister testing. Develops computer controlled measuring and data processing equipment to be used in producing report data. Operates and maintains an experimental gas mask canister assembly line to test changed designs or modify assembly methods and advises manufacturers on assembly methods and test procedures. Maintains ancillary equipment used in the tests and maintains and calibrates instruments used in the recording of physical and chemical assessments. Uses equipment such as metering and flow testing apparatus, spectrophotometers, gas chromatographs equipped with flame photometric - ionization - electron capture and thermal activity detectors. | 35 |

**Specifications**

| | Degree/ Points |
|---|---|
| Knowledge | 5 / 215 |

The work requires knowledge of physical, organic and inorganic chemical analysis, including spectrophotometric and gas chromatographic techniques, evaluation and performance test procedures, sampling methods and safety techniques.

Experience is required to develop analytical methods and equipment to test canisters, to develop automated (computer controlled) equipment, and to advise manufacturers on assembly methods and test procedures for gas mask canisters.

This knowledge is normally acquired through on-the-job training in a chemical laboratory and the study of physical, organic or inorganic chemistry, of physical properties and biological effects of toxic gas and corrosive chemicals.

Degree/
Points

Technical Responsibility C2 / 182

Considerable initiative and judgement are required to develop and evaluate methods and equipment, to resolve testing or assembly problems and to develop computer controlled measuring and data processing equipment and system. Initiative and judgement are also required to simulate production facilities, to identify and rectify manufacturing and testing problems and to determine if standards and test requirements are being met by the manufacturer. The conduct of tests and evaluations is carried out according to general guidelines provided by a research scientist. The work requires the use of prescribed tests and evaluation procedures to ensure conformity and control of results.

The results of the tests and evaluations affect the work of the scientists and the operations of material and gas mask manufacturers. Errors in testing or in recording findings could result in the misdirection of the research program, in faulty material being accepted or suitable material being rejected and in the considerable waste of time and resources. The development or fabrication of equipment would be checked periodically by Head, Chemical Protection Section (DS) to whom this position reports. Most test results are accepted for technical accuracy.

Responsibility for Contacts B2 / 45

The works requires contacts with production and quality control managers of manufacturing companies to discuss assembly methods and test procedures, to provide advice regarding any problems which may arise and to provide the results of tests and evaluations. There is a requirement to contact companies supplying ancillary equipment, and scientists working in research and development centres in the United States regarding the inspection or approval of materials shipped to Canadian companies or foreign governments and to discuss methods and analytical procedures.

Conditions of Work

Concentration 2 / 20

The work requires moderate mental-sensory coordination while monitoring simultaneously, air-flow, gas-flow, humidity, CW gas concentration, sampling and respiration rates for the first colour change in any one of four indicators. Call tests require monitoring ten flow meters simultaneously. Concentration is required when metering toxic gases and transferring toxic agents to test samples.

Physical Effort 1 / 10

The conduct of tests and the operation of the experimental assembly line requires intermittent sitting, standing and walking and the lifting of small hand and machine tools. There is an occasional requirement to lift cartons, gas cylinders and other equipment weighing up to 25 kilograms.

| | Degree/ Points |
|---|---|
| Environment | 2 / 13 |

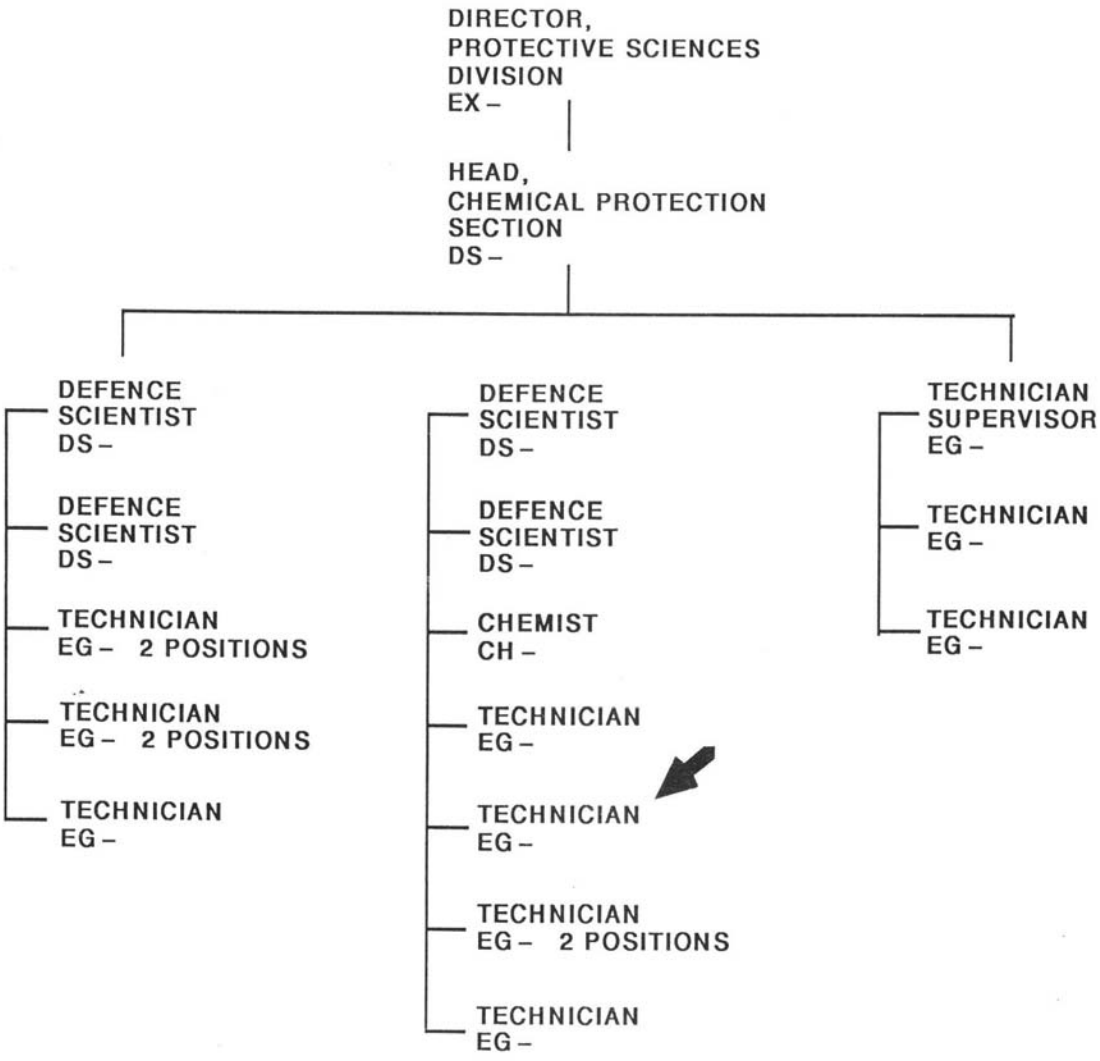
The tests and evaluations of gas mask materials and canisters requires exposure to high noise levels and the transferring of vesicants and other toxic substances requires the wearing of protective clothing, gas masks, safety glasses and rubber gloves. The work **is** carried out in a well lighted and ventilated laboratory or work setting, and there is occasional exposure to dirt and fumes when visiting manufacturing plants producing rubber goods.

| | |
|---|---|
| Hazards | C2 / 30 |

The frequent handling of toxic gases requires stringent adherence to safety precautions and such aspects of the work are never performed by one person alone. Incapacitating respiratory injury could result from exposure to imperceptible concentrations of chemical warfare agents during duties that are frequently performed.

| | |
|---|---|
| Supervision | 1 /5 |

There is no requirement to supervise the work of employees.




PROTECTIVE SCIENCES DIVISION

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 20 Level: 6

Descriptive Title: Dental Therapist Point Rating: 558

| | % of Time |
|---|---|
| Reporting to the Regional Dental Officer: | |
| Delivers a comprehensive dental treatment program to a patient case load. Completes dental charts under professional direction. Performs uncomplicated extractions of teeth and tooth roots and administers local anaesthetic by infiltration or nerve block. Applies fissure sealants and silver amalgam or composite synthetic resin for restorations. Performs vital pulpotomy techniques on deciduous or primary teeth and places stainless steel crowns on deciduous teeth. Supports amalgam restorations by pins when prescribed. Cleans, scales and polishes fillings and teeth using rubber cup and hand instruments. Applies topical fluoride to teeth in a clinical setting and applies fluoride in toothpaste form in a classroom setting. Takes and develops dental x-rays. Inserts film plates in the mouth and exposes and develops films. Annotates patient dental charts and refers case to Dentist when further treatment if required. Advises patients of procedures, problems and treatment required. Cleans, maintains and services dental equipment and sharpening instruments. | 80 |
| Delivers a dental health education program in school. Instructs and lectures school children, education officials, teachers, community organizations, Parent Teacher Associations and others on nutrition, diet, dental problems, programs and hygiene. Promotes water fluoridation in communal water supplies and monitors the distribution and use of fluoride tablets or drops. | 20 |

| Specifications | Degree/ Points |
|---|---|
| Knowledge | 6 / 260 |

Knowledge is required of the techniques of dental treatment including the examination and charting of dental condition, the performance of prophylaxis, the preparation and filling of deciduous and permanent teeth, the extraction of uncomplicated teeth, the administration of local anaesthetic and the topical application of preventative substances. Knowledge is also required of teaching methods.

Experience is required to identify the abnormal particularly in relation to malocclusions and pathological lesions, to read dental charts and to modify treatment as required once dental work has begun. Experience is required to react to emergency situations and to select the preferred course of action. Experience is also required to provide a dental health education program.

This knowledge is normally acquired through in-house training and study of Dental Therapy.

Degree/
Points

Technical Responsibility — B3 / 181

Initiative and judgement are required to select and perform specific dental procedures, in the absence of the dentist, following the examination of the patient and the review of the diagnosed treatment plan or chart. Judgement is required to adjust x-ray equipment and to apply anaesthetic and to plan and deliver a dental health education program. Judgement is also required to select procedures in emergency situations in isolated communities.

The dental therapy work impacts on a patient case load in a region and affects the health and well being of these patients. The dental health education program impacts on the dental health and future treatment needs of the populations of several isolated communities.

Responsibility for Contacts — B2 / 45

The work requires contacts with the general public in isolated communities to teach the methods and techniques of dental hygiene and to explain dental health treatment problems and the suitability of diagnosed treatment.

Working Conditions

Concentration — 2 / 20

The work requires moderate level of attention and concentration when instructing on dental health. Concentration is required when delivering dental treatment. Occasionally greater attention is required for short periods when using anaesthetic or performing extractions and isolating teeth.

Physical Effort — 2 / 20

The work requires continual standing or walking when performing treatments and delivering lectures on dental hygiene.

Environment — 2 / 13

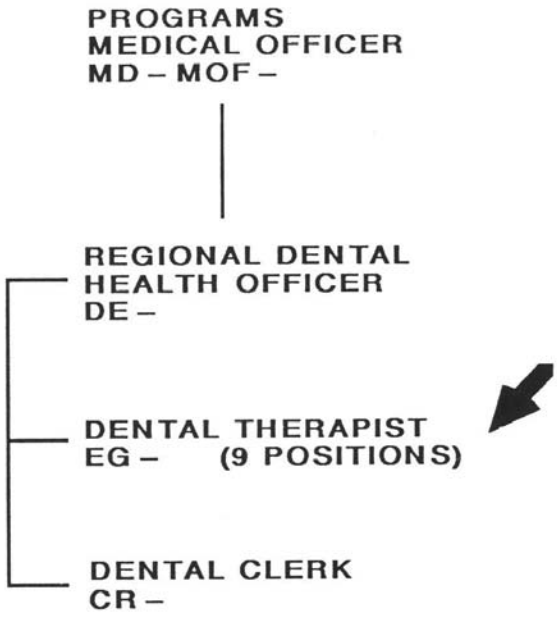
The work requires occasional exposure to several disagreeable conditions such as high noise levels from drills and long periods away from home travelling during adverse weather conditions to isolated communities.

Hazards — A2 / 14

Minor injuries such as cuts, abrasions or injuries could occur while frequently performing dental treatment.

Supervision — 1 /5

There is no requirement to supervise the work of others.




## DENTAL SERVICES

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 21 Level: 6

Descriptive Title: Chemical Research Technologist Point Rating: 560

| | % of Time |
|---|---|
| Reporting to the Research Scientist: | |
| Develops novel analytical methods for the identification of drugs, determination of content uniformity and the assay of complex mixtures of previously unknown impurities, at the parts per million level, in drugs. Establishes project priorities and objectives with supervisor. Reviews and abstracts scientific literature for techniques and data related to the analysis of drugs. Identifies problems, examines and tests approaches and selects the most promising analytical approach. Devises procedures, selects the instrumental methods for the drug under study such as gas, liquid or thin layer chromatography, infrared, ultraviolet, atomic absorption spectroscopy or others. Modifies and assembles instrumentation; observes, records and interprets data. Advises on the limitations, accuracy and reproducibility of methods and equipment devised. Statistically analyses experimental data. Writes project reports and discusses results with supervisor. Advises scientists and technicians on procedures, methods, techniques and instrumentation capabilities in own specialized area. Trains summer students, technicians and visiting scientists in analytical techniques. | 70 |
| Evaluates drugs for the presence of impurities. Reviews and abstracts scientific literature and selects the instrumental method. Tests the system for suitability, diagnoses performance problems in the electronic and mechanical components of the various instrumentation systems: and takes remedial action. Devises and modifies procedures for separating and quantifying the drug and impurity. Treats experimental data to generate pharmaceutical quality parameters, discusses progress and interpretation of results with supervisor. Writes project reports, and assists the scientist in the preparation of papers and reports. | 25 |
| Writes analytical procedures and reports for Departmental reports and publication in scientific literature. Participates in collaborative studies initiated by external organizations such as Food and Drug Administration USA (FDA), United States Pharmacopoeia (USP), and Association of Official Analytical Chemists (AOAC). Analyses special samples, orders chemicals and laboratory supplies. | 5 |

| Specifications | Degree/ Points |
|---|---|
| Knowledge | 6 / 260 |
| The work requires knowledge of theoretical and practical analytical chemistry, the theory of modern chemical, physical and instrumental analytical techniques, such as gas, liquid or thin layer chromatography, isolations and separations, operation of computer systems for data acquisition and analysis, and their application to non routine chemical analysis in pharmaceutical quality investigations. | |

Degree/
Points

Experience is required to review, develop and modify quantitative analytical methods and a variety of sophisticated instrumentation. Experience is required to interpret experimental data. Experience is also required to resolve electronic and mechanical problems with any of the chromatographic and spectroscopic instrumentation utilized such as gas, liquid or thin layer chromatography, infrared, ultraviolet, atomic absorption spectroscopy, and to advise other technicians and scientists on techniques and methods, to search the literature and to write analytical procedures for inclusion in reports and scientific publications.

This knowledge is normally acquired through the study of organic, physical and analytical chemistry, statistical analysis and electronics, and on-the-job training in a research laboratory.

Technical Responsibility C2 / 182

Considerable initiative and judgement are required to modify, adapt and develop quantitative analytical methods, techniques and instrumentation for the determination of drug identification, purity and content uniformity. Initiative and judgement are also required to plan analytical methods when little or no directly related literature is available and when devising experimental approaches for the solution of identified scientific problems. The development, testing, adaptation and evaluation of methods as well as the design, construction, evaluation and operation of scientific apparatus is carried out according to general guidelines provided by a research scientist.

The methods developed for drug identification, quantitative analysis of drugs and impurities and content uniformity are published and are the basis for branch requirements under the Food and Drug Regulations. The methods developed are used by the Branch as official methods in regulating drug quality, by manufacturers to test drugs against specifications and by the internationally recognized standard setting organizations such as the United States and British Pharmacopoeias and the Association of Official Analytical Chemists. Inadequate methods could lead to acceptance by the department of poor data from manufacturers, increased costs of drug testing, the unwarranted withdrawal of a manufacturer's product or the release of an unsatisfactory product.

Responsibility for Contacts B2 / 45

The work requires contacts with scientists and technologists from outside agencies, and other departments and with departmental chemists and research scientists to explain experimental methods and techniques, to discuss problems in methodology and to provide interpretations of data.

