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CLASSIFICATION STANDARD

METEOROLOGY

Scientific and Professional Category

Canada

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CLASSIFICATION STANDARD

METEOROLOGY GROUP

RECORD OF AMENDMENTS

Ammendment No.	Date	Inserted by	Remarks

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INTRODUCTION

The classification standard for the Meteorology Group is a point-rating plan consisting of an introduction, definitions of the Scientific and Professional Category and the occupation group, rating scales and illustrative 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 make. The point-rating method facilitates rational discussion and resolution of differences in determining the relative values of jobs.

Factors

Four factors are used in this plan, each of the factors having two elements. The factors and elements do not necessarily describe all aspects of the positions; they deal only with those characteristics that are useful in measuring and determining the relative value of positions. Each of the elements is divided into degrees. Each degree description indicates a level of work difficulty in respect to the characteristics of the element, and successive degrees represent significant escalations into the scale of relative work difficulty.

Factor, Element and Degree Weighting

The importance of the characteristics of work in terms of assessing relative difficulty is reflected in the maximum point values assigned to the factors and elements.

The points assigned to the degree coordinates of the factors and elements increase in geometric progression from the minimum to maximum point value.

Rating Scales

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

		Factor	Point Values	
Factor	Element	Percentage Weight	Minimum	Maximum
Knowledge	- Depth of Knowledge - Breadth of PracticalApplication	35	35	350
Problem Solving/ Decision Making	- Complexity - Impact on EndResults	30	30	300
Accountability	- Supervisory/Managerial Respon-sibility - Freedom to Act	25	25	250
Communications Requirements	- Oral and/or WrittenCommunications - Human Relations Skills	10	10	100

Descriptive Examples of Factor Degree Coordinates (Illustrative Position Descriptions)

This standard does not contain bench-mark positions in the traditional sense. However, in order to exemplify the degree coordinates of the two elements in any one of the four factors, illustrative position descriptions containing descriptive examples of the various degree coordinates have been provided. These illustrative position descriptions have been carefully selected to represent, within practical limitations, the full range of meteorological positions.

These illustrative position descriptions, with their descriptive examples of factor degree coordinates, are an integral part of the classification plan and should be used to ensure consistency in the application of the rating scales. The descriptive examples are part of "live" position descriptions and, as such, will be updated and replaced as necessary.

Use of the Standard

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

1. One of the important steps in the application of this standard is to ensure that the information being used to evaluate a given position is complete. It must include reference to the specific characteristics of work described in the factors as they relate to the duties of the position. The position description is studied to ensure understanding of the position as a whole, and of each factor. The relation of the position being rated to positions above and below it in the organization is also studied.

2. Allocation for 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 Factor Definitions, the Notes to Raters and to the Descriptive Examples of Element Degree contained in the illustrative position descriptions.

4. The description of the factor degree coordinate in any one of the descriptive examples exemplifying the degree tentatively established, is compared with the factor statement in the position being rated and also with descriptive examples having degrees above an below the one tentatively established.

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

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

Determination of Levels

The ultimate objective of position evaluation is the determination of the relative value of positions in the occupational group. Positions that fall within a designated range of point values will be regarded as being of equal difficulty and will be assigned to the same level.

POINT BOUNDARIES

POINTS	LEVEL
Formal Meteorological Instruction	1
100-133	2
134-170	3
171-217	4
218-295	5
296-400	6
401-543	7
544-737	8
738-1,000	9

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 and the Occupational Sub-group Definition Maps, which provide the 2005 group and sub-group definition and their corresponding inclusion and exclusion statements. The maps explicitly link the relevant parts of the overall 2005 occupational sub-group definition to each classification standard.

KNOWLEDGE FACTOR

This factor measures the know-how requirements acquired through formal education, additional study, in-house courses, on-the-job training, and the application of this knowledge to a breadth of practical applications having the diversity and variety.

DEFINITIONS

Depth of Knowledge is a measurement of the expertise in the theories, principles and practice, of meteorology, and a knowledge of other scientific disciplines and their inter-relationships with meteorology required for the position. It is initially acquired through graduation from university, with a prescribed number of courses in mathematics and physics, and the additional departmental course in theoretical and practical meteorology; this is supplemented by additional study of other related disciplines and bodies of relevant, specialized knwoledge or technical expertise, such as agriculture, biology, chemistry, computer science, engineering, forestry, hydrology, limnology, oceanography and pedagogy.

Breadth of Practical Application is a measurement of the range of applications of the knowledge required. This is exercised in meaningful assignments encompassing, in range and/or degree of involvement, the following:

- operational meteorological activities, e.g., analysis, prognosis, forecasting, etc.;
- allied scientific disciplines or specialized applications, e.g. oceanography, chemistry, hydrology, computer applications, limnology, etc.;
- research projects or special studies;
- system analysis and design;
- program and service development;
- development of instruments and methods for observing and recording atmospheric phenomena; - more than one organizational region;
- variety of users;
- consulting role; and
- teaching or instructing.

NOTES TO RATERS

This factor does not measure the requirement for knowledge of administration, supervisory/management principles and practices. These requirements are considered under the Accountability factor.

The degrees of the Depth of Knowledge element are designed to recognize a combination of the knowledge of the principles and practices of theoretical and applied meteorology with the knowledge of other specialties and/or scientific diciplines and their inter-relationships with meteorology required to perform type duties of positions of increasing difficulty. In determining the Depth of Knowledge, consideration must be given to the Knowledge requirements of positions from which likely candidates should be drawn.

The definitions for degrees A through *E* contain a primary statement relating to the principles and practices of theoretical and applied meteorolgy. In addition degrees A through *E* contain a secondary statement relating to the inter-relationships of meteorology with other specialties and/or scientific disciplines.

Because the requirements for the Primary and Secondary Knowledge do not necessarily combine and progress at the same rate, provisions have been made in the rating scale for a varying combinations of the Secondary Knowledge with the Primary.

To accommodate the combination of the Secondary Knowledge with the Primary Knowledge requirements of a position, the Secondary Knowledge has been divided into sub-degrees which progress from general to extensive knowledge of significant portions of the theory and practices of other specialties and/or scientific disciplines and their inter-relationships with meteorology.

In evaluating the Depth of Knowledge element raters should first consider the appropriate degree level for the Primary Knowledge requirement of the position and then the sub-degree level for the Secondary Knowledge requirement. The sub-degree level assigned to the position for the Secondary Knowledge can only be one of the three sub-degrees shown on the rating scale opposite the Primary Knowledge degree level assigned to the position. The following example illustrates the application of these combinations:

Example:

If the Primary Knowledge requirement statement in degree C is considered appropriate, raters should determine which sub-degree statement, (a), (b), or (c) is appropriate, i.e., a good knowledge, or a thorough knowledge or an advanced knowledge of significant portions of the theory and practices of other specialties and/or scientific disciplines and their inter-relationships with meteorology. If sub-degree level (b) were assigned for the Secondary Knowledge and the Breadth of Practical Application degree level were 3, the points accorded for the Knowledge factor would be those for degree coordinates CO, i.e., 111 points.

There are no instances where the Secondary Knowledge requirement would be less that "general"or greater that "extensive", hence, no points are shown on the rating scale for degree levels Aa or Ec.

The degrees of the Breadth of Practical Application element escalate from a limited variety to an extensive variety of applications exercised in performing the duties of the position.

In evaluating the Breadth of Practical Application, raters are to consider the requirements of the position, in range and/or degree of involvement, in assignments encompassing the following:

- operational meteorological activities, e.g., analysis, prognosis, forecasting, etc.;
- allied scientific disciplines or specialized applications, e.g. oceanography, chemistry, hydrology,
  computer applications, limnology, instrumentation, data collections, etc.;
- research projects or special studies;
- systems analysis and design;
- program and service development;
- more than one organizational region;
- variety of users;
- consulting role; and
- teaching or instructing

KNOWLEDGE FACTOR

This factor measures the know-how requirements acquired through education, additional study, in-house courses, on-the-job training, and the application of this knowledge to a breadth of practical applications having diversity and variety. Thus, it has two dimensions:

1.Depth of Knowledqe of the principles of theoretical and applied meteorology, other sciences and specialties as related to the practice of meteorology. It is initially acquired through formal education and supplemented by additional study of other related disciplines and bodies or relevant, specialized or technical expertise.

2.Breadth of Practical Application is a measure of the range, diversity and variety of applications of the knowledge required. This is exercised in meaningful assignment encompassing, in range and/or degree of involvement, the following: operational meteorological activities, allied scientific disciplines or specialized applications; research projects or special studies; system analysis and design; program and service development; instrument development; more that one organizational region; variety of users; consulting role; teaching or instructing.

DEPTH OF KNOWLEDGE			BREADTH OF PRACTICAL APPLICATION				
PRIMARY KNOWLEDGE METEOROLOGY	SECONDARY KNOWLEDGE Theory and practices of other specialitiesand/or scientificdisciplines and theirinter-relationshipswith meteorology.		Limited range of applica-tions and/or degree of involvement 1	Moderate range of applica-tions and/or degree of involvement. 2	Significant range of applica-tions and/or degree of involvement. 3	Pronounced range of applica-tions and/or degree of involvement. 4	Extensive range of applicationsand/or degree of involve-ment. 5
			Page	Page	Page	Page	Page
A. General knowledge of principles of theoretical and applied meteorology and the techniques of weather analysis and prediction.	General knowledge of significant portions	(a)					
	Good knowledge of significant portions	(b)	35	44	55	68	85
		(c)	42	52	65	82	102
B. Good knowledge of theoretical and applied meteorology and of meteorological and principles techniques.	General knowledge of significant portions	(a)	42	52	65	82	102
	Good knowledge of significant portions	(b)	50	62	78	97	122
	Thorough knowledge of significant portions	(c)	59	74	93	116	145
C. Thorough knowledge of theoretical and/or applied meteorology and of meteorological principles and practices.	Good knowledge of significant portions	(a)	59	74	93	116	145
	Thorough knowledge of significant portions	(b)	71	89	111	138	173
	Advanced knowledge of significant portions	(c)	84	106	132	165	206
D. Advanced knowledge of theoretical and/or applied meteorology and of meteorological principles and practices.	Thorough knowledge of significant portions	(a)	84	106	132	165	206
	Advanced knowledge of significant portions	(b)	101	126	157	197	246
	Extensive knowledge of significant portions	(c)	120	150	188	235	293
E. Extensive knowledge of theoretical and/or applied meteorology and meteorological principles and practices.	Advanced knowledge of significant portions	(a)	120	150	188	235	293
	Extensive knowledge of significant ortions	(b)	143	179	224	280	350

7.4
10.3
12.2
15.4
9.4
1.6
20.6
25.6
8.3
22.4
21.5
4.4
14.4
17.5
5.3
6.3
16.3
23.6
24.4
3.4

(c) - - - - -

PROBLEM SOLVING/DECISION MAKING FACTOR

This factor measures the Complexity of the problems to be solved and the Impact on End Results of the problem solving and decision making.

DEFINITIONS

Complexity is a measurement of the difficulty of the work in terms of the mental process and judgement required to identify, define and resolve problems and the originality, ingenuity, initiative and resourcefulness necessary to analyze, evaluate, reason, arrive at and make decisions.

Impact on End Results refers to the consequences of decisions made and problems resolved in terms of their effect on users, clients and industry; also their contribution to the science of meteorology and the scientific community.

NOTES TO RATERS

Under Complexity, raters are required to consider the intricacy of the work as it combines the range and variety of activities and their interrelationship. The complexity element varies from a limited degree of complexity with problems restricted in a range having few variables, to an extensive degree of complexity with unique problems of substantial range, requiring ingenuity, resourcefulness, judgement and initiative to arrive at a solution.

The level of mental demands (Complexity) involved in the work, is to be measured by the degree of initiative, originality, ingenuity and judgement required. Initiative, originality, ingenuity and judgement refer to the requirement to select, modify and apply methods an techniques appropriate to the peculiarities of the given situation and to exercise imagination and innovation in their application.

In evaluating the Impact on End Results raters are to consider typical characteristics of the work, such as the following:

(1) The size and nature of the internal resources (human, financial, physical) affected by decisions

(2) The effect of decisions on the development of meteorological science and technology.

(3) The enhancement, maintenance or loss of confidence in the professional stature of the service.

(4) The consequences of an error in making a decision or arriving at a solution.

(5) The effect of decisions and solutions on users, clients or on industrial, commercial or other organizations (external).

These example characteristics are only an indication of the Impact on End Results and the whole context within which the work is performed is to be considered.

The Impact on End Results element is divided into five degrees ranging from limited to extensive. It may be of local significance or of national importance; it may have indirect or direct, short or long term effect. Direct impact is generally considered to be more important than indirect; likewise, long term effect is generally considered to be more consequential than short term.

In assessing this element, raters should also consider the requirement, where applicable, to make decisions under the pressure of dealines and limitations of data; also the kind and significance of the consequences of actions taken and the result of a possible error not attributable to neglect or incompetence. In assessing the potential of the position's problem solving/decision making requirements to have a particular degree of impact on end results, raters are to consider only those consequences which are reasonably possible and not those which, although possible, are unlikely to occur.

PROBLEM SOLVING/DECISION MAKING FACTOR

This factor measures the Complexity of the problems to be solved and the Impact on End Results of problem solving and decision making.

IMPACT ON END RESULTS / COMPLEXITY	A Limited degree of complexity; Problems restricted in range with few variables.	B Moderate degree of complexity; Problems of moderate range with occasional variable requiring originality.	C Significant degree of complexity; Problems of considerable range requiring resourcefulness and originality.	D Pronounced degree of complexity; Unusual problems of substantial range requiring ingenuity, resourcefulness, judgementand initiative.	E Extensive degree of complexity; Undue problems of substantial range requiring ingenuity, resourcefulness, judgement and initiative.
1. Limited	30 Page 38	42 Page 7.5 10.3 53	59 Page 75	82 Page 105	115 Page 146
2. Moderate	48	1.6 8.3 9.4 11.5 12.2 15.4 68	18.3 20.7 95	133	186
3. Significant	61	86	19.7 22.5 120	169	236
4. Pronounced	78	109	21.6 23.7 24.5 25.6 153	214	300
5. Extensive				2.5 3.4 4.4 14.4	5.3 6.4 16.4

ACCOUNTABILITY FACTOR

This factor measures the Supervisory/Managerial Responsiblity for which the position is held accountable and the Freedom to Act within which the responsibility is discharged.

DEFINITIONS

Supervisory/Managerial Responsibility is a measurement of the requirement for planning and conducting assignments, providing advice, utilizing and/or controlling physical and financial resources, developing policies, standards and procedure, supervising, directing and controlling the work of others.

Freedom to Act is a measurement of the degree and nature of procedural controls and supervision received, including the supervisory control over physical and financial resources.

NOTES TO RATERS

Under Supervisory/Managerial Responsibility raters are to consider the requirement for planning, organizing, coordinating, integrating, directing, controlling and supervising. This element ranges from the performance of daily tasks which are fairly specific as to objective and content to the total managerial requirements of a major meteorological unit; in assigning a position to a degree level, the position must include most of the elements in that degree definition. Reference to subordinate or support staff in degree definitions indicated employees of the organizational unit concerned and included full and part-time or seconded employees.

Under Freedom to Act raters are to consider the degree and nature of procedural controls, the level of supervisory control over assignments, deviations from accepted practices, modification of assignments and changes in the use of resources. Gradations in the degree definitions are cumulative through the whole range of supervisory control. In evaluating a position under this element, it is mandatory that raters review the position description of the immediate supervisor of the position under review.

ACCOUNTABILITY FACTOR

This factor has two dimensions: (a) Supervisory/Managerial Responsibility for planning and conducting assignments, providing advice, utilizing and/or controlling physical and financial resources, developing policies, standards and procedures, supervising, directing and controlling the work of others. (b) Freedom to Act as evidenced by the nature and degree of procedural controls and the supervision received including the supervisory control, over physical and financial resources.

SUPERVISORY MANAGERIAL RESPONSIBILITY	Performance of daily tasks which are fairly specific as to objectives andcontent and with appropriate awareness of other related activities. Basic requirement to plan and organize own work within set standards.	Plans, performs and/or supervises several assignments/activities which are specific as objective and content coordination. Arranges and/or recommends work flow in relation to available resources and inaccordance with prescribed work procedures and methods. Reviews work of subordinates or support staff in progress and upon completion, for quality and acceptability.	Plans, organizes, performsand/or supervises avariety of assignments, activities which mayrequire external coordination.Recommends and/orimplements changes in priorities, methods, procedures and commitment of resources to accommodation variations in project requirements andobjectives. Appraises performance of subordinates.	Plans, organizes, integrates and directsdiverse functions of aunit, requiring coordination with other units: Recommends requirements for manpower, financial and other resources, to meet program objectives. Appraises performance of subordinate supervisors and recommends appointments, promotions and reassignments.	Plans, organizes, integrates, directs and controls major functions of a complex organization to achieve short and long range objectives and policies, and monitors modifications in organizational structure, methods and procedures. Determines and recommends requirements for manpower,financial and other resources, to meet program objectives, monitors and controls heirutitlization.Apprais es performance ofsenior staff members.
FREEDOM TO ACT	A	B	C	D	E
1, Assignments or tasks aresubject to established practices and procedures. Work and assign-ments in progress may only bemodified through consultation and supervisory approval.	25 Page	31 Page	39 page	49 page	61 page
2. Purpose and results expected ofassignments are provided. In pro-gress, variations from accepted practices, modifications of assignments and changes in the use of resources must be discussed with supervisor.	36 7.5 9.5 10.4 11.6 12.3 20.6	44 15.5 18.4	56	69	87
3. Purpose and results desired of assignments are provided but maybe modified through discussion with supervisor(s). In progress, variations from accepted practicesor modifications of assignments arenormally discussed with supervisors at the discretion of the incumbent.	51	63 8.4 19.9 22.6 25.7	79 1.8	99	124
4. Purpose and results expected of assignments are codetermined with superior(s). In progress variations from accepted practices, modifications of assignments and changes in the use of resources are normally decided by the incumbent.	72	90	113 23.8 24.6	141 21.8	176
5. Purpose and results desired of assignments are provided ingeneral terms and are subject onlyto broad policy and senior management guidance. In progress only modifications and changes with apossible effect on programs and resources of the organizational unit are discussed with superior(s).	103	128	160	200 2.6 3.6 4.5 14.5 17.7	250 5.4 6.6 16.5

COMMUNICATIONS REQUIREMENTS FACTOR

This factor measures the requirements, both internal and external, for oral and/or Written Communications as well as the Human Relations Skills necessary in relating harmoniously and effectively with others.

DEFINITIONS

Oral Communications, in this context, means the facility to express oneself in the spoken work when giving informative summaries or briefings. Written Communications are the various reports, forecasts, explanatory summaries, technical papers, précis and management directives or memoranda. This does not include form or pattern letter. "Written reports" are publications prepared mainly for internal use with limited or no external distribution and "papers" are publications prepared for wide external distribution in journals or other periodicals, or in texts or other monographs.

Human Relations Skills is the application of the art of working harmoniously and effectively with others in all interpersonal relationships.

NOTES TO RATERS

In evaluating positions under the Communications Requirements factor, raters are to consider the required skill degree of Oral and/or Written Communications. The degrees of this element range from a moderate degree of oral and/or written skills required to prepare and/or present short, informative, relatively straight forward reports, to that required for more detailed and complex presentations involving a very high degree of oral and/or written skills. Raters should note that such communications may be either internal or external, or both.

In applying the Human Relations Skills element, raters are to consider the degree of the skill required. This ranges from the primary human relationships involving basic courtesy, to the more critical skills of developing, motivating and earning the support of others in order to achieve effective results with employees, clients, users or the media.

COMMUNICATIONS REQUIREMENTS FACTOR

This factor measures the communications requirements (internal and external) as evidenced by the need for oral and/or written communications and the human relations skills required in relating harmoniously and effectively with others in regular interpersonal relationships.

It was two dimensions:

1. Oral and/or written communications
2. Human relations skills

HUMAN RELATIONS SKILLS / ORAL AND/OR WRITTEN COMMUNICATIONS SKILLS	A A moderate degree of explanation and clarification is required in providing advice and consultation on the science and application of meteorology and/or related disciplines to internal and/or external problems.	B A significant degree of explanation and clarification is required in providing advice and consultation on the scienceand application of meteorology and/or related disciplines tothe more difficult internal and/or external problems.	C A pronounced degree of clarity is required inachieving understanding and agreement on an interpretation or on a course of action with respect to the provision of services, knowledge or the application of meteorology.	D Communications skills involving logical and persuasive presentation of information, advice or principles are required in the expression of occasionally unique variable or non-recurring concepts on subjects within the science and the application of meteorology and/or related disciplines and the formulation of policy.
1. Basic courtesy is required to ensure effectiveness in interpersonal relationships.	10 Page	15 Page 9.6 11.7 18.5	22 Page	33 Page
2. Understanding, influencing and/or serving others are important requirements in achieving effective results.	17	26 1.8 8.4 10.5 12.4 15.6 20.8	39 19.9 22.7 23.9 24.7 25.8	57
3. Developing, motivating and earning the support of others is critical in achieving effective results.	30	45	67 2.7 3.7 4.6 14.6 17.8 21.9	100 5.5 6.7 16.6

ILLUSTRATIVE POSITION DESCRIPTIONS

Illustrative Position Descriptions are intended to exemplify the degrees of each classification factor and element in the position classification and evaluation plan. They are based on actual positions allocated to the Meteorology Group but, because they serve to exemplify degrees, their value for that purpose continues even when the actual positions undergo changes.

The contents of Illustrative Position Descriptions serve to illustrate the type of information used as a basis for the classification of positions.

In Numeric Order

DESCRIPTION TITLE	IPD PAGE	TOTAL POINTS	LEVEL
Base Meteorological Officer, Canadian Forces Weather Office, Trenton	1.1	232	5
Chief, Forecasting, Computers andCommunications Division	2.1	716	8
Chief, Hydrometeorology and MarineApplications Division	3.1	716	8
Chief, Instrument Design and DevelopmentDivision	4.1	646	8
Director, MeteorologicalApplications Branch	5.1	856	9
Director of Meteorology and Oceanography,Department of National Defence Headquarters	6.1	856	9
Duty Forecaster, Canadian Forces WeatherOffice, Greenwood, Nova Scotia,Maritime Command	7.1	143	3
Head, Hydrometeorological StreamflowStudies Unit	8.1	231	5
Ice Forecaster, Ice Forecasting Central	9.1	178	4
Meteorological Instructor, CanadianForces Weather Office, Cold Lake	10.1	154	3
Meteorologist, Major Weather Office	11.1	169	3
Meteorologist Instructor, Canadian ForcesSchool of Meteorology	12.1	177	4
VOID - Not used at this time			

DESCRIPTION TITLE	IPD PAGE	TOTAL POINTS	LEVEL
Officer-in-Charge, Major Weather Office	14.1	646	8
Operations Supervisor, Canadian ForcesWeather Office, Greenwood Maritime Command	15.1	185	4
Regional Director, Atmospheric EnvironmentService	16.1	856	9
Regional Superintendent General, WeatherServices	17.1	601	8
Research Meteorologist, Cloud physics	18.1	240	5
Scientific Services Meteorologist,Regional	19.1	329	6
Senior Meteorologist, MajorWeather Office	20.1	230	5
Senior Staff Officer, MeteorolgyAir Command	21.1	466	7
Shift Supervisor, Analysis and PrognosisDivision, Canadian MeteorologicalCenter	22.1	308	6
Superintendent, Forecast Systems ResearchSection	23.1	429	7
Superintendent, Industrial MeteorologySection	24.1	429	7
Shift Supervisor, Major Weather Office	25.1	338	6

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 1 Level: 5

Position Title: Base Meteorological Officer, Canadian Forces Weather Office, Trenton Point Rating: 232

Summary

Through a reporting relationship as outlined on page 1.4 (See Note 1) plans, organizes and directs the meteorological, scientific and technical programs of the Canadian Forces Weather Office (CFWO); advises and provides consultation on meteorological matters to Base authorities; manages the personnel and materiel resources of the CFWO; deputizes for the Senior Staff Officer Meteorology at Air Transport command Headquarters; performs other duties.

Duties % of Time

A. Plans, organizes and directs the meteorological scientific and technical programs ofthe CFWO to ensure peak effectiveness in meeting the meteorological support require-ments and public weather service commitments of the Canadian Forces at the Base. 35

1. Reviews Canadian Forces operational activities involving the Base andcoordinates with senior officers of the Base to determine requirements formeteorological service.

2. Assesses the local military and civilian requirements for meteorological supportand establishes operational meteorological programs to meet the requirementsfor meteorological services from the CFWO.

3. Controls the meteorological operational programs of the CFWO and reviews andrevises operational program as necessary to correct deficiencies, satisfy newor modified requirements and improve the output, (e.g. support to Search andRescue missions and large scale military transport exercises in Canada and abroad).