Working Conditions

Concentration 3 / 30

The work requires a high level of mental-sensory coordination and effort when cleaning, testing, repairing, assembling and optimizing the various delicate and sensitive instrumentation systems. A high level of attention and concentration when taking observations and handling micro amounts of toxic chemicals and drugs.

| | Degree/ Points |
|---|---|
| Physical Effort | 1 / 10 |

The work requires sitting or standing at a work bench and handling lightweight test apparatus and instruments while testing. There is an occasional requirement to handle gas cylinders (20-40kg) and other heavy objects.

| | |
|---|---|
| Environment | 2 / 13 |

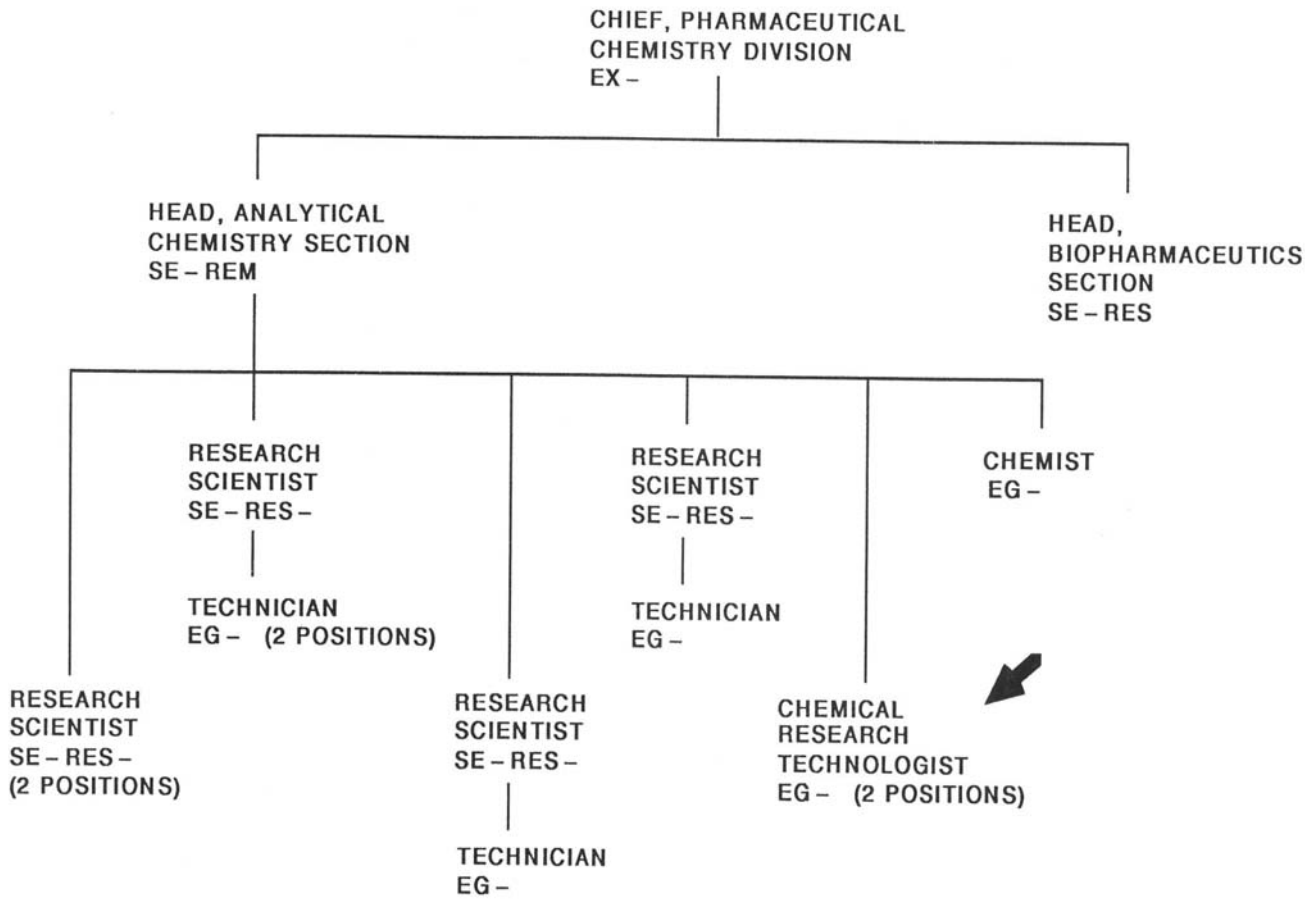
There is constant exposure to organic solvents and occasional exposure to toxic compounds and noise from equipment. The work is performed in a well-lighted, air conditioned laboratory.

| | |
|---|---|
| Hazards | Bl / 15 |

Lost time injuries or illness may result from occasional exposure to toxic, corrosive, flammable or explosive chemicals in a laboratory setting with well established safety standards and methods of operation.

| | |
|---|---|
| Supervision | 1 / 5 |

There is a requirement to show others how to perform tasks.




## BUREAU OF DRUG RESEARCH

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 22 Level: 6

Descriptive Title: Gas Chromatograph - Mass Spectrometer - Data System Technician Point Rating: 560

| | % of Time |
|---|---|
| Reporting to a Research Scientist: | |
| Operates a combined high resolution capillary gas chromatography - mass spectrometry (GC-NS) data system to obtain and analyze mass spectrometry data on complex mixtures of synthetic and naturally occurring compounds. Discusses research requirements with scientists, determines if CC-MS analysis is appropriate and provides advice on sample preparation. Determines the ionization mode, electron and chemical ionization and reactant gas or gases most suitable for the compounds to be analyzed and determines and installs the correct high resolution glass capillary column. Modifies the GC-MS transfer lines as dictated by the compound. Records the chemical and physical properties of pure compounds and the gas chromatographic data of mixtures of compounds. Interprets the basic fragmentation patterns, searches data systems for structural verification and trace components and subtracts background from spectral data. Maintains a library of GC-MS data on synthetic compounds. Maintains and operates the computer and data storage systems and maintains files and cross reference all GC-MS data. Assists scientists in the interpretation and preparation of GS-MS data and manuscripts. Explains the system's capability and analytical procedures and interprets results to scientific staff from a number of research stations. | 60 |
| Tests the electronic and mechanical components of the system, and locates and replaces faulty components. Contacts manufacturing company service representatives for the troubleshooting and diagnosis of specific problems. Uses equipment such as oscilloscopes, microscopes, functional generators, computer, multimeter and related instruments. Modifies circuitry to optimize the performance of the system and dismantles, cleans and reassembles the microcomponents of the ion source, entrance lens, quadruple and detector sectors. Dismantles, cleans and reassembles mechanical and oil diffusion pumps and detects and corrects leaks in the high vacuum system. Prepares and evaluates high resolution glass capillary columns and determines the stability and resolution potential of the column. Discusses potential applications for the GC-MS data system with the manufacturers and users of similar systems, searches literature for hardware, software and techniques suitable for particular analytical situations and develops procedures for the use of mass spectrometry in new fields. | 40 |

| Specifications | Degree/ Points |
|---|---|
| Knowledge | 6 / 260 |

The work requires knowledge of non-routine chemical analysis including gas chromatography and mass spectrometry techniques, methods of computer system operation and data base management.

Degree/
Points

Experience is required to modify the sophisticated CC-MS equipment, to trouble shoot and resolve operational problems, to test electronic circuits and to analyse and interpret test results. Experience is also required to develop potential applications of the GC-MS system, to search the related literature to advise user scientists on the use of the system and to assist scientists in the preparation of manuscripts.

This knowledge is normally acquired through the study of organic and physical chemistry, electronics, computer operations, circuitry and circuit diagrams, high vacuum systems and on-the-job training in a research laboratory.

Technical Responsibility C2 / 182

Considerable initiative and judgement are required to modify and adapt methods and procedures to meet operational requirements, to identify possible new and unique applications for the equipment, to search the literature or project papers for answers to particular analytical or equipment problems and to maintain the GC-MS system. The mass spectral data requirements are determined in consultation with scientists working in a variety of fields and from different sections and research establishments. Project objectives are defined by the scientists and general guidelines provided. The interpretation of fragmentation patterns requires comparison to model compounds and reference to authoritative sources.

The results of the analyses and interpretations provided to departmental and other scientific staff affect the reliability of material to be considered in research projects. Inaccurate or inconsistent results and the incorrect application of the equipment could result in additional analyses, project delays, damaged equipment and considerable waste of time, materiel and resources. The results of the work affects the maintenance of the data library and the provision of assistance to scientists for manuscript preparation. The volume and nature of data is such that it is normally accepted as correct and cannot be easily verified. The data produced may be uses by outside organizations such as universities and provincial government departments. The position reports to a Research Scientist.

Responsibility for Contacts B2 / 45

The work requires contacts with the technical representative of the manufacturer of the system to discuss and resolve operational problems and arrange for the maintenance and repair of the system's various components.

Working Conditions

Concentration 3 l 30

The work requires a high level of mental-sensory coordination when dismantling, cleaning and reassembling the multi-components of the analyzer and high vacuum systems, and in tuning and setting up the GC-MS instrumentation, microscopic assembly and alignment of some components. Certain procedures, once started, must be continuous. A high level of attention and concentration are required when diagnosing, locating, testing and replacing faulty electronic components of the complex electronic circuits and when modifying circuitry to optimize instrument performance.

| | Degree/ Points |
|---|---|
| Physical Effort | 1 / 10 |

The operation of the system and the analysis and interpretation of results are carried out in standing or sitting positions. There is an occasional requirement to handle gas cylinders weighing between 20-40 kilograms.

| | |
|---|---|
| Environment | 2 / 13 |

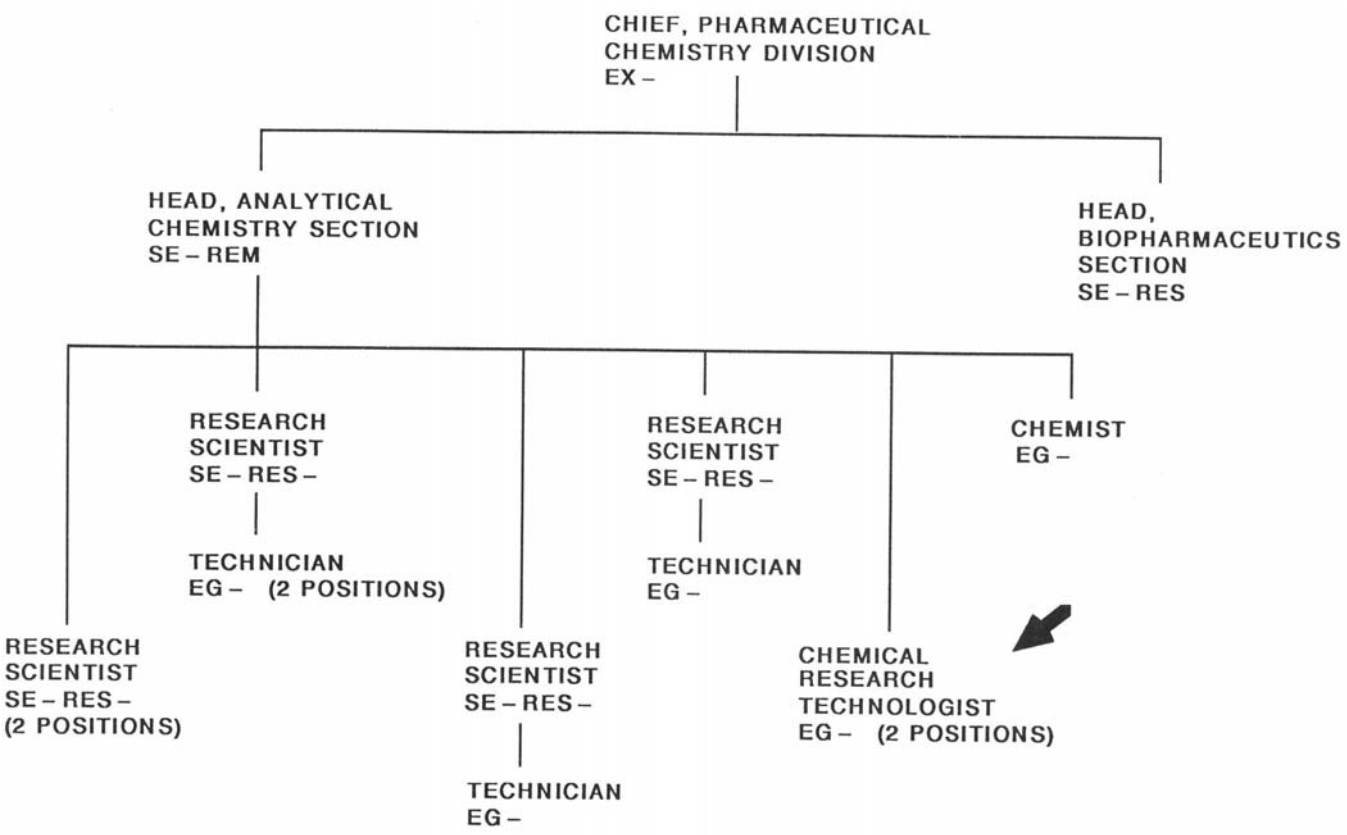
The operation of the system requires constant exposure to noise from the high vacuum equipment and exposure to organic solvents and chemical fumes. The system is located in a well lighted and ventilated work area to prevent contamination.

| | |
|---|---|
| Hazards | B1 / 15 |

Lost time injuries or illness may result from occasional exposure to organic solvents and chemicals.

| | |
|---|---|
| Supervision | 1 /5 |

There is no requirement to supervise the work of others.




BUREAU OF DRUG RESEARCH

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 23 Level: 6

Descriptive Title: Technical Inspector, Architectural/Structural Point Rating: 577

| | % of Time |
|---|---|
| Reporting to the Building Systems Technologist: | |
| Conducts inspections, investigations and tests of the operations and maintenance of all Architectural Structural building services to achieve performance reliability and to satisfy building operating standards. Implements all inspection activities, establishes schedules and performance standards and supervises the inspections carried out by operating and maintenance staff. Conducts inspections in response to required structural changes to accommodations or tenants' building utilization. Writes inspections reports of observations of the effectiveness of current 0&M procedures and work methods, and makes recommendations for improvements. Reviews reports from Provincial Safety Inspectors, the Fire Commissioner of Canada (FCC), accident reports and determines work required to implement the directions or recommendations contained in these reports. Participates in the management of minor capital and OEM projects, initiates work requests and troubleshoots. Identifies maintenance and repair requirements. | 70 |
| Provides technical advice, consultation and guidance on matters related to installations, operation and maintenance to line and operating personnel. Responds to emergency situations such as overloading of structures, deteriorated roofing or roof decks, windows, entrances, etc. As requested, investigates, detects and resolves potential problems in order to ensure dependable and economic operation of building structure and architectural features. | 20 |
| Provides technical back-up services, such as monitoring contractors' performance and compliance with specifications and for minor contracts, administers contracts, approves payments and final settlements. | 10 |

**Specifications**

| | Degree/ Points |
|---|---|
| Knowledge | 6 / 260 |

The work requires knowledge of all aspects of architectural and structural technology applicable primarily to selection, installation, construction, operations and maintenance of facilities. Knowledge of materials of construction, of architectural components in buildings and of building and safety codes is also required. Knowledge of departmental policies, procedures and administrative systems, Government contract policy, financial procedures and safety regulations is required.

Experience is required for evaluating maintenance requirements and procedures to integrate technical features and apply them to develop costs, economic analyses and to submit technical reports of observations and recommendations.

This knowledge is normally acquired through the study of Architectural/Structural/Building Sciences Technology and on the job training in the construction field and/or industrial physical plant maintenance.

Degree/
Points

Technical Responsibility B3 / 181

Initiative and judgement is required to direct project work, troubleshoot and administer service contracts. The work is performed according to general direction from the Building Systems Technologist. The incumbent is required to apply procedures and practices requiring interpretation when observing problems, carrying out projects, analysing measured or metered information.

The action taken or decisions made following inspections and/or investigations will affect the operating costs and safety of buildings, the quality of building services, the size, nature and work methods of the operating and maintenance staff, and the comfort and satisfaction of building occupants. Errors in managing minor capital and operations and maintenance projects, or in administering contracts could result in further expenditure and have a negative impact on the department's working relations with clients.

Responsibility for Contacts B3 / 63

The work requires contacts with outside consulting engineers and architects, provincial and municipal safety inspectors to discuss the suitability of services and equipment following building inspections/investigations.

Working Conditions

Concentration 2 / 20

The work requires a moderate level of attention and concentration when inspecting buildings, examining building materials and components and later analyzing the measured or observed data.

Physical Effort 2 / 20

Most of the work is carried out inspecting buildings and facilities. There is a requirement when doing the inspection to crawl into tight and confined spaces, climb ladders and scaffolding.