4. Composes and issues office instructions detailing the implementation,modification or deletion of programs.

5. Investigates or directs investigations of specific aspects relative to the CFWO operational programs and initiates appropriate action.

6. Evaluates the effectiveness of, and recommends on the meteorological scientificsupport provided by the Canadian Meteorological Centre, the Atmospheric Environ-ment Service (AES) Region Weather Central and the main Weather Office andestablishes procedures for staff of the CFWO to make optimum use of thissupport and to ensure compatibility of forecasts with those of other offices.

7. Directs the investigation, evaluation and implementation of new operationaltechniques in the CFWO.

% of Time

8. Coordinates the Base meteorological instruction program and supervises theactivities of the Air Transport Meteorological Instructor.

9. Coordinates and directs the provision of meteorological services by the CFWO tocivilian users (e.g. direct radio broadcasts from CFWO Trenton).

B. Advises and provides consultation on meteorological matter, to Base authorities toensure effective application of meteorological knowledge and services to militaryoperations and, as required, to civilian users (see Note 2). 20

1. Promotes the understanding of meteorology and its applications by encouragingaircrew in the use of meteorological information in planning and conductingflight operations and by participating in Base planning meetings and dis-cussions relative to the topics of operations, exercises, flight safety, etc.

2. Provides advice, information and professional opinion relative to flyingaccident prevention and in support of flying accident investigation boards.

3. Writes reports on meteorological matters relevant to Canadian Forces activitiesand provides advice to the Base Commander and Base Section Heads on specificproblems.

4. Reviews reports and complaints relative to meteorological services, initiatesremedial action as applicable and advises on the capabilities and limitationsof meteorological services.

5. Coordinates with the Rescue Coordination Centre (RCC) and controls theprovision of meteorological advice and special services in support of Searchand Rescue Operations. (See Note 3)

6. Provides specialized advice on meteorological matters to civil interests in the Bay of Quinte area, (e.g. advice to agriculture interests with emphasis onfruit, vegetable and tobacco growing).

C. Manages the personnel and materiel resources of the CFWO to promote the developmentand ensure efficient use of these resources.

1. Reviews military and AES plans, estimates future requirements and recommends onpersonnel, equipment and other resources.

20

2. Assigns responsibilities, reviews and approves schedules, completesperformance evaluations on the Air Transport Meteorology Instructor andsubordinate supervisors, and reviews evaluations for duty forecasters.

3. Provides guidance, counsel, on-the-job training and organizes professionaldevelopment activities for subordinate meteorologists (e.g. responds atcomplaint stage in grievance procedures for meteorologists).

4. Administers the staff, reviews complaints and grievances and initiates orrecommends remedial and career action in accordance with appropriate public andmilitary service directives and orders.

% of Time

5. Directs and monitors the arrangement and use of accommodation and materielresources to optimum advantage.6.Assigns and guides investigative study projects and recommends publication ofsignificant results.

D. Deputizes for Senior Staff Officer Meteorology (SSO Met) at Air Transport CommandHeadquarters during absences of the incumbent. (SSO Met Air Transport Command hasfairly extensive travel commitments associated with the duties of the position andthe requirement for deputizing is greater than in other commands.) 15

E. Performs other duties such as:

1. Attends scientific and management meetings and seminars.

2. Directs and promotes public relations activities, e.g., conducts tours of theSection for interested groups and presents talks to church groups and schools, plans and arranges meteorological displays on such occasions as Armed ForcesDay. 10

3. Implements and supervises the DND and DOE Occupational Health and SafetyPrograms in the CFWO.

Note 1 - The Base Meteorological Officer (BMetO) reports through the Base Operations Officer (BOpsO) to the Base Commander:

(a) As Senior Meteorological Advisor on the Base, and

(b) For the supervision of all meteorological operational and training programs of the Base.

The BMetO reports to the Command Senior Staff Officer Meteorology (SSO Met) on all meteorological scientific and technical matters and is responsible to the SSO Met for all matters pertaining to personnel administration of seconded DOE meteorologists of the CFWS and to specialized meteorological equipment and materiel of the CFWO.

Note 2 - In accordance with interdepartmental DND/DOE agreements, Canadian Forces Weather Offices (CFWOs) have responsibilities for the provision of public weather services as follows:

(a) Weather Offices at locations in Canada where there is a predominantly Canadian Forces requirement for meteorological service but which are important in the national meteorological network and where there is a substantial civilian requirement for service will be operated by the Canadian Forces on a scale to meet the combined needs. At such stations Canadian Forces meteorological personnel will provide the complete meteorological service required by various users.

% of Time

(b) Weather offices at locations in Canada of major importance to the CanadianForces program but of minor importance in the national meteorological programwill be operated by the Canadian Forces on a scale to meet their own require-ments, with the weather service being available to civilian users providingthere is no interference with the routine Canadian Forces program.

Note 3 Meteorological services at CFWO Trenton are provided to the Rescue CoordinationCentre (RCC) and to the locally based Search and Rescue Squadron. Support tothe RCC includes the provision of meteorological consultation services toprovide advice relative to probable cause of missing aircraft, boats, etc. andon past meteorological conditions relative to the effect they would have on theflight of the missing aircraft to determine areas of search. These mostfrequently concern areas of sparse meteorological data.

There is a requirement to arrange for the CFWO to provide specialized briefingsinvolving consultation in support of Search and Rescue operations on acontinuous 24-hour a day basis. The briefings in support of Search and Rescueoperations must provide the aircrew with sufficient information covering exten-sive geographic areas, including Arctic regions, to enable them to plan andmake judgemental in-flight decisions in support of Search and Rescue missionsdespite meteorological developments. The Trenton TCC is responsible for mostof Ontario, James Bay, most of Hudson Bay and that area of Quebec west ofapproximately 70 degrees longitude.

Job Requirements

Degree/ Points

Knowledge

Ca2/74

The position requires a knowledge of theoretical and applied meteorology, of climatologyand of physical geography on a global scale with specific reference to the area ofoperational concern, sufficient to make accurate scientific judgements in interpretingdata and numerical weather prediction guidance, in analysing and forecasting weatherconditions, providing meteorological consultation to users and managing the scientificprogram.

A knowledge of the inter-relationships between meteorology and a variety of allieddisciplines is required to provide consultative service with respect to militaryactivities, primarily aviation, such as Search and Rescue, tactical reconnaissance andaerial surveillance, construction and airfield maintenance, air transport and to a widevariety of civil users in the local area such as agriculture, recreational and marineinterests, news media and construction interests.

Problem Solving/Decision Making

B2 /53

The work entails responsibility for a program for the provision of operationalmeteorological services in support of military operations and decisions must be basedupon a knowledge of the role, activities and operational limitations of the CanadianForces and the policies and procedures of two government departments. In addition, inaccordance with Note 2, the work entails responsibility for the provision by the CFWO, ofweather service to civilian users in the local area.

Degree/
Points

The provision of the optimum meteorological services by the CFWO depends on the exerciseof sound judgement in planning and implementing procedures relative to local forecastproblems and meteorological service requirements. Requests for new services or changesin existing service require flexibility and sound decision making in evaluating andestablishing priorities and work routines for the CFWO.

The determination of future resource requirements, assignment of priorities in support ofoperational commitments and development of work schedules requires skillful coordinationto maintain an effective meteorological service and avoid a conflict between two govern-ment departments, e.g. personnel matters pertaining to meteorologists are governed byDOE/AES administration regulations and the terms of the Collective Bargaining Agreement, while technicians on staff are administered in accordance with DND personnel regulations.

Impact on End Results

Errors in the forecasts and advice provided in support of domestic (particularly remoteArctic regions) and international operations could result in mission failure, damage orloss to expensive equipment and injury or loss of life. Accurate and timely forecastsare extremely important to the effectiveness and safety of Search and Rescue operations,since many search missions are planned on the basis of weather forecasts. If factualweather conditions in a search area are poorer than expected, this exposes searchpersonnel to a high degree of risk in terms of flight safety. Conversely, if a searchmission is cancelled on the basis of a forecast and factual weather was such that asearch could have proceeded, this would deter from the effectiveness of the searchmission and reflect unfavourably on the credibility of the entire Search and Rescueoperation and the Canadian Armed Forces.

Decisions made directly affect the quality and effectiveness of meteorological servicesprovided by the CFWO and as a consequence reflect upon the AES and the meteorologicalprofession.

The consequences of decisions made have a primary impact upon the morale and conductof Section staff. Failure to recognize deficiencies and implement remedial pro-grams to improve the services can have a direct effect on the quality of servicesprovided as well as contribute to an unfavourable working "climate" involving twogovernment departments.

Accountability

Supervisory/Managerial Responsibility C3/79

The job requires to organize, develop, implement, and direct the scientific, technicaland administrative programs, for optimum utilization of the allocated personnelresources, i.e., eight meteorologists and seventeen military personnel, and materiel andphysical resources.

The BMetO prepares appraisals on professional staff and reviews the appraisals ontechnician staff members, recommends career development training, provides staffcounselling, manages Section personnel administration in accordance with DND or AESregulations, as applicable, and may be required to rate applicants on promotional ratingboards.

Degree/
Points

The fulfillment of the responsibilities of this position allows for general personalinitiative except for restraints in respect to actions involving changes in work programsaffecting the budget, basic policies and guidelines regarding personnel and materielresources, and technical procedures. The BMetO must also be completely familiar with theterms of the existing Collective Bargaining Agreement.

The immediate supervisor (See Note 1) is geographically removed from this position, thusclose supervision is not available. By virtue of this fact there is freedom to exerciseindependent judgement in carrying out the managerial and supervisory duties of thisposition.

Communications Requirements B2 / 26

Oral and/or Written Communications

Skill in oral communication is required in oral presentations to Canadian Forcesofficials on operational and administrative items, giving talks on meteorology to newsmedia, commercial interests and interested groups participating in section tours.Written skills and knowledge are required, utilizing the appropriate communicationchannel (i.e. DND or AES), in preparing daily administrative correspondence, staffappraisals, issuance of office directives and writing of reports.

Oral and written skills are required to a high level of competence when performing theduties of Senior Staff Officer Meteorology (SSO Met) at Command Headquarters.

Human Relations Skills

An understanding of the responsibilities and requirements of the local military unit andindividual section commanders plus tactful and cooperative effective provision ofmeteorological services and utilization of resources.

As a Section Commander in a military organization, courtesy, tact and positive leadershipmust be exercised to maintain respect from the staff of the CFWO and maintain a harmoniousworking rapport in the CFWO.

2.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 2

Level: 8

Position Title: Chief, Forecasting, Computers and Communications Division

Point Rating: 716

Summary

Reporting to the Director, Field Meteorological Systems Branch, and with the assistance of subordinate supervisory staff; plans, organizes, directs, coordinates and controls the national scale Canadian Weather Service Forecasting System (CWSFS), the Meteorological Communications System (MCS) and Computer Systems of The Field Services Directorate (FSD), represents the Atmospheric Environment Service (AES) in international and national bodies concerned with meteorological forecasting and communications, e.g., Commission on Basis Systems of the World Meteorological Organization (WMO); manages the Forecasting, Computers and Communications Division, assists in the general management of the Branch, and performs related duties.

Duties	% of Time
A. Plans, organizes, directs, coordinates and controls the national scale Canadian Weather Services Forecasting System, the Meteorological Communications System and the Field Services Directorate Computer Systems, involving line authority over a Division staff of at least 24 persons and expenditures of approximately $3 million per annum, and functional authority over activities involving approximately 800professional and technical employees and expenditures in the order of $20 million per annum; to ensure that these Systems operate in an integrated manner at maximum efficiency and effectiveness.	60
1. Ascertains needs for Forecasting, Computer and Communications services throughconsultation with User Requirements Division, other components of FSD and Headquarters, Regional Directors and staffs; Director, Meteorology and Oceanography,DND and staff; and foreign Meteorological Services especially of the U.S.A.	
2. Establishes goals and priorities for national activities related to theForecasting, Computers and Communications Systems and negotiates with other FSDmanagers to establish Directorate priorities.	
3. Directs activities of Forecasting, Computers and Communications (FCC) Division staff in design, selection, implementation and evaluation of systems andtechniques, and coordinates activities of other components of AES, e.g., Regions, Forecast Research Division of Atmospheric Research Directorate (ARD), Training Division of Central Services and outside organizations, e.g.Telecommunications and Electronics Branch (T&E, MOT) communication companies in support of these activities.	

% of Time

4. Directs the development of operational plans, programs and budgets by FCC Division staff, ensures that Regional Directors and Director of Canadian Meteorological Centre (CMC) are kept informed of plans for the forecasting, Computers and Communications Systems that will have impact on their programs,and directs the review of operational plans and programs of regions and CMC related to the Forecasting, Computers and Communications Systems.

5. Identifies requirements for types of staff, training requirements and needs forspecialized equipment, arising out of the planning and operation of theForecasting, Computers and Communications Systems.

6. Directs, coordinates and participates in the solution of problems arising from the Forecasting, Computers and Communications Systems.

7. Develops and maintains systems of management reporting and field inspection covering the operations of the Forecasting, Computers and Communications Systems.

B. Represents the AES, DOE or Canada, as the case may be, in national and internationalconferences and meetings related to Forecasting, Meteorological Computers andCommunications Systems, e.g., Canadian Member of WMO Commission on Basic Systems; DOE representative on Northern Communication Sub-Committee of Advisory Committee on Northern Development (ACND); participates in Meteorological Committee of Canada-U.S. Regional Planning Group (NATO) and the Meteorological Committee of the Military Coordinating Committee (Canada-U.S.); to ensure that Canadian, DOE and AES interestsin these areas are adequately promoted in international and national basis. 15

1. Maintains expertise in Weather Forecasting, Computers and Meteorological Communications Systems and a knowledge of international organizations and theiractivities in these fields.

2. Coordinates the development of national, departmental, or AES positions onagendas for conferences and obtains approval at an appropriate level.

3. Participates in conferences as representative of Canada, DOE or AES asappropriate.

4. Takes follow-up action to ensure that the results of conferences are made knownto those concerned.

C. Manages the Forecasting, Computers and Communications Division, assists in thegeneral management of the Branch, and performs related duties. 25

1. Determines objectives and goals, organizes the Division, defines staffresponsibilities, outlines administrative procedures, motivates staff andintegrates staff effort.

2. Supervises, through subordinate professional and technical Unit Heads, a staffof at least 24.

% of Time

3. Prepares divisional input to Branch program forecasts, plans, etc., andcontrols expenditures in accordance with financial management procedures andcontrols (1973-74 budget of $3 million 0 & M).

4. Provides advice and guidance to the Director on policy.

5. Provides expert advice as required in matters relating to Forecasting,Computers and Communications Systems, through discussions and correspondencewith officials both inside and outside the government and through serving asFSD, AES and DOE representative on committees, working group, etc., e.g.,activities in connection with AES Emergency Planning under the Emergency Measures Organization, and with the provision of support to DND under the DND/DOE agreement.

6. Deputizes for the Director, as required (this responsibility shared in turn with two other Division Chiefs.)

Job Requirements

Degree/ Points

Knowledge

Ea4/235

The work requires a knowledge of mathematics and physics, and meteorological theory asapplied to forecasting, including a knowledge of areas of research with potentialapplication in forecasting, such as numerical prediction, automated techniques and theuse of new types of data, and how these can be communicated and processed, by computersor manually. The position requires knowledge of the Canadian Weather Service ForecastingSystem and supporting systems in communications, computers and data acquisition, andknowledge of similar systems in other countries, especially the U.S. with which there areactive operational interfaces.

The work requires a knowledge of disciplines such as oceanography, physical geography,climatology and hydrology, which are related with weather forecasting. An appreciationof the application of meteorological factors to diverse user needs, such as forestry,agriculture, and marine operations is also needed.

The work requires a knowledge of AES goals, and those which devolve upon FieldMeteorological Systems Branch, and a knowledge of other organizations related to thework, especially DND meteorological services, T & 8 Branch of MOT, and internationalorganizations (WMO and International Civil Aviation Organization (ICAO)).

Problem Solving/Decision Making

D5/214

Complexity

The planning and operation of national scale systems as a unified structure with a commonpurpose involves consideration of many interrelated problems, including scientific,technical, organizational, and administrative (P/Y, budgets, classification, personnel).

Degree/
Points

Impact on End Results

The position has line authority over staff of the Division and expenditures ofapproximately $3 million, including the communications budget. Functional authorityinvolves approximately 800 professional and technical employees across Canada, andexpenditures in the order of $20 million per annum.

The national systems involved are the most highly visible of any AES activities, and havea daily impact on all segments of the population and economy involved with day-to-daymeteorological services.

The national systems have a substantial impact on other supportive systems, notably dataacquisition, and research and development systems. Impact of decisions is frequently indirect, long term, and national in scope, such asarrangements for distribution of Automatic Picture Transmission (APT) information, ornational plans for computer acquisition. The impact may be regional, as for exampleoperational plans for operation of a major forecast office. Frequently, the impact maybe international, affecting relationships with the U.S., as for example, coordinatingarrangements on hurricanes, or severe storms, or with WMO as for example, Canada'sposition on World Weather Watch, Commission for Basic Systems, or the GlobalTelecommunications Systems.

Accountability

Supervisory/Managerial Responsibility D5/200

The work involves line authority over a staff 9f at least 24 professional and technicalemployees, involving the usual supervisory functions such as assigning work, reviewingprogress, appraising performance, counselling, budgeting, controlling expenditures,arranging training, travel, staff selection, etc.

The functional authority over national scale systems is exercised through formulation ofpolicy, guidelines, and operating manuals and directives and the provision of advice, andaffects the operations of offices and their staffs throughout the country.Recommendations are made on organization, classification, career progression, staffmembers required, training and reassignments, affecting all offices.

Freedom to Act

Direction is provided by the Director, Field Meteorological Systems Branch, including thefinancial and human resources constraints on national system operations. Normally,actions are taken or recommendations prepared without further resource to higherauthority.

Communications Requirements C3 /67

Oral and/or Written Communications

The planning and operation of national systems requires frequent discussion with linestaff, to discuss problems, and arrive at solutions. There is the requirement toparticipate in, or chair, meetings with regional staff, with other agencies, such asT & E, MOT, with commercial interest such as computer suppliers, or with the U.S.National Weather Service.

2.5

Degree/
Points

Reports are frequently prepared for Headquarters and Field System use, and occasionallypapers are prepared for journal or periodical publications.

Human Relations Skills

The work requires an effective rapport with the Director, and with subordinate SectionHeads in the daily conduct of the work, to motivate and stimulate their support. Contactwith other Headquarters staff at various levels is to earn their cooperation in workingout solutions in areas of mutual concern.

The contact with field managers must be effective in influencing them to actions consistent with national needs, and to provide them with Headquarters support in approvedprograms.

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 3

Level: 8

Position Title: Chief, Hydrometeorology and Marine Applications Division

Point Rating: 716

Summary

Reporting to the Director, Meteorological Applications Branch, Central Services Directorate, Atmospheric Environment Service, (AES) Department of Environment, directs, plans, organizes and administers the activities of the Hydrometeorology and Marine Applications Division to provide a national program and national centre of expertise dealing with the application of meteorology to the solution of problems of the fresh and salt water environment. The Division provides professional meteorological support, directly and through the Regional Scientific Support Units, to such specialized interests as hydrology, limnology, oceanography and water resources planning, engineering and management. Such support ranges from consultation and advice to the provision of engineering design criteria, the undertaking of multi-disciplinary studies and the writing and publication of scientific reports and papers. Responsibilities include that of advisor to senior officers in government and the provision of a continuing interface between AES and the local provincial, federal and international agencies and organizations dealing with the operational aspects of the water environment.

Duties — % of Time

A. Directs, plans, and organizes the activities of the Hydrometeorology and MarineApplications Division in order to provide a national program and a national centre ofexpertise dealing with the application of meteorology to the solution of problems offresh water and salt water environments. — 23

1. Reviews, assesses, and determines departmental, regional, national andinternational requirements for hydrometeorological and marine applicationservices and evaluates the needs and requests for services.
2. Recommends and plans short and long range developments affecting changes inpolicies, objectives, authorities and allocation of resources to meet approvedand foreseeable requirements.
3. Advises on problem resolutions and the development or revision of programs tosolve the problem at Division, Branch, Directorate, Service and departmentallevels as appropriate and through committees and commissions at national andinternational levels.
4. Establishes priorities and determines the resources required, assigns andallocates the resources of the Division for the implementation, continuation ormodification of required projects.

B. Directs, conducts, and publishes the results of a program of studies andinvestigations employing the application of meteorology to the solution of hydrological, limnological, oceanographic and water resources planning, engineering and management problems. — 25

1. Identifies problems and reviews proposed subjects for investigation and studyto determine feasible avenues for investigation.

2. Institutes and leads studies and investigations for federal, provincial, and local government departments and agencies, industry and commerce.

3. Writes and reviews publications or reports of such studies and investigations.

C. Provides scientific direction, advice, and information services to engineers, planners, scientists, members of international bodies and principal officers of government departments and agencies and to private organizations. 30

1. Provides a national program and a national centre of expertise and provides guidance and special services to the Scientific Support Units of six (6) AES Regions and the Prairie Hydrometeorological Office.

2. Provides a continuous interface between AES and operational agencies and organizations with responsibilities in the water environment; between AES and other organizations dealing with the operational aspects of the water environment.

3. Develops and maintains effective working relations with representatives of other divisions, branches, and departments within government, and with user groups, industry, universities and international organizations.

4. Acts as a consultant and serves on AES, departmental, national and international committees and represents Canada, at times as principal delegate, at meetings of the World Meteorological Organization, United Nations Education, Scientific and Cultural Organization (UNESCO), and other international scientific meetings.

D. Manages the operations and resources of the Division by supervising directly or through subordinate supervisors eleven scientific professionals, fourteen technical and administrative support staff, as well as special projects and casual professional and semi-professionals. 20

1. Outlines the administrative procedures and organization of the Division and the assignment of duties and responsibilities of the staff.

2. Reviews and oversees the preparation of operating and capital budgets for the Division and its sections and controlling activities and expenditures in accordance with budgetary and program limitations, requirements and priorities.

3. Negotiates the acquisitioning of funds and personnel from user organizations for collaborative and cooperative programs and employing them in the bestinterests of the organizations concerned, according to agreement.

E. Develops and implements observance of the Departmental Occupational Health and Safety Program within the given area of responsibility. 2

1. By providing appropriate training for supervisors, appointing safety committees and delegating particular responsibilities as required.

2. By ensuring periodic inspections with a view to maintaining the working environment in a safe and healthful condition.

3. By ensuring that all accidents are promptly and properly reported and investigated and that any necessary corrective action is taken.

Job Requirements

Degree/ Points

Knowledge

Ea4/235

The work requires sufficient knowledge of theoretical and applied meteorology, hydrometeorology and climatology in order to provide scientific leadership to the Hydrometeorology and Marine Applications Division. Because of the multi-disciplinary nature of the duties, and in order to provide a national centre of expertise in meteorologicalapplications to both the fresh-water and salt-water environment the work requires a knowledge of hydrology, limnology, oceanography and water resources engineering. Also required is a knowledge of the research and investigations current in the fields of hydrometeorology and marine applications in order to provide in-depth studies, consultation and advice to other departments of all levels of government and the private sector.

Problem Solving/Decision Making

D5 /214

Complexity

Studies and consultative advice must be made based on the application of meteorology to problems of the many scientific disciplines involved in the fresh and salt-water environment. Since hydrometeorology is a relatively new field, most problems are new and each is situated in a different set of climatological and geographic conditions. In most cases the depth of record and number of observing stations are not sufficient to allow the use of standard statistical techniques and for this reason most projects require original or innovative approaches. Examples of such complex multi-disciplinary studies include:

(i) Water level forecasting techniques for the Great Lakes must take into account precipitation, evaporation, snow melt, stream inflow and outflow, ground water supply, set-up and seiche and sediment deposition.

(ii) The assessment of critical meteorological conditions for the design of spillways and free-board allowances for major dams (e.g. Bennet, Churchill Falls,etc.) is based on the maximization and transposition of major storms of history, depth-area-duration analyses of each storm, and extreme value frequency analyses of wind-induced set-up and waves.

Impact on End Results

Decisions made have a direct impact on a staff of 24 professionals and technicians (plus a varying number of casuals) operating with a budget of close to one-half million dollars. Decisions also influence the direction and results of the hydrometeorology and oceanographic programs of the six AES Regions. As hydrometeorology is a relatively new science results of studies and subsequent decisions frequently make significant contributions to both the national and international levels of the science thus enhancing the stature of AES. The results of studies and/or the consultative advice of the incumbents dictate such decisions as:

(i) The location, design and operating procedures for large hydro-electric and regulatory dams.

Degree/
Points

(ii) Government regulations relative to shipping and the design of vessels.

(iii) Improved techniques for making flood forecasts and for forecasting river flowfor operational purposes.Errors based on faulty information related to dam design could lead to a waste ofmillions of dollars of taxpayers money through over-design or multi-million dollareconomic losses and the loss of life as the result of under-design. As an example, atechnique developed for synthesizing over-water winds led to a $2 million saving in thedyke system for the Churchill Falls complex.