Environment 2 / 13

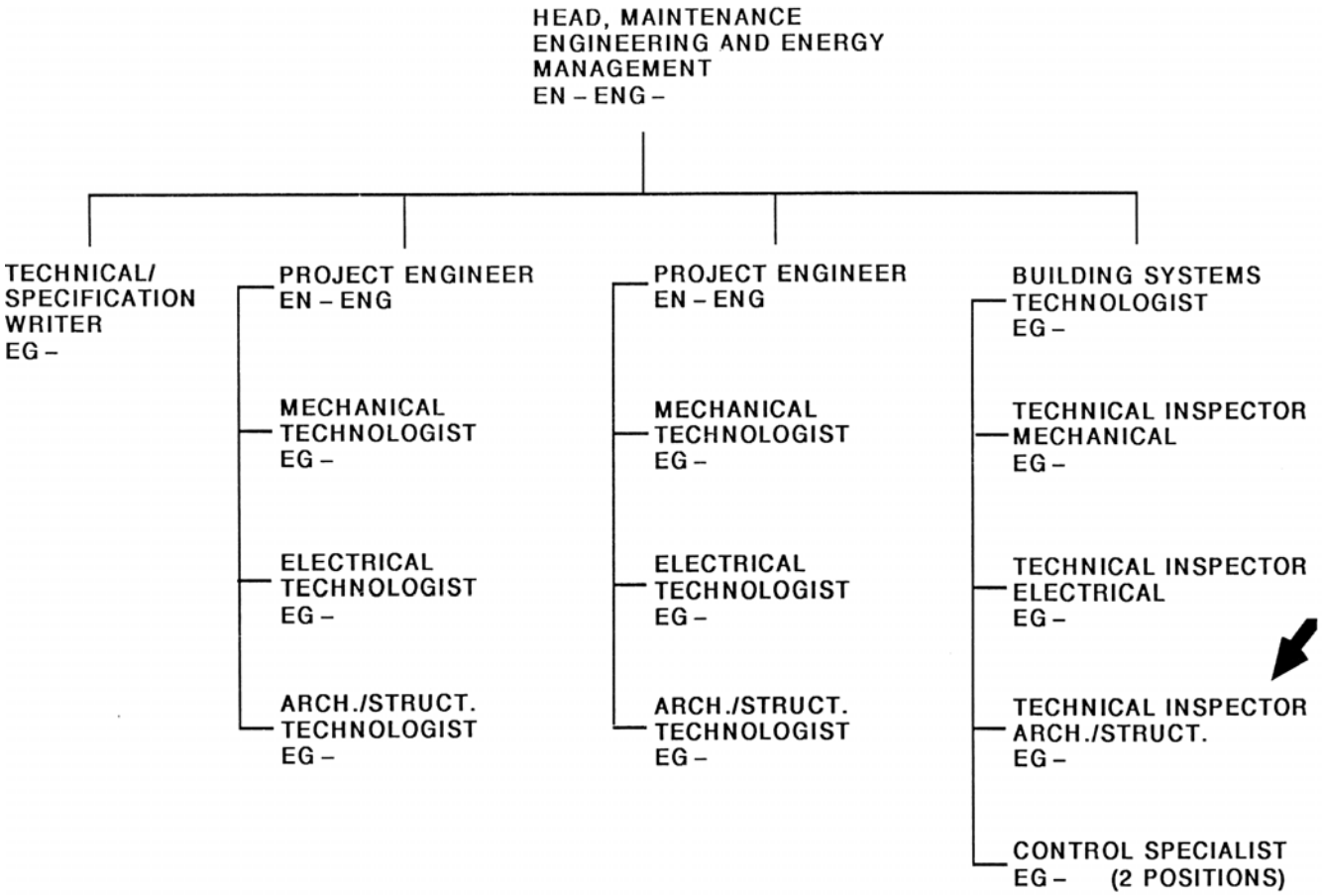
When visiting the work site, there is occasional exposure to several disagreeable conditions such as noise, dirt, dust, adverse weather and the requirement to wear protective head gear and safety glasses.

Hazards B1 / 15

Injuries such as sprains or other lost time injuries could occur due to falling from scaffolds, ladders, roofs or other high structures. Exposure to such injuries could occur when inspecting buildings.

Supervision 1 /5

There is no requirement for the supervision of subordinates.




## PROPERTY ADMINISTRATION

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 24 Level: 6

Descriptive Title: Research and Design Technician, Test Equipment Point Rating: 585

| | % of Time |
|---|---|
| Reporting to a research scientist: | |
| Designs or modifies gun propellant test equipment and subsystems to measure performance characteristics such as ignition or the pressure dependence of burning rate. Determines design concepts in discussion with engineering and drafting personnel and provides technical guidance to machinists and fitters involved in the construction and installation of the equipment. Discusses problems associated with the design and installation and improvement of test apparatus with the drafting, design and engineering personnel. Designs or selects gauges to meet test program requirements and constructs and maintains test equipment and ancillary and signal processing equipment. Verifies that the firing circuits function correctly and calibrates, adjusts, operates and monitors the correct operation of recording equipment. Carries out modifications to the test equipment and connects ancillary electronic equipment such as oscilloscopes, wavelength analyzers and other data acquisition devices to the test facilities. Calibrates, adjusts and ensures the accurate operation of electronic amplifiers, filters and other high and low frequency signal indicators. Periodically tests and calibrates recording and signal processing equipment within approved tolerances and repairs or replaces malfunctioning components using standard test instruments or techniques. | 70 |
| Identifies, in discussions with scientific staff, the electronic, optical or photographic instrumentation required to record or measure flame temperature, burning surface regression and other factors used in the study of gun propellant combustion processes. Devises tests and calibrates instruments used in firing trials requiring standard or non-standard data acquisition and control facilities. | 10 |
| Supervises a junior technician in the conduct of gun propellant performance tests. Collaborates with the scientist, develops experimental work plans. Prepares and sets up test samples and test equipment to conform to test requirements. Selects and installs the appropriate instrumentation and data acquisition equipment. Carries out the firing test according to established procedures and in conformance with safety and security measures. Verifies the accuracy and dependability of the test results for computerized interpretation and writes reports on test results for the scientists consideration. | 20 |

| **Specifications** | Degree/ Points |
|---|---|
| Knowledge | 6 / 260 |

The work requires the knowledge of mechanical design practices, of high pressure combustion test techniques, of gun propellant and subsystems performance analysis. Knowledge is also required of safety and security measures. Knowledge of basic electronics to operate, fabricate and maintain firing equipment and instrumentation is required.

Degree/
Points

Experience is required to devise and modify gun propellant test equipment to record and analyse test data for consistency, to troubleshoot and resolve problems, to provide a testing service, to use and control materiel and human resources and to use specialized test instruments. Experience in the specialty area is required to maintain an awareness of trends and developments in the specialty area and to prepare reports.

This knowledge is normally acquired through in-house training in a research laboratory and study of physics, chemistry, mechanical design, photography and electronics.

Technical Responsibility C2 / 182

Considerable initiative and judgement are required to develop design concepts and experimental work plans according to general guidelines and to meet the requirements of the test program. Initiative and judgement are also required to design or select appropriate instrumentation and gauges, to identify, adapt, modify and utilize specialized electronic, optical and photographic apparatus for use in the study of combustion processes and to verify the accuracy and dependability of test results.

The development and selection of instrumentation and equipment and the preparation of experimental work plans have an effect upon the nature and timeliness of data provided to the research scientist and the progress of the project. The improper conduct of tests or inadequate direction and training of the subordinate technician could result in the provision of inaccurate data, the loss of data, damage to equipment and the considerable waste of time, materials and human resources.

Responsibility for Contacts B2 / 45

The work requires contacts with employees of private sector chemical companies and with technical and scientific staff of other government establishments to discuss the suitability of testing methods and equipment and the operational problems being experienced in the testing.

Working Conditions

Concentration 3 / 30

The work requires a high level of attention and concentration for sustained periods when calibrating, adjusting, operating and monitoring a variety of recording equipment during firing trials, and a high level of mental-sensory coordination when wiring, connecting, calibrating and adjusting oscilloscopes, wave form analyzers, data acquisition devices, electronic amplifiers and filters. A high level of concentration is also required when designing, constructing, installing and operating specialized electronic, optical and photographic apparatus.

Physical Effort 1 / 10

The work requires standing or sitting at a work bench and the handling of test apparatus and instruments when developing and setting up the firing tests. The construction and installation of equipment requires the use of hand and power tools for short periods of time.

| | Degree/ Points |
|---|---|
| Environment | 2 / 13 |

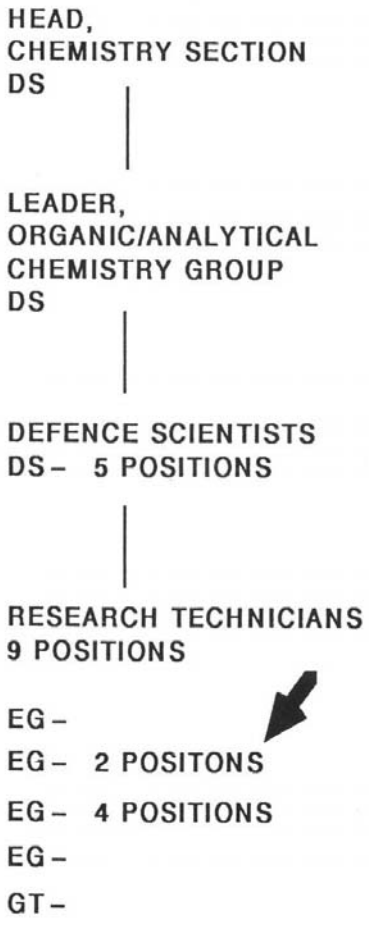
The work is carried out in a well-lighted and ventilated firing facility which is located in an explosive plant area. Strict conformity to safety and security regulations results in restricted movement and specific dress and behaviour requirements.

| | |
|---|---|
| Hazards | C2 / 30 |

The frequent loading of test apparatus with propellant and igniter prior to a test and the preparation of test samples could result in exposure to serious and incapacitating injuries due to deflagration or explosion. These duties are carried out in a firing facility with well established safety and security standards and regulations.

| | |
|---|---|
| Supervision | 2 / 15 |

There is a requirement to supervise the activities of a junior technician, instruct in the performance of duties and safety regulations, to assign work and to occasionally provide guidance and instruction to employees working on the test project.




## PROPULSION DIVISION

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 25 Level: 6

Descriptive Title: Shift Supervisor
Major Weather Office
Point Rating: 607

| | % of Time |
|---|---|
| Reporting to the Officer-in-Charge, Toronto Weather Office: | |
| Supervises and coordinates a weather services program on a 24-hour, 7-day-a-week basis. | |
| Ensures that scheduled weather office programs such as: media broadcasts, radar observations, Weather radio Canada broadcasts, briefings for airline flights, are coordinated with unscheduled duties arising out of severe weather situations and spontaneous requests from users for information and consultation. Supervises the analysis of weather trends, identifies and monitors severe weather situations, and ensures that immediate action is taken to warn the public of situations with potential to cause loss of life or economic sector damage. Supervises the timely dissemination of weather warnings, ensures that all appropriate agencies, such as emergency measures organizations, provincial and municipal police forces, media outlets, and other weather-sensitive users, such as aircraft refuelling companies, are contacted, so that they may take appropriate action. Ensures the provision of safety and security services to surrounding regions, when local weather offices are closed, by assuming responsibility for their severe weather alerting programs. Oversees weather support services directed to sister agencies such as Transport Canada. | 40 |
| Controls the operation of a government owned radio station, Weatheradio Canada, which continuously broadcasts weather information and weather warnings to the public, marine, agricultural, industrial, aviation, and transportation sectors. Determines content and frequency of Weatheradio broadcasts, edits or writes radio scripts, and controls the quality of the outputs. Also controls content, quality and loading of weather information products for displays on cable television stations and for playback on automatic telephone answering devices in several provincial locations. | 15 |
| Supervises the operation of weather radar display systems covering a large, densely populated portion of the province. Controls the mode of operation of several facilities and the issuing of radar observations. Coordinates maintenance schedules with operational requirements. | 10 |
| Maintains, through daily contacts, a close rapport with representatives of the media, by informing them about meteorology and interpreting the Environment Canada weather information products presented to their audiences. Participates in live and taped interviews and/or broadcasts. | 15 |
| Analyzes user requests which fall within departmental cost recovery policies, directs customers to the correct source of information, and ensures that appropriate fee schedules are applied. Initiates administrative action to invoice for services rendered by the weather office. | 15 |
| Conducts formal evaluations of staff and makes recommendations for discipline, training, and deployment. | 5 |

| Specifications | Degree/ Points |
|---|---|
| Knowledge | 6 / 260 |

The work requires knowledge of theoretical meteorology, climatology, weather observing, recording and reporting techniques and procedures, radar theory and operating procedures, Weatheradio and other mass dissemination systems, and the presentation and communication techniques required for a wide range of clients. Knowledge is required of commercial media operations and broadcasting techniques, as well as an appreciation of the needs and understanding of target audiences and the impact that such dissemination methods have upon Environment Canada's image. The work also requires knowledge of general administration and supervisory techniques and procedures.

Experience is required in analyzing weather situations and providing weather services in a number of different geographical, climatological and economic regimes. Experience is required in consulting with users, determining their requirements, selecting the most appropriate information for their purposes, and facilitating the decision-making process of the user. Experience is also required in providing a variety of services under the pressure of changing priorities and time constraints, severe weather or emergency situations, and strict deadlines.

This knowledge is normally acquired through formal in-house training and study in supervision, theoretical meteorology and climatology, presentation, marketing and communication techniques, media relations, radar and Weatheradio.

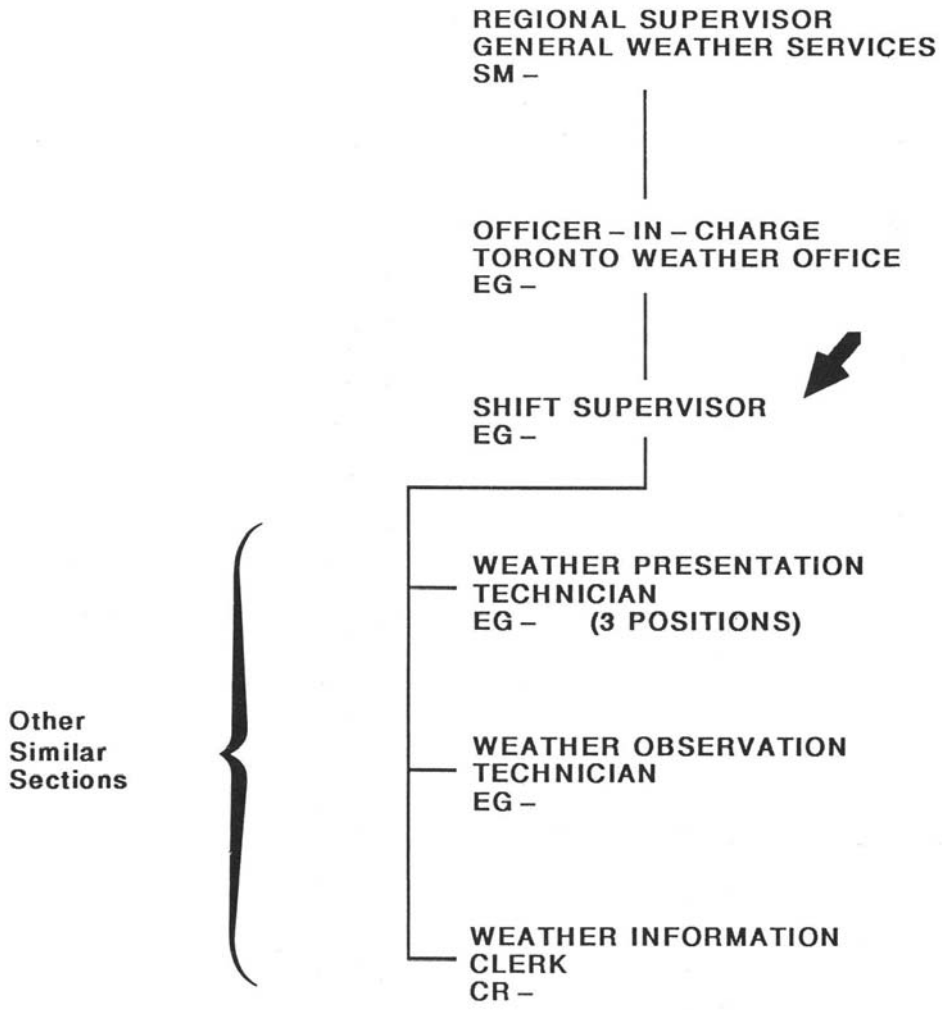
| Technical Responsibility | C3 / 182 |
|---|---|

The supervisor controls and participates in the modification and adaptation of weather forecasts and other products, and the development of new information, in order to offer products of a more precise nature, in terms of timing and area affected, to most effectively meet clients' needs. Controls the continuous analysis of incoming weather information in the form of alphanumeric code, and graphical and pictorial depictions. Supervises the interpretation and integration of the data in order to identify trends and significant developments in weather patterns. Coordinates the timely dissemination of weather warnings. Controls the human and material resources of the weather office during the shift.

The weather office is the first point of contact with the majority of requests for weather and other environmental information from Environment Canada. The services are produced and presented to the users by the weather presentation technicians without professional intervention. The shift supervisor is accountable for the quality of these services rendered to the public in a large and complex urban/rural area. The responsibility for safety and security services to the public also extends to adjacent regions during hours when the local weather offices are closed.

Weather sensitive economic sectors, such as agriculture, construction, transportation and recreation rely on the weather office to provide information and advice necessary to make major business decisions. For example, the cancellation of a major outdoor sporting event results in substantial direct loss to the franchise operator. Decisions made by users based on information received directly from the shift supervisor or a subordinate affect many millions of dollars' worth of economic activity, and the safety and security of entire communities. Direct input to media outlets at the local, regional, and national levels ensures the integrity of Environment Canada products.

| | Degree/ Points |
|---|---|
| Responsibility for Contacts | B3 / 63 |
| The work requires discussion and explanation and interpretation of analytical reviews or elaboration with users in order to ascertain the nature of their requirements and appropriately tailor the information provided. Users include radio and television stations and officials of private companies and of own and other federal, provincial and municipal government departments and agencies. | |
| Working Conditions | |
| Concentration | 2 / 20 |
| The work requires moderate attention and concentration when analysing weather patterns, monitoring information form a wide variety of sources, and preparing information packages and briefings for users. | |
| Physical Effort | 1 / 10 |
| The work is performed in an office environment at a work station designed to minimize the need for standing or walking around. | |
| Environment | 1 / 6 |
| Most of the work is performed in an open office environment with exposure to few disagreeable conditions such as ringing telephones and talking. | |
| Hazards | Al /6 |
| As the work is performed indoors, exposure is limited to minor injuries, such as cuts and abrasions. Duties involved occupy a small amount of time. | |
| Supervision | 3 / 60 |
| The work requires the supervision of three weather presentation technicians, a weather observation technician, and a weather information clerk. It also requires the conduct of formal performance evaluations and recommendations on disciplinary measures and training requirements. | |




ATMOSPHERIC ENVIRONMENT SERVICE

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 26 Level: 6

Descriptive Title: Underwater Weapons Technologist Point Rating: 607

| | % of Time |
|---|---|
| Reporting to the Underwater Weapons Technological Development Supervisor: | |
| Plans and carries out projects involving the design, development, acquisition, installation and disposal of underwater weapons and systems such as anti-submarine rockets, surface vessel torpedo tubes and the associated handling equipment. Maintains, repairs, modifies and improves such equipment and systems, and provides technical guidance and advice to own and other departments and industry. Carries out detailed analysis of technical data, using computer or other means to determine parameters of equipment and the degree of its conformance to departmental requirements, in order to produce options for equipment selection. Estimates project costs and develops supporting data to justify the provision of budget amounts. Prepares guidance drawings and specifications for installation of equipment and systems in ships and in shore facilities, and approves engineering drawings for the production and installation of equipment, to be used as a standard for inspection procedures. | 50 |
| Performs detailed studies of equipment and systems to draft maintenance policies and schedules for approval by senior staff. Develops regular maintenance and repair procedures, develops modifications to improve equipment and systems performance, establishes the extent and variety of spare parts required and arranges with the contractor and departmental staff to have this logistic support available prior to or concurrent with the introduction of new equipment to the Fleet. | 30 |
| Visits operational ships, shore facilities, and contractors premises in Canada and abroad to provide evaluation and technical assistance on installation, equipment and maintenance problems, to ensure that the methods and procedures being used are in accordance with specified standards and recommends corrective action if required. Certifies invoices for payment. | 20 |

| **Specifications** | Degree/ Points |
|---|---|
| Knowledge | 6 / 260 |

The work requires knowledge of product improvement, installation and repair procedures; techniques for estimating project costs and computer analysis of technical data. Knowledge is required of quality assurance techniques, specification writing and drafting techniques and departmental logistics support procedures. Knowledge is also required of contract regulations.

Experience is required to develop modifications for improved equipment and systems performance, to draft maintenance policies and schedules, to provide technical guidance and advice to industry for example in the production and standardization of torpedo systems. Experience is also required to oversee refits, installations, tune and refit of weapon systems involving missiles, handling and launching systems in surface ships and submarines.

Degree/
Points

This knowledge is normally acquired through on-the-job training and study of weapon systems, mechanical and electrical and electronics technology, drafting and life-cycle material management.

Technical Responsibility C3 / 232

Considerable initiative and judgement are required to develop product improvements to increase reliability, to adapt and modify standard equipment to unique installation constraints, to develop specifications and to analyze reported deficiencies, performance data and evaluation results. Initiative and judgement are also required to define and resolve design problems, and recommend acceptance or rejection of new or refurbished systems and equipment. Projects are assigned and carried out according to general instructions.

The work affects the operational readiness and effectiveness of maritime equipment, manufacture and installation procedures and maintenance and logistic support on a national basis. Errors in the analysis of failure data could result in significant financial, materiel and time losses such as loss of expensive weaponry and repeated system breakdown. The position reports to the Underwater Weapons Technological Development Supervisor (EG).

Responsibility for Contacts B2 / 45

The work requires contacts with employees in other departments, such as the Department of Supply and Services to provide technical guidance, explanations and interpretations on specifications and schedule requirements. Contacts are also required with professional and technical employees of contractors to discuss the suitability of methods and equipment. and to check on the quality and progress of work carried out.

Working Conditions

Concentration 2 / 20

The work requires moderate attention and concentration when preparing design specifications, analyzing systems proposed by vendors, analyzing sea trial results and engineering drawings, setting maintenance levels and writing instructions for operation and maintenance of underwater weapons.

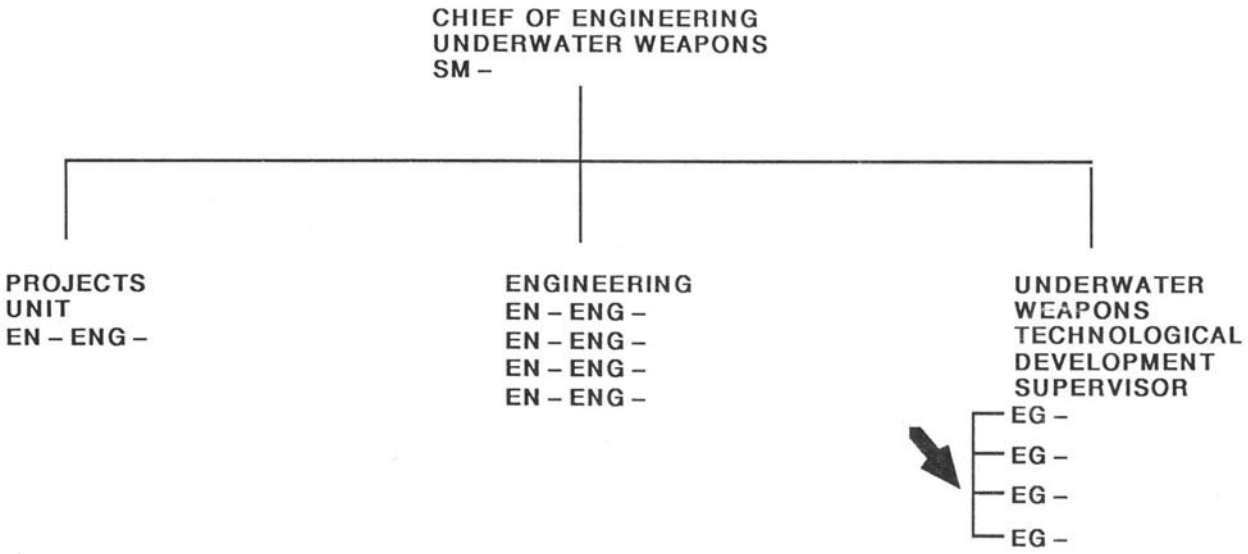
Physical Effort 1 / 10

The work requires some standing and walking in the workshop and the occasional climbing of ladders aboard vessels. There is a requirement to assist in the movement of heavy objects during operational trials of equipment at sea.

Environment 3 / 20

Installation, maintenance and inspection duties are carried out on board ships at sea and in commercial ship yards which involve significant exposure to dirt, noise, extreme temperatures and vibration. There is a requirement to be away from home for extended periods of time when conducting sea trials and visiting contractor facilities.

| | Degree/ Points |
|---|---|
| Hazards | B1 / 15 |
| There is exposure to lost time injuries or illness such as sprains, fractures or sea-sickness when occasionally assisting with the installation of equipment and the testing of equipment under proof-load conditions while at sea. | |
| Supervision | 1 /5 |
| There is no requirement for the supervision of subordinates. | |




MARITIME COMBAT SYSTEMS DIRECORATE

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 27 Level: 6

Descriptive Title: Senior Project Officer, Construction and Maintenance Point Rating: 644

| | % of Time |
|---|---|
| Reporting to the Manager, Construction: | |
| Controls the progress of a number of assigned construction projects, from the award of contract to project completion, coordinates the various aspects of the work performed by consultants, contractors and inspection staff and investigates and reports on any unforeseen conditions or problems. Coordinates the work of survey and soil testing crews. Informs contractors of contract and scheduling requirements and of the conditions on site. Investigates the financial background and previous performance of contractors and recommends which tender bid to accept. Advises clients, consultants and contractors and inspection staff of departmental and contract requirements, methods and procedures, of appropriate construction techniques and environmental conditions and of the (available) methods of local transportation. Assists the scheduling officer to establish realistic project schedules. Conducts or coordinates site inspections, determines the need for and coordinates specific structural, mechanical and electrical inspections and reports the inspection results to the Manager, clients, consultants and contractors. Instructs the inspectors on methods and techniques and appraises their performance. Reviews the contractors work for progress and verifies the accuracy of progress claims. Investigates any unforeseen site conditions, of instances of damage, neglect or faulty work and investigates contractor claims or work delays. Represents the department when disputes with contractors occur regarding scheduling, scope and quality of work, cost quotations or other problems. Participates in the preparation of financial updates, forecasts expenditures and prepares and issues contract change notices. Convenes interim and final acceptance boards and represents the department at such meetings. Coordinates and developments construction projects with the use of inmate labour programs. | 75 |
| Controls day labour projects, determines the scope of the work and estimates the quantity of materials required. Orders the material and organizes its shipment to the site. Selects the workforce or contracting company and makes lodging arrangements when necessary. Reviews the proposed cost estimates and recommends their acceptance or rejection. Informs the construction supervisors of their duties and responsibilities and of the scope of the work and provides advice on the methods and procedure to be followed. Controls the expenditure of funds and inspects the work to ensure approved methods and materials are used. | 25 |

| **Specifications** | Degree/ Points |
|---|---|
| Knowledge | 7 / 305 |
| The work requires knowledge of techniques and methods of investigating site conditions, of standards and construction practices and of project management techniques. | |
| Experience is required to react to unforeseen site conditions by adjusting work in progress, and to negotiate the departmental position with suppliers in disputes regarding the scheduling of work, workmanship, cost quotations and other problems. Experience is | |

Degree/
Points

required to maintain an awareness of trends in construction methods and trades operations, consultant services, and changes to building codes. Experience is also required to provide a construction project control service, to manage day-labour projects, and to represent the department on acceptance boards.

This knowledge is normally acquired through in-house training and study of civil engineering technology, the practices, standards, principles of construction (structural, mechanical, and electrical) and contract law.

Technical Responsibility B3 / 181

Initiative and judgement are required to coordinate and monitor the activities of consultants, contractors and the inspection staff, to assess inspection results, to evaluate contractors' progress claims, investigate contract disputes and to convene acceptance boards at appropriate times. The control of construction and day labour projects, the coordination of construction and inspection activities and the investigation of unforeseen site conditions or other problems are carried out according to general instructions provided by the Manager and to meet contract and client departments' requirements and schedules. Judgement is required to prepare contract change notices, to forecast expenditures and financial updates when site conditions or contracts change.

The decisions made on-site regarding cost estimates, project schedules, labour and material requirements affect the progress and completion dates of the various projects. Errors could result in significant additional cost, project delays and client complaints. Errors in controlling the expenditure of funds for day-labour projects and errors made when representing the client departments' interests in disputes with contractors could result in further expenditure and have a negative impact on the department's working relations with contractors. The position reports to the Manager Construction (EG).

Responsibility for Contacts C3 / 80

The work requires representing the department at meetings with contractors to investigate and settle disputes arising from schedules, the scope and quality of work performed, cost quotations and other such issues affecting the progress of the projects.

Working Conditions

Concentration 1/ 10

The work requires attention and concentration when reviewing tenders, and investigating site conditions.

Physical Effort 2 / 20

The work requires frequent visits to construction sites and the walking through unfinished sections to monitor and assess progress, carry out or coordinate inspections and to investigate problems and contractor claims.

| | Degree/ Points |
|---|---|
| Environment | 3 / 20 |

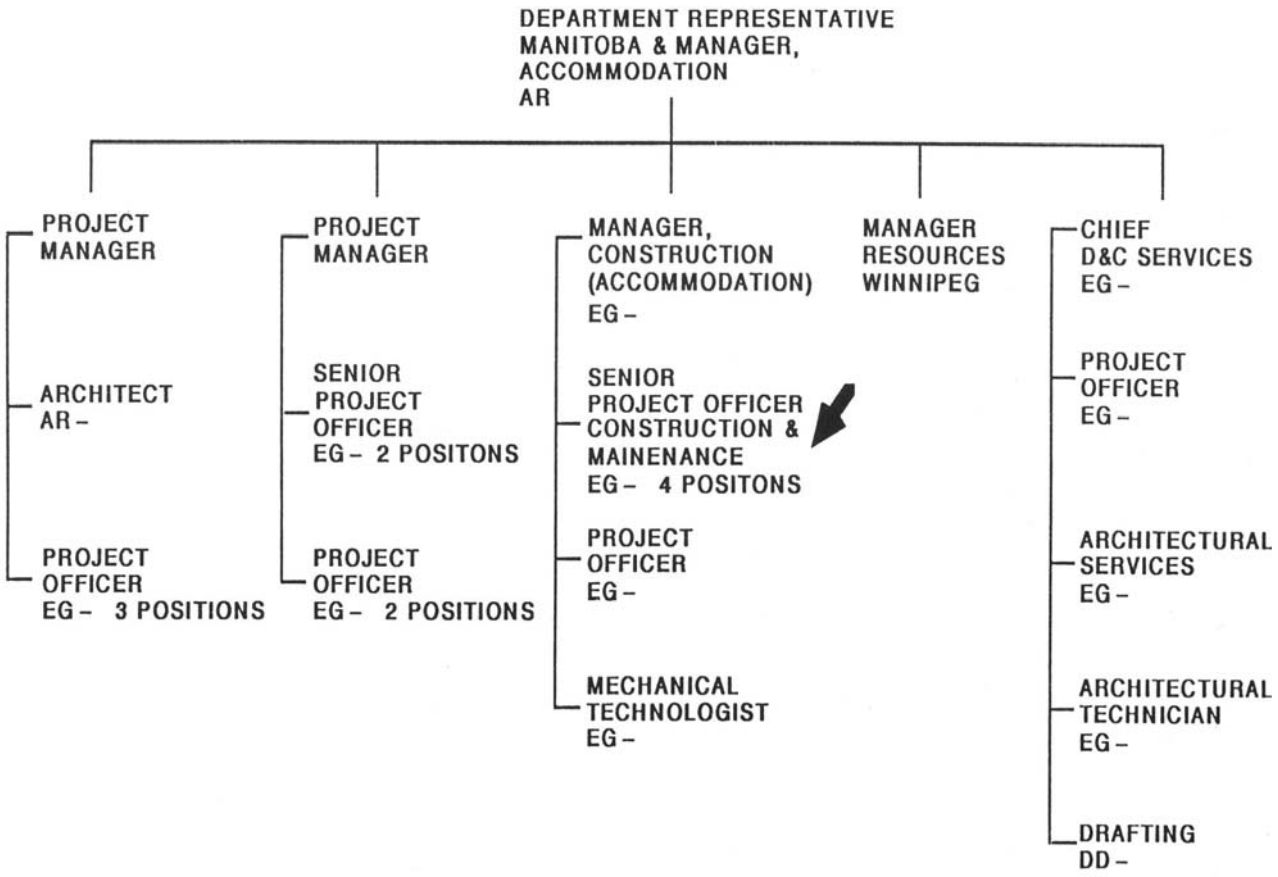
The work is mainly carried out in the field involving extensive travel and absence from home for periods of time. Some of the construction sites are located in northern and arctic regions and there is exposure to such adverse weather conditions as arctic sub-zero temperatures. The work requires exposure to several disagreeable conditions such as dirt, dust, noise and insect bites when evaluating work in progress and carrying out site inspections. There is a requirement to wear protective footwear, hard hats and safety glasses on construction sites.

| | |
|---|---|
| Hazards | B2 / 23 |

While frequently inspecting work sites and assessing work in progress there is exposure to lost time injuries such as fractures or sprains due to insecure footing or falling objects.

| | |
|---|---|
| Supervision | 1 /5 |

There is no requirement for the sustained supervision of subordinates.