Accountability

Supervisory/Managerial Responsibility D5/200

The work entails responsibility for planning, organizing, controlling and directing thework of the Hydrometeorology and Marine Applications Division consisting of 10 profes-sionals, 14 technicians and clerks, several casuals, and a budget of about one-halfmillion dollars. Changes may be recommended in programs or objectives thus changingrequirements for human and financial resources. The work involves evaluating the outputof the Division, making personal evaluation of the Section's superintendents and thesecretariat and reviewing evaluations made by subordinates. Many projects are conductedjointly with other agencies, sometimes at the international level. These require agreater degree of coordination and management responsibility.

Freedom to Act

The position requires the development of an annual plan and a five-year program (using AES personnel and financial guidelines) for the approval of the Director, Meteorological Applications Branch. Programs may be altered within previously approved personnel andfinancial constraints. The work entails responsibility for final review of reports andpapers. These are then recommended for the Director's formal approval and in the case ofscientific papers are further reviewed by the editorial boards of the publishingjournals.

Communications Requirements C3/67

Oral and/or Written Communications

Scientific papers and reports are presented at national and international conferences andsymposia (International Union of Geodesy and Geophysics, American Society for theAdvancement of Science, American Geophysical Union) and are frequently published in majorscientific journals (Monthly Weather Review, Bulletin International Association forHydrologic Sciences, Proceedings of Great Lakes Conference). Writing skill, oralcommunication and scientific competence is required for the preparation and presentationof these papers. The work requires the incumbent to represent the Atmospheric EnvironmentService at high level inter- and intra-departmental and federal-provincial meetings andrepresent Canada at international meetings. (Interdepartmental Committee on Water,Prairie Provinces Water Board, WMO, UNESCO). It also requires the incumbent to beresponsible for the post-graduate course in Hydrometeorology (519X) in the PhysicsDepartment of the University of Toronto and for a number of lectures on the subject forin-house training programs.

3.5

Degree/
Points

Human Relations Skills

In order to lead a Headquarter's centre of competence the work requires promoting andmaintaining staff interest and providing advice and motivation during the course ofinvestigations. As Chief of Division of good rapport, based on good communications andmutual respect, must be maintained with the staff and with the Scientific Support Unitsin the AES Regions. As an AES representative on co-operative programs with other federaland provincial government agencies and universities human relations skill is important;as a representative of Canada at international meetings (WMO, International Field Year in the Geat Lakes (IFYGL), UNESCO), it is a must.

4.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 4

Level: 8

Position Title: Chief, Instrument Design and Development Division

Point Rating: 646

Summary

Reporting to the Director, Atmospheric Instruments Branch, organizes and manages the Design and Development Division which determines the optimum design of instruments and data acquisition systems for the operational programs and special projects of the Atmospheric Environment Services (AES), and produces reports and related documentation defining those instruments and systems so that they can be procured, operated and maintained; and which provides related expert consultation and services in support of the AES and other agencies. To ensure that the Division accomplishes this job, directs the scientific and technical work of the Division; administers, supervises and coordinates the activities of the Division; and performs other duties.

Duties — % of Time

A. Directs the scientific and technical work of the Design and Development Division toensure the high-quality and timely design, advice and services. — 35

1. Initiates, reviews and approves project proposals particularly with respect to objectives, soundness of method, time planning, cost/benefit relationships.
2. Reviews major design recommendations produced by the Division with regard totechnical adequacy, clarity and suitability.
3. Directs, reviews and coordinates the activities of divisional personnel working in a larger Branch, Service or Departmental context in planning and implementing design and development phases of major instrumentation programs or projects.
4. Provides scientific and technical development opportunities such as training, seminars, conferences, etc.
5. Arranges for the use of outside resources, such as consultants, commercial, academic and government services, to assure coordinated, integrated multi-disciplinary solutions to instrument problems.

B. Plans and coordinates timely Division input to Service programs involvinginstrumentation. — 25

1. Develops proposals, reviews submissions, and participates with Service program managers and working groups in exploring the needs and opportunities for theapplication of new and improved data acquisition systems for the operational programs and special projects of the AES.
2. Reviews Service programs to determine requirements for meteorological instrument design and development services, and to evaluate schedules andpriorities of the programs.

% of Time

3. Commits Division resources, where appropriate.

4. Serves on Service Planning and Estimates Croups, Working Groups and Committeesto work for best use of AES resources in programs involving instrumentation.

C. Administers and supervises the Division; directs and coordinates the activities of the Division through six Section Heads. 15

1. Manages a Financial Responsibility Centre with a total operating and capital budget of $1.15 million.

2. Directs the preparation of, reviews and recommends the annual operating andcapital budgets of the Division.

3. Establishes, reviews and promulgates administrative procedures; assigns duties and responsibilities to the staff and assigns and allocates resources ofcapital and operating funds, of professional, technical and administrative personnel and of space and technical equipment.

4. Appraises senior staff; reviews junior staff appraisals and performs other supervisory and maintenance and personnel functions.

5. Directs the establishment, maintenance and operation of a Branch technicalinformation system, including files, reference materials, books, journals, etc.

D. Contributes to the management of the Atmospheric Instruments Branch. 15

1. As a member of the Branch Management Council, participates in the definition ofBranch objectives, setting of goals, establishment and review of policies andprocedures, and assessment of Branch performance.

2. Acts for the Director as required.

3. Provides staff advice to the Branch Director, especially with respect to newtechnological developments.

E. Performs other duties. 10

1. Represents the Branch on Planning and Estimates groups, Collective Bargaining Working Groups and Committees; attends conferences, participates in extra-curricular studies, etc.

2. Recommends and reviews research projects; encourages and assists staff in preparing research papers; reviews and edits draft papers and recommends on their publication.

3. Provides advice and consultation on instrumentation problems to other government agencies and departments, universities, companies, and the general public.

4. Present lectures; participates in World Meteorological Organization studies andworking groups.

5. Ensures implementation of policy and procedures as defined in DepartmentalOccupational Health and Safety Programs, and arranges for appropriaterepresentation on the relative Headquarters committee.

Job Requirements — Degree/ Points

Knowledge

The work requires a knowledge of mathematics and physics as applied in instrumentation and engineering, a knowledge of meteorological principles and practices and of the principles of organizing and administering a complex scientific and technical service of a Headquarter's Division. Cc4/165

A knowledge of the methods used to measure, collect and process meteorological and climatological data; of techniques used in research and development work; of instrument design, testing, construction and calibration; and of the principles and practices of instrument purchase and commercial manufacture.

Problem Solving/Decision Making D5/214

Complexity

Problems are primarily technical or administrative. Technical problems are made complex because the speciality of the Branch, instrumentation, differs from that of the remainder of the Service, and this Division provides a major interface between the Branch and theremainder of the Service.

Other problems relate to assuring an adequate and timely input of instrumentation factors into the planning of the operational and research programs of the Service. Most problems involve finding a solution in which a level of mutual understanding can be achieved between disparate groups, and trying to make that understanding self-generating at aworking level.

For example, an analysis of the data processing aspects, the potential improvement of the measured data, the economic and hardware aspects, and a knowledge of the wide variety of uses of the end data was necessary to see, and convince others of the desirability of a more complex system of computer based data reduction of upper air rawinsonde data for Canada than was being developed in the U.S.A. This program had to be coordinated betweenspecialists in all headquarters Directorates and is a typical problem of this position.

Other types of problems include the appropriate reaction to indefinite governmentpolicies, such as make-or-buy; the termination of development projects that areproceeding successfully but loosing relevance; the maintenance of the organizationalflexibility necessary for an innovative response within a large organization such as theGovernment of Canada.

Impact on End Results

Decisions made have a direct impact on a divisional budget of $1,150,000 and on the workof a staff of 55 people, and on the use of at least $50,000 capital used on behalf ofother programs.

The accuracy, scope, reliability and availability of data is a vital link in theoperational and research programs of AES. Poor quality instrumental data would directlyaffect the reputation of the Service with other science based organizations.

Degree/
Points

An error in judgement may have the work of 5 or 10 people directed in a non-productivedirection for periods of time, and could consequently delay operational and otherprograms, and affect the morale of the Division.

Faulty development decisions have an impact on all aspects of the Service activities. Adecision leading to the procurement of less that optimal equipment for a national networkmay saddle the AES with expensive and inadequate data in that area for long periods oftime, and indirectly affects the weather service on a national basis.

Accountability

Supervisory/Managerial Responsibility D5/200

The position requires planning, organizing, controlling, directing and coordinating thework of 55 subordinates in the Division. There is a requirement to monitor and guidethe work of six Section Heads. Advice and consultation is given to subordinates ontechnical matters and to appraise their performance.

Freedom to Act

The work is performed according to objectives outlined by the Director, with the recourseto consult with him in difficult or unusual situations.

Communications Requirements C3 /67

Oral and/or Written Communications

There is a requirement to communicate with colleagues, subordinates, and with seniorofficials of other Branches to discuss and priorize projects, plan, review and directwork.

Written communications are in the form of memoranda, reports on projects to the Directorand the editing of technical papers.

Human Relations Skills

The position requires the ability to deal effectively with one or several people topersuade them to agree on courses of action that may meet their needs. An effectiveworking atmosphere must be maintained with a large staff in order to work effectivelytoward a common and desirable goal. This requires the understanding and comprehension ofthe needs and problems of others.

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 5 Level: 9

Position Title: Director, Meteorological Applications Branch Point Rating: 856

Summary

Reporting to the Director-General of Central Services Directorate directs, through five Division Chiefs, the activities of the Branch, which include the establishment of network standards of observational data, the quality control, processing and publishing of climatic data, the provision of climatic information systems, and the provision of systems for the application of meteorology and hydrometeorolgy through study and consultation; administers the Branch and supervises 148 staff members.

Duties % of Time

A. Directs, through Division Chiefs, the activities of the Meteorological ApplicationsBranch engaged in the development, design and establishment of standards for themeteorological data acquisition systems; the monitoring, quality control, archivingand publishing of climatological data and the provision of wide ranging servicesfor the application of climatology, meteorology and hydrometeorology (data, infor-mation, advice and consultation). 40

1. Established priorities and implements programs for the Branch according to thedirectives, agreements and objectives of the Directorate and of AES.
2. Approves and issues guidelines to govern the conduct of activities within the Branch.
3. Coordinates the activities of the five Divisions within the Branch and withother components of the AES.
4. Reviews and evaluates the adequacy and effectiveness of services provided anddiscusses these with Division Chiefs (e.g. evaluating methods and proceduresfor the processing, quality control and publishing of data; plans short andlong-range developments in procedures and services).
5. Reviews and approves divisional programs and plans such as those for network anddata quality standards.
6. Allocates Branch resources to maintain and improve standards and to provide theservices listed above.

B. Directs climatological, meteorological and hydrometeorological investigations andsurveys for the purpose of improving and enhancing services. 15

1. Identifies problems and initiates ways and means of improving services andresolving problems and incorporates findings into administrative and budgetaryplans.

% of Time

2. Leads a program of investigations to determine the effects of climate on the economic and social life of the country, and writes or reviews reports made on these and other studies and investigations.

3. Determines the need for research to assist in the development of new servicesand the improvement of existing services and requests such research from other AES units.

10

C. Provides an advisory service to senior administrators in government departments andagencies, private organizations, and to members of international bodies.

1. Represents Canada at international scientific meetings (World MeteorologicalOrganization (WMO) etc.), DOE and AES at inter- and intra-departmentalmeetings.

2. Develops and maintains effective working relations with users, acts as aconsultant and serves on specialized committees.

35

D. Administers the Branch and supervises directly, and through five subordinate chiefs,33 meteorologists and approximately 115 technical and administrative support staff.

1. Outlines administrative procedures and the responsibilities of the staff andcoordinated divisional and inter-Branch activities.

2. Defines objectives, analyzes reports and reviews the compilation of the budget.

3. Directs the development and operation of a computer service to provide for dataprocessing retrieval and project work.

4. Assigns staff, appraises them, approves and recommends disciplinary, promotionand transfer action, recommends on training requirements and counsels staff onpersonnel and work problems.

Job Requirements — Degree/Points

Knowledge — Da5/206

Knowledge of meteorology is required at a level to direct climatological investigationsand surveys, the archiving and publishing of climatological data and the provision ofservices in the broad applications field. Knowledge is required of climatology, hydrometeorology, geography, earth sciences and methods of data processing sufficient torepresent the Branch and AES on national and international scientific meetings.

Problem Solving/Decision Making — E5/300

Complexity

Decisions are made and solutions must be found in setting priorities and in allocating resources in the five Divisions. Decisions must be made when planning for upcoming programs, when resolving problems and selecting alternatives in ongoing and evolving programs.

Ingenuity is required when developing long-range plans for the Branch.

Degree/
Points

Impact on End Results

This position carries responsibility for allocating internal resources consisting of a staff of about 33 meteorologists, 115 technicians and administrative support staff and budget of $2,160,000 for various national projects. The application of meteorology and climatology to the economy has been developing for some time, but now meteorological applications work is reaching increased importance as attempts must be made to preservethe environment, as well as to assist with national and international problems having to do with our future supplies of energy and food. Errors in the provision of data andinformation to users can cause them financial loss and can lead to poor use of resources. Meteorological application services have been used as aids in sitting the new Mirabel,P.Q. International Airport, whether an investment of $400,000,000 will be in jeopardy ifthe airport is improperly located with respect to climate. Failure to seek such servicesled to the under-design of power transmission lines in Quebec which failed in 1969 necessitating replacement costs totalling over $20,000,000. Poor or incomplete services cause a loss of prestige for AES with governments and the public, and what may be most important, reduces the demand for future services resulting in higher possibilities of loss in areas such as described above.

Accountability

Supervisory/Managerial Responsibility — E5/250

The position involves the responsibility for planning, directing and coordinating the work of five Divisions. The Director provides advice to the Division Chiefs and holds ultimate responsibility for their work. The position also involves the responsibility for implementing changes within the Branch and for committing resources.

Freedom to Act

Guidance is received in terms of broad policy outlines and desired results. Policy is recommended to the Director General (DG) and advice is sought on programs only if theyare likely to adversely affect the Directorate or AES as a whole.

Communications Requirements

Oral and/or Written Communications — D3/100

The work involves giving talks and providing consultation to individuals and groups onprojects, programs and proposals. There is also a requirement to give radio and TV interviews on the interpretation of meteorology and science to the public.

Human Relations Skills

The position requires an ability to work with others on committees and task forces to put forward the AES position. There is also a requirement to work on WMO Technical Commissions and working groups as a representative of Canada. Through personal contact and indirectly through subordinate supervisors the work requires to deal effectively witha wide variety of personnel problems.

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 6 Level: 9

Position Title: Director of Meteorology and Oceanography, Department of National Defence Headquarters (DNDHQ) Point Rating: 856

Summary

Reporting, as explained in the note below, to the Chief of Air Operations at National Defence Headquarters (DNDHQ) and to the Director General Field Services at AES Headquarters, directs and controls scientific and technical programmes pertaining to the meteorological and oceanographic services required by the Canadian Forces; originates or recommends, as appropriate and implements meteorological and oceanographic policies related to the national and international responsibilities of the Canadian Forces, and represents Canada in international military meteorological and oceanographic affairs; coordinates with senior departmental officials of the DND and DOE concerning the interdepartmental and international implications of military meteorological and oceanographic long-term and short-term plans, requirements and programs.

Duties % of Time

A. Directs and controls extensive and widely varied scientific and technical programsin support of the developmental, operational and training activities of the Canadian Forces toward the achievement and maintenance of meteorological and oceanographicservices required by the Canadian Forces in the fulfillment of their national andinternational responsibilities. These responsibilities involve all elements of theforces in both routine, emergency and wartime situations. 40

1. Directs the continuing review and assessment of need within the Canadian Forcesfor revision, development, improvement and expansion of meteorological andoceanographic services in consideration of the stated requirements of theCanadian Forces Commands and advances in meteorological and oceanographicscience, technology, instrumentation and ancillary support services.

2. Establishes objectives and priorities for the Canadian Forces Weather Services(CFWS).

3. Directs and controls the compilation of annual and long-term plans, with theirassociated estimates of resources required from the AES for the operation ofCFWS (Budget in Fiscal Year 1974/75 of $2.5 million), and directs theexpenditure of these funds.

4. Supervises through two subordinate Superintendents at NDHQ and five SeniorStaff Officers located at the Canadian Forces Command Headquarters, a totalstaff of approximately 140 professional meteorologists.

5. Provides meteorological and oceanographic technical direction and control overtrade specifications, training, development and utilization of approximately300 military meteorological technicians.

6. Convenes and conducts meetings of selected subordinate staff from Headquartersand field as deemed necessary.

% of Time

7. Issues technical directives and instructions pertaining to meteorological andoceanographic services for the Canadian Forces.

8. Acts as Step 2 in the departmental grievance procedures for all DOE civilianpersonnel seconded to DND and acts as Step 1 for two immediate subordinateSuperintendents.

B. Originates, coordinates, recommends and implements defence policy on meteorological and oceanographic services to ensure that Canadian Forces plans and programs make adequate provision for the meteorological and oceanographic services needed tosupport operations in peacetime and in wartime, both nationally and in the meetingof international (United States, NATO, NORAD, etc.) commitments. 40

1. Studies trends and developments in the fields of military meteorology and oceanography.

2. Consults with senior NDHQ line officers and with the Assistant Deputy Minister,AES and the Assistant Deputy Minister Oceans and Aquatic Affairs (O&AA) of DOE to coordinate policy proposals for subsequent implementation.

3. Represents Canada at international meetings e.g. NATO, and the Canada-UnitedStates Military Cooperation Committee to discuss and develop common policy on military meteorology and oceanography.

C. Coordinates with the AES and O&AA, as appropriate, the short- and long-term plans, requirements and programs for meteorological and oceanographic support for theCanadian Forces to ensure that Canadian Forces meteorological and oceanographicservices are fully coordinated with other programs operated by the Government, andthat maximum practicable use is made of available DOE facilities and services. 20

1. Meets and discusses with Senior Officials of the AES and O&AA if DOE to agreeupon common programs.

2. Coordinates the AES, O&AA and the Canadian Forces positions regarding mattersof national and/or international scope pertaining to military meteorological andoceanographic services.

3. Convenes and conducts military meteorological and oceanographic meetings (e.g.as Chairman of the NDHQ Committee on Military Meteorology and the NDHQ Committeeon Military Oceanography which have representation from AES and the O&AA, respectively, as well as from DND.)

Job Requirements — Degree/ Points

Knowledge — Da5/206

The position requires a knowledge of meteorological science and technology sufficient toidentify, evaluate and ensure the provision of the most effective meteorological servicerequired by the Canadian Forces both nationally and internationally, by the forces ofallied nations from the CFWS in accordance with international (NATO) agreements, and byother users in those local areas of Canada where the CFWS has commitments (in accordancewith the interdepartmental agreements) for the provision of public weather-type services.

Degree/
Points

A knowledge of the specialized military applications of meteorology, including the applications of climatology to military planning, sufficient to direct consultative services to a wide range of Canadian Forces operational planning and engineering development activities.

The position also requires a knowledge of physical oceanography, with special emphasis on applications to military operations, and of the inter-relationships between meteorology and oceanography, sufficient to direct the CFWS in its provision of oceanography, sufficient to direct the CFWS in its provision of oceanographic services and training, and to originate, coordinate and implement defence policy and plans for oceanographic services.

Problem Solving/Decision Making E5/300

Complexity

In the CFWS as a whole, there are some 30 meteorological offices/units spread across Canada, some 20 meteorological detachments in HMC ships, and two weather offices in Europe. Because of the geographical spread and functional command relationships of these components, the problem-solving/decision-making processes in this position are very complex on the basis of the policy, practices and procedures of a single government department; they are all the more intense, all the more lacking in precedent and demanding in terms of required ingenuity and resourcefulness, because they involve the policies, practices and procedures of two distincitly different departments, DOE and DND. This duality intensifies the mental demands and judgement required in managing the financial, materiel and personnel resources of the CFWS. On the personnel staffing side there are still further complexities as a result of the combining of civilian meteorologists seconded from DOE, military meteorological technicians from the Canadian Forces. Another complicating factor for the position is the increase in workload in terms of problem-solving/decision-making, as a result of major organizational or administrative restructuring in either DOE or DND. Even the recent exercise in identifying and designating the language requirements of positions in the CFWS was more complex and posed additional problems for D Met Oc because of the interface between DOE and DND in CFWS personnel matters.

Decisions must frequently be made on DOE and AES administrative and technical directives which, although fully applicable as issued by DOE/AES Headquarters to all AES regions, require some modification to be meaningful in the CFWS. The problem-solving/decision-making processes are complicated, too, by the continuing climate of budgetary constraintswithin both DOE and DND. The effects of these constraints are revealed in the tighteningof person-year allocations/personnel establishment ceilings, reduction of equipment procurement, curtailment of on-duty travel, etc.

Maximum discretion must be exercised in assigning financial priorities, with full regard to such considerations as cost-effectiveness, and effects on morale.

Degree/
Points

In oceanographic matters, judgement must frequently be exercised with due regard to the complexities of the division of oceanographic responsibility within NDHQ, and the DND's working arrangement with the O&AA of DOE. The position is responsible for the planning and direction of military oceanographic information services on behalf of DND. The work includes a role in the coordinating of oceanographic research and survey projects as Chairman of the NDHQ Committee on Military Oceanography which, however, are primarily the responsibility of other NDHQ directorates in conjunction with the defence research establishments in Halifax and Esquimalt.

It is necessary in this position to constantly review military meteorological and oceanographic programs in the light of technological advances, government policy and international plans, and to ensure that decisions and recommendations for development or modification of programs are realistic. Judgement, initiative and resourcefulness are also necessary in the representation of Canada at international meetings.

Impact on End Results

Decisions and recommendations in this position affect the interdepartmental and international relationships pertaining to military meteorological and oceanographic programs, and determine in a large measure the utilization and effectiveness of some 140 meteorologists and 300 military meteorological technicians in the CFWS. Decisions have a direct impact on an annual budget of 2.5 million dollars of DOE funds in support of DND, and in the case of Canadian Forces meteorological technicians, directly affect the DND annual budget of some 3 million dollars.

Judgement and decisions as the senior specialist officer in meteorological and oceanographic services in the Canadian Forces are of utmost importance to the professional stature of the AES, both nationally as viewed by DND, and internationally as viewed by Canada's allies. For example, decisions made in this position regarding the acceptance or rejection by Canada of programs having implications in the field of meteorology or oceanography in NATO, have a definite impact on the international image of the CFWS, AES and DND. Errors of wrong decisions in advising the higher echelons of NDHp could have serious adverse effects on particular items of DND policy, with consequent loss of DND confidence in the AES and damage to interdepartmental relationships.

Accountability

Supervisory/Managerial Responsibility E5/250

The work has full responsibility including the direction and control of the activities of the CFWS through two Superintendents. The latter are given general direction in the form of goals to be achieved, and are left free to plan, organize and coordinate their work within established policy. Guidance is provided upon request during work progress andwork is reviewed upon completion. The responsibility for the direction and control of the work of the Command Senior Staff Officers (SSOs) Meteorology is delegated to these Superintendents to the fullest extent possible. The work includes appraising the performance of the two Superintendents and reviewing appraisals of their immediate subordinates and the Command SSOs Meteorology.

Degree/
Points

The work entails responsibility for approving and implementing changes in the CFWS within policy and financial constraints; for determining the CFWS requirements for personnel, materiel and financial resources both from DOE and DND; for providing or directing the provision of scientific and technical advice; for directing the implementation of AES and Public Service Commission (PSC) standards in the CFWS to the extent applicable, thedevelopment of standards where none are otherwise available (e.g. in the military meteorological technician training program); and for directing the management of DOE civilian personnel serving in the CFWS (including the approval of selections for secondment), and the coordination as required on position and career matters for CFWS military personnel.

Freedom to Act

Guidance is received in the form of goals to be achieved and in broad policy outlines. Policy is recommended to superiors only if it does not fall within these broad policy guidelines. Within these constraints, the position has full freedom to manage personnel, materiel and financial resources provided by DOE and to the CFWS, and to direct the meteorological and oceanographic technical programs of the CFWS. Performance appraisals are done by the Director General Field Services and reviewed by the Assistant Deputy Minister AES (ADMA).

Communications Requirements D3/100

Oral and/or Written Communications

Oral and/or written communications are a continuing responsibility of this position. Oral communications include direction to, and consultation with, immediate staff at NDHQ and the Command SSOs Meteorology; also consultation with, and presentation of briefings to senior officials of NDHQ and the AES. Written communications include letters and submissions to other departments, particularly to DOE or AES, prepared for the signature of the Deputy Minister DND or the Chief of the Defence Staff as appropriate; letters to the commanders of the military commands, both for higher signature or over the positions's signature block as appropriate; internal NDHQ memoranda and scientific/technical reports; and scientific, technical and administrative directions to CFWS components over the position's signature block.

Human Relations Skills

The position requires the ability to work harmoniously and effectively with others oncommittees and task forces, frequently as the chairman, to achieve the goal of providing DND with optimum meteorological and oceanographic services within the constraints of available resources and the limitations of the two sciences. Tact and diplomacy must be used in international and national committee work. Through personal contact, and indirectly through subordinate managers, the work requires dealing effectively with the large civilian and military staffs of the CFWS, developing their confidence in both the Canadian Forces and the AES, and motivating them to the achievement of CFWS objectives and to the furtherance of their careers in meteorology.

7.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 7 Level: 3

Position Title: Duty Forecaster, Canadian Forces Weather Office, Greenwood. Nova Scotia. Maritime Command Point Rating: 143

Summary

Reporting to the Operations Supervisor, analyzes the meteorological state of the atmosphere over large geographic areas, develops prognosis and predicts meteorological developments; develops and disseminates weather forecasts and advisories and maintains a local and area weather watch; provides oceanographic support services for Canadian Forces Maritime Command operations; provides specialized meteorological information and consultation, and performs other duties.

Duties	% of Time
A. Analyzes the meteorological state of the atmosphere over large geographic areas toobtain an understanding of meteorological conditions and atmospheric processes, and40develops prognosis for periods up to 24 hours and predicts meteorological developments, and interprets guidance prognostics to issue outlooks for up to four days.	40

1. Examines all available and applicable meteorological data, such as codedsurface and upper air reports, forecasts, weather maps, charts and meteoro-logical guidance e.g. numerical weather prediction prognostics from othercomponents of the Canadian Weather Service Forecasting System (CWSFS).

2. Develops analyses of meteorological conditions e.g. surface weather charts andevaluates significant and pertinent features on charts at various levels of theatmosphere.

3. Integrates and projects the pertinent atmospheric parameters to developprognosis of meteorological states utilizing recognized forecasting proceduresand techniques.

4. During periods of difficult and complex meteorological development may discusssignificant developments with the Operations Supervisor, or with meteorologistsat other weather offices or weather centrals by telephone.

5. Consults with off-going or on-going duty meteorologist on present and expectedweather developments to ensure understanding of meteorological conditions andcontinuity in the analytic and prognostic program of the Canadian ForcesWeather Office (CFWO).

% of Time

B. Develops and disseminates weather forecasts and advisories to support Canadian Forces operations and maintains a weather watch to alert responsible authorities concerning hazardous or other significant developments.

1. Composes and issues:

(a) areodrome forecasts and amendments for external and on-base distributing,

(b) area forecasts for normal operating area,

(c) route and horizontal weather depiction forecasts for routine and special maritime patrols including those terminating in Europe which are often of 18 hours duration. 25

2. Composes and issues specialized user forecasts e.g. snowfall and freezing precipitation advisories to Base Snow and Ice Control Team in support of runway condition maintenance.

3. Monitors and evaluates meteorological conditions over the area of concern, composes and issue weather warnings and advisories as required and advises appropriate authorities on significant or hazardous meteorological developments.

C. Provides specialized meteorological information and consultation to Canadian Forces and special users. 20

1. Evaluates meteorological and climatological conditions relative to weather sensitive activities and advises base or other user personnel on the implications of meteorological factors to their specific operations or activities e.g. percentage frequency of marginal or restricted flying conditions due to meteorological factors.

2. Organizes and presents specialized groups and individual briefings to Canadian Forces aircrews.

NOTE: In addition to those briefings given to aircrew operating in the normal operating area, Maritime Command aircraft operate airborne patrols up to 18 hours over seas covering the Atlantic Ocean and the Canadian Arctic. Specialist advice and consultation is required by aircrew of these patrols on specific meteorological and oceanographic aspects which affect the mission.

3. Advises Canadian Forces authorities and civilian operators on relevantmeteorological factors for short range planning e.g. advice on operationalflying limitations for the following day to Canadian Forces and at CanadianForces Base Summerside, DOE and United States Coast Guard (USCG) Ice Patrols.

4. Provides, at (CFWOs) Greenwood and Summerside, meteorological advice to civilian users e.g. daily weather summary to local newspapers and briefings to local radio stations, advice to local industrial, marine, fishing, municipal or agricultural interests on meteorological factors pertinent to their specificoperations.

		% of Time
D.	Provides oceanographic support services for Canadian Forces Maritime Commandoperations to ensure that aircrews fully understand the oceanographic informationavailable in their anti-submarine duties.	10
	1. Interpolates and extrapolates the current oceanographic charts from theMeteorology and Oceanography (METOC) Centre i.e. Potential Layer Depth chart,Sea Surface Temperature chart, Wave Height chart and Bathythermograph tracecharts.	
	2. Presents a briefing and documentation to aircrew on the oceanographicparameters in the appropriate area of operations.	
	3. Interprets and advises aircrew on the effects of expected oceanographicconditions on underwater acoustics.	
E.	Performs other duties.	5
	1. Promotes the understanding of meteorology and its applications to useractivities by encouraging aircrew in the use of meteorological information inthe planning and conduct of flight operations and by participating in publicrelations activities such as tours through the weather office.	
	2. Occasionally, presents formal classroom instruction to aircrew trainees andprovides on-the-job training to new professional staff.	
	3. Provides guidance and advice to Canadian Forces technician staff in the dailywork output with respect to priorities and procedures and assists technicalstaff with respect to on-job training for trade advancement.	
	4. Observes the DND and DOE Occupational Health and Safety Programs in the CFWO.	

Job Requirements	Degree/ Points
Knowledge	Bbl/50

The position requires a knowledge of theoretical and applied meteorology, of the physical geography of eastern North America and of the climatology of eastern Canada and the North Atlantic Ocean, sufficient to make accurate scientific judgements in interpreting data and numerical weather prediction guidance, analyzing and forecasting weather conditions and providing meteorological consultation to users.

A knowledge of the interrelationships between meteorology and a variety of allied disciplines is required to provide consultation services in support of military aviation and to a wide variety of civil users in the local area such as agriculture, fisheries, construction interests, etc. A knowledge of Physical Oceanography and underwater acoustics as they apply to military maritime operations is required in order to interpret and extrapolate current charts depicting oceanographic parameters sufficient to provide meaningful advice and consultation to aircrew participating in anti-submarine patrols.

Degree/
Points

Problem Solving/Decision Making B1/42

Complexity

The analyses and prognosis of meteorological conditions and the monitoring of weather developments require assimilation of large masses of data in an ordered form. Judgement and accurate decisions in forecasting and providing advice in support of military operations are required while meeting deadlines and predetermined schedules. Quick and decisive action may be required e.g. in the issuance of special advisories and warnings. Knowledge of the role, activities and limitations of the military operations and the weather limitations of the equipment must be considered in making decisions.

A knowledge of the Canadian Forces organization at Base level and the AES organization ingeneral and Canadian Forces Weather Service is required.

Impact on End Results

Errors in the meteorological and oceanographic forecasts or advice provided in support of military operations could result in unnecessary economic loss, mission failure, damage or loss to equipment and injury or loss of life. The provision of accurate and timely advice to civil interests at Greenwood and Summerside may minimize or avoid crop and material losses. Failure to exercise good judgement in weather forecasting could adversely affect military operations and civil undertaking to the detriment of the image of AES and the meteorological profession.

Accountability

Supervisory/Managerial Responsibility A2/36

The work entails supervisory responsibility for the technical staff and office operations during other than normal working hours and may occasionally require performing supervisory duties in the absence of the Operations Supervisor for reasons of leave, sickness, etc.

Freedom to Act

The job requires independent assessment and evaluation of meteorological data, planning and organizing of the work within established office guidelines and in accordance with established meteorological techniques and priorities. The performance of the work is to a large degree left to the incumbent and the output is not normally reviewed before issuance.

During the times when the Operations Supervisor or Base Meteorological Officer (BMetO) is not normally on duty, such as weekends and evening/night shifts, direct professional supervision is not available. Pertinent AES and reference manuals outlining duties and operational requirements are available in the weather office for consultation and guidance.

Degree/
Points

Communications Requirements

Oral and/or Written Communications B1/15

Oral communication is required in providing (1) advice and consultation to operational aircrew, (2) information summaries to news media, the general public and interdisciplinary interests, and (3) lectures to aircrew including student pilots, flight safety seminars,air traffic controllers and civil interests.

Written communication is primarily in the form of weather forecasts. Reports on familiarization flights and scientific conferences, technical papers on local research studies and papers on flight safety and lecture topics are occasionally prepared.

Human Relations Skills

Courtesy and effectiveness in the provision of weather forecasts and information activities are required. Consideration of the needs and sensitivities of civillian colleagues and Canadian Forces military technical staff is essential for a harmonious and effective working environment. The duties are carried out as a civilian of officer status at a military base.

8.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 8 Level: 5

Position Title: Head, Hydrometeorological Streamflow Studies Unit Point Rating: 231

Summary

Reporting to the Superintendent, Hydrometeorological Projects Section, plans and conducts applied meteorological studies and systems engineering projets in support of hydrological and water resource management activities in all AES Regions across Canada with emphasis on streamflow studies and hydro-meteorological data requirements; provides consultative services, specialized scientific advice and guidance to Regional Scientific Support Units, other meteorologists, federal and provincial water agencies and universities on the application of meteorology to hydrological and water resource problems; writes, co-authors and reviews papers for publications and presents papers at scientific conferences; represents the AES on departmental, inter-agency and international committees and working groups; and performs other duties as related to the position of Head of Unit.

Duties % of Time

A. Plans, organizes, develops, coordinates, directs and conducts applied meteorological studies and systems engineering projects in support of hydrological and water resource management activities with emphasis on streamflow studies and hydro-meteorological data requirements. 35

1. Identifies the particular hydrometeorological problems of various regions across Canada; carries out comprehensive literature surveys; develops alternative solutions to problems; analyzes scientific, operational, and cost-benefitfactor, conducts feasibility studies,and selects optimum solutions.

2. Plans and participates in field projects including selection of standard or specialized instrumentation, siting of equipment and the processing, analysis and interpretation of data.

3. Modifies existing methods or advises new techniques; recommends innovative methods of incorporating advances in technology in the provision of meteorological services to operational hydrology with particular reference to satellite, remote sensing, data retransmission and computer technology.

4. Recommends changes in meteorological networks and services in support ofhydrological forecasting activities including streamflow, flood and water supply forecasting.

B. Provides consultation services, specialized scientific advice and guidance to AES Headquarters Directorates (Field Services, Research, and Central Services), Regional Scientific Support Units, other meteorologists engaged in hydrometeorological activities, federal and provincial water agencies and universities on the application of meteorology to hydrological and water resource problems. 25

1. Visits various AES Regions, agencies and universities to attend project meetings and to keep abreast of current practices and research in hydro-meteorology and water resource management.

% of Time

2. Recommends short- and long-range hydrometeorological data requirements for network planning.

3. Reviews drafts of papers prepared for publications in scientific journals, presents lectures or reports at study sessions, and represents AES atscientific meetings and conferences and on departmental, inter-agency and international committees and working groups.

C. Writes or co-authors papers on hydrometeorological subjects for publication and presentation at scientific conferences to ensure that useful results are brought to the attention of the national and international scientific community and user agencies. 20

1. Supervises the acquisition of pertinent data, preparing or supervising the preparation of appropriate computer programs, statistical analyses, tables, diagrams and maps, drafts or writes texts, and consults with co-authors as required.

D. Provides staff support for the Superintendent of the Hydrometeorological Projects Section in administrative and financial management. 15

1. Estimates budget requirements and monitors expenditures for the Unit, estimates manpower requirements and prepares necessary personnel documents.

E. Implements and supervises the operation of the Departmental Occupational Health and Safety Program within the given. area of responsibility. 5

1. By ensuring that all employees supervised understand the program and their particular responsibilities and arranging for training when necessary.

2. By investigating and reporting all accidents determining causes and taking any needed corrective measures.

3. By making regular inspections for health and safety purposes and correcting unsatisfactory conditions, or reporting these to higher authority for action.

Job Requirements

Degree/ Points

Knowledge

Cb2/89

Sufficient knowledge is required of meteorology both applied and theoretical in order toconduct meteorological studies and to participate in or supervise field projects. Also required is a knowledge of hydrology, geography and computer science in order to analyseand interpret climatological data for streamflow studies or to recommend methods ofincorporating advances in technology e.g. satellite remote sensing, data retransmissions.

Degree/ Points

Problem Solving/Decision Making B2/53

Complexity

Decisions must be made to select course of action of applying meteorological informationto the solution of hydrological problems e.g. development of precipitation gauge networkfor streamflow forecasting. Recommendations are required concerning changes in the provision of meteorological and hydrometeorological services. Decisions made must integrate user requirements, installation costs and hydrologic and telemetry network.

Impact on End Results

Decisions made concerning streamflow forecasts will assist power companies and other agencies operating reservoirs to forecast availability of hydro-electric power, water for irrigation or pollution abatement. Decisions concerning the precipitation gauge network will add to the technology of weather prediction and will directly affect the image of AES e.g. flood warning service to the public. Errors would cause more than necessary installation expenses for instrumentation and loss of quality of the services provided.

Accountability

Supervisory/Managerial Responsibility B3/63

The work consists of planning, organizing, and controlling own work and that of 2 casual employees as well as sharing the services of draftsmen, keypunch operators, and typists. Changes in methods and procedures are generally designated by a project manager. Work is performed on a project basis, duties are non routine and are development oriented.

Freedom to Act

Guidance and advice are received through informal discussions with the project manager of the Superintendent of the Hydrometeorological Projects Section. Reports are prepared and reviewed by the project manager, objectives and general guidelines are prepared by the Superintendent.

Communications Requirements B2/26

Oral and/or Written Communications

There is a requirement for both oral and written presentation of reports and papers at scientific conferences both national and international. Monthly written reports must bemade to the Chief, Hydrometeorological and Marine Applications Division.

Human Relations Skills

The work involves dealing with a wide variety of users and being able to determine thenature of the problem and work harmoniously with different groups.

9.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 9 Level: 4

Position Title: Ice Forecaster,
Ice Forecasting Central Point Rating: 178

Summary

Reporting to the Chief, Ice Forecasting Central and the Operations Supervisor, prepares daily operational forecasts; prepares plain language forecasts of ice conditions for a thirty-day period, twice monthly; collaborates with other Ice Forecasters in the development of a seasonal outlook for ice conditions; develops a weekly series of "historical" ice charts; determines requirements for ice observations from specific areas; provides professional consultation to a variety of users; participates in investigations related to the observing and forecasting of ice conditions; provides on-the-job training; establishes northern field ice forecast offices as required; collaborates with other forecasters in preparing Ice Summary and Analysis publications; provides informational bulletins on iceberg locations; supervises a support staff and may develop and provide instructional training regarding the ice program.

Duties	% of Time
A. Prepares daily operational ice forecasts in plain language and chart form.	
1. Extrapolates the most recent ice observations provided by aerial reconnaissance, satellites, and ship and shore reports to the present situation, and then calculates future ice conditions due to meteorological, oceanographic and ice dynamics predictions.	30
B. Prepares plain language forecasts of ice conditions for a thirty-day period, twice monthly.	10
1. Compares existing conditions with previous years and calculates the effect offorecast winds, temperatures and known currents on these ice conditions.	
C. Collaborates with other Ice Forecasters in the development of a seasonal outlook forice conditions, prepared in early December for eastern Canadian waters and in latemay for the Arctic and for Hudson Bay and approaches.	5
1. Analyzes oceanographic data, compares the present situation with previousclimatological data, considers long range U.S. Weather Bureau forecasts, analyzes reports on ice thickness and observations made from ice reconnaissance aircraft, and interprets satellite photographs.	
D. Develops a weekly series of "historical" ice charts in southern areas (and innorthern areas from May to October) using all available reports. These are the official AES record of ice conditions for climatological work end are in additionto "composite" charte prepared three times weekly for mail distribution to a lengthy list of subscribers.	15

		% of Time
E.	Determines requirements for ice observations from specific areas to support marine operations and to maintain general continuity of ice data over a broad area.1.Determines aerial ice reconnaissance coverage required in the following twoweeks and updates these with daily flight requests defining detailed coveragerequirements.	5
F.	Provides professional consultation and advice to a variety of users regardingexisting and expected ice conditions in direct support of operations and planning ofoperations, e.g. officials of Canadian Marine Transportation Administration (CMTA)(MOT) re operation of ice breakers, oil exploration companies, shipping companies.	5
G.	Participates in investigations related to the observing, reporting and forecasting of ice conditions and the requirements of users for ice information, studies ice conditions in specific areas, to ensure that new techniques are developed and integrated into the ice program and that ice forecast and advisory services aregeared to meet requirements.	10
H.	Establishes and operates a northern field ice forecast office if required during navigation season to supply on-the-spot forecast and advisory service to all interested in the assigned area of responsibility.	5
I.	In collaboration with other forecasters, prepares seasonal Ice Summary and Analysis reports, by relating the seasonal ice regime for a broad area to the mean wind and temperature fields comparing it with that of average ice conditions and that of the previous year, and explaining significant deviations from normal and from the previous year's conditions. These are published as the Atmospheric Environment Service's report on the ice season for government, scientific and commercial and industrial users, both nationally and internationally.	5
J.	Provides informational bulletins on iceberg locations by assimilating and plotting iceberg data received from ships and aircraft and from collaboration with International Ice Patrol to supply shipping companies and ships with iceberg information for the Strait of Belle Isle and adjacent areas not covered by International Ice Patrol.	5
K.	Performs other duties: 1. Supervises a supporting technician on shift staff and maintains a quality control of the work output, identifies errors and areas of deficiencies and proposes solutions to overcome them. 2. May develop and provide instructional training regarding the ice program including codes, chart interpretation, observing and forecasting operations, ice climatology of Canadian waters and the theoretical aspects of ice formation, growth and dissipation for officer trainees in the Canadian Coast Guard, meteorological technicians at offices where offshore operations are conducted and for various other interests such as fishermen, teachers, etc. 3. Assists in on-the-job instruction and training to new professional staff and assigned technical staff.	5

Job Requirements	Degree/ Points
Knowledge	Bc2/74

Knowledge of the principles and theories of meteorology and physical oceanography, with emphasis on the air-sea interface, is required to analyze and prepare various ice forecasts and to instruct newly assigned meteorologists and technicians. Knowledge ofice dynamics and bathymetry is required in order to analyze and forecast ice conditionson a daily, monthly and longer term basis. Knowledge of the climatology and geography ofthe Arctic, sub-Arctic, eastern Canada and the Great Lakes is also required. The iceforecasts provide a national service to MOT, shipping companies, oil companies and vessel owners. Advice and consultation is provided to these users requiring a knowledge of the capabilities and limitations of various ships and classes of ships. A knowledge of the capabilities and applications of remote sensing instrumentation and of computer processing and programming is required to fully utilize the additional data and to refine the forecasts in this developing phase of the ice program. A knowledge of the organization and procedures of both AES and MOT is required because of the very close contact that is maintained.

Problem Solving/Decision Making	B2/53

Complexity

Sound scientific judgement is required in the forecasting of ice conditions as this is aunique unit within the AES, operating without daily external guidance that shipping companies an other users must depend on for ice information. A large amount of technical ice data as well as weather data must be accurately analyzed and synthesized to make decisions in time for facsimile teletype and telex transmissions. Judgement is also required in discerning exactly what the user requires. Decisions based on scientific judgement are also necessary in scheduling requirements for reconnaissance aircraft inlight of changing factors, such as weather and financial considerations.

Impact on End Results

Decisions made on ice forecasts have an impact on the users and can substantially affect them economically if they decide not to proceed with shipping or oil exploration operations because of information received. Often the forecaster is more aware of the scope of the problems than the user and advice goes directly into their operational plans. Decisions have an impact on the work of support staff, particularly at northern field sites where good working relations are important. These decisions affect the stature of AES on a national and international level. Errors in forecasts can result in financial loss to government or private agencies and individuals; they may result in shipping difficulties, delays or damages; they may cause severe economic loss to the fishing industry or cause widespread environmental damage e.g. oil spills.

Degree/
Points

Accountability A2/36

Supervisory/Managerial Responsibility

There is a requirement to guide the work of support staff, and to coordinate ice reconnaissance flights with a view to budgetary restraints to coordinate with MOT Marine Operations icebreaker duties. Advice is given to users on problems and requirements forice information. At a northern field ice forecast office the work includes supervisory responsibility such as scheduling work, overtime, etc., for own work and limited support staff. There is a commitment to state daily requirements for aerial ice reconnaissance and for providing ice information guidance and direction to approximately 28 ice observers. There is also a requirement to assist OIC and/or Supervisor by representation at meetings, in the evaluation of subordinates and clerical staff and may deputize as required.

Freedom to Act

The work is conducted under the general supervision of OIC who provides expertise based on experience. The ice forecaster effectively controls the operation of the shift. As procedures to be followed are varied, careful judgement must be used in determining the proper course of action. Develops and recommends changes in operational programs and plans ice studies.

Communications Requirements B1/15

Oral and/or Written Communications

The work requires daily forecasts in written and chart form, seasonal outlooks, 30-day outlooks, etc., and daily scheduled briefings, written and oral, to Marine Services MOT. There are also many unscheduled requests, both national and international, via telex, telephone, letters which require replies both in the form of statements and in complex reports.

Human Relations Skills

The position requires the ability to determine the needs of users and to respond to these effectively. There is a requirement for skills to motivate and direct technical staff, particularly at field ice offices.

There is a requirement to establish information exchange with other professionals in the related disciplines of AES and other government agencies such as MOT, Arctic Weather Central, Oceanographic Branch of Ocean and Aquatic Affairs, Fisheries and Marine Service, DOE, etc. There is also a requirement to establish good working relationships with a variety of international sections such as U.S.N. Fleet Weather Facility, International Ice Patrol (U.S. Coast Guard) for coordination of effort and general cooperation.

10.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 10

Level: 3

Position Title: Meteorological Instructor,
Canadian Forces Weather Office, Cold Lake

Point Rating: 154

Summary

Through the reporting relationship noted below, plans, organizes and conducts the program of training in theoretical and applied meteorology given to military aircrew trainees; evaluates students' knowledge and skills in the use of meteorology, advises and coordinates with the Ground Training Squadron Commander, and performs other duties.

NOTE: Being on the personnel establishment of the Canadian Forces Weather Office (CFWO), the position reports to the Base Meteorological Officer (BMetO), who is responsible for the meteorological training program on the base. The primary duties of the BMetI are in the Ground Training Squadron (GTS) where the position is responsible to the GTS Commander for the conduct of the meteorological instruction of aircrew students.

Duties	% of Time
A. Plans, organizes and conducts the program of training in theoretical and applied meteorology given to military aircrew trainees for the purpose of safe and efficient aircraft operations.	50
1. Teaches meteorological theory, procedures and practices.	
2. Recommends revisions to Course Training Standards and writes and reviews Course Training Plans.	
3. Designs, constructs and updates training aids.	
4. Develops reference précis and study guides.	
5. Gives remedial instruction and individual tutoring to weak students.	
6. Develops and conducts exercises in the practical application of meteorology toflight problems.	
7. Presents oral classroom briefings on actual weather situations.	
B. Evaluates students' knowledge and skills in the use of meteorology to ensure that graduates achieve the prescribed standards.	20
1. Composes and administers classroom and formal tests.	
2. Assesses students' classroom performance.	

% of Time

3.Participates actively in progress review boards.

4.Analyses test results to determine remedial teaching requirements

5.Administers and analyzes final examination results and assists in drafting final student assessments.

C. Advises and coordinates with the Ground Training Squadron Commander in the fulfillment of an approriate share of the instructional team's responsibilities. 20

1. Reports on class disciplines and academic progress.
2. Composes assessments and evaluations of students.
3. Provides meteorological information and advice as required for the conduct of training exercises.
4. Recommends on training schedules and course revisions.
5. Develops, evaluates and implements new instructional techniques.

D.Performs other duties, such as: 10

1. Participates as Duty Forecaster to provide leave relief and Maintaining professional proficiency.
2. Provides instruction to graduate aircrew to aid them in the maintenance of aircrew proficiency standards, and to other Canadian Forces (CF) personnel e.g.Air Traffic Control (ATC) personnel and meteorological technicians for career advancement purposes.
3. Takes familiarization flights and trips to achieve a better understanding of the aircrew operational environment.
4. Deputizes for BMetO as required.
5. Follows ONO and DOE procedures in respect of such matters as security and occupational health and safety.

Job Requirements

Degree/ Points

Knowledge Bbl/50

The position requires a knowledge of theoretical and applied meteorology sufficient to explain in general terms the physical processes which take place in the atmosphere, the causes, characteristics and effects of specific weather parameters inrelation to aircraft operations, in those weather regions and climates found inNorth America and over the surrounding waters; makes accurate scientific judgements based on the interpretation of meteorological data and numerical weather prediction guidance material as provided by supporting weather offices.