## ARCHITECTURAL AND ENGINEERING SERVICES
## WESTERN REGION

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 28 Level: 6

Descriptive Title: Senior Architectural Technologist Point Rating: 661

% of Time

Reporting to a Project Architect:

Supervises the activities of four technicians and drafting personnel involved in the design, planning and conduct of construction projects covering new and existing buildings, heritage restorations, facilities for the handicapped and tenant services. Assigns duties, provides technical advice and guidance, ensures compliance with standards, regulations and budgets and evaluates staff performance. 15

Plans the development of project control packages, discusses the clients' requirements, prepares a project brief and assesses the suitability of proposed and alternative sites. Arranges for site testing and survey activities and assesses the results obtained. Develops and evaluates design approaches and prepares a feasibility report indicating investigation results, and the most suitable plan of action in terms of scope, quality, time, cost and implementation strategy. Prepares a design package for approval by the client and design authorities. 30

Prepares contract document packages including additional design drawings, working drawings, specifications, prototype scale models and upgraded time and cost estimates for client and design authority approval and to facilitate testing and construction. Coordinates the procurement of engineering, design, translating, scheduling, specification and historical research resources as required. Compiles and verifies contract documents and submits them to the client and design authority for approval at strategic intervals. Attends construction briefing sessions, answers queries during tender calls and prepares tender addenda as required. 30

Provides technical support to the construction supervisor, evaluates tenders and prepares cost reduction proposals. Reviews shop drawings for conformity to contract documents and approves samples. Prepares design clarification and modification documents to cover unforeseen site conditions or contract changes and inspects the work in progress to ensure contract requirements are met. Assists in the analysis and defence of claims submitted by the contractors, prepares as-built documents and briefs the client or property officers during commissioning or takeover and throughout the warranty period. 25

**Specifications** Degree/ Points

Knowledge 7 / 305

The work requires knowledge of the techniques and the methods to assess the suitability of sites, to evaluate design approaches, and to estimate costs of construction. Knowledge of procedures for interior design, landscaping, specifications and inspection are required.

Degree/
Points

Experience is required to plan and coordinate the design, scheduling, materials and construction of projects including new construction, repairs, renovations, additions, heritage restorations and retrofits. Experience is required to provide an architectural project design service and to control materiel and human resources. Experience in the field is also required to maintain an awareness of trends in architectural design, architectural technology, by-laws and building codes.

This knowledge is normally acquired through in-house training and study of engineering or architectural technology, thermography, acoustics, vibration, historical research, contract administration and building codes.

Technical Responsibility C2 / 182

Considerable initiative and judgement are required to assess test results and site suitability, to evaluate and modify design approaches, to determine project implementation strategy, to coordinate technical and specialized resources and to brief clients and property officers on project content issues. The planning and development of project control and contract document packages for a number of projects are carried out according to general instructions provided by the Project Architect to meet the requirements of the client or the user of the facility. The contract documents are prepared to conform to municipal building codes and by-laws, the National Building Code of Canada and the requirements of the Canadian Specifications board. Judgement is required to review unforeseen site conditions and contract changes and to prepare design drawings and documents and cost estimates.

The decisions made in the preparation of project control and contract document packages affect the economical and timely completion of the projects undertaken. Errors in evaluating design approaches are normally detected by the design authority. Errors in scheduling and cost estimating, planning and controlling the work of subordinates could result in significant costs, project delays and client complaints. The position reports to a Project Architect.

Responsibility for Contacts B3 / 63

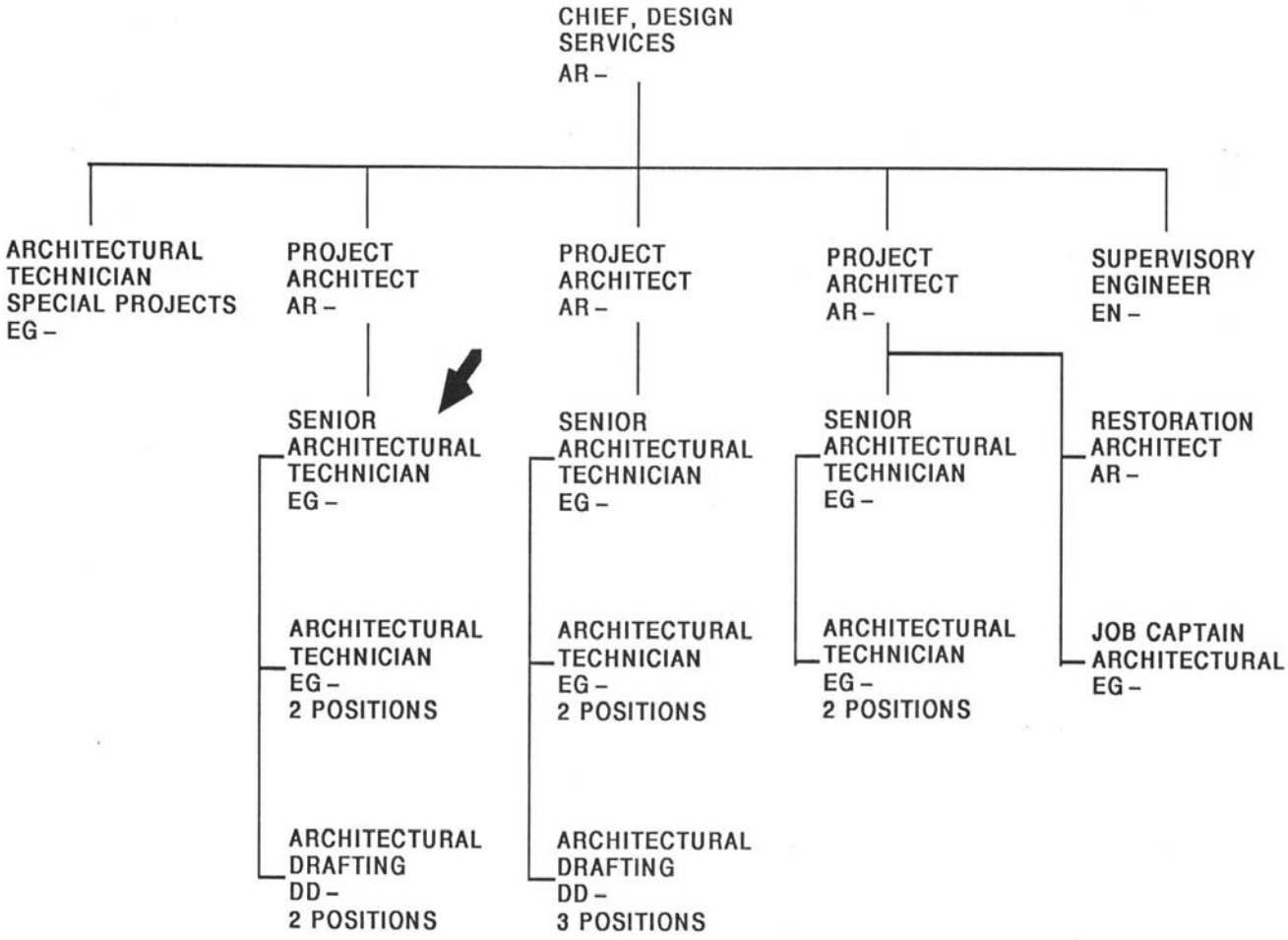
The work requires contacts with officials and representatives of municipal governments, outside agencies and professional associations to analyse and evaluate implications of local by-laws, to provide explanations and rationale for land acquisitions and other issues of common interest affecting projects. Contacts are required with officials of client departments to determine services, and requirements and to provide project briefings.

Working Conditions

Concentration 2 / 20

The work requires moderate attention and concentration when preparing architectural design drawings, scale models, specifications, cost estimates and schedules and when evaluating tenders.

| | Degree/ Points |
|---|---|
| Physical Effort | 1 / 10 |
| The work requires visits to construction sites and walking through unfinished sections to observe and report on progress. Most of the work is carried out at a desk supervising, planning and developing the project document packages. | |
| Environment | 1 /6 |
| As most of the work is performed in an office environment there are few disagreeable conditions. | |
| Hazards | B1 / 15 |
| Injuries such as sprains or other lost time injuries could occur due to insecure footing or falling objects. Exposure to such injuries could occur when occasionally inspecting work in progress. | |
| Supervision | 3 / 60 |
| The work requires the continuing supervision of architectural technicians, drafting personnel and summer students, the assigning and checking of work, the provision of technical guidance and instruction on work methods and procedures and the formal evaluation of subordinate performance. | |




DESIGN AND CONSTRUCTION BRANCH

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 29 Level: 6

Descriptive Title: Oilseed Breeding Supervisor Point Rating; 664

| | % of Time |
|---|---|
| Reporting to the Section Head, Oilseeds: | |
| Develops, plans and supervises laboratory studies for the rapid analysis of oil, protein, fatty acid composition, glucosinolates, crude fibre, mucilage and other chemical contents of plant material. Conducts interlaboratory standardization of sampling with other research stations, National Research Council, universities and industrial laboratories, Collaborates with non-government research laboratories in the development of methods for performing meal, oil, protein and fatty acid determinations. Conducts and supervises field, greenhouse and laboratory experiments to evaluate and identify plant material with potentially desirable agronomic and chemical characteristics. | 45 |
| Initiates and coordinates cooperative research studies and trails in Canada and northern U.S.A. involving local farmers, universities, and research scientists. Analyses and reports significant agronomic data and prepares and submits papers to the Expert Committees on Grain Breeding and Grain Quality. | 25 |
| Analyses, summarizes and reports experimental data including chromatographic ion peak data, laboratory and field observations. Modifies and adjusts a variety of sophisticated laboratory equipment to meet ad hoc and special applications. This equipment includes gas chromatographs, autosamplers, strip chart recorders, spectrophotometers, nuclear magnetic resonance spectrometers, and an infrared analysers. For statistical analysis, computer programs are modified through the use of mini-computer based lab systems dedicated to the on-line acquisition of data from analog chromatograhpic instruments, peripheral equipment including teletypes, decwriters, high speed paper tape photoreaders, and a terminal. | 15 |
| Supervises and assigns analytical and field work on numerous projects involving 4.5 p/y's of station staff. | 15 |

| **Specifications** | Degree/ Points |
|---|---|
| Knowledge | 6 / 260 |

The work requires a knowledge of non-routine techniques for the chemical analysis of plant materials, and the analysis and interpretation of statistical data using a variety of sophisticated laboratory equipment and mini computer and peripheral equipment, knowledge of techniques is required for the development of new methodologies for testing materials.

Degree/
Points

Experience is required to analyse experimental results for the evaluation and identification of plant material with desirable agronomic and chemical characteristics. Experience is required to modify sophisticated lab equipment and to modify computer programs to meet new experimental requirements. The planning, coordination and conduct of oilseed breeding projects requires experience in the use and control of material and human resources.

Considerable independence from direct supervision places demands on the work in identifying areas of greatest potential warranting further testing, setting out the experimental plans including the number of entries, plot size, number of replicates and locations at which trials should be conducted and advising the industry, provincial, university and other cooperators in the research projects on proper cultural practices.

This knowledge is normally acquired through in-house training and the study of botany, genetics, cytogenetics, chemistry plant breeding, taxonomy, plant physiology, electronics and computer sciences.

Technical Responsibility C3 / 232

Considerable initiative and judgement are required to develop and improve methods for performing meal, oil, protein and fatty acid determinations, to evaluate and identify plant material with desirable agronomic and chemical characteristics and to analyse and report significant data and prepare and submit research reports to the Export Committees on Grain Breeding and Grain Quality. Initiative and judgement are also required to plan and coordinate projects, defines objectives, determines the most suitable cultural practices and interprets results. The operation of the laboratory and the evaluation of new plant material are carried out according to general instructions provided by the Section Head, a research scientist.

Test results, information and data obtained are provided to scientific staff in federal/provincial governments as well as in industry and can affect the progress and viability of these research and development programs. The decisions made on projects affect the economics and timeliness of completion of projects. Test results and recommendations will determine the selection and the entry to the market of significant new strains of rapeseed, canola, mustard and sunflowers.

Responsibility for Contacts B3 / 63

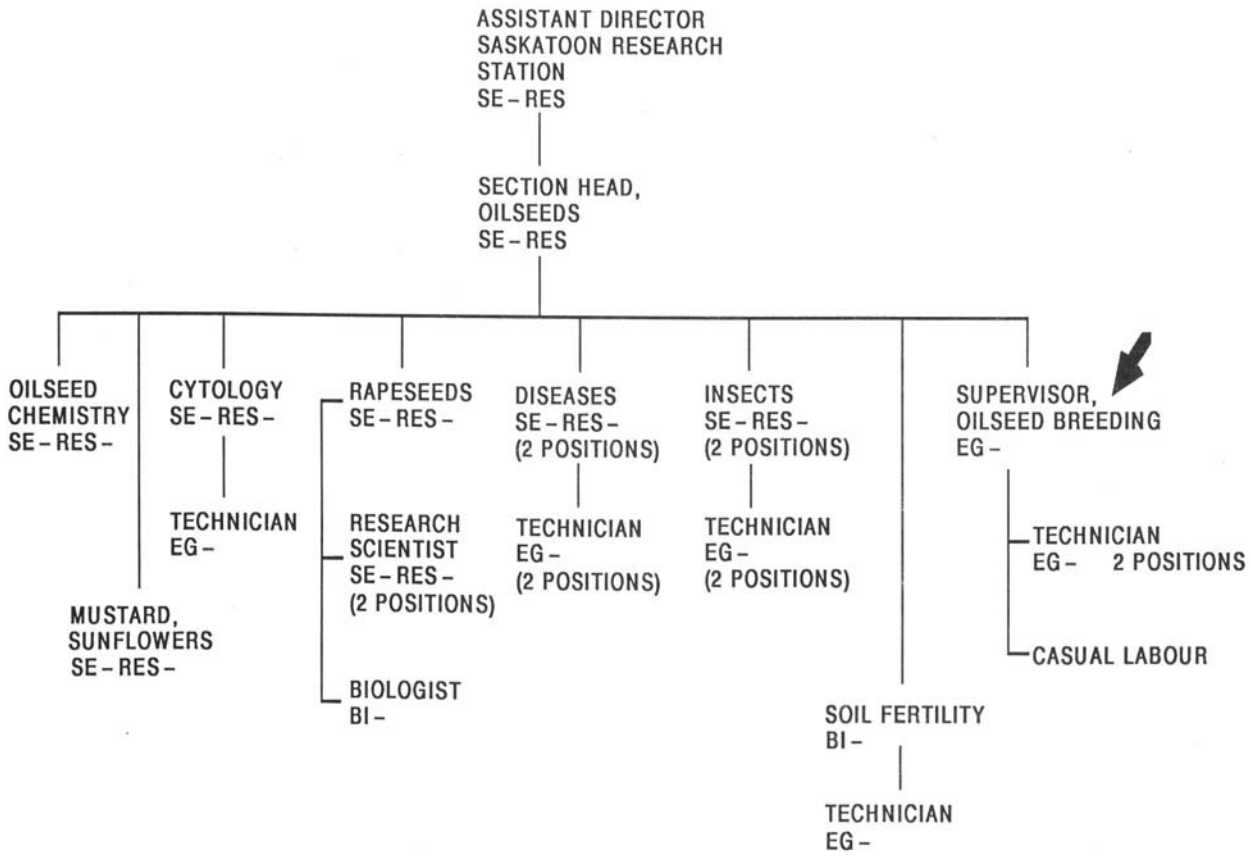
The work requires contacts with visiting officials, scientists and technicians from Canadian universities, industry and other countries such as Chile, Poland, Brazil, etc. to train, explain and interpret the results of breeding and analytical procedures and techniques used in improving Brassica oilseeds.