A knowledge of pedagogical principles and instructional techniques is also

Degree/ Points

Problem Solving/Decision Making 81/42

Complexity

Judgement is continually exercised when assessing the capability and competence of the students. Decisions are required in developing study guides and exercises to ensure that the significant problem areas are emphasized. Resourcefulness is reflected in the capability of the instructor to adapt the instructional approach to best convey the lesson to the students in the light of their background circumstances e.g. course enrollments may include students from other NATO countries or from new nations receiving developmental assistance from Canada. The effectiveness of the instructional program must be continually reviewed, evaluated and remedied to improve training plans, training aids and examinations.

Impact on End Results

Decisions affect the overall competence of military aircrew and the careers of students who are being trained and assessed. The students' first impressions of the AES and the Canadian Forces Weather Service (CFWS) and of the pertinence of meteorological services to the safety and efficiency of air operations will be based on the quality of training they receive.

Accountability

Supervisory/Managerial Responsibility A2/36

The job entails the management of the students in the classroom, including the development of their respect and cooperation, to meet the objectives of the courses given. The workentails responsibility for the evaluation of student progress and performance, determination of student weaknesses and the planning and implementation of remedial instruction. The work includes responsibility for evaluating the effectiveness of the meteorological training program and recommending on course revisions. The work also requires carrying out essential managerial and administrative functions during theabsence of the BMetO.

Freedom to Act

The work is carried out with the guidelines provided by the Course Training Standard and school policy. It entails responsibility for writing the Course Training Plan which specifies the learning objectives and the standard of performance required of trainees.In addition, discretion must be used with respect to methods and detail in practicalexercises and the presentation of individual lectures to achieve objectives. Lecturesare occasionally audited by the BMetO and Staff Officer Meteorological Training for theirmeteorological content and by the Ground Training Squadron Commander for instructional standards.

Degree/Points

Communications Requirements 132/26

Oral and/or Written Communications

Oral communication is required in almost all aspects of the training function. Inlecturing, oral communication is essential to the process of making complex subject matter easy to understand and in presenting topics in an effective and convincing manner. The ability to express oneself orally is required in discussions of course and student progress and presenting briefings. Written communication skills are also required for the preparation of Course Training Plans, instructional précis, study guides and course reports.

Human Relations Skills

The work requires understanding problems and requirements of students, thus a sympathetic and tactful rapport with trainees must prevail. Skill in motivating the students is essential.In lecturing, skill in capturing and holding the attention of students is of primary importance. As an officer status civilian in a totally military environment, thejob demands understanding and cooperation with other staff members towards administrative matters and schedules.

11.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.:11 Level: 3

Position Title: Meteorologist, Major Weather Office Point Rating: 169

Summary

Reporting to the Shift Supervisor, in a major weather office, identifies the factors affecting the current weather situation; reviews and interprets analyses, prognosis and guidance material; develops and issues weather forecasts for a large geographical area; maintains a weather watch; promotes understanding and effective application of meteorological services; participates in Operational Development, Implementation and Training (ODIT) activities on a rotational basis, performs other duties as required.

NOTE: The Meteorologist will normally be assigned to the less complex and less demanding working position in the *office,* or duties where the output has less impact. This may vary somewhat, depending on the location, the office's commitments, the season, and even from shift to shift depending on the critical aspects of the particular weather situa-tion. The Shift Supervisor, as the scientific leader in charge of the shift staff, has the authority and responsibility to assign the Meteorologist to any of the working posi-tions or duties on the shift. The Meteorologist will normally have the duties listed

Duties	% of Time
A.Determines and identifies the factors affecting the current weather situation over alarge geographical area to provide the basis for preparing forecasts.	
1. Makes a detailed analysis of surface weather charts.	
2. Organizes observational weather data in coherent patterns, in accordance with scientific meteorological theory.	25
3. Delineates patterns of component weather elements.	
4. Examines all available weather data, surface and upper air observations, pilot reports, radar and satellite information, and assimilates them into the three dimensional structure of weather systems.	
5. Considers the topographic, geographical, and seasonal influences, including temperature of water bodies, ice and snow coverage, vegetation.	
6. Analyses upper air soundings to determine vertical distribution of temperature,and humidity, and their relationship to weather elements.	
7. Discusses problem areas, and conflicts, with Shift Supervisor, as required.	

% of Time

B.Reviews and interprets a variety of analyses, prognosis, and derived fields,provided within the office, by Canadian Meteorological Centre (CMC), and by otheroffices, preparatory to issuing forecasts. 20

1. Studies past, current and prognostic charts to locate and determine theintensity, amplitude, and speed of those features relevant to the weather overthe wide area of responsibility of the office.
2. Determines past history and expected future developments of weather systems,and delineates these in accordance with office operating procedures.
3. Assesses the available guidance material such as objective temperatureforecasts, computed precipitation probabilities and amounts.
4. Discusses, if necessary, the impact of these findings on future weather, withthe Shift Supervisor and other members of the forecast team.

C.Develops and issues weather forecasts for aviation and the general public, for alarge geographical area and for time ranges required by the office program. 15

1. Uses approved forecasting techniques and procedures and assesses the guidance available to decide on the future weather elements.
2. Composes the aviation or public forecasts in the approved terminology and format.
3. Plans activities and work flow so that the issued forecasts meet the rigidly scheduled deadlines.

D.Maintains continuous weather watch to ensure forecasts retain accuracy and goodquality. 15

1. Reviews all incoming weather information and assesses its impact on forecastsalready issued, especially if the information is not in accord with expected developments.
2. Reviews and interprets new analyses, prognosis, and guidance material.
3. Revises forecasts and issues amendments when required.
4. Discusses conflicting indications and problems with the Shift Supervisor, as required.
5. Reviews issued forecasts, for consistency with other output of the office, andwith that from other offices.
6. Reviews and discusses the past, present, and forecast weather conditions and problem areas with the on-coming shift, and participates in such discussions with the off going shift, so that continuity is maintained.

96 of Time

E. Promotes understanding and the effective application of meteorological services. 10

1. Provides information and advice, and answers queries on matters related toaviation and public weather.
2. Explains weather forecasts and warnings, and discusses with users the application of these to their requirements.
3. Disseminates and discusses climatological information.
4. Provides professional consultation on meteorological problems related togeneral areas of interest (such as snow removal, recreation, general marineweather, industry) and if necessary obtains additional advice from othersources, or refers the problem to appropriate sources of information.
5. Participates in public information and public relations activities (radiobroadcasts, conducts office tours, lectures for Air Cadets, Boy Scouts, SailingClubs, Soaring Clubs).

15

F.Participates in Operational Development, Implementation, and Training (ODIT)activities of the office, on a rotational basis.

1. Participates in studies to solve operational problems peculiar to the area of responsibility.
2. Participates in the investigation, development and testing of improved techniques and procedures.
3. Participates in projects designed to exploit available facilities, such as applications of computer technology to office programs.
4. Attends and reports on seminars, conferences, familiarization flights.
5. Recommends changes and improvements in methods, procedures, working arrangements and programs.

G.Performs other duties, as required.

1. May act as Senior Meteorologist, if staff situation dictates.

Degree/ Points

Job Requirements

Knowledge Ba3/65

A level of knowledge of meteorology is required to make accurate scientific judgements while interpreting data, numerical weather prediction guidance material, analyzing and forecasting weather, writing forecasts and providing weather consultations. A knowledgeof the interrelationships between meteorology and a variety of allied disciplines is required to provide consultative services to a variety of users within the area of responsibility, e.g. aviation, general public, marine, construction, agriculture,municipal agencies, provincial film companies, etc.

Degree/Points

Problem Solving/Decision Making 82/53

Complexity

The work requires the analysis of a wide variety of weather data such as past, present and prognostic surface and upper air charts and weather reports such as radar, pilot, satellite and ice coverage, etc., in order to provide weather forecasts for a large geographic area within a specified time. Frequently, missing or conflicting data will require difficult judgemental decisions to produce forecasts and amendments. Good judgement must be exercised in the use of phraseology in the text of the forecast, synopsis and in response to special requests.

Impact on End Results

The work affects their accuracy of the final forecast presentations resulting in possible unnecessary economic loss to commercial concerns and inconvenience to the general public. Forecasts issued are the primary basis upon which the public and other users form an opinion on the professional stature of the AES. Factual weather conditions, different from those forecast and which affect the public adversely have an undesirable effect onthe image of the AES.Forecasts and consultative services provided in this position affect directly a broad spectrum of human activities, for example: savings or loss in the agricultural industry, forest fire prevention and control, aviation and marine operations, construction projects, etc. Accuracy of forecasts has a direct bearing on the safety of aircraft and small craft such as fishing boats and pleasure craft. Many lives could be saved or lost, depending on adequate forecasting of severe weather conditions.

Accountability A2/36

Supervisory/Managerial Responsibility

The job requires planning and organizing own work within the guidelines established bythe Shift Supervisor. Provides advice on scientific, technical and special problems asrequired.

Freedom to Act

The work is performed within the established guidelines and operational procedures of the weather office. Independent judgement is required in the analysis of the weather and inthe preparation of forecast details, and in the provision of professional consultation and advice on meteorological problems in assigned specialty areas in response to user requirements. Decisions required in the preparation of weather forecasts are normally made jointly with the Senior Meteorologist and/or the Shift Supervisor.

Degree/ Points

Communications Requirements B1/15

Oral and/or Written Communications

The work involves verbal communications with the general public, pilots, air traffi ccontrollers, industry, and the press to provide information and consultation on current and expected weather forecasts. There is a requirement to engage in direct radio broadcasts from weather offices and also to provide "actuality" broadcasts during severe storms. Forecasts must be written in a brief yet accurate form.

Human Relations Skills

Good working relationships with fellow workers are necessary to function effectively aspart of a scientific team. The work involves a requirement for courtesy and effectiveness in the provision of weather forecast information and occasional involvement in public information activities such as conducting office tours and giving talks on the role of Atmospheric Environment Service weather offices.

12.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 12 Level: 4

Position Title: Meteorologist Instructor,Canadian Forces School of Meteorology Point Rating: 177

Summary

Reporting to the Chief Instructor, organizes and coordinates assigned training programs for postgraduate Meteorologists, Meteorological Technician and Air Traffic Control Officers (MET TECHs); provides formal instruction in meteorological theory, applied meteorology and forecasting and briefing techniques; conducts and supervises practical training; performs assigned administrative duties and other related duties.

Duties	% of Time
A. Organizes and coordinates the assigned training programs to ensure the mosteffective integration of instruction and use of facilities and staff.	30
1. Develops, or assists in developing Course Training Plans, lesson directives andlesson plans. 2. Develops schedules for lectures and practical exercises. 3. Prepares student evaluations and progress reports. 4. Recommends appropriate action on serious student discipline and progressproblems.	
B. Provides formal instruction in meteorological theory, applied meteorology andforecasting and briefing techniques; conducts and supervises practical training.	40
1. Develops, conducts and grades classroom exercises, progress tests and examinations. 2. Develops lesson plans and reference précis and delivers formal lectures based on these plans. 3. Provides guidance to, and monitors the performance of, students taking part in practical forecasting and briefing exercises. 4. Conducts and evaluates student practice lectures on assigned meteorological topics.	
C. Performs assigned administrative and supervisory duties.	1525
1. Monitors the performance of, and assists in evaluating subordinate instructors. 2. Acts as a member of evaluation or "cease training" boards. 3. Maintains class discipline.	

% of Time

D. Performs other duties. 15

1. Acts as Chief Instructor as required.
2. Reviews meteorological and technical literature in order to remain currenton educational theory, applied meteorology and forecasting.
3. Visits other meteorological operational and training facilities and attendscourses to improve and maintain professional competence.
4. Follows ONO and AES policies with respect to such matters as security andoccupational health and safety.

Degree/Points

Job Requirements

Knowledge Bb2/62

The position requires a knowledge of theoretical and applied meteorology sufficient to develop and present courses to post graduate Meteorologists, MET TECHs and Air Traffic Control Officers including courses in atmospheric physics, weather analysis and forecasting, climatology, presentation techniques and instructional techniques.

Problem Solving/Decision Making B2/53

Complexity

Judgement is required in giving formal instruction where difficult meteorological concepts must be put into a presentable and understandable form. Originality, ingenuity and resourcefulness to analyze and evaluate forecast problems during instructional labsis also required. Judgement and resourcefulness are necessary in assessing the work doneby meteorologists and senior technicians in training. The work is complex because the students have a wide range of educational background, form part high school to university graduate qualifications. A knowledge of the use of meteorology by sea, land and air elements of the Canadian Forces (CF) and of civil applications of meteorology is necessary to provide the instruction required.

Impact on End Results

Decisions made in resolving practical current weather problems in the classroom set the example for the future decisions of meteorologists in their later field work. Judgements and decisions made in evaluating students' capability and progress affect their individual careers.

Degree/ Points

Accountability

Supervisory/Managerial Responsibility A2/36

The position requires assisting in organizing the work of temporary duty meteorologists and MET TECHs on short-term assignments to Canadian Forces School of Meteorology. Thereis a responsibility for monitoring and coordinating the evaluation of MET TECH student performance. Changes are recommended in Course Training Standards and Plans and are implemented when approved; changes are recommended in instructional methods and procedures as required; work priorities and changes are approved in work programs of the MET TECH instructors; changes are recommended to the performance checks used in evaluating trainees. The position requires recommending man power requirements and providing advice on various technical and instructional problems to MET TECH instructors within the School.

Freedom to Act

Guidance and advice are available from the Chief Instructor but there is freedom to plan details of instruction, and freedom in setting up practical exercises.

Communications Requirements 132/26

Oral and/or Written Communications

Oral communication is involved in student evaluation boards, interviews and guidance. Oral communication is basic to instruction in theoretical and applied meteorology which requires effective communication skills in order to maintain a high level of interest and comprehension. Written communication includes writing précis and other material for various facets of instruction. There is also a requirement to write assessments on students.

Human Relations Skills

The work requires understanding the problems of technicians and meteorologists undertraining in order to most effectively present the training programs. Skill in human relations is required to motivate and maintain good rapport with students of varying backgrounds and experience. Patience and tact are needed to maintain classroom discipline along with high morale. The effective counselling of students also requires skill in the human relations field. In lecturing, capturing and holding the attention of students is of primary importance.

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 14 Level: 8

Position Title: Officer-In-Charge, Major Weather Office Point Rating: 646

Summary

Reporting to the Regional Director, Atmospheric Environment Service, plans, organizes, directs and coordinates the scientific, technical, service and administrative programs of the office, manages the resources of the office, participates in and directs the program of consultation with users, prepares recommendations to the Regional Director.

Duties	% of Time
A. Plans, organizes, directs, coordinates, and controls, through subordinate staff, allthe scientific, technical, service, and administrative programs of the office, toensure these programs are effective.	40

1. Provides overall scientific direction of the office, giving leadership indevising the operational and Operational Development, Implementation andTraining (ODIT) programs.
2. Interprets policy, and guidelines, for their impact on office operations.
3. Reviews and rules on the operational program of analyses, prognosis andforecasts, prepared by the Chief Meteorologist.
4. Provides technical coordination with the Canadian Meteorological Centre (CIVIC), ONO and other AES Regions concerning operational programs.
5. Reviews and approves the ODIT programs.
6. Coordinates with regional Headquarters on overall service programs.
7. Reviews and approves arrangements for the service, technical, communications,and administrative support programs of the office.

B. Manages, through subordinate staff, the financial and personnel resources of theoffice, to ensure their efficient use.	20

1. Makes recommendations for long and short range financial planning.
2. Allocates expenditures in accordance with approved budget.
3. Approves invoices, claims, reports variances.
4. Monitors and evaluates staff, prepares appraisals.
5. Recommends staff disciplinary action, promotions, transfers, etc.

% of Time

6. Interprets administrative directives and manuals.
7. Approves leave and work schedules.
8. Allocates duties, counsels staff, provides guidance.
9. Meets with staff representatives to discuss personnel problems, workingconditions, and grievances.
10. .Encourages resourcefulness and initiative, and develops individuals' talentsand potential.
11. .Ensures equipment and facilities are used effectively and maintained in properoperating condition.
12. Serves on rating and classification boards.

C. Participates in and directs the program of consultation with users, to ensure theweather service programs are effective. 20

1. Maintains contact with user groups, either directly or through subordinatestaff.
2. Approves changes in service programs within policy and within resources.
3. Provides professional consultation on meteorological problems, and arranges forcontact with specialists in regional Headquarters, or national Headquarters asrequired.
4. Promotes effective relations with news media and other users of services.
5. Provides liaison and consultation with other government departments, universityand industry scientists on problems related to meteorology.
6. Arranges, through subordinate personnel for lectures, press articles, officetours, and public exhibitions and displays.

D. Prepares recommendations to the Regional Director on matters relating to officeprograms. 10

1. Recommends new policy, or changes in existing policy on services provided by the office.
2. Recommends staff and facilities required for effective operations.
3. Recommends new policy or changes to existing policy or guidelines on the national aspects of the forecasting system, the responsibility of various offices, the relationship between offices.
4. Coordinates with the other offices on ODIT programs, and prepares recommendations for the Regional Director on related research programs in Headquarters.
5. Provides recommendations on national problems related to staff, such as careerprogression, collective bargaining, job classification.

Degree/Points

Job Requirements

Knowledge — Da4/165

The work requires a knowledge of theoretical and applied meteorology with particular emphasis on the application of physical processes to weather analysis and weather prediction and a broad knowledge of developments in meteorological science related to forecasting, such as new data forms, new numerical models, etc., a knowledge of the application of meteorology to all phases of human activities in the area of responsibility of the operating procedures and practices of the weather office and the AES Forecasting System, a knowledge of related disciplines such as ecology, agrometeorology, forestry,oceanography, hydrometeorology, climatology, and biometeorology is required as well asknowledge of statistical methods and the application of computers in the operation of alarge complex forecast office. The work also requires experience in weather analysis and prediction, the provision of weather forecast and advisory services and the planning, organization and coordination of the meteorological activities of an independent workunit.

Problem Solving/Decision Making — B2/53

Complexity

The work requires making decisions on financial, personnel, and resource management ofthe weather office and on meteorological matters concerning the overall quality of supporting meteorological services provided to other weather offices in the area of responsibility and the weather forecast and advisory services provided by the weather office for the same large geographic area. Decisions require advising new courses ofaction and modifying existing methods and procedures to meet changing conditions andlocal circumstances within approved budgets.

Impact on End Results

The work involves the management of the operations and resources of the weather office including allocations of an annual budget of over $1,000,000. Decisions and recommendations affect the weather services available to users in the area of responsibility, thepublic image of the Service, and the overall effectiveness and efficiency of the weatheroffice operations.

Accountability — A2/36

Supervisory/Managerial Responsibility

The work involves planning, organizing, directing and controlling the operational program of the weather office, reviewing and evaluating the operational output against clearly defined objectives in order to ensure that acceptable standards are maintained and that resources are allocated in the most effective manner. It involves recommending, approving and implementing changes in methods and procedures, work priorities, work programs, objectives, and in organizational structure. The work requires assessing and determining requirements for manpower, financial and other resources and involves arequirement to provide professional consultation on scientific aspects of meteorology. It also includes reviewing work performance, setting operational standards, and making recommendations on appointment, promotion and reassignment of staff.

Degree/Points

Freedom to Act

The work is performed within the framework of approved policies and general operational guidelines and involves establishing procedures, evaluating priorities, allocating resources, resolving scientific and technical problems and setting operational standards within the area of responsibility.

Communications Requirements C3/67

Oral and/or Written Communications

The work requires contacts with the weather office (WO) staff, supervisors of other AESunits in the regions, the Regional Director and Headquarters personnel to exchangeinformation, and to discuss and resolve operational problems. Contacts are also madewith scientists in other disciplines, officials of industry and government and repre-sentatives of user groups to exchange information, to discuss problems of mutual interest, to discuss the meteorological aspects of research projects and occasionally tomake tentative agreements regarding the provision of special weather services to user groups.

Human Relations Skills

The work involves evaluating the work of the WO staff, discussing personnel matters and motivating the staff toward the achievement of established objectives. There are frequent contacts with MOT branches to discuss marine and aviation weather sensitive activities and with other managers of the AES and DOE to discuss revisions to weather advisory programs and services. Contacts also involve discussions with news media concerning weather forecast accuracy, discussions with representatives of industry concerning the provision of special forecast service to suit their particular requirements and discussions with scientists outside the government concerning the provision and exchange of meteorological information.

15.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 15 Level: 4

Position Title: Operations Supervisor, Canadian ForcesWeather Office, Greenwood Maritime Command Point Rating: 185

Summary

Reporting to the Base Meteorological Officer (BMetO), the Operations Supervisor supervises the meteorological and oceanographic scientific programs, promotes professional development of subordinate meteorologists and meteorological technicians, participates in and/or supervises the investigation of local forecast problems, participates as required, in the scientific and administrative programs and performs other duties.

Duties % of Time

A. Supervises the meteorological and oceanographic scientific programs of the CFWO toensure a high standard of support to user agencies. 35

1. Monitors the procedures and techniques used in the analysis, prediction, forecasting and briefing functions by the subordinate professional staff.
2. Evaluates the meteorological output and develops and institutes correctiveaction where deficiencies exist.
3. Formulates and disseminates work programs and duty schedules for subordinatemeteorologists.
4. Advises the BMetO on the performance of subordinate meteorologists for annualassessment purposes.
5. Interprets directives and manuals for subordinates.

B. Acts as scientific leader of the CFWO operational staff and promotes professional development of the subordinate meteorologist and meteorological technician staff toimprove the effectiveness of their participation in the programs. 15

1. Develops or evaluates and implements new operational techniques and procedures to improve the scientific programs.
2. Provides on-the-job training to newly assigned meteorologists and presentationtechnicians.
3. Provides professional guidance and counselling to subordinate meteorologistsand meteorological technicians to correct individual shortcomings.
4. Presents formal and informal lectures on forecasting techniques and presentsnewly published techniques which may have application to the scientific program.

% of Time

5. Encourages self-improvement on the part of the subordinate professional and technical staff through ensuring current and applicable literature is available.

6. Provides specialist advice to base authorities on operational meteorological matters.

C. Participates in and/or supervises the investigation of local forecast and climatological studies to solve forecast problems or meet requirements for climatological data. 15

1. Delineates problem areas where forecast procedures are inadequate.
2. Investigates literature and other sources to determine what previous work has been carried out on the subject. 25
3. Assigns staff and monitors or carries out required investigations into meteorological problems.
4. Assigns climatological projects to subordinate staff with guidelines as to desired results. Reviews results and takes appropriate action.

D. Participates in the administrative program in the absence of the BMetO and in thescientific program as required to meet leave commitments and during periodS of excess workload. 20
   1. Deputizes for the BMetO as required.
   2. Performs the duties of the duty forecaster position in the scientific program.

E. Performs other duties. 15

1. Provides meteorological and oceanographic instruction to aircrew and other trades.
2. Provides meteorological and oceanographic information and advice to local civil users (see Note 1 below).
3. Ensures the observance of the DND and DOE Occupational Health and Safety Programs in the CFWO.

NOTE 1 - In accordance with interdepartmental DND/DOE agreements Canadian Forces WeatherOffices (CFWOs) have responsibilities for the provision of public weather services as follow:

a) Weather offices at locations in Canada where there is a predominantly Canadian Forces (CF) requirement for meteorological service but which are important in the national meteorological network and where there is a substantial civilian requirement for service will be operated by the Canadian Forces on a scale to meet the combined needs. At such stations Canadian Forces meteorological personnel will provide the complete meteorological service required by various users.

% of Time

(b) Weather offices at locations in Canada of major importance to the Canadian Forces program but of minor importance in the national meteorological program will be operated by the Canadian Forces on a scale to meet their own requirements, with the weather service being available to civilian users providing there is no interference with the routine Canadian Forces Program.

Degree/Points

Job Requirements

Knowledge — Bb3/62

The position requires a knowledge of theoretical and applied meteorology, of the physical geography and of the climatology of North America and the oceanic area of operational concern, sufficient to make accurate scientific judgements in interpreting data and numerical weather prediction guidance, analyzing and forecasting weather conditions, providing meteorological consultation to users and supervising the scientific program ofthe CFWO.A knowledge of the interrelationships between meteorology and a variety of allied disciplines is required to supervise and provide consultation services in support ofmilitary aviation and, at CFWO, Greenwood to a wide variety of civil users in the local area such as agriculture, fisheries, construction interests, etc. A knowledge ofphysical oceanography and underwater acoustics as they apply to military maritime operations is required in order to interpret and extrapolate current charts depicting oceanographic parameters sufficient to provide meaningful advice on and consultation toaircrew participating in anti-submarine warfare patrols.

Problem Solving/Decision Making — 62/53

Complexity

Problems associated with the composition of weather forecasts and provision of meteorological and oceanographic advice in support of military operations require a solution within a specified time. Investigations must be made into local forecastproblems to find solutions. Instruction to professionals, aircrews and others must begiven. In matters concerning administration and program management both the AES and the Canadian Forces organizations and procedures must be known and used as applicable. Knowledge of operational tactics in military operations and weather limitations on equipment must be considered (e.g. speed, range, operating altitudes, critical ice accretion and cross wind landing effects of aircraft; wave heights on sonobuoy equipment). The significance and effects of weather conditions on plant growth, fruit spraying operations and spread of plant parasites, on forestry and fishing, activities and industry such as construction must be considered.