Working Conditions

Concentration 2 / 20

The work requires moderate attention and concentration when refining and modifying analytical instrumentation, when accumulating and analyzing data using computer programs and when writing specifications for laboratory equipment.

| | Degree/ Points |
|---|---|
| Physical Effort | 1 / 10 |
| Most of the work is carried out in a standing, sitting position. There is an occasional requirement to walk through fields when inspecting production. | |
| Environment | |
| There is occasional exposure to several disagreeable conditions when inspecting fields such as adverse weather conditions, biting insects, dust, dirt and chemical/fertilizer fumes. | 2 / 13 |
| Hazards | Al /6 |
| There is occasional exposure to minor injuries such as cuts or bruises when examining field production. | |
| Supervision | 3 / 60 |
| Organizes and controls the work of staff on a continuing basis and formally evaluates staff performance. | |




RESEARCH BRANCH

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 30 Level: 7

Descriptive Title: Regional Supervisor Point Rating: 711
Airport Electrical Facilities

| | % of Time |
|---|---|
| Reporting to the Regional Manager, Airport Facilities: | |
| Develops and implements the Regional airports electrical program covering the total life cycle management of all electrical facilities at regional airports, including power supply and distribution systems, interruptible and uninterruptible emergency power and alarm systems, the electrical components of systems for heating, air conditioning, baggage conveyors, escalators and loading bridges and lighting for roads, carparks and aprons. Ensures consistency with national standards through a formal review and evaluation program; provides sites with assistance and technical expertise in resolving problems such as power failures, to determine corrective action or arranging trial prototypes and modifications as required; provides electrical technical assistance to Municipal or other Government authorities having responsibility for airport operations and maintenance. Recommends "do" or "buy" approaches to the operation, maintenance and repair of facilities; directs the preparation of service contracts and ensures that work is completed satisfactorily. | 60 |
| Initiates and participates in the planning for new or restored electrical facilities; analyses the technical alternative and establishes the parameters according to national policies and standards including those covering cost reduction or recovery and energy conservation; forecasts load requirements, determines site requirements and develops program approval and related documents; provides recommendations on the requirement for new electrical equipment, taking into account the balance between higher capital cost and reduced maintenance overhead and the state of current technology. | 30 |
| Supervises the regional electrical facilities section; participates in the development. of a National Training Plan for airport electricians and implements the regional electrical training program; provides technical advice to managers and superintendents of associated divisions airport managers, field staff, other departments and outside agencies. | 10 |

**Specifications**

| | Degree/ Points |
|---|---|
| Knowledge | 7 / 305 |
| Work requires a knowledge of electrical principles, practices and state of the art technology as applied to the life cycle management of diverse electrical systems at airports. Knowledge is required of cost estimating and of management principles relating to financial, personnel and maintenance management. Experience is required in the assessment of electrical facilities, in co-ordinating proposals for maintenance or replacement of equipment, in determining operational and design requirement and in investigating and resolving difficult problems encountered in the functioning of electrical systems. This knowledge is normally acquired through completion of courses in electrical engineering technology at an Institute of Technology together with extensive experience working with the specialized systems used at airports. | |

| | Degree/ Points |
|---|---|
| Technical Responsibility | C3 / 232 |

This position provides the senior level of technical expertise in electrical facilities at airports in the Region, in relation to the operation, maintenance and total life cycle management of diverse systems including high and low voltage distribution systems emergency power and visual aids for aircraft. Recommendations and decisions on electrical matters are regarded as authoritative and are questioned only for interpretation and implications, not for technical content. Technical competence is required in analysing and solving complex operational and maintenance problems and in the identification of critical areas for research and investigation.

The value of electrical capital plant is approximately $90M and the annual airports operating and maintenance budget for electrical facilities is $20M. There is also responsibility for electrical facilities at other Transport establishments in the Region and for developing and implementing a technical training program for all electricians in the Region. Because of the operational nature of the airports activity, all electrical facilities must remain capable of functioning at all times, with back-up systems as appropriate and necessitate prompt response to system problems.

| | |
|---|---|
| Responsibility for Contacts | B3 / 63 |

Regular contacts are maintained with Regional Managers, Superintendents, Airport Managers and their technical staff to discuss matters affecting the life cycle management of electrical facilities. Frequent contacts are made with industry representatives and with municipal and federal officials with advisory or control responsibility over electrical installations (Fire Protection, Labour and Industrial safety, licensing of tradesmen, certification and inspection of equipment).

Working Conditions

| | |
|---|---|
| Concentration | 2 / 20 |

The work requires moderate attention and concentration when planning work programs, coordinating projects, analysing reports and consultants proposals and in determining the corrective action necessary to resolve technical problems.

| | |
|---|---|
| Physical Effort | 1 / 10 |

Most of the work is performed at a desk or drawing board. There is an occasional requirement for walking and climbing ladders while inspecting equipment while on field trips.

| | |
|---|---|
| Environment | 1 / 6 |

The work is normally performed in an office with occasional need for exposure to uncomfortable weather conditions while examining installations at northern or remote sites.

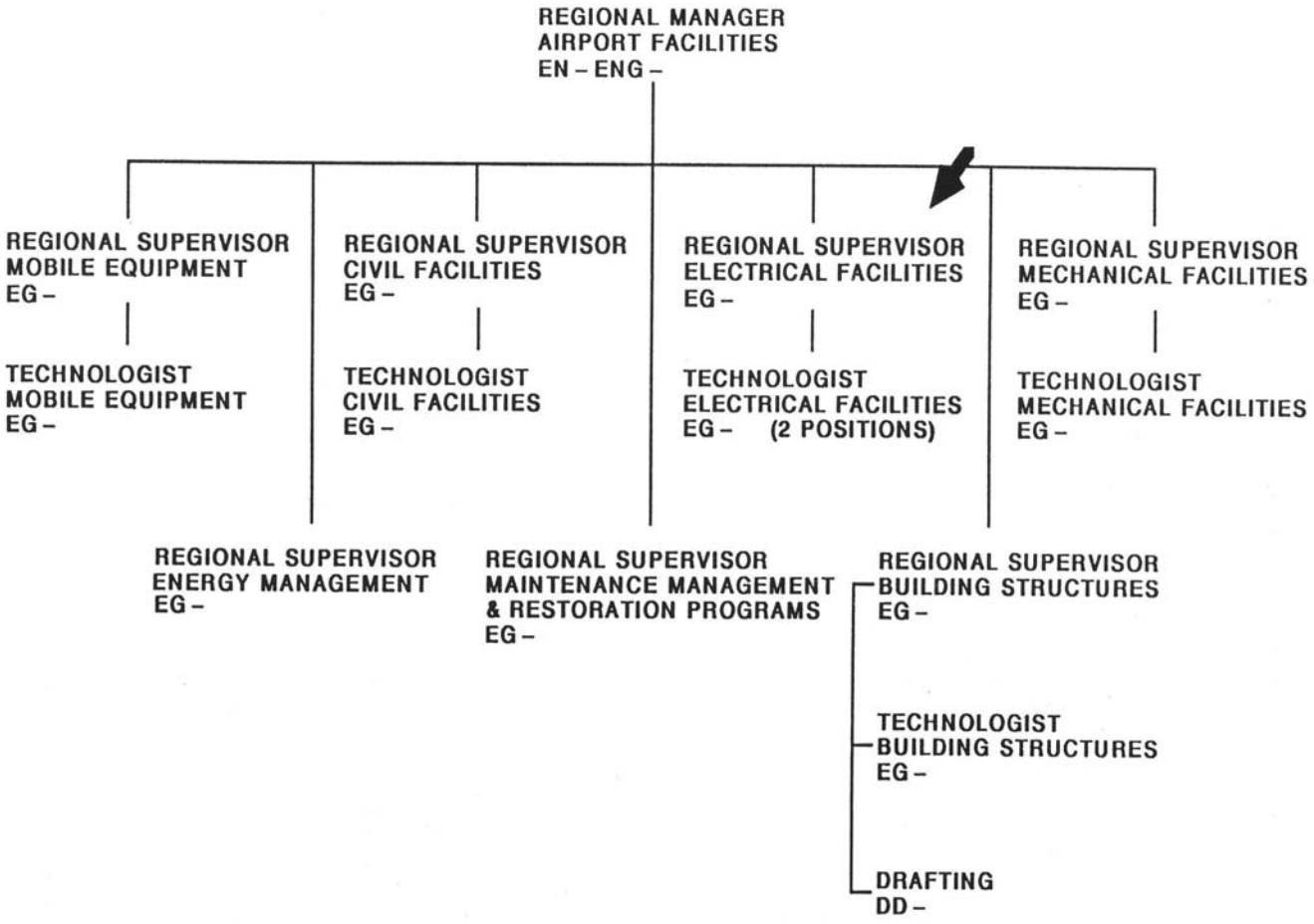
Degree/
Points

Hazards B1 / 15

There is occasional exposure to lost time injuries during the inspection and testing of electrical installations.

Supervision 3 / 60

Organizes and controls the work of two technicians on a continuing basis in the Electrical Facilities unit, allocating regional priorities and formally evaluating performance.




AIRPORT FACILITIES

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 31 Level: 7

Descriptive Title: Head, Materials Laboratory Point Rating: 718

| | % of Time |
|---|---|
| Reporting to the Leader, Materials and Structural Analysis Group: | |
| Directs and supervises the administration of a materials laboratory engaged in the conduct of metallurgical and mechanical investigations of the qualities and uses of high pressure performance structural materials. Discusses work requests with the originator to define the objectives of the tests and the nature of the information required and selects or devises the most suitable methods to achieve them. Allocates resources to the project, and in consultation with the Group Leader, determines the laboratory's schedule of priorities. Prepares the work orders, assigns tasks to subordinates, provides guidance and instruction, checks results of work for accuracy and reliability, formally appraises employee performance and maintains personnel and equipment records and requisitions. Writes project reports describing the work performed and results obtained and containing conclusions and recommendations for the scientist's consideration. | 40 |
| Devises or modifies test methods, fixtures, specifications and instrumentation, and tests or directs the testing of prototypes. Interprets the results of the tests and recommends the use of the finalized test configurations and methods. Also recommends the acquisition or fabrication of new equipment and develops appropriate maintenance schedules and operating procedures for such equipment. Coordinates the testing of material involved in equipment breakdowns. Analyses the failed component or material fragments to determine the mode of failure, the material defects, the extent of mishandling and the conditions under which the equipment was operating. Provides design data for use in the testing of replacement components and to determine their safe service life. Writes reports describing the mode and probable reasons for failure and recommending component improvements. | 40 |
| Provides technical advice to scientists and engineers on materials standards and specifications, quality assessments and alternative alloys. Explains the capabilities and limitations of the testing procedures and recommends metallurgical and mechanical tests for use in the characterization and quality assessment of materials. Provides interpretations of test results and explains laboratory services. Represents the establishment on a provincial commission studying and approving provincial metallurgical standards and discusses the suitability of testing methods and new materials with private sector research and development organizations and the standardization authorities in the United States. | 20 |

| Specifications | Degree/ Points |
|---|---|
| Knowledge | 7 / 305 |

The work requires knowledge of the principles of mechanics and metallurgy; metallographic sampling, energy dispersive X-ray analysis, electron microscopy and high vacuum technology. Knowledge of high performance structural materials is also required.

Degree/
Points

Experience is required to analyse test results for prototype equipment, to analyse failed components, to devise test techniques and to devise and modify specialized systems for the assessment of ordnance components and new structural materials. Experience is required to research the related literature, to propose new techniques, and to advise research scientists and manufacturers on the assessment of materials. Experience is required to provide a materials testing laboratory service and to control materiel and human resources.

This knowledge is normally acquired through in-house training in a research laboratory and the study of mechanics, metallurgy, physics, material science, and optical and electronic instrumentation.

Technical Responsibility C3 / 232

Considerable initiative and judgement are required to adapt and modify methods, equipment and instrumentation for the evaluation and testing of new materials. Initiative and judgement are also required to plan the projects, define their objectives, determine the most suitable test methods and verify the accuracy and reliability of the test results produced by subordinate staff. Judgement is required to evaluate prototypes and failed components and to interpret test results and recommend finalized test configurations or improvements to components. The operation of the laboratory and the evaluation of new materials for military application are carried out according to general instructions provided by the Group Leader.

The results of the tests and the data and information provided to scientific staff have an effect on the progress and viability of their research and development programs. Inaccurate or unreliable results or errors in interpretation could result in retesting and delays and the waste of significant materials, human resources, and time. There is a requirement to recommend the acquisition of new lab equipment to senior management. Inaccurate test results and inappropriate recommendations could affect the design of defence hardware. Errors in assigning work and training subordinates in a complex research and development environment would have a negative impact on the achievement of the Section's objectives. The impact of errors are not readily discernable. The position reports to the Leader, Materials and Structural Analysis Group (DS).

Responsibility for Contacts B3 / 63

The work requires contacts with standardization authorities in the United States, officials of a provincial government and private sector research organizations to discuss the suitability of new methods, equipment and material for military application. Contacts are required with scientific and engineering staff within the department to explain laboratory services, discuss methods and provide interpretations of test results.

Working Conditions

Concentration 2 / 20

The work requires moderate attention and concentration when analyzing the results of experiments, when developing new instrumentation and test techniques and assembling, calibrating and operating modified and new laboratory instrumentation.

| | Degree/ Points |
|---|---|
| Physical Effort | 1 / 10 |

The work requires sitting or standing in an office or laboratory and involves the handling of delicate instruments and test equipment. There is an occasional requirement to lift and carry heavier metal components and equipment during some tests.

| | |
|---|---|
| Environment | 2 / 13 |

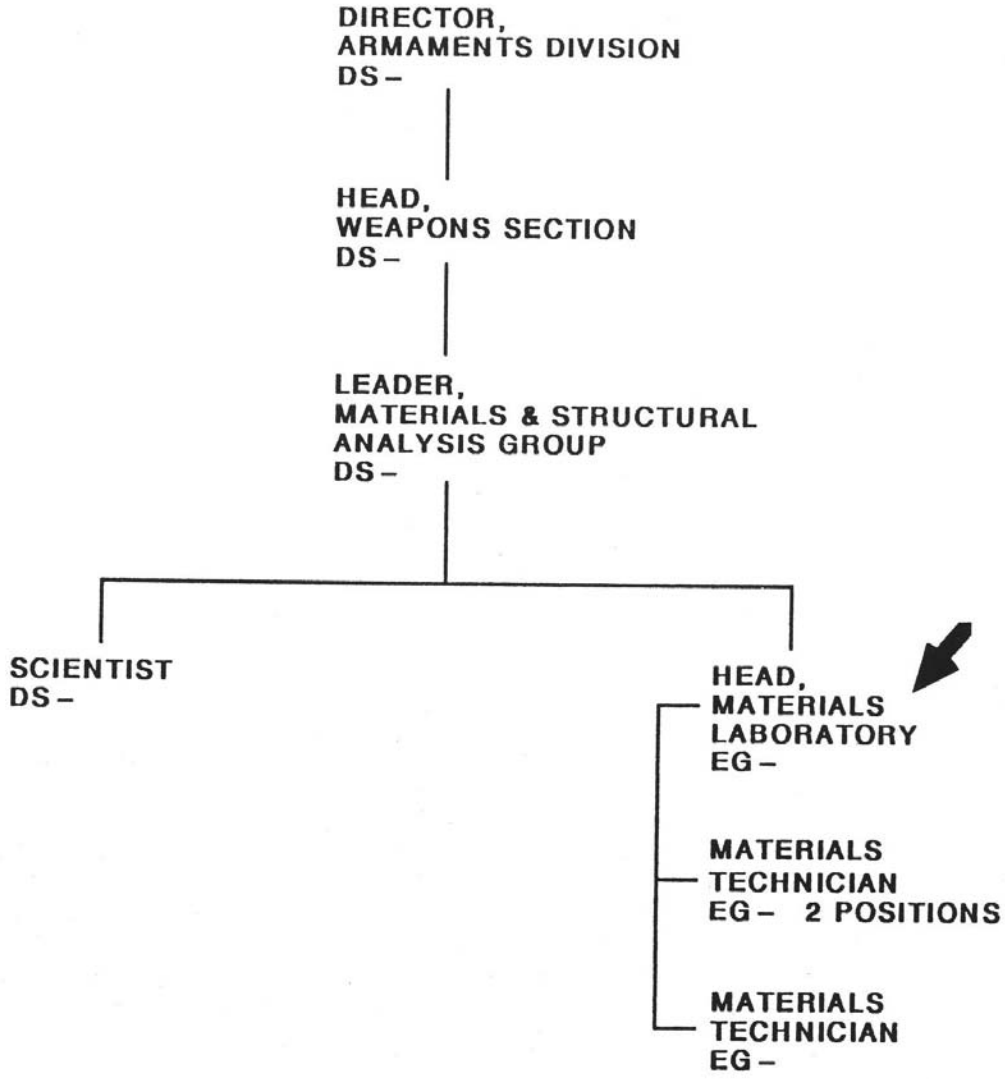
The administrative duties are normally carried out in an office environment. The testing of materials is carried out in a well-lighted and ventilated laboratory with exposure to the corrosive fumes of reagents, solvents and acids, machinery noise and heat from test furnaces. The wearing of protective clothing and glasses is required when handling acids or other corrosive chemicals.

| | |
|---|---|
| Hazards | B1 / 15 |

Lost time injuries could result from the handling of solvents and corrosive chemicals, duties that occupy a small amount of time.

| | |
|---|---|
| Supervision | 3 / 60 |

The work requires the supervision of the laboratory technicians, the scheduling and assigning of work, the provision of guidance and the checking of work for accuracy and reliability and the formal appraising of employee performance.