Impact on End Results

Unreliable forecasts, inability to meet deadlines and/or inadequate or incorrect advicewill seriously hamper successful completion of operational patrols or missions. In the case of these patrols or missions undertaken as a result of a NATO or UN commitment the ramifications can be inter departmental and international.

Degree/
_Points

The professional development and orientation of newly assigned "off-course"meteorologists and the development of professionalism within the staff is dependent onthe ability to promote and stimulate involvement in the scientific programs and participation in the study of local forecast problems and techniques. Crop and material losses by agriculture, forestry and fishing interests may be minimized or avoided by the provision of accurate and timely advice. These programs are seasonaland must be initiated to meet user requirements (e.g.) frost warnings for PEI potato harvest or fruit spraying in the Annapolis Valley.

Accountability 82/44

Supervisory/Managerial Responsibility

The job entails the planning, organizing and supervising of the work of the duty forecasters, developing work schedules, developing and implementing changes in work procedures and priorities of subordinate staff and acting as Base Meteorological Officer in his absence.

Freedom to Act

Guidelines are received from the BMetO, work is reviewed to confirm objectives are metal though only occasionally is work supervised while in progress. The work allows freedom of judgement in the provision of forecast advice, and freedom to determine methods and priorities in work output, but all managerial functions are controlled by the BMetO.

Communications Requirements

Oral and/or Written Communication

Skill is required in the provision of concise meaningful mass briefings to operational crews and in oral presentations to military commanders, communications media, commercial interests and the general public. Written skills are required in the composition of forecasts and the drafting of correspondence, instructions and reports.

Human Relations Skills

An understanding of the military commanders operational problems, a tactful approach and consideration of the needs and sensitivities of colleagues and consumers is essential inthe provision of information, the achievement of respect and in the military environment,and the development and motivation of subordinates.

16.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 16 Level: 9

Position Title: Regional Director, Atmospheric Environment Service Point Rating: 856

Summary

Reporting to the Director General, Field Services Directorate, manages the program of an AES region; plans, directs, coordinates and controls the provision of meteorological services in a region; maintains personal contact with all parts of the regional organization; directs the recruitment of professional and technical staff; maintains constructive relationships with governmental and private organizations and with the general public; promotes the development and use of meteorological services in support of allied scientific and weather sensitive activities; represents AES in a region.

Duties	% of Time
A. Manages the program of an AES region (6 across Canada) with the assistance of subordinate staff and in accordance with AES, departmental and governmental policy.	
1. Develops the 5- and 10-year regional meteorological program; directs and participates in the preparation of annual budget submissions and control sexpenditures (up to $6 million annually).	30
2. Directs, plans and controls a staff of up to 300, mostly professional and technical employees, dispersed throughout a region.	30
3. Plans, directs and controls the provision of office accommodation, housing transportation, etc. required by meteorological activities within the region,e.g., establishment of a new weather station.	30
4. Interprets AES and departmental policy directives and provides advice andguidance to subordinate staff, approves and recommends disciplinary action, evaluates performance of senior subordinate staff, approves travel and removal expenses of personnel within the region, recommends changes in establishment, monitors staff assignments and meets with staff representatives to discuss working conditions, salaries and other grievances.	30
B. Plans, organizes directs, coordinates and controls through subordinate supervisorsthe provision of meteorological services to meet civil requirements and interna-tional commitments and provides meteorological support for Canadian Forces WeatherOffices. Provides special scientific services within the region.	35
1. Develops and maintains effective working relations with representatives of usergroups, such as other government departments, and other levels of government,e.g. provincial, municipal and foreign; news media, airlines, industry, agri-culture, etc. and evaluates requirements for new and additional meteorologicalservices and determines whether such requirements are justified.	
2. 2.Represents AES at formal meetings and explains meteorological programmes.	

% of Time

3. Interprets AES directives, analyzes the effect of policy decisions on meteorological services, recommends changes, provides appropriate instructions to regional operational units and coordinates with adjacent AES regions andwith the U.S. National Weather Service.
4. Acts as AES representative on senior committees of scientific agencies engaged in cooperative environmental activities where climate and weather play and important role, especially where departmental resources are being used.
5. Develops plans for emergency weather services in support of Emergency Measures Organization (EMO) and Environmental Protection Service (EPS) crisis programs.

C. Maintains personal contact with all parts of the regional AES organization by visits to field units to obtain first-hand knowledge of operational problems, to discusslong-range plans and financial management programs, to provide guidance, to resolve personnel matters, to communicate ideals and objectives and to inspire and motivate personnel. 5

D. Directs the recruitment and promotion of professional and technical staff and the selection of staff for further training and development. Ensures the acquisition of adequate staff to carry out meteorological problems. Promotes staff development to meet the expanding and changing requirements of an essential public service. 5

E. Maintains constructive relations with various organizations in the region and with user groups, including the general public, to present a good image of the work ofthe AES and for the science of meteorology. Encourages regional professional staff to maintain and develop scientific competence. 5

F. Promotes the development and use of meteorological services in support of allied scientific and weather sensitive activities. 5

G. Represents AES on DOE Regional Management Boards and may be required to serve from time to time as Chairman. Coordinates matters of regional concern with other DOE Directors and Directors General. Participates with the DOE Regional Directors onregional matters of DOE concern. 10

Job Requirements — Degree/Points

Knowledge — Da5/206

The Regional Director's knowledge of meteorology must be at a level to enable him to identify, evaluate and ensure the provision of the most effective meteorological services required by the public and other agencies which are involved in weather sensitive activities within an AES region. Knowledge of the interrelationships of meteorology with other specialities and scientific disciplines is required over a broad range including hydrology, air quality, forestry, agriculture, oceanography, geography, recreation and tourism and also computer sciences. The relative importance of these allied disciplines will vary from region to region butthe requirement for the knowledge of their interrelationships with meteorology will rangefrom "in-depth", for at least a few, to an appreciation of the remainder. Active scientific involvement is required in determining and developing applications involving

Degree/Points

The above interrelated scientific disciplines and specialities. Frequently, this is accomplished by evaluating, approving and determining the priorities for special studies and research undertaken by the Scientific Services Unit (SSU) for various consumers aswell as for AES regional forecasting systems. To function effectively as a Regional Director, sound scientific judgements must be madeconcerning provision of all regional meteorological services and AES data acquisitionanalysis, prediction and communication systems. The Regional Director is required to provide scientific consultation, to all levels ofconsumer representatives and government agencies. There is also a responsibility for the provision of adequate formal and on-the-job training programs for regional staff.

Problem Solving/Decision Making E5/300

Complexity

The work involves the resolution of a broad spectrum of problems, scientific and administrative in nature, arising in the region. This position make the final decisionin selecting courses of action from a variety of alternatives and making regional decisions with regard to finance, future planning, personnel, regional operational and developmental programs. As resources are seldom sufficient for all, requirement priorities must be determined, e.g. does one increase the technological capability of theregional weather central in a given fiscal year (at a cost of approximately $100,000) ordoes one construct a new weather station? An example of the type of decision involving organizational problems would be "Are we justified in closing down Station A and augmenting the staff of Station B? What are the political and social consequences?"This may involve readjustment of responsibilities between AES regions. There are also decisions in the area of technological advancement of the science, e.g. the acquisition of a regional dedicated computer and its integration into the regional scientific programs.

Impact on End Results

Decisions made can have an impact on any one of the employees (up to 300) in the regionand on the regional budget (up to $6 million) and on the AES physical resources valued atmore than $2 million. Sound scientific judgement is made on the acquisition and implementation of new technologies which may enhance the development of the science of meteorology.As senior representative of AES in the region, the activities of the regional director have maximum impact on the professional stature of the AES. The direction provided tothe regional organization in the provision of effective services within an AES region hasa direct impact on all users. The consequences of a wrong decision could have many ramifications, political and social. Within the Department, there could be financial, resource, effectiveness, and "image" impacts.

Degree/Points

Accountability E5/250

Supervisory/Managerial Responsibility

The work entails responsibility for planning, organizing and controlling the work of a regional organization which includes coordination of the activities of other components of DOE, MOT, DND and Headquarters Directorates. The work of subordinates is reviewed, monitored and coordinated to achieve objectives, maximize utilization of resources, and maintain standards. The work requires approving and implementing changes in methods and procedures, priorities and work programs within a framework of approved policies and resources and responsibility for the determination of total requirements for manpower, financial and other resources for carrying out approved programs for the region. A frequent requirement is to provide advice on administrative as well as scientific matters at board or committee meetings, (advice on scientific and technical matters is normally provided by professional staff in the regional organization). The work also requires developing standards, assessing and appraising performance of immediate subordinates andreviewing appraisals of their subordinates.

Freedom to Act

General direction is received from Director General, Field Services Directorate (AFDC) inthe form of objectives and annual review of performance. The Regional Director recommends changes in objectives and organization for approval by AFDC. Within these constraints the Regional Director has almost complete freedom to act in the provision of meteorological services to the region.

Communications Requirements D3/100

Oral and/or Written Communications

The work requires discussing policy, programs and performance with the superior, the Director General; with peers, staff specialists in Headquarters, other DOE Directors inthe region, with heads of agencies in government (federal, provincial and municipal),heads of university faculties and senior representatives of the business community. Italso requires speaking before groups, chair meetings and responding effectively inpersonal discussions. A great deal of business is conducted through letters, reports and documental submissions. The work requires composing concise, correct and authoritative documentsand reviewing effectively those that are prepared for his signature.

Human Relations Skills

Through personal contact and indirectly through supervisors, the work requires developing an effective rapport with a large staff to generate a feeling of confidence in and cooperate with the AES as an employer, and to encourage their dedication to a progressive career in the science of meteorology and their interest in the regional weather programs. Through frequent contact with representatives of other federal, provincial and municipal departments, industry, the public and other users, the Regional Director must promoteconfidence in and respect for the AES and the services it provides.

17.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.:17 Level: 8

Position Title: Regional Superintendent General,Weather ServicesPoint Rating: 601

Summary

Reporting to the Regional Director, plans, organizes, coordinates and controls the operations of weather offices and the provision of weather services within a region. Analyses user requirements, audits and evaluates current and proposed new services, establishes priorities for activities that are possible within resources, assesses economic implications and/or benefits of new and existing programs, and facilitates and arranges scientific investigations to improve weather services. Develops budget proposals for capital and operating expenses; reviews weather office budgets and approves and controls expenditures. Takes action on and makes recommendations as appropriate with regard to the recruitment, assignment, training, appraisal and discipline of both professional and technical staff. Participates in the consultative and public relations role of the AES. Assists the Regional Director in the management of the region and deputizes for him as required.

Duties	of Time
A. Directs the operation of weather offices and the provision of weather services within a region. Weather service include the provision of meteorological information (forecasts, warning, consultation, flight briefing, climatological data, weather charts, past and current observations, etc.) to the general public and to aviation, industrial, agricultural, forestry, marine and transportation interests.	20
1. Coordinates programs of weather offices and arranges for appropriate forecasting and operational support. 2. Monitors weather office operations. 3. Arranges for introduction of new and/or improved scientific techniques and procedures. 4. Interprets directives and policy related to weather office operations.	
B. Analyses requirements for new and improved weather services, evaluates benefits ofnew services in relation to their costs, establishes priorities and makes appropriate decisions and/or recommendations.	15
1. 1.Obtains specific information or requirements by direct contact with usergroups, e.g. indicates limitations imposed by allocated resources and thepresent state of meteorological knowledge, coordinates requirements of users and determines optimum methods for meeting requirements. 2. 2.Determines economic benefits of new weather services, e.g. benefits ofestablishing a new weather office in relation to costs involved. 3. 3.Maintains current knowledge of population trends and economic growth in variousparts of the region.	

% of Time

4. Arranges for introduction of new services, which can be met by existingresources within the region in accordance with policy.

5. Recommends new or extended services which involve resources outside the region or which require increased expenditures within the region, e.g. additionalstaff.

C. Develops plans for the introduction of new approved weather services. 15

   1. Determines requirements for financial resources, staff and facilities.
   2. Prepares budget proposals for associated operating, personnel and capitalexpenditures.
   3. Plans physical office arrangement for new offices or for changes in existingoffices.
   4. Arranges for special weather services for special events, e.g. royal flights, Expo '67, high level balloon and rocket flights.

D. Assists the Regional Director in the administration of regional meteorological programs. 10

   1. Provides technical advice on scientific support provided to regional weather offices by the Canadian Meteorological Centre (CMC) and weather central or major weather office.

   2. Contributes, through discussion and consultation, to the development of Regional and AES policy, particularly with regard to the standardization adequacy and effectiveness of weather services and supporting facilities, e.g., communications.

   3. Prepares periodic and special reports on weather services and other activities in the region, e.g., bilingualism in the Quebec region; growth patterns of aviation and non-aviation services in the region.

   4. 4.Acts on committees which impact on regional operations, long range planning ofAES and requirements of other federal (e.g. MOT) and provincial Departments.

   5. 5.Acts as designated representative of or deputizes for Regional Director asrequired.

E. Administers financial and personnel matters related to the provision of regionalweather services and manages personnel involved. 20

   1. Evaluates performance of subordinate regional staff and of Officers-in-Charge(OICs) of weather offices, for which the position is directly responsible, and reviews performance appraisals prepared by other managers under the Regional Superintendent General Weather Services (RSGWS).
   2. 2.Determines recommendations regarding disciplinary actions, promotions, transfers, etc.

% of Time

3. Determines staff training requirements and arranges for same.
4. Participates in the staffing process and recommends reclassification ofpositions when warranted.
5. Develops long-range services program indicating annual financial requirements.
6. Develops annual budget (approximately $2 million) for regional weather servicesthrough coordination of budgetary proposals of weather offices and in consider-ation of economic developments and priorities for services.
7. Monitors expenditures of various units in relation to annual budgets, clarifiesvariances and reports to Regional Director.
8. Re-allocates funds between units to meet unexpected financial requirements,e.g. unscheduled replacement of equipment.
9. Explains the concepts and interprets financial and administrative procedures toOICs of weather offices.

F. Initiates, encourages, participates in and arranges for scientific and technicalinvestigations and studies to ensure that weather services are maintained at a highlevel and that full advantage is being taken of innovations in the science ofmeteorology.
1. Determines deficiencies in regional weather services program through contactwith user groups and on basis of user reaction regarding services. 55
2. Indicates areas where investigations should be carried out.
3. Provides advice to personnel engaged in specific activities, e.g., to thehydrometeorologist assigned to the Eastern Rockies project or to scientificservices meteorologists and other meteorologists or research scientistsstudying problems of air quality, forest protection, environmental impact orresource development.
4. Provides consultations to those whose enterprises are weather sensitive.

G. Performs other related duties such as providing lectures and talks to various groupse.g. civil defence classes, arranging for publicity on meteorological activities,e.g. World Meteorological Day and distribution of educational material, loan of films,etc., attends staff training courses and scientific meetings, answers technicalenquiries form public, supervises special projects. Organizes and participates inthe recruitment of professional and technical staff. Participates in cross-missionprojects with other Services in DOE, involving various other scientific disciplines.

Job Requirements — Degree/Points

Knowledge — Da4/165

This work requires sufficient knowledge of meteorology to plan, organize and control the operation of regional weather offices and weather services to aviation, agriculture, forestry, hydrometeorology, industry, general public, etc. It also requires sufficient

Degree/
_ Points

knowledge of other disciplines to be able to analyse the requirements of the various users in the region and to relate meteorology to their problems. A knowledge of financial and personnel management, departmental organization and policies is also required. Also required is a sufficient depth of knowledge to recognize the need for and promote the development of new methods and techniques. A knowledge of meteorological programs in other regions and at Headquarters is requiredin order to assure standardization where applicable with regard to weather services.

Problem Solving/Decision Making D4/169

Complexity

Judgement is required in the development and justification of operational plans and inorder to maximize resources to establish priorities for weather services, e.g. Operational plans to co-locate regional weather central and weather office involves AES, DOE and itsother components and DPW and MOT. A variety of scientific decisions have to be made regarding the introduction of computerized methods in the regional weather program. Decisions are required in dealing with financial and personnel problems arising from the management of the regional and weather office staff e.g., deployment of limited person years to maintain most effective program. The establishment of weather services to provincial departments requires great judgement since two levels of government are involved.

Impact on End Results

Decisions on the use of internal resources have an impact of a staff of up to 150 and an annual budget of approximately $2 million. The General Weather Services Unit is responsible for the interface with the general public and many specific user agencies requiring weather services on a routine basis. The quality of service, therefore, has a direct influence on the image of the AES.The quality of service directly influences the operational decisions made by individuals or organizations engaged in weather sensitive activities and relates to the economic well-being, comfort and safety of the community at large.

Accountability D5/200

Supervisory/Managerial Responsibility

The work involves planning, organizing, coordinating and controlling the operations of weather offices and the provision of weather services within a region. This involves supervising a staff of up to 150 and an annual budget of approximately $2 million including the performance appraisal of subordinate supervisors and a review of appraisals made by them. Programs are administered within the policies, and procedures of the region, Service and Department. The work requires participating in the managerial functions of the regional office, and providing advice on scientific and service matters at committee meetings.

Degree/ Points

Freedom to Act

Programs are only discussed with Regional Director at crucial points of development, regular reporting of developments in major programs are made, policy suggestions are regularly discussed but there is freedom in administration of established programs, policies and procedures. There is great scope for initiative and innovative activity.

Communications Requirements C3/67

Oral and/or Written Communications

Communication is a very significant characteristic and requirement of this position. Thework involves meeting with, or writing to user groups to determine requirements, explain established services, or agree to new services. Oral and written communications involve AES Headquarters, regional office staff, line managers, inter and intra-departmental, federal and provincial managers, the general public, educational institutions, the media, scientific agencies on scientific, administrative and service matters. Weather officere-organization - physical plant or functions; personnel or financial problems; liaison of AES and MOT (letters of understanding, interface costing, co-operative staffing or aviation user requirements). Documents Requirements for AES and DOE, 5- and 10-year longrange plans.

Human Relations Skills

The ability to motivate and supervise a staff (150 people) is required. Also the abilityto deal effectively with a variety of users and user groups, since the weather services are the interface with users in a region. The work involves appraisal of subordinate supervisors and reviewing the appraisals of professionals and technicians in weather offices. A good understanding of the problems and needs of the staff and users is required. Positive leadership is conducive to good morale of staff, high quality ofservice and economic benefit.

18.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.:18 Level: 5

Position Title: Research Meteorologist,Cloud Physics Point Rating: 240

Summary

Reporting to the Chief, Cloud Physics Research Division, Atmospheric Processes Research Branch, organizes and conducts research on assigned projects dealing with various meteorological element; writes reports and papers on research carried out; supervises a research technician and a student assistant; and performs other duties.

Duties % of Time

A. Organizes and conducts research on assigned projects of national and internationalinterest dealing with various meteorological elements such as automated meteorolo-gical prediction, the presence of atmospheric ozone and its properties, soil waterpotential and water balance, analyzing data obtained during the International FieldYear on the Great Lakes (IFYGL), weather modification experiments, etc. 50

1. Reads and studies texts, periodicals, journals, and papers to maintain currentknowledge of research developments and to ensure that own research is notduplicated by work being done elsewhere.
2. Identifies problems, studies associated phenomena and recorded observations andestablishes objectives and parameters of the area of research.
3. Recommends on the feasibilty and the requirements of proposed research.
4. Develops an initial plan of approach and modifies the approach as suggested bypreliminary results.
5. Develops a series of possible approaches at each stage of research and selectsthe best approach.
6. Analyses available data and imposes quality control by modifying data inaccordance with scientific principles and theories.
7. Determines and recommends the type of data required and the methods andprocedures to be used to obtain such data.
8. Conducts library studies in areas of research problems.
9. Discusses problems with, and seeks the advice of other scientists working inareas related to the research problem.

% of Time

B. Writes reports and papers on research carried out for publication in journals ortechnical circulars or for presentation at scientific meetings and seminars. 20

1. Analyses findings.

2. Synthesizes and organizes data in logical order.

C. Supervises a technician and a student assistant during the summer months. 10

1. Explains work objectives and interprets operating directives.

2. Arranges and participates in the training and development of the staff.

3. Assigns work.

4. Checks the work during progress and upon completion.

5. Appraises and reports on performance.

D. Performs other duties such as: providing consultation service to AES regional scientific support units and to other groups, agencies, departments, or non-govern-mental groups; preparing computer programs, drafting letters in reply to requests for information, attending AES Weather Reporting and Coordinating Committee meetings, presenting papers, reviewing scientific papers on related fields that havebeen submitted for publication and writing critiques. 20

Degree/Points

Job Requirements

Knowledge Da2/106

The work requires sufficient knowledge of meteorology in order to carry out research in assigned meteorological projects. Knowledge of operational meteorological activities is required of a level to enable to recommend the type of data required and the method toobtain it is required. The knowledge of meteorology and its applications must be sufficient to enable to provide professional consultation to a variety of users. A knowledge of computer science and its applications is required to analyse and synthesize data. To avoid duplication of work, the position requires a knowledge of continuing research in operational meteorology. Theparticular meteorological related area of research project will necessitate a knowledge of at least one geophysical science.

Problem Solving/Decision Making C2/75

Complexity

The work requires making decisions and recommendations in determining suitable subjects for study and research, in determining the objectives parameters, feasibility and plansof approach for studies and in writing reports and papers on completed research. Decisions are made when further work on a project should be terminated or expanded toinclude unexpected or related problems. Decisions are also made in planning day-to-dayoperations to ensure conformity with budgetary and manpower limitations.

Degree/
__Points

Impact on End Results

Decisions will directly affect at least one subordinate technician and one student assistant. On the basis of research carried out, recommendations are made that have abearing on similar problems across Canada and the results of this research will have a direct bearing on meteorology as a science. Sound decisions and good performance affect the quality or research results and this in turn directly affects the professional stature of the AES on a longterm national and international basis. Errors could cause an expenditure of resources with no return, a delay of experimental findings, which for certain critical projects may be a significant factor, and the presentation of incorrect results could be to the detriment of the meteorological sciences.

Accountability B2/44

Supervisory/Managerial Responsibility

The work involves the planning, directing, organizing and controlling of own work and that of one technician and one student assistant for the efficient completion of given research projects. Advice and direction is provided by the supervisor. The work requires that advice and consultation be provided to colleagues and technical staff.

Freedom to Act

Projects are assigned in terms of general guidelines and goals. The supervisor controls financial and manpower resources. Procedures must be developed if they are unavailable through various meteorological texts, books, and journals. Reviews are made by other scientists for publication of research results.

Communications Requirements B1/15

Oral and/or Written Communications

The work involves orally presenting research work at scientific meetings and giving internal and external seminars on related subjects. Written reports and papers onresearch work carried out are required for publication in journals or technical circulars.

Human Relations Skills

In order to carry on research, the work requires promoting, developing and maintaining staff interest and providing advice during the course of investigations. A good rapport must be established between supervisor and colleagues in order to maintain high scientific output. Tact must be used whenever dealing with personnel, either senior or subordinate.

19.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.:19 Level: 6

Position Title: Scientific Services, Meteorologist, Regional Point Rating: 329

Summary

Reporting to the Regional Superintendent, Scientific Service, provides scientific advice and consultation services to various user groups, conducts applied meteorological and operations research in support of meteorological services in the Region, develops operational meteorological techniques and designs data acquisition networks and other facilities, develops and recommends implementation plans for special weather programs, provides meteorological support to departmental and multi-agency environmental assessments and impact studies and performs other duties.

Duties	% of Time
A. Provides scientific advice and consultation services on problems involving the application of the science of meteorology to user groups including forestry, agriculture, industry, environmentalists, the general public, scientific research organizations and other resource agencies and managers in the region.	
1. Responds to requests from user groups by providing meteorological information and scientific interpretations of past, current or forecasted weather data.	25
2. Assists such agencies as forestry, hydrology, agriculture, industry, governmentand environmental groups to identify their problems and their needs for service.	
3. Participates in work groups and committees involving such user groups as a meteorological specialist.	
4. Seeks advice from and consults with other specialists in meteorology and related fields who can contribute knowledge to the services provided and an understanding of sensitivity to meteorological parameters.	
5. Provides liaison between users with special needs and Headquarters climatological archives, computer facilities and specialist expertise.	
6. Establishes objectives for studies which are needed to develop the services which provide specific benefits to all concerned agencies both in and out ofthe federal government.	
B. Plans, organizes and conducts service design projects assigned to or developed within the Region.	20
1. Performs or participates in studies in special fields such as air pollution, hydrometeorology, agriculture and forestry meteorology, fire-weather, etc.	
2. Seeks advice and calcultation with regard to such studies through referral to Headquarters specialists.	

% of Time

3. Identifies and obtains measurements of the parameters of the atmosphere which have an effect on the industries or activities under study.
4. Investigates meteorological parameters involved in such phenomena as the starting, spreading and control of forest fires, air stagnation episodes, floods and other environmental emergencies.
5. Prepares reports of studies for distribution to forestry, agricultural, environmental, meteorological and other concerned industries and occasionally prepares papers for publication on these studies.

C. Carries out studies using Operations Research techniques to develop and evaluate alternative solutions to problems assigned to, or that are regional in scope, including field projects and studies needed to provide a quantitative basis forarriving at the most advantageous meteorological service to users. 15

1. Considers economic, social and political factors.
2. Assembles and evaluates relevant facts, develops and tests hypotheses and designs measures to evaluate the benefits and effectiveness of alternative courses of action.
3. Cooperates with appropriate specialists to develop quantitative data to assist in selection of the most advantageous course of action.
4. Analyses alternative solutions and recommends a solution, which is both practicable and capable of being put into operation as a regional meteorological service.

D. Develops operational meteorological techniques, designs data acquisition networks and other facilities needed in the solutions to assigned problems or in support of services to regional industries and activities in accordance with the course ofaction selected. 15

1. Considers meteorological data and meteorological support which is presently available.
2. Indicates observational requirements, including identification of parameters, to support specific forecast programs, environmental assessments, design studies of other special data uses.
3. Advises on siting and instrumentation of weather observation stations, determines observation programs and interprets such observations relative tothe needs of the user concerned.
4. Arranges for the routine communication of special weather observations such as forest weather observations, marine observations, ski resort observations, etc., to the appropriate weather office for inclusion in specific forecast programs.
5. Develops systems for providing additional meteorological support compatible with present processing systems.

% of Time

6. Develops operational plans to meet additional requirements for the provision ofimproved service.
7. Evaluates the effectiveness of services provided.

E.Develops and recommends implementation plans for programs of specialized weather forecasts and advisory services to be provided in support of regional needs and including forestry operations, flood forecasting, agriculture, outdoor recreation and environmental emergencies. 10

1. Participates in a number of working groups and committees in cooperation with relevant user groups to ensure compatibility of special forecasts and advisory services with user needs.
2. Determines format and content forecasts, areas of coverage and frequency of issue.
3. Determines changes in programs in relation to seasonal requirements of to meet special requirements such as high hazard fire levels, fires in progress, floods, oil spills, etc.
4. Plans for dissemination of special forecasts to user throughout the province.

F.Provides meteorological expertise in support of departmental and multi agency environmental assessments and impact studies. 15

1. Represents the AES on, and provides meteorological inputs to, departmental cross-mission task forces and multi-agency committees engaged in broad environmental baseline assessments and specific studies into the impacts ofproposed developments.
2. Indentifies the interactions between meteorological factors and the other resources involved, including changes expected as a result of proposed developments.
3. Analyses climatological data of all types on scales and to a degree of refinement suitable for environmental baseline studies ranging from details mesoscale mapping over individual estuaries, parklands and urban areas to more general descriptions over large tracts of undeveloped land.
4. Consults with Headquarters specialist and utilizes Headquarters climatologicaL data banks and computer processing services.
5. Contributes to joint reports for distribution to government and private resources managers and often to a broader cross-section of the public at large.

G.Performs other duties, such as:

1. Attends scientific meetings and conference, both national and international, concerning aspects of meteorological service, scientific methods and techniques and interactions with related disciplines in order to keep abreast of the latest developments in the meteorological sciences and in their application.

% of Time

2. Participates in such meetings by presentation of papers related to regionalprograms.
3. Delivers lectures to personnel and students at university level on topics of meteorological information relative to their interests.
4. Supervises technician staff, assigns tasks and monitors output.
5. Directs the work of career oriented summer students by providing meaningful projects, indicating available support material, monitoring output and evaluating performance.

Degree/Points

Job Requirements

Knowledge Cc3/132

The position requires a level of knowledge of both theoretical and applied meteorology sufficient to provide advice and consultation services to a wide spectrum of user groups including managers of resource industries (forestry, agriculture, hydro-electric), pollution control agencies, industrial firms, environmentalists, scientific research organizations and the general public. This knowledge must include an understanding of the climatology of the region, its synoptic origins, geographical and topographical influences as well as specialized analysis techniques in order to provide accurate information and explanations of phenomena throughout the area of responsibility. In addition, knowledge of data networks, processing systems and methods of mathematical prediction is required in the development of operational techniques, design of network facilities, in the development of specialized weather forecasting services and in research projects assigned to the region. A knowledge of the Canadian forestry practices and relevant current research is needed to develop, adopt or improve the meteorological techniques used in providing specialized weather forecasts; e.g. fire weather forecasts and wind-wave forecasts. A knowledge of related biological, physical and computing sciences is required when dealing with diverse special problems This normally involves an in-depth understanding in one or more fields and some knowledge in a number of other areas. For example, a knowledge of hydrology is required to take part in a committee assessing flood forecasting models for regional implementation. A knowledge of oceanography is required to make recommendations to Service and Department officials regarding measurements, models and advisory services to deal effectively with oil spills in complex coastal waters, forexample, in developing a wind-wave forecast program for B.C. coastal waters. A knowledge of forestry is required to make recommendations to managers regarding climatological programs pertinent to the study of seedling success or in recommending changes tofire-weather forecasting programs. Environmental assessments and impact studies oftenbring many of these spheres of knowledge to the fore.

Degree/ Points

Problem Solving/Decision Making C2/95

Complexity

The work requires flexibility and resourcefulness in responding to problems submitted bya wide variety of users. Often needs must be identified and then decisions made as tothe best possible solution. In many cases data may be insufficient or theory may be inadequately developed. For example, typical questions that arise include: What are the pollutant dispersal characteristics of the atmosphere at a proposed mill site in a remote valley? What is the expected climatic impact of a large hydro reservoir? What is the interaction between meteorological factors and the spoilage of grain in storage bins? How do topographic influences affect an automated wind forecast used in a forest firehazard evaluation routine? The solution to problems involving the initiation of orchange to special weather forecast programs, network expansion, the introduction of new techniques, etc., often involves complex managerial interactions with the user agency, other interested services and management officials within the AES. Economic factors must be superimposed on scientifically desirable solutions to effect an acceptable compromise. For example, what should manpower deployment be in providing fire weather services to a remote Forestry District? What is an acceptable density of meteorological stations to provide baseline environmental data in developing northern areas?

Impact on End Results

The development and implementation of special forecast programs have an importantlong-term economic and environmental impact on the region. For example wind-wave forecasts, agricultural and fire weather forecasts. The provision of adequate special forecast services and warnings to agriculture, forestry, industry, commercial users and the public substantially reduces human, financial and physical loss. Consultation has significant effect on the economic efficiency of designing and operating various engineering projects, e.g. hydroelectric. Faulty forecast programs or incorrect advice will also affect the credibility and loss of confidence in the service. Involvement in environmental impact assessments contribute to government policy decisions regarding the development of new industry and the preservation of the environment. Participation intask forces, etc., is mainly at senior management levels and reflects on the AES image in influential areas. This affects the participation of AES future policy-making groups. Since the position involves participation in research projects which contribute to thescience of meteorology on a regional basis the standard and extent of the participation affects technological development in other disciplines relying on meteorological support.

Accountability 133/63

Supervisory/Managerial Responsibility

The work requires planning, organizing and controlling own work, providing assignments and directing the work of technical staff and occasionally that of term or summer student employees.

Degree/Points

Freedom to Act

Assignments are made by the Superintendent; however, many projects are initiated from direct contact with regional users. The work involves exploring and identifying areas where meteorological service can be made more effective. This includes improving ongoing programs, developing new meteorological services and recommending priorities in resource allocation. The work requires adjusting the work program to meet current demands. The method of completing assignments is the responsibility of this position.

Communications Requirements B1/15

Oral and/or Written Communications

The work requires the ability to communicate both orally and in writing with senior personnel in the AES and various scientific groups including scientists, economists, agriculturists, forestry officers and the general public. For example, Task Force Recommendations and Departmental Project Reports concern complex scientific interactions thus requiring extensive skill in written communication. Discussion in these groups which are made up of senior officials, requires appropriate ability in oral communication. Periodic reports must be submitted to AES HQ's onactivities in the region. There is also a requirement to write scientific papers and information articles and be prepared to present orally at management meetings, scientific conferences or other publichearings.

Human Relations Skills

This position required courtesy and interpersonal skill when attempting to understand the problems and needs of people from a number of differing occupations and scientific disciplines. An effective rapport with employers and management, both within the Service and with user agencies, must be established and maintained to effectively carry out the duties of this position and to receive the cooperation of outside agencies when their assistance is required. A high degree of skill in human relations is required since many of the contacts deal with new services not defined by existing policy. This conflicting interest may arise and initial attitudes and posture are important.

20.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.:20 Level: 5

Position Title: Senior Meteorologist, Point Rating: 230

Major Weather Office

Summary

Reporting to the Shift Supervisor on a shift, in a weather office, identifies the factors affecting the current weather situation; prepares prognostics; develops and issues weather forecasts, warning, and specialized forecasts for a large geographical area; maintains a weather watch; provides professional consultation to ensure effective application of meteorological service, including service to specialized users; participates in ODIT activities on a rotational basis, performs other duties as required.

The Senior Meteorologist will normally be assigned to the more complex and more demanding working position in the office, or duties where the output has the greater impact. This may vary somewhat, depending on the location, the office's commitments the season, and even from shift to shift depending on the critical aspects of the particular weather situation. The Shift Supervisor; as the scientific leader in charge of the shift staff, has the authority and responsibility to assign the Senior Meteorologist to any of the working positions or duties on the shift. The Senior Meteorologist will normally have the duties listed below.

Duties % of Time

A. Determines and identifies the factors affecting the current weather situation 25

over a large geographical area to provide the basis for preparing forecasts.

1. Makes a detailed analysis of surface weather charts.
2. Organizes observational weather data in coherent patterns, in accordance with scientific meteorological theory.
3. Delineates patterns of component weather elements.
4. Examines all available weather data, surface and upper air observations, pilot reports, radar and satellite information, and assimilates them into the three-dimensional structure.
5. Considers the topographic, geographical, and seasonal influences, including temperature of water bodies, ice and snow coverage, vegetation.
6. Analyses upper air soundings to determine vertical distribution of temperature, and humidity, and their relationship to weather elements.
7. Discusses problem areas, and conflicts, with Shift Supervisor, as required, and recommends the type of manual or computer-based diagnostic aids to be produced by support staff.

B. Reviews and interprets a variety of analyses, prognoses, and derived fields, and 20

1. Studies past, current and computer prognostic charts to locate and determine the intensity, amplitude, and speed of those features relevant to the weather over the wide area of responsibility of the office.

2. Determines past history and expected future developments of weather systems, and delineates these in accordance with office operating procedures.

3. Prepares prognostic charts, weather depiction charts, and other forecast aids in accordance with meteorological principles, and using approved procedures, incorporates all available information and assesses all available guidance, to meet deadlines.

4. Discusses, if necessary, prognostic problems, and the implications of the prognosis, with the Shift Supervisor and other members of the forecast team.

C. Develops and issues a wide variety of weather forecasts and weather warnings, for 15
a large geographical area and for time ranges required by the office program.

1. Selects and uses approved forecasting techniques and procedures, and assesses the guidance available to decide on the future weather elements.

2. Composes the aviation or public forecasts in the approved terminology and format.

3. Issues weather warnings and bulletins for aviation, public and special users (agricultural frost warning, heavy snowfall warnings).

4. Issues seasonally required specialized user forecasts, such as agriculture, forestry, hydrology, special marine, air pollution potential.

5. Plans activities and work flow so that the issued forecasts meet the rigidly scheduled deadlines.

D. Maintains a continuous weather watch to ensure forecasts retain accuracy and good 15
quality.

1. Reviews all incoming weather information and assesses its impact on forecasts already issued, especially if the information is not in accord with expected developments.

2. Reviews and interprets new analyses, prognoses, and guidance material.

3. Revises prognoses and forecasts and issues amendments, when required.

4. Discusses conflicting indications and problems with the Shift Supervisor, as required.

% of Time

5.Reviews issued forecasts, for consistency with other output of the office, and with that from other offices.

6.Reviews and discusses the past, present, and forecast weather conditions and prognostics and problem areas with the on-coming shift, and participates in such discussions with the off-going shift, so that continuity is maintained.

E.Provides professional consultation to ensure effective application of meteorological services. 15

1. Provides information and advice, and answers queries on matters related to aviation and public weather.
2. Explains weather forecasts and warnings, and discusses with users the application of these to their requirements.
3. Provides professional consultation to specialized users such as agriculture, forestry, hydrology, industry, identifying by discussion how their operations are weather-sensitive, and indicates how weather services can bring benefits to their operations.
4. Provides lectures and training to specialized users such as agriculture, forestry.
5. Disseminates and discusses climatological information.
6. Provides professional consultation on meteorological problems related to general areas of interest (such as snow removal, recreation, general marine weather, industry), and if necessary, obtains additional advice from other sources, or refers the problem to appropriate sources of information.
7. Participate in public information and public relations activities, (radio broadcasts, conducts office tours, etc.).

F.Initiates scientific studies on operational problems, participating in OperationalDevelopment, Implementation, and Training (ODIT) activities of the office, on arotational basis. 15

1. Identifies operational problems peculiar to the area of responsibility.
2. Investigates, develops and tests improved techniques and procedures to solve operational problems.
3. Identifies new or improved forms of service and the means of providing these.
4. Reviews the scientific literature for potential operational applications.
5. Initiates projects to exploit available facilities or to acquire improved facilities, such as the application of computer technology to office programs.
6. Attends and reports on seminars, conferences, and familiarization flights.

% of Time

7. Recommends changes and improvements in methods, procedures, workingarrangements and programs.
8. Acts as a leader on team projects in WIT activities, as required.

G.Performs other duties, as required.
1. May assist Shift Supervisor in supervision of supporting technical staff.
2. May occasionally appraise performance of technical or clerical staff.
3. Assists in the instruction of professional and technical staff, by providinglectures or seminars on special topics, and by double banking during contacttraining.
4. May act as Shift Supervisor, if staff situation dictates.

Degree/ Points

Job Requirements

Knowledge — Ca3/93

The position requires a level of knowledge of meteorological principles and practices to participate in the analysis, forecast and prognosis programs carried out at a weather office. The responsibility for the position included on-the-job training of subordinate meteorologists. Consultative and advisory weather services must be provided to a wide range of users within the area of responsibility. This position requires the ability to plan, prepare and undertake local forecast studies. A knowledge of the inter-relation-ships between meteorology and a variety of allied disciplines such as physical geography, oceanography, forestry, hydrometeorology, agrometeorology, etc., is required to provide service to a wide variety of users. Although the relative importance of these allied disciplines will vary for AES region to region, the requirement for this knowledge will range from need of formal courses plus practical experience for at least a few, to an appreciation for the less important ones in a particular region.

Problem Solving/Decision Making — C2/75

Complexity

The main thrust of this job is that of problem solving. The solution of an individual weather forecasting problem requires the ability to organize and coordinate a large number of facts, to organize and interpret these facts, utilizing complex manual and/orcomputer-based diagnostic developments. Judgement must be used to analyze and synthesize a large amount of data quickly and accurately, to make decision in a prescribed time, tomeet deadlines for teletype transmission of forecast information. The forecasts and prognostic charts are based on decisions arrived at by employing analysis and prediction techniques for the shorter range (up to 24 hours from base datatime) and interpretation of scientific guidance provided by Canadian Meteorological Center (CMC), National Meteorological Center (NMC) and the Shift Supervisor for thelonger range. Frequently, later data, and conflicting data, will invalidate the guidance material and will cause difficult and complicated decisions for the Senior Meteorologist who is charged with the responsibility of producing weather forecasts to meet rigid deadlines.

Degree/ Points

Impact on End Results

Forecasts issued are the primary basis upon which the public and other users form an opinion on the professional stature of the AES. Factual weather conditions, different from those forecast and which affect the public adversely have an undesirable effect onthe image of the AES.Forecasts and consultative services provided in this position affect directly a broad spectrum of human activities, for example: savings or loss in the agricultural industry (seeding, haying, harvesting, frost, etc.); effects on safety or hazards to human life involved in the application of forecasts to aviation, marine operations, construction projects, etc. Timely and accurate weather warnings of severe weather conditions such as tornadoes, gales, freezing rain, heavy snow, save innumerable human lives.

Accountability A2/36

Supervisory/Managerial Responsibility

The job requires planning and organizing own work to meet routine requirements for prognostics, forecasts and warnings. Deputizes as Shift Supervisor when necessary and assists Shift Supervisor in supervision of supporting subordinate staff.

Freedom to Act

The Senior Meteorologist assists the Shift Supervisor in assessing and recommending changes in methods and procedures in work priorities, program objectives and the organizational structure of the weather office. The work is performed within established guidelines allowing for independent judgement in the preparation of prognostics, forecasts and warnings and also in the provision of advice and consultation on meteorological problems in speciality areas.

Communications Requirements B2/26

Oral and/or Written Communications

Oral communications are required to provide consultative services to a wide variety of consumers; conduct radio programs; lecture at training courses, seminars, schools and during office tours, and to discuss operational problems with the staff of the office andother AES offices within the region. There is a requirement to engage in direct radio broadcasts from weather offices and to provide also "actuality" broadcasts during severe storms. The ability to write concise, lucid and accurate communications is essential in preparing forecasts. Reports regarding scientific studies, familiarization visits, accident investigations, etc. are also required.

Human Relations Skills

Good working relationships with fellow workers are necessary to function effectively aspart of a scientific team. Daily contacts with other offices within the region, the public, and a wide variety of users, demand tact and understanding to ensure the continuance of a high standard of service and enhance the professional image of the AES.

21.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 21 Level: 7

Position Title: Senior Staff Officer, MeteorologyAir Command Point Rating: 466

Summary

Reporting, as explained in Note 1 following, to the Deputy Chief of Staff Air Operations and Training (DCOS), Air Command Headquarters (ACHW), and to the Directorate of Meteorology and Oceanography (D Met Oc) at National Defence Headquarters, plans and directs the scientific and technical meteorological operational programs of the Command; plans and controls the meteorological training of aircrew personnel conducted by the Command; provides general supervision of, and coordinates training conducted by the Canadian Forces School of Meteorology (CFSMet); provides specialist meteorological advice to Command staff; directs the administration of meteorological professional civilian personnel and the specialized meteorological material resources of the Command; provides specialist advice on Canadian Forces meteorological technician personnel matters and performs other duties.

Notes:

1. The Senior Staff Officer Meteorology (SSO Met) reports to the Deputy Chief of Staff Air Operations and Training through whom he is responsible to the Commander, Air Command:
as senior meteorological advisor within the Command; and
for the general supervision of all meteorological operational and training programs within the Command.

The SSO Met reports to the Directorate of Meteorology and Oceanography (D Met Oc), NDHQ, on all meteorological scientific and technical matters and is responsible to D Met Oc for all matters pertaining to personnel administration of seconded DOE civilians of the CFWS within the Command. While financial authority has not been delegated to the SSO Met, expenditures under the DOE budget for specialized meteorological equipment and supplies for Air Command are controlled by D Met Oc through the SSO Met.

2. Administrative control of all CF air bases in Canada comes under the Commander, Air Command. Professionally staffed meteorological facilities within Air Command include thirteen weather offices, the CF School of Meteorology, and a NORAD Weather Centre. In addition, one technically staffed observing/presentation office comes under the administration of the Command. The SSO Met is responsible for the administration of these facilities and for planning and directing the professional and technical operational programs of these meteorological facilities to meet the requirements of the CF and, as provided for under the interdepartmental DOE/DND agreements, civil requirements at those locations where the major user is military but at which there is a substantial requirement for meteorological service to civil users. The SSO Met is also responsible for planning, directing and controlling meteorological training programs for CF aircrew, and for general supervision and coordination of professional and technical training conducted at CFSMet.

3. The Commander Air Command also se2rvices as Regional Commander for the Prairie Region, made up of the three provinces of Alberta, Saskatchewan and Manitoba. Specialist meteorological advice, as required in support of CF operations in aid of the civil power dealing with floods, forest fires, and other civil emergencies, is the responsibility of the SSO Met.

4. Canada is divided into four Search and Rescue Areas, each with a Rescue Coordination Centre (RCC). Air Command is responsible for two of these areas. While the provi-sion of meteorological support to specific searches is delegated to local offices, overall responsibility for support rests with the SSO Met, as detailed below:

a. organizing meteorological support for the RCCs and SAR operations;

b. determining the meteorological support requirements and assigning meterological personnel to support specific SAR operations;

c. coordinating, as required, with the appropriate Atmospheric Environment Service Regional Director on meteorological support for specific SAR operations involv-ina other government departments.

Duties	% of Time
A. Plans and directs the scientific and technical meteorological operational programsof the Command to ensure effective meteorological services are provided in supportof national and international military operations, and, as required, for civilusers.	30

1. Reviews Command operations and operational plans and CFWS and Atmospheric Environment Service operations and services; identifies meteorological support requirements/deficiencies and estimates future requirements for meteorological services.
2. Directs the development of the meteorological portion of Command plans, including those for special exercises and emergency situations.
3. Directs the development of, and coordinates plans for, the scientific and technical operational programs of 15 Command weather offices/centres; directs the continuing review, assessment and revision of these programs.
4. Coordinates on meteorological support provided to Command weather offices, and recommends the modification of external support and guidance as appropriate.
5. Controls the CF Area Meteorological Inspection program in the Command.
6. Coordinates, and as necessary directs, the provision of scientific and technical meteorological services by Command weather offices to support AES orother civil activities.
7. Organizes meteorological support for the RCCs and SAR operations and coordinates the AES senior officials as required.

% of Time

B.Plans, directs and controls the meteorological training of aircrew personnel conducted by the Command; provides general supervision of, and coordinates training conducted by CFSMet for professional meteorologists and meteorological technicians; coordinates the meteorological training of other personnel e.g. Air Traffic Controland Nuclear Defence personnel. 25

1. Evaluates the effectiveness of, and directs the meteorological training of aircrew at Command Flying Training Schools and controls the relevant proficiency standards for student and graduate aircrew.
2. Provides general supervision of, and coordinates on, the training programs at CFSMet for meteorological professional and technician personnel.
3. Controls the development of the meteorological portion of Command Training Plans and supervises or coordinates the development of CF Meteorological Training Publications used by Air Command schools and units.
4. Controls the development, promulgation and revision of CF military meteorological technician training standards, and directs the validation program on the adequacy of CF meteorological technicians, as required.
5. Liaises with SSO Met Maritime Command regarding military oceanographic training for Air Command meteorologists and meteorological technicians, as required.

C. Provides specialist meteorological advice and consultation to Command staff toensure that Command operations are planned and conducted in full cognizance ofrelevant meteorological factors. 20

1. Interprets, and advises senior military officers of the Command on, national and international meteorological policy and procedures and meteorological factors relevant to planned operations and exercises.

2. Advises on the applicability, availability and limitations of meteorological service and information in relation to Command planning and operations.

3. Provides, or directs the provision of, meteorological information and advice to senior military officers relative to current operations.

D.Directs the administration of the meteorological professional civilian personnel andthe specialized meteorological materiel resources of the Command to ensure effectiveresource utilization, and provides specialist advice on Canadian Forcesmeteorological technician personnel matters. 20

1. Determines and recommends on meteorological resource requirements in relationto CFWS and Air Command plans.

2. Assesses the performance of 3 subordinates and reviews appraisals of 18subordinate supervisors or instructors.

3. Interprets directives and provides advice and counsel to subordinates onpersonnel and materiel administrative matters.

of Time

4. Reviews reports and requirements relating to meteorological personnel of the Command and recommends or assists in the implementation of career, establishment and staffing actions.
5. Controls (see Note 1) the expenditures of operating and maintenance funds provided through AES to meet Air Command requirements for meteorological support.
6. Acts as Step 1 in the Departmental grievance procedure for AES civilian meteorologists in Air Command.

E. Performs other duties such as coordinating with other meteorological operational and training formations both domestic and foreign, participating on AES or CFWS working groups and committees (e.g. CFWS Management Committee), attending scientific meetings and conferences, and developing and implementing Occupational Health and Safety Programs. 5

Degree/Points

Job Requirements

Knowledge Cb4/138

The position requires a knowledge of theoretical and applied meteorology, physical geography, climatology and a wide variety of specialized military applications of meteorology, sufficient to plan and direct the meteorological operational program of AirCommand, and to provide specialist advice to Command staff on the application of meteorology to a wide range of military air operations. The latter includes global air transport, continental air defence, air support to land and sea forces, search andrescue, and Arctic surveillance.A knowledge of meteorology and its military applications is also required sufficient to plan and direct the training of CF aircrew personnel and the professional development programs of meteorologists in Air Command CFWOs, and for the general supervision of training programs for meteorologists and CF meteorological technicians at the Canadian Forces School of Meteorology.A knowledge of pedagogical theory and techniques is required sufficient to plan, direct and/or supervise the foregoing training programs in accordance with good teaching practice and accredited instructional techniques.