## DEFENCE RESEARCH EESTABLISHMENT

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 32 Level: 7

Descriptive Title: Supervisor, Building Services and Contracts Point Rating: 759

| | % of Time |
|---|---|
| Reporting to the Head, Building Services Section: | |
| Coordinates and directs the work of an engineering support unit consisting of two senior technologists, engaged in the study, investigation, detailed design, applied research and quality assurance related to building engineering technology, including special building problems encountered in the extreme north. Establishes and revises objectives, priorities, schedules, methods and procedures to guide senior technologists. Participates in the work of multi-discipline teams engaged in the implementation of engineering systems and standards to accommodate the mechanical, electrical and structural components of building design. Conducts research on specific problems, such as the application of fire sprinkler systems for use in unheated buildings in low temperature locations, or the prototype installation of new electrical systems for possible departmental use. Carries out on-site visits to collect data, appraise and advise on problems relating to special design and construction situations. Directs technical studies to support Headquarters and Regional engineers and architects dealing with such topics as energy conservation, environmental protection, fire safety and health. | 55 |
| Provides a technical liaison service between program managers, regional technical staff and Indian officials for the planning, design, construction operation and maintenance of buildings on Indian lands and throughout the Northwest and Yukon Territories. Recommends that specific work be undertaken by the department or contractors, such as the retrofit of buildings to improve energy conservation. Determines work procedures in civil, mechanical and electrical fields for assigned projects such as a major renovation of the electrical service to a students residence. Investigates complex problems, interpreting data, writing reports and developing new methods of work which will facilitate the lowest cost construction of buildings such as a refrigerated warehouse. Monitors the construction of prototype buildings, analyzing and evaluating the effectiveness of design and recommending acceptance or modification. Interprets existing building practices as applied to a new procedure such as the incorporation of mechanical and electrical services into modular prefabricated buildings for ease of on-site erection and maintenance. | 30 |
| Represents the Technical Services and Contracts Branch on committees and at meetings with departmental engineers, contractors and private industry specialists to exchange ideas, discuss new methods and make proposals requiring major expenditures and commitment of human resources. | 15 |

| Specifications | Degree/ Points |
|---|---|
| Knowledge | 7 / 305 |
| The work requires knowledge of prototype construction techniques, and of the procedures required in the study and investigation of specific building problems. Knowledge of civil, mechanical and electrical standards and of quality control techniques is required. | |

Degree/
Points

Knowledge is also required to advise Indian Band Councils and Housing authorities and to represent the branch on technical committees and meetings with other government departments, and private companies.

Experience is required to resolve complex technical problems in areas such as solar heating systems and to provide a specialized technical advisory service to Indian Band Councils and Northern Programs managers. Experience in design and applied research related to building engineering technology is required to maintain an awareness of trends and to control materiel and human resources.

This knowledge is normally acquired through in-house training and the study of building technology, civil, electrical and mechanical technology, construction methods, building standards and materials quality assurance systems, energy conservation, fire and health safety and environment protection.

Technical Responsibility D3 / 283

Significant initiative and judgement are required to evaluate designs for prototype systems and the resolution of complex problems such as the application of solar energy systems to buildings. The position has the principal responsibility in the Branch for solving technological problems relating to building design, construction, operation and maintenance. The coordination and direction of detailed design projects, applied research and quality assurance related to building engineering technologies, as well as the development of building standards, are performed according to broad guidelines and to meet stated objectives. Judgement is required to set priorities and schedules, to modify methods and approaches and to guide subordinate technologists.

Decisions and recommendations result in the commitment by the department of human and financial resources. The work carried out affects building-life expectancy, environ mental quality and the health and safety of building occupants. The impact of errors goes beyond the department when advice is given to Provincial and Territorial Housing Authorities and Indian Band Councils. Inadequate direction and training of subordinates could result in waste of materials, human resources and disruption of schedules. The position reports to the Head, Building Services Section (EN).

Responsibility for Contacts B3 / 63

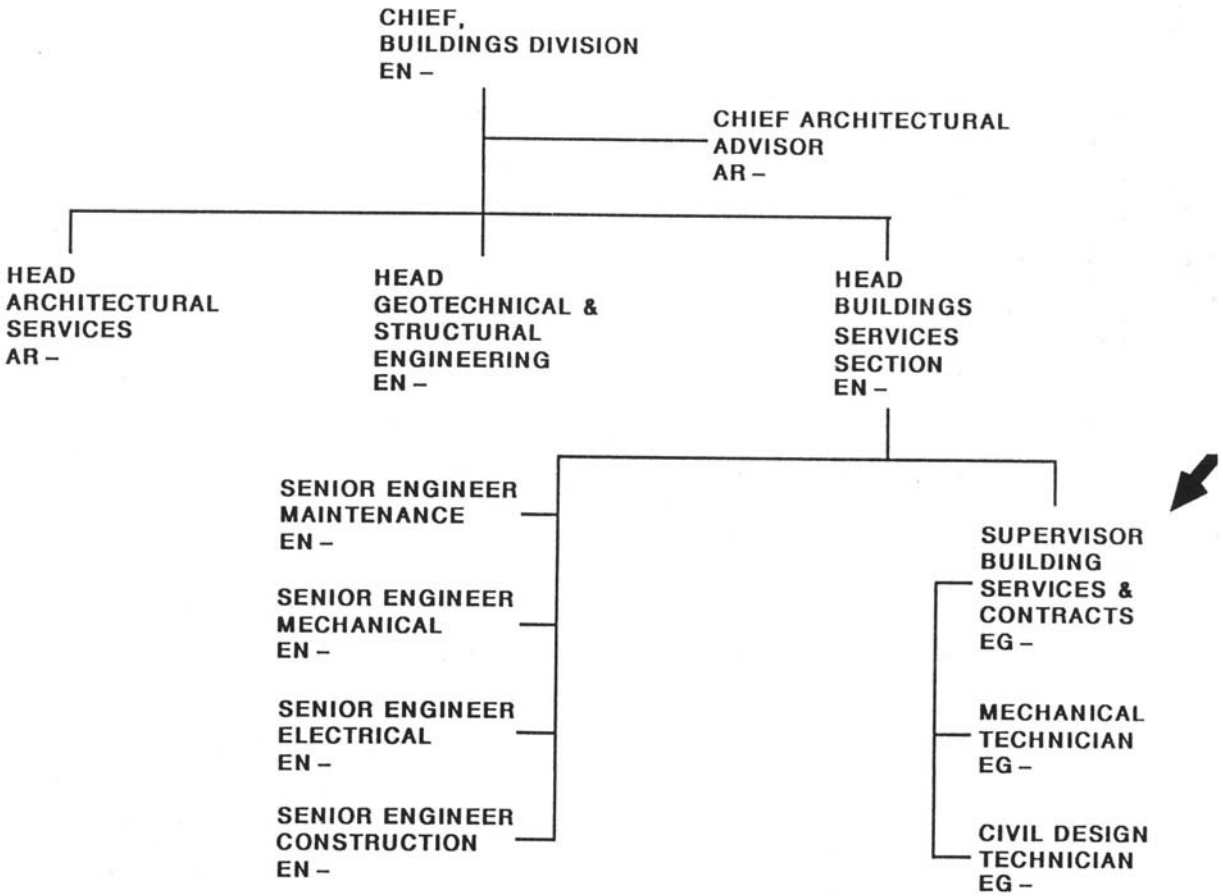
The work requires contacts with officials of Indian Band Councils to provide advice and to discuss the suitability of methods and techniques relating to the electrical, structural, and mechanical aspects of building services technology and to discuss problems and determine the need for new materials, practices, developments and improvements in building and building services.

Working Conditions

Concentration 1 / 10

The work requires some concentration and attention when developing standard and prototype designs and construction methodology for buildings.

| | Degree/ Points |
|---|---|
| Physical Effort | 1 / 10 |
| The work requires walking and standing during site inspections. Most of the work is carried out at a desk when coordinating the work of the unit, conducting research and working on design teams. | |
| Environment | 2 / 13 |
| Field investigations require travel to remote northern areas for periods of several days at a time and exposure to all weather conditions, dirt and noise. Protective headgear and safety glasses are worn for short periods of time. | |
| Hazards | B1 / 15 |
| Injuries such as sprains or hernias could occur due to insecure footing or falling objects when occasionally visiting sites. | |
| Supervision | 3 / 60 |
| The work requires establishing priorities, assigning and coordinating the work load for the unit, formally evaluating performance and writing appraisal reports on two senior technicians, and identifying staff development and training needs and proposing appropriate action. | |




**BUILDING DIVISION**

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 33 Level: 7

Descriptive Title: Zone Environmental Health Officer Point Rating: 790

| | % of Time |
|---|---|
| Reporting to the Zone Director: | |
| Administers a zone surveillance program encompassing Public Service Health, Environmental Health, Quarantine and Regulatory to prevent pollution and the spread of communicable disease through the monitoring and enforcement of federal, territorial and international health regulations. Reviews engineering studies and plans covering the installation of water plants, waste disposal systems and the sub-division of land and recommends changes when hazardous situations or problems are identified. Conducts quality control inspections of treatment plants and monitors the sampling programs carried out by the plant operators, private sector consultants or Environment Canada personnel. Surveys and analyzes existing disposal systems and methods, provides advice to operators regarding their suitability and approves the use of disposal sites. Inspects houses and food service establishments for compliance with regulations and where warranted recommends remedial action or closure. | 60 |
| Provides interpretations and instructions regarding ordinances, regulations and standards to three subordinate Environmental Health Officers. Supervises subordinate staff, monitors the quality and frequency of inspections, allocates work and establishes time frames. Provides training, prepares formal performance appraisals, participates in the selection of new staff, prepares operational work and training plans, travel schedules and a budget for the programs. Initiates and carries out detailed studies of actual and potential environmental hazards. Collects data and discusses the situation with management and union representatives to encourage their assistance in the review and resolution of the problem. Prepares study reports, proposes remedial actions and recommends the closure of premises when warranted. Assists in the preparation of public health by-laws and promotes their passage through council. | 30 |
| Assists doctors and nurses in the administration of a communicable disease protection program and provides investigative and emergency service as required. Acts as a health officer, with the authority to enforce communicable disease regulations. Monitors foreign aircraft and ships to ensure compliance with international health regulations and recommends quarantine and fumigation actions when warranted. | 10 |

| Specifications | Degree/ Points |
|---|---|
| Knowledge | 7 / 305 |
| The work requires knowledge of techniques to analyse systems and plans, to assess quality control reports, to identify potential and actual hazards and to investigate and inspect conditions and enforce regulations. | |
| Experience is required to recommend remedial action to members of the community in the face of hazardous conditions and to advise on the operation of disposal systems. Experience is also required to provide an environmental and public health zone surveillance | |

Degree/
Points

program and to control materiel and human resources. Experience in public health administration is required to maintain an awareness of trends in disease control and new regulations.

This knowledge is normally acquired through a certificate in Public Health Inspection (Canada) and study of health standards, health and safety programs, international, federal and provincial ordinances and regulations, principles and practices of installation, maintenance and operation of water, plants and sewage systems and the subdivision of land.

Technical Responsibility C4 / 280

Considerable initiative and judgement are required to develop, implement and enforce a comprehensive surveillance program of health standards, to interpret regulations while maintaining good relations with the public, representatives of government and business people, to encourage management and unions to participate in the resolution of problems, to act as an authorized health officer and to provide emergency assistance to medical personnel under the communicable disease protection program. The work is carried out according to general instructions provided by the Zone Director to achieve Zone and Regional objectives in environmental and occupational health fields. The standards and procedures used in the conduct of field investigations and surveys in the more remote areas cannot be specifically defined.

The results of investigations and the enforcement of regulations could effect changes to the methods of operating or constructing plants and business establishments and to building project schedules throughout the Zone. Quarantine activity decisions could delay the movement of aircraft and shipping or, conversely, incorrect decisions could result in the entry of unwanted pests or communicable diseases to the North American continent. Incorrect or unreasonable interpretations and decisions could alienate and inconvenience the public and business people, expose them to health or environmental hazards and create lack of confidence. There is a requirement to recommend the closure or condemnation of business premises and dwellings and to exercise the appropriate authority in the enforcement of communicable disease regulations.

Inadequate direction and training of subordinates could result in extensive waste of time, materials and human resources. The position reports to the Zone Director (MD-MOF).

Responsibility for Contacts C3 / 80

The work requires discussing enforcement policies, regulations and implications, proposed changes to legislation and the results of investigations and inspections with officials of all levels of government, politicians, Chiefs and Band Councils, military base commanders, ship and aircraft captains and business people. There is a requirement to convince such officials and owners of the need to upgrade facilities and carry out improvements and reduce the risk of pollution and spread of disease throughout the Zone. Meetings are held with union and management representatives in the resolution of problems, where their differing points of view on how to deal with the situation have to be given adequate representation and consideration in arriving at decisions acceptable to all parties and within regulatory limitations.

Degree/
Points

Working Conditions

Concentration 1 / 10

The work requires attention and concentration when conducting quality control inspections and preparing studies.

Physical Effort 2 / 20

The work requires some walking over rough terrain and standing when carrying out field investigations and surveys in remote areas and the inspection of business premises, dwellings, ships and aircraft requires walking and standing and some crawling in confined spaces.

Environment 3 / 20

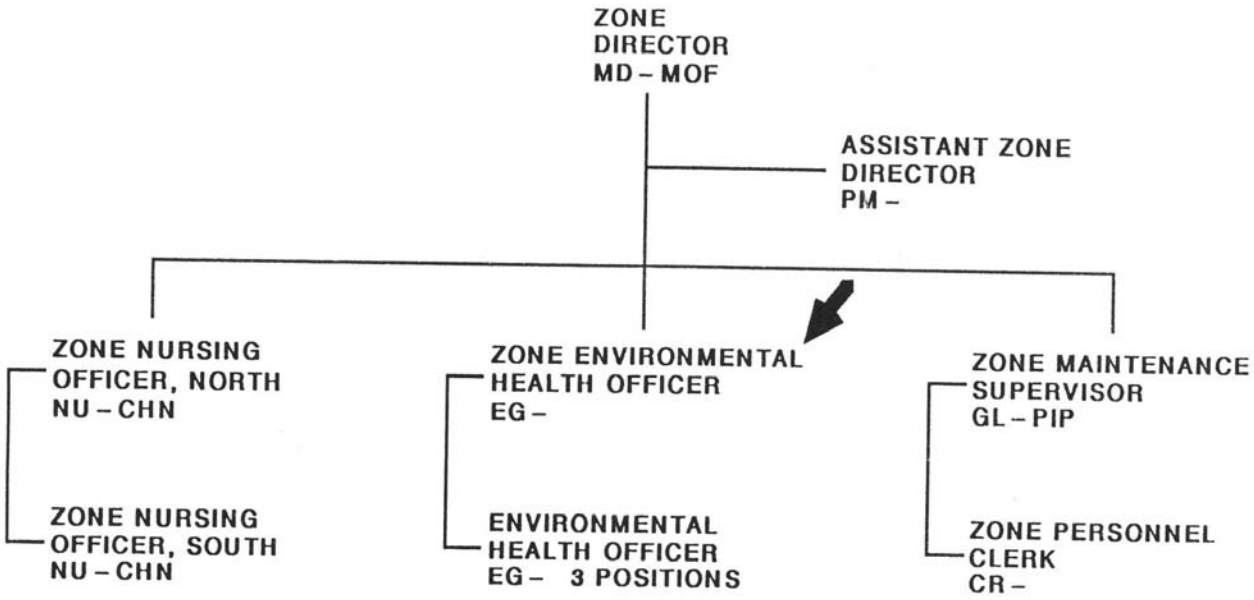
The inspection of sewage plants, waste disposal sites and ships holds requires periodic exposure to environmental contaminants, obnoxious odours, fumes, rodents and other vermin. The work also requires exposure to extremes of temperature, dust, and insects when on field trips or occupational health investigations in remote or northern areas of the Zone.

Hazards 81 / 15

Injuries such as broken bones or sprains could occur while climbing ships ladders, crossing ice to island communities or as a result of material falling from the loading or unloading of ships. The exposure to such injuries could occur during periodic inspections and field trips.

Supervision 3 / 60

The work requires the supervision of other Environmental Health Officers working in the Zone, the establishment of time frames, the monitoring of the frequency and quality of inspections, the provision of training to inspectors and the formal evaluation of employee performance.




## OPERATIONS DIVISION – MACKENZIE ZONE

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 34 Level: 8

Descriptive Title: Chief, Construction Specifications Point Rating: 861

| | % of Time |
|---|---|
| Reporting to the Director, Project Management Technology: | |
| Directs the development of policies relating to the preparation of specifications for departmental construction projects and the development and dissemination of specification standards, material selection guides and associated tendering documents. Assesses the changing needs of the department and industry and evaluates current specification writing practices, procedures and production methods, contract regulations and sub-contract relationships, trade practices and tendering systems. Reviews the departmental policies that pertain to specification matters, the evaluation and procurement of construction materials, preferences for Canadian Labour and materials and drafts departmental directives. | 25 |
| Provides technical guidance to the supervisors of regional Specification Writing Sections. Provides advice and information to departmental personnel, other departments, trade associations, clients and private sector companies on the use, technical properties and availability of construction materials, products, methods and other related matters. Provides advice on special tender and procurement procedures for prestige building or in emergency situations. | 20 |
| Acts as the departmental advisor respecting the control of asbestos in public buildings. Examines the condition of public buildings and prepares reports, guidelines, specifications and recommendations for the use and control of asbestos. | 30 |
| Directs the preparation and review of building project specifications, master specifications and specifications covering standard plan buildings. Ensures draft and final specifications conform to construction principals, departmental policies and standards and contract regulations. Arranges for the retention of consultants and directs the evaluation of consultant prepared plans and specifications. Participates in post construction evaluations of specifications, identifies deficiencies and proposes remedies. Directs the preparation and maintenance of the Standards Manual, monitors the performance of Regional Specification Sections and provides short-term specification writing services to the Sections. Advises regional management on the utilization of specification writers, develops and conducts training courses and seminars and assists in the recruitment, selection and appraisal of regional specification writers. | 25 |

| Specifications | Degree/ Points |
|---|---|
| Knowledge | 8 / 350 |
| The work requires knowledge of construction principles and methods and of government design and construction specification procedures and standards, contract regulations, codes and by-laws and of departmental design and construction policies, programs and | |

Degree/
Points

objectives to develop specification preparation policies to meet the changing needs of the department and the construction industry, and to represent the department on interdepartmental technical committees.

Experience is required to assess the changing needs of the federal government and the construction industry and to advise trade associations, private sector companies, and other departments on new policies and standards affecting architectural, mechanical, electrical and civil building systems. Experience is required to maintain an awareness of new construction methods, materials systems and standards. Experience is required in providing a construction specifications service and controlling materiel and human resources.

This knowledge is normally acquired through the study of architectural technology or specialized study that meets the requirements of the Registration Board of Construction Specifications, study of construction principles and methods, contract regulations, tender and procurement procedures and building codes and by-laws.

Technical Responsibility D4 / 330

Significant initiative and judgement are required to evaluate the changing needs of the construction industry, the current specification writing procedures and production methods, contract regulations, trade practices, material and labour preferences and tendering methods, and to review policies, recommend changes and draft departmental directives. The development and dissemination of policies, specification standards and material guides, the review of building project specifications and standards manuals and the monitoring of the performance of the Specification Sections are carried out according to broad departmental guidelines developed to meet the changing needs of the industry.

The development of policies, standards and procedures affect the operations of contractors working on government building projects across Canada. The recommendations proposed and the directives prepared are reviewed for approval by the design authorities or the technical and management committees of the Government National Master Specification Program. Incorrect evaluation of departmental and industry needs could result in the recommending of inappropriate government-wide policies and procedures, excessive contract prices and contractor claims and the waste of time and extensive resources to conduct additional evaluations. Inadequate direction and training of subordinates could result in extensive waste of materials, human resources and disruption of schedules. This position is the departmental recommending authority for specifications and reports to the Director, Project Management Technology (EX).

Responsibility for Contacts C3 / 80

Contact is maintained with officials in own and other government departments, agencies and architectural and engineering consulting firms to discuss the development and promulgation of departmental policy and procedures pertaining to construction materials and practices.

Degree/
Points

Working Conditions

Concentration 1 / 10

The work requires some attention and concentration when developing standards and master specifications for federal construction projects.

Physical Effort 1 / 10

The work requires some standing and walking when visiting work sites. The evaluation studies and the development of policies, procedures, etc. is carried out while sitting at a desk.

Environment 1 /6

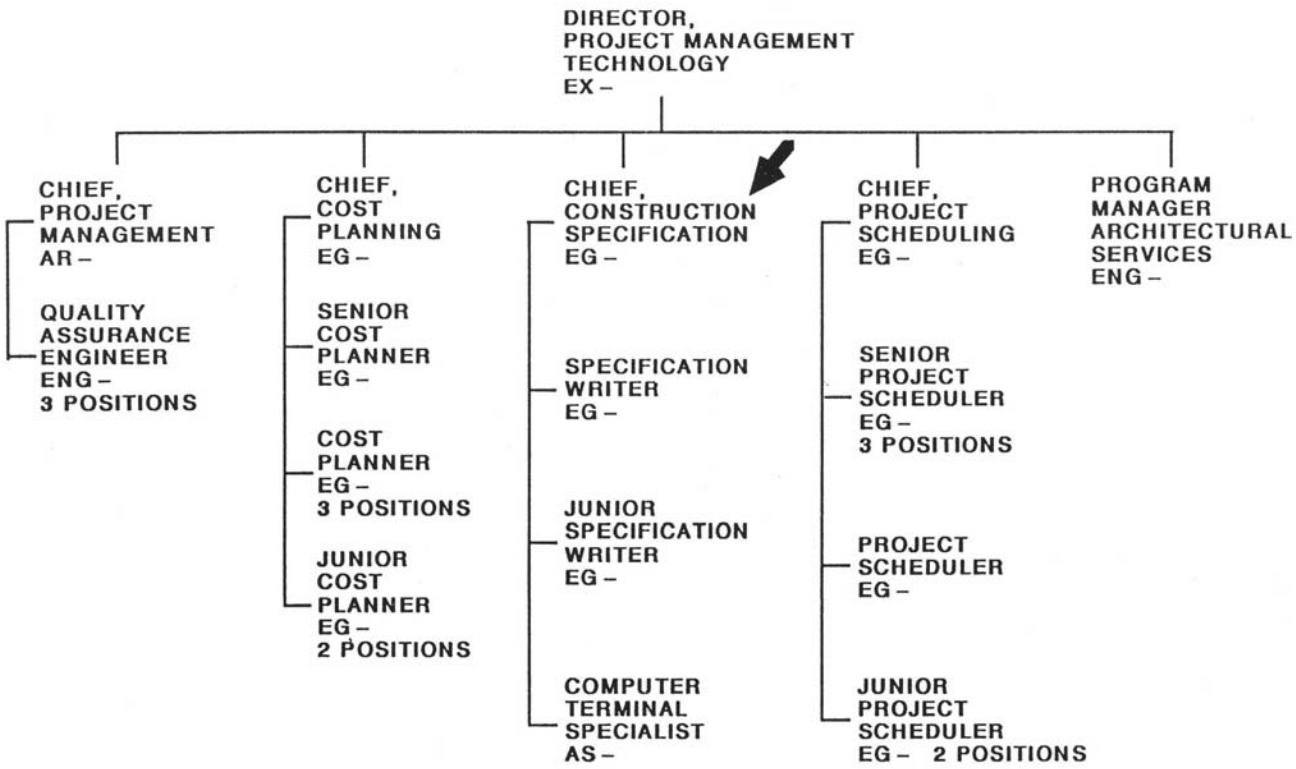
Most of the work is carried out in a normal office environment. There is a requirement to wear protective headgear and face masks when visiting work sites or when inspecting the installation or removal of asbestos.

Hazards B1 / 15

Injuries such as sprains could occur during occasional work site inspections.

Supervision 3 / 60

The work requires the supervising of two specification writers and a computer terminal specialist. Duties include the assignment of tasks, the provision of guidance, the checking of work for completeness and accuracy and the formal appraisal of employee performance.




## DESIGN AND CONSTRUCTION TECHNOLOGY BRANCH

BENCH-MARK POSITION DESCRIPTION

Bench-Mark Position Number: 35 Level: 8

Descriptive Title: Chief, Aircraft Maintenance Point Rating: 912

| | % of Time |
|---|---|
| Reporting to the Director, Technical Services: | |
| Manages and coordinates all technical aspects of departmental aircraft overhaul and maintenance, encompassing some 90 fixed wing aircraft and helicopters as well as 28 RCMP aircraft. Plans, schedules and implements programs of repair, maintenance and overhaul consistent with DOT, FAA and international airworthiness requirements; reviews and evaluates maintenance standards, ensuring that these are adhered to and recommending appropriate changes; writes and promulgates comprehensive specifications governing repair, overhaul, and modifications to departmental aircraft; sets standards for inventories of equipment, components, spares and material to be carried in Headquarters, at Regional bases and for helicopters on board Coast Guard vessels, based on technical evaluation of maintenance data; ensures that systems are established to control the testing, overhaul and certification of parts and components with limited shelf life, taking into account economic, airworthiness and safety factors and analyses premature failure rates of engines, systems and components to ensure corrective action is taken. Directs a comprehensive program of data promulgation covering airworthiness directives, maintenance manuals, service directives and a time control and component history system covering some 23,000 serial numbered components. | 60 |
| Directs and supervises the activities of over 150 technical and support personnel with the assistance of three senior technical supervisors; administers and O&M Budget of some $6,000,000 and a Capital budget of $150,000, developing budgets and forecasts, reviewing cost records and variance reports. Provides technical advice and guidance to an additional 70 maintenance supervisors and staff in Regions, ensuring that national standards are maintained. | 30 |
| Provides recommendation on technical policies, program forecasts and long range planning for new equipment and facilitates and on major modifications to aircraft or on the assessment and disposition of damaged aircraft. | 10 |

**Specifications**

| | Degree/ Points |
|---|---|
| Knowledge | 8 / 350 |

Work requires a knowledge of the principles of aerodynamics and of aircraft systems and components generally, covering electrical, power, hydraulic, avionics and related systems for a wide variety of different departmental aircraft and helicopters. A knowledge of civil airworthiness requirements is necessary, relating to engineering standards and procedures, licensing and the airworthiness certification of aircraft, engines and components. Experience is required in industrial management, plant and equipment layout, workload estimating and scheduling and supervising a large number of technical, operational and administrative support staff. This knowledge **is** normally acquired through study of engineering subjects including metallurgy, heat treatment, strength of materials, destructive and non destructive testing and qualification for an Aircraft Maintenance Engineer 'M' Licence.

| | Degree/ Points |
|---|---|
| Technical Responsibility | D4 / 330 |

The management of the maintenance, repair and overhaul facility is carried out according to broad administrative direction. Decisions and recommendations are made on all technical aspects of the care and maintenance of departmental aircraft valued at $44M. Judgement and initiative are required to resolve engineering and technical problems relating to fuselage corrosion, wing spar cracking and unforeseen serviceabilities, affecting the safety and availability of aircraft, and to adjust production schedules or redeploy the work force where necessary. There is a requirement for the continued assessment of operations and plans in response to changes in policies and standards and to ensure coordination between the various sections. The impact of poor or wrong decisions could result in delays in overhaul and maintenance, aircraft not available when required or accidents resulting in damage or loss of aircraft or lives. Cost could exceed several million dollars. The proper use of judgement and initiative could result in the more effective scheduling of activities, decreased down-time, increased safety and substantial monetary savings.

| | |
|---|---|
| Responsibility for Contacts | C3 / 80 |

Contacts are established and maintained with a wide variety of officials in industry and government, concerning the overhaul or purchase of aircraft, engines or components. Such contacts include discussions with engineering staff of manufacturing companies in the United States, Great Britain and France as well as Canada to resolve problems of scheduling and delivery and to discuss complex structural modification or repair issues.

Working Conditions

| | |
|---|---|
| Concentration | 1 / 10 |

The work requires some attention and concentration when developing forecasts and plans and in determining the most effective methods of re-scheduling activities to meet urgent or unexpected requirements.

| | |
|---|---|
| Physical Effort | 1 / 10 |

Most work is performed at a desk with an occasional requirement for standing and walking on the shop floor to view work in progress.

| | |
|---|---|
| Environment | 1 /6 |

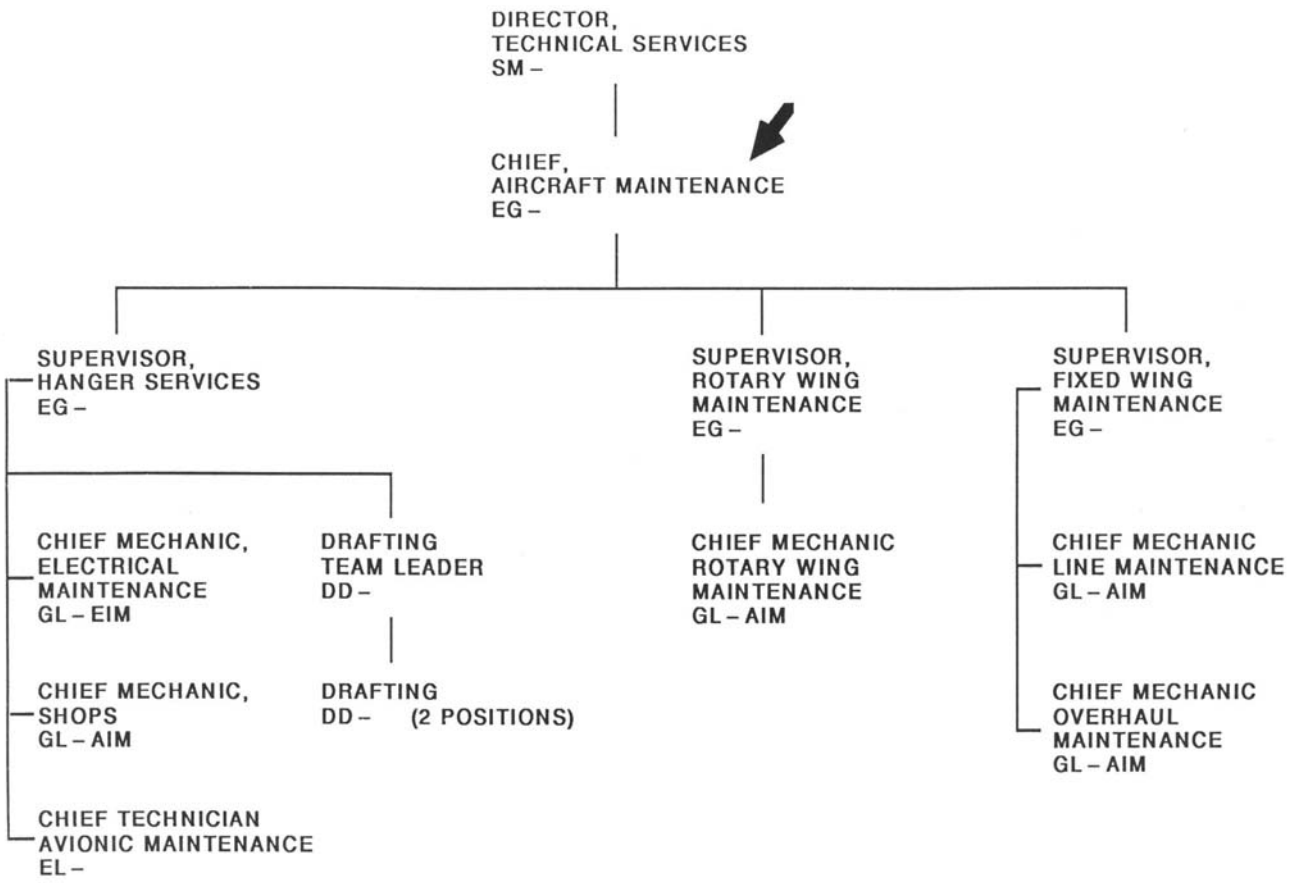
Few disagreeable conditions are encountered during the normal course of business.

| | |
|---|---|
| Hazards | Al / 6 |

There is an occasional exposure to cuts and bruises while inspecting repair or overhaul work while in progress.

| | |
|---|---|
| Supervision | 5 / 120 |

Supervision of a large technical, operational and administrative staff is carried out through subordinate senior technical section heads on a continuing basis. There is a significant responsibility for the effective deployment of resources, to establish and maintain work standards and to formally evaluate employee performance.




## AIR ADMINISTRATION TECHNICAL SERVICES