Problem Solving/Decision Making B2/53

Complexity

The position requires coordination with two government departments (DOE and DND) relative to their respective roles in the provision of meteorological operational support and training programs for the CF, with particular reference to Air Command. The complexity in the planning, directing and controlling of these programs is increased through the existence of separate military civil reporting channels of responsibility, depending onthe subject matter involved. Decisions must be made, therefore, with a knowledge of the respective organizations, objectives and policies of the Atmospheric Environment Serviceand the Canadian Forces and in accordance with bilateral agreements between DOE and DND in the provision of meteorological services to the CF.

Degree/
Points

Differences in the administration procedures and practices in AES and the CF with regard to personnel and logistics policies, combine to make administration complex and increase the problem areas requiring discriminate decision making.

Judgement is required in planning and directing, and coordinating as necessary, the provision of meteorological services at 15 CFWOs in support of diverse military operations affecting the land, sea and air elements of the CF including, air transport,air defence, and support to ground forces, maritime, air, Arctic surveillance search and rescue operations.

The involvement of Air Command in NORAD and NATO operations necessitates planning decisions and operational problem solving which are in consonance with Canada's participation in international defence agreements and emergency plans.

Complexity in the training responsibilities is not only engendered by the respective roles of AES and DND in the CF meteorological training organization but also in the widespectrum, by type and syllabus, of the meteorological training courses carried out within Air Command. Specialist training at the CFS Met for civilian meteorologists must be coordinated with AES and DND with regard to requirements, policies, practices and scheduling. Specialist training for CF meteorological technicians must conform to DND military training regulations and standards and conform to, or be compatible with, national standards and practices required for meteorological technicians in Canada byAES. The courses for aircrews necessitate decisions on syllabus length and course content, which sometimes are without clear precedent, and demand expertise in the selection of scientific and practical content appropriate to students' academic background, the duration of the course and the meteorological knowledge necessary to meet flight safety objectives.

Impact on End Results

Decisions made have a direct impact upon the provision of effective meteorological support for all of the national and international air operations of the Canadian Forces. These operations include on the national side, sovereignty patrols (including fisheries and pollution surveillance), air search and rescue, air transport, air defence and training, and on the international side, NORAD activities, long-range air support ofNATO, UN peacekeeping operations and disaster relief. Inadequacies in the planning and directing of meteorological support will result in a loss of effectiveness of Canadian Forces operations, jeopardize the safety of lives and property and could reflect unfavourably upon the Department, the Canadian Forces and, in international operations, upon the Canadian nation as a whole.

Decisions made have a direct impact on the operational effectiveness of 14 professionally staffed weather forecast/observing offices, one presentation/observing office and theCanadian Forces School of Meteorology, the effective employment of some 90 meteorologists and 150 military meteorological technicians and expenditures in excess of $1,500,000 annually.

Decisions made directly affect the quality of meteorological training of aircrew in the CF and, hence, are indirectly reflected in the capability of the CF to meet assigned objectives and flight-safety standards. The standards of meteorological training of CF meteorological technicians are controlled by, and dependent upon, decisions of the position with a consequent impact upon CF operational support programs (e.g. weather observing at airfields) directly concerned with safety of lives and property.

Degree/
Points

Accountability D4/141

Supervisory/Managerial Responsibility

The position requires planning, directing, and controlling the activities of all meteorological facilities of Air Command. Direct supervision is exercised over 3 subordinate supervisors and, through them, 21 meteorologist supervisors, 8 instructors and approximately 55 other meteorologists. Direct supervision is exercised over a subordinate military Area Meteorological Inspector at CWO rank, and scientific and technical military direction is exercised over the activities of approximately 150 military meteorological technicians of Command. Expenditures under the DOE budget for specialized meteorological materiel for Air Command are controlled by D Met Oc through the SSO Met.

Freedom to Act

Direction is provided by DCOS Air Operations and Training and, in scientific technical matters, by D Met Oc in the form of goals to be achieved. The work is performed in accordance with approved CF and AES policies and standards. Supplementary direction or interpretation of policy is provided, as required, by military authorities of D Met Oc,as appropriate, relative to the development of meteorological training programs, the administration of resources and the provision of meteorological support services. Within the framework of established policy and procedures and of allocated resources, there is freedom to act and the work is not normally reviewed except with respect to the attainment of established goals.

Communications Requirements C3/67

Oral and/or Written Communications

The work requires a pronounced degree of clarity in oral and written communications with senior military personnel of the Command to discuss and advise on meteorological matters affecting Canadian Forces activities, and with subordinate supervisors in the planning and directing of meteorological operational and training programs in Air Command. Effective oral and written communications are required in representing the Command in meteorological matters and in participating in CF and AES working groups and committees.

Human Relations Skills

The work requires understanding user activities and needs and working with Command military staff to satisfy these.As a result,the exercise of tact and good judgement, and the establishment of effective working relationships with senior military officers to obtain their support, are essential in performing the duties of this position. Ability to earn the support of, andto motivate subordinate supervisors responsible for meteorological operational and training programs, is essential.

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 22 Level: 6

Position Title: Shift Supervisor, Analysis and Prognosis Division,Canadian Meteorological Centre Point Rating: 308

Summary

Reporting to the Chief of the Analysis and Prognosis (A&P) Division, supervises the integrated operational functions of all the operational Divisions and Sections within the Canadian Meteorological Centre (CMC) during a shift; establishes the official synoptic weather analysis over most of the northern hemisphere for the Atmospheric Environment Service (AES); carries out research projects to update and improve computer models; provides consultation to professional meteorologists within the CMC and in field offices on all matters relating to weather analysis problems; teaches new and junior staff meteorologists the principles of operational meteorology, and the operational procedures at the CMC; performs other duties.

Duties	% of Time
A. Supervises the integrated functions of all the operational Divisions and Sections ofthe CMC during a shift to ensure that the CMC meets its routine operational national and international commitments in the name of the AES.	20
1. Assumes responsibility for on-duty staff and property of the CMC in the absence of the Division Chief.	
2. Maintains liaison with the shift supervisors of the operational Divisions and Sections of the CMC to ensure proper coordination of the integrated functions.	
3. Plans, organizes and directs the action to be taken by the operational components of the CMM during frequent non-routine situations, e.g. computer failure, communications breakdown and less frequently, power outages, etc. to ensure that charts of maximum quality and usefulness are disseminated.	
B. Establishes the official synoptic weather analysis over most of the northern hemisphere for the AES in the form of surface and upper level charts, prepared by manual and computer methods, for national (internal) and international disseminationto AES weather centrals, and weather offices, universities and other training esta-blishments, marine and military radio stations for transmission, varied private agencies and for research and archive purposes.	50
1. Controls the operational analysis work program within the A&P Division bycoordinating, supervising and providing scientific leadership to staff in order to maintain a high standard of accuracy and usefulness.	
2. Obtains a thorough knowledge of the current meteorological situation by attending the shift change briefing by the supervisor of the previous shift, by studying past and current weather charts, satellite cloud pictures, radar weather reports, advisories and bulletins prepared by weather centres in Canada and the United States.	

$ of Time

3. Ensures that all pertinent weather data have been considered and that thehorizontal and vertical consistency of the hemispheric weather system ismaintained. Some charts must be analyzed to help in the solution of difficultproblems in the three dimensional structure of weather systems.
4. Monitors the computer analyses to ensure that special data are computed inthose areas where they are required, and monitors where time permits, thecharts prepared by meteorologists and by technical staff, for facsimiletransmission.
5. Consults with the Prognostician in the A&P Division to ensure internalconsistency where interests overlap.

C. Provides consultation to all local professional meteorologists and to Field Officesupervisors in all matters relating to weather analysis problems. 10

1. Writes weather analysis advisories to inform field officers of the reasoning behind the analysis, of problem areas which exist, and to describe unusual thermal structures which cannot be represented pictorially.

2. Initiates telephone discussions with concerned weather centres for consultation on unusual weather patterns.

3. Carries out shift take-over briefings at the end of each shift for theon-coming shift and conducts formal briefings at scheduled times during theweek for managerial and research meteorologists as well as the operational staff.

D. Carries out operational research and updates professional knowledge in order to recommend changes in the techniques and output of the operational program. 10

1. Carries out investigations to assess computer and manual techniques for producing varied forecast parameters, and thus offer advice for the improvement of such techniques.
2. Recommends changes in the output of the operational program to improve operations and to ensure optimum use of the multi-million dollar computer facilities.
3. Tests new computer models developed by the Dynamic Prediction Research Division of the Atmospheric Research Directorate (DPR) and offers guidance and advice for the modification of such models before they become operational.

E. Performs other duties, teaches new and junior staff meteorologists the principles of meteorology; deputizes for the Chief of the Division when absent; arranges forre placement staff in cases of illness; supervises on-the-job training; assists the Division Chief in the appraisal of staff. 5

Job Requirements — Degree/Points

Knowledge — Cb3/111

The work requires a level of knowledge of applied meteorology to supervise, and to provide scientific leadership for staff in providing analyses on a hemispheric scale to weather centrals, weather offices, universities and training schools, and for officialsarchives; and a knowledge of computer applications to coordinate the objective analyses of charts prepared by the computer and to conduct research in problems associated withthe computer output. A knowledge of weather analysis methods and computer applications is required to provide consultation and give guidance to research personnel in testing new models and to teach and train new meteorologists. A knowledge of geography, topography and oceanography is required to be able to determine interactions between meteorological parameters, and oceanographic or topographic parameters. A knowledge of hydrology and computer applications is required in order to carry out research projects to improve objective models or develop new ones.

Problem Solving/Decision Making — C3/95

Complexity

The main task is to provide effective scientific leadership and judgement in assessing vast amounts of weather data from many sources. For example, data produced from satellite soundings is often inaccurate, internally inconsistent or incompatible with normal radiosonde data. It is particularly important that the surface charts show thecorrect analyses of cyclones in areas of sparse data of the Atlantic or Pacific Oceans.A single ship report in one of these areas may be an early warning of a developing storm, or it may be a bad report. The supervisor must make an assessment and a decision based on the consistency of the various elements of the report, the consistency of the report with previous reports, if any, the sea temperature, the air temperature, the vertical temperature profile through the troposphere and the characteristics of the upper wind flow. His knowledge of the interaction of these parameters would lead him to a decision as to whether or not the area was favourable for cyclone development. The complexity ofthe problem is compounded by the hemispheric scale of operation in three dimensions which require the analysis of many types of weather systems over a variety of climatic regions(i.e. if, in the above example, it **is** decided that a developing cyclone is justified onthe surface chart, then the appropriate changes must be made on the upper level charts).Quick, accurate judgement under mental pressure is required, in order to meet rigid deadlines, and also to ensure that operating routines and schedules are maintained in situations of emergency, e.g., frequent computer failures.

Impact on End Results

The total staff on duty **is** about 25 persons. Decisions made on the content of information provided nationally to weather centrals, weather offices and a large variety of other users, affect their forecasts. Errors in making decisions have an impact on the output of all weather offices across Canada, on the information received by ships at sea, on archives used on research studies, and on maps used in University Training programs across Canada.

Degree/
__ Points

Errors in the analysis of impending severe weather can cause problems to the public specific weather users, e.g., the rapid development of violent storms off the east coastof North America can result in disastrous loss of life and property to the Atlantic Provinces. The immediate identification of these developing storms results in early advisories and warnings to the public, minimizing the adverse effects of the storm and enhancing the image and professional stature of the AES.The resources at the CMC, such as the research manpower involved in model development and the computer itself, which is the most expensive in the AES, must be properly utilized, and the shift supervisor plays a key role in this utilization, by supervising the control of the objective analyses.

Accountability B3/63

Supervisory/Managerial Responsibility

The shift supervisor supervises the professional and technical staff of the Analysis and Prognosis Division on all shifts, and all the CMC staff on duty on all shifts except those coinciding with regular working days of the administration staff. He deputizes forthe Chief of the Division when the latter is absent. The position requires the planning and organization of the work of the Analysis program within operational guidelines; the coordination and direction of the work of the operational staff on a shift; and the re-organization and re-scheduling of duties and manpower during non-routine situations, e.g., frequent computer failures, so as to maintain high standard of facsimile output under adverse conditions. The shift supervisor is operationally responsible for the most efficient and proper usage of the full resources during his shift.The work involves assisting in the evaluation of staff performance.

Freedom to Act

The work is performed under the general direction of the Chief of the Analysis and Prognosis Division, according to operating instructions. The shift supervisor is free to plan the operation of the shift in order to meet the specified deadlines, and in non-routine situations is required to plan the workload, to call extra manpower If required, in order to meet objectives as effectively as possible. He recommends changes in procedures to the Chief of the Division, and provides advice to research personnel in the modification of new computer analysis models.

Communications Requirements C2/39

Oral and/or Written Communications

The position requires giving detailed briefings to oncoming staff at shift change, and to conduct briefings for all CMC and DPR staff at scheduled periods during the week. Information is occasionally provided by telephone to the weather centrals and weather offices, and to the National Meteorological Center, Washington.

Degree/
Points

Consultation is provided to research personnel in the development of computer models. Written communication consists of routine synoptic analysis summaries in which analyses and unusual weather problems are explained. These are disseminated nationally and internationally four times a day. Writing skills are required in preparing reports of projects, for internal use, for publication or for oral presentation at seminars or conferences.

Human Relatoins Skills

There is a requirement for the skills necessary to direct and motivate subordinates, both professional and technical. Professionals often work most effectively when left on their own. The supervisor must assess subordinates individually in order to supervise most efficiently. Effective working relations must be developed with professionals at the CMC and at the weather offices across Canada.

23.1
ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.:23 Level: 7

Position Title: Superintendent, ForecastSystems Research Section Point Rating: 429

Summary

Reporting to the Chief Forecasting, Computers and Communicating Division, plans, coordinates, and provides general and detailed supervision for projects of the Division to transform the results of research to a form suitable for use in the operational forecast system. This includes projects for systems design, systems engineering, integration of functional meteorological prediction components, into the system, verification, testing and evaluation of systems and their functional components (viz. Numerical Weather (NWP) models, statistical procedures, special environmental prediction procedures, data acquisition, verification and display procedures, etc.).

Manages the activities of the Forecast Systems Research Section and contributes to the general management of the Division; performs related duties.

Provides support for the transfer of Division results to, and implementation in, the Canadian Weather Forecastinn System_

Duties % of Time

A. Plans, coordinates and provides general and detailed supervision for projects of the Division to transform the results of research to a form suitable for use in the operational forecast system. This includes projects for systems design, systems engineering, integration of functional meteorological prediction components into the system, verification, testing and evaluation of systems and their functional components. (Viz. NWP models, statistical procedures, special environmental prediction procedures, data acquisition, verification and display procedures, etc.) 50

1. Provides general planning of and scientific direction to Section projects within the guidelines of Branch Programs and Goals and to achieve Divisional Targets by assessing the need and the scientific and technical feasibility forSection projects and recommending to the Chief of the Division on their inclusion in Divisional Action Plans and Extensions; by determining the extent, detail and timing of the projects, by identifying and defining Section projects to be carried out by Research and Development (R & D) contracts, and by providing Section input to, and recommendations on, the content of the Divisional Two Year Targets as laid down by the Branch Director in consultation with the Division Chief.

2. Plans and controls the operation of the Meteorological Senior Research Branch(SRB) Weather Office Test Bed Facilities. These consist of three real time computerized Regional Update Systems: a general system on the CYBER 76 Computer, a special system for the Beaufort Sea also on the CYBER 76 Computer,and another general system on the VARIAN 73 Computer. The Test Bed Facilities provide real time environments comparable to the two classes of major weather offices -- those for which direct access to the CYBER 76 is practical, and

% of Time

those with independent dedicated computer facilities. The facilities are used to extend Section projects to practical prototype systems complete with all components functioning, obtaining results, knowledge and experience for input to purchase and operational implementation decisions by Field Services Directorate (FSD). In the case of the CYBER 76 Test Bed Facility, output is designed for Atmospheric Research Directorate (ARD) use and also to be directly accessible by Toronto and Montreal weather offices for field testing, and as preliminary to hand-over to operations, also to Training Branch for Meteorologist Course Training and Professional Development.

3. As group leader, coordinates and supervises: scientific and technical staff, including those specially assigned from elsewhere in AES and other special resources such as those working under terms of R & D contracts. Evaluates project progress and results and determines when project or contract work is adequately completed.
4. Studies the nature of, and advances in, weather office technological functions by analysis of current practice and planning in Canada and other countries, reviewing meteorological journals and periodicals, and by participating in related conferences and symposia.
5. Identifies scientific and technical aspect of weather office operations which are amenable to computerization through consultations with senior AES Headquarters managers and regional management officials.
6. Studies computer-science and Electronic Data Processing (EDP) journals andperiodicals and identifies significant advances particularly with respect tocomputer and communications technology applicable to regional operations.
7. Evaluates the design and utility of existing NWP models, meteorological andother related environmental data handling, analysis, prediction and verifica-tion schemes and procedures, and pertinent computer and computer-systems programs and may recommend and initiate improvements to ensure their suitability for use in the Canadian operational forecasting system.
8. Coordinates and supervises the design and upgrading of the systems running onthe FRD test-bed facilities (VARIAN 73 and CYBER 76) through introduction and modification of computerized forecasts, verification and other system sub-components, models and procedures.
9. Provides recommendations and expert advice on computer hardware, software and peripheral equipment to Branch/Division management and chairs committees responsible for Division selection of computer hardware and systems.
10. Provides general and/or detailed supervision on the design of computerized systems or the construction of individual computer programs for meteorological applications, and often leads and participates in design projects.
11. 11. Prepares scientific and technical reports or papers for publication or forpresentation at conferences or seminars.

% of Time

B. Manages the activities of the Forecast Systems Research Section and contributes to the general management of the Division; performs other duties. 20

1. Sets and approves priorities for the Section, assesses the feasibility and resource requirements for Section projects, and allocates its resources.

2. Provides management direction to the four units which comprise the Forecast Systems Research Section, one of which includes substantial contract R & Dresources.

3. In respect to work which maybe performed under contract, evaluates contract proposals, and monitors them through their progress to completion.

4. As required, performs the duties of the Chief of the Division.

5. Defines the organization of the Section and prescribes the administrativeprocedures to be followed.

6. Evaluates staff performance and prepares appraisal reports. Evaluates contract groups or individuals relative to their use as future suppliers.

7. Serves on selection, classification and other administrative boards as required.

C. Provides support for the transfer of Division results to and implementation in theCanadian Weather Forecasting System. 20

1. Coordinates and cooperates with regional or Headquarters officials in the design and conduct of operational implementation actions for computerized analysis, forecast and verification systems in large weather offices.

2. Studies, on a continuing basis, AES, FSD, Central Services Directorates (CSD)and MSRB policies related to the national forecasting system and the role of Computer Systems in forecasting.

3. Provides advice to FSD managers on the specific design of their operational computer systems to permit optimum use of the results of Divisional R & Dprojects and programs.

4. Recommends and advises FSD managers on the application of computerized methods, specifically those developed by the Division, to field office functions as partof the national system of forecast production for weather and weather-dependent environmental phenomena, and on the relation of those functions to centralized aspects of the national system.

5. Represents the Forecast Research Division on committees and working groups concerned with computer applications to meteorology.

6. As required, provides technical advice to, or serves on, boards or committees responsible for the selection (purchase or rental) of computers and computer systems (e.g. EDP configurations for regions).

% of Time

7. Provides scientific or technical advice as requested to FSD and Ice BranchSystem managers on specific problems they may be having with their operational weather office computer systems particularly in relation to automated meteorological techniques and systems.

Job Requirements — Degree/Points

Knowledge — Db3/157

The work requires a knowledge of theoretical and applied meteorology sufficient to develop, select and evaluate optimally-effective manual and numerical forecast methods and systems for weather and dependent environmental prediction. A knowledge of synoptic and statistical meteorology, electronic data processing and multi-task real-time computer operating systems sufficient to plan, organize and control the forecast research and systems-engineering projects of the Section is also required. Knowledge of the overall role and functioning of the existing forecasting system within AES is necessary in orderto contribute to Branch program development and participate in the Division's and more specifically the Section's operations and activities. In addition, knowledge is needed of other disciplines such as Oceanography, Atmospheric Chemistry and Forestry sufficientto understand and anticipate future expansion of forecasting services into new areas of real-time environmental prediction systems and prediction support in these areas.

Problem Solving/Decision Making — C4/120

Complexity

Judgement must be exercised particularly in carrying out duties A.1 to A.11; in coordinating with other Divisions of the Branch and, as required, with the Canadian Meteorological Centre (CMC) and regional weather offices. A variety of scientific, technical and financial decisions must be made on the benefits of introducing various computerized methods into existing forecast system. Scientific and technical advice isprovided to user offices on current and future automated forecast procedures and equipment. Decisions are required on alternative approaches to projects, amount and timing of resource allocation, evaluating progress and results, determining when project shave been completed, and/or when systems/methods are ready for implementation/field testing. Problem solving is required continually to provide basic approaches and outline solutions to achieve Section project objectives including particularly system design and problems of method in computerized forecast support.

Impact on End Results

The application of computerized analysis, forecast and evaluation systems developed in this Section will very significantly modify work practices and productivity at weather offices across the country where computer facilities now exist or are anticipated. The work of this Section is designed to improve to timeliness, quality and quantity of forecast produced by major forecast offices by developing and engineering pertinent research into operationally practical methods and systems. Results of projects and test-bed operations form basic input to HO and regional decisions on the design and operation of the Forecast System. Current examples:

Degree/ Points

1. The introduction of automated plotting and isoplething of current charts has a big impact on the work and resource allocation in forecast offices.
2. The development of an ice, wind-wave storm-surge and weather prediction system for support to Beaufort Sea oil drilling operations.
3. The development and improvement of real-time prediction and evaluation systems and their overall reliability enhances the professional stature of the AES on a broad front. Moreover, it increases the confidence of the public and other users in the forecasting services provided by the AES.

Accountability

Supervisory/Managerial Responsibility C4/113

The work involves the planning, organizing and controlling of projects within generalguidelines established by the Division Chief. Decisions are required in the allocationof financial and personnel resources for supporting Section projects such as the design,development, modification and implementation of automated forecast support systems. Thismay frequently also involve resources from other Sections in the Division. The workrequires monitoring and ensuring the progress of the work, including the efficient use ofcomputer resources. Major changes in operations are recommended to the Division Chiefincluding changes in operational procedures. Advice given to user offices frequently hasa direct influence on the resource expenditure of other AES components (e.g., TrainingBranch, weather offices) and at times may be given during visits to the field in theabsence of the Division Chief. The work further requires implementing work standards forthe section staff and preparing personnel and other appraisals of their work (6 permanentstaff, 2 project meteorologists on a continuing basis, the equivalent of about 2 more"on-loan" from other Sections of the Division,and 2 continuing R & D contract personnelworking at the CS-2 and SE-RES-2 levels).

Freedom to Act

The work is performed within the changing annual project guidelines established by theDivision Chief in close consultation with the incumbent and **is** subject only to generalguidance except where modifications or problems occur in the established project workflow. Occasionally, the work requires representing the Division Chief or the director innegotiations and consultations with operational managers (particularly when at regionaloffices). The work requires determining how, with what detail and with what allocationof resources (13 MY - including $30,000 to $40,000 capital per year. Also a VARIAN 73and peripherals and functional control over the 2 test-beds on the CYBER) projectobjectives will be achieved.

Communications Requirements C2/39

Oral and/or Written Communications

Written or oral communications are frequently required in the motivation and supervisionof Section staff; in preparing and presenting reports to management; in preparing andpresenting scientific or technical reports or papers at national and internationalconferences and seminars; in providing consultative service to the regions, to other AESDirectorate, to other government and non-government institutions; in contacts withofficials of other national weather and environmental services in planning thedevelopment of systems.

Degree/
___ Points

Human Relations Skills

The work requires supervising and motivating the Section staff, assigning work and assisting in the resolution of technical and personnel problems. Frequent contactsare made with operational managers and forecasters to ensure cooperation and understanding in the final design stages of a project and in the implementation in the resulting forecast systems or methods. Frequent contacts are also made with computer industry representatives, Canadian Meteorological Centre officials and officials ofother AES Directorates (particularly in the fields of computer utilization, meteorological communications and data archiving, also with officials of other national and environmental services in planning the development of systems for field office functions as part of national systems.

24.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.: 24 Level: 7

Position Title: Superintendent,Industrial Meteorology Section Point Rating: 429

Summary

Reporting to the Chief, Applications and Consultation Division, Meteorological Applications Branch, plans, organizes and directs a program of applied climatological consultation, analysis and meteorological investigation in support of Canadian industry and urban and rural development; participates with other scientists in the Division in coordinating programs of application and consultation, and in environmental impact studies; and performs other duties sa required.

Duties % of Time

A. Plans, organizes and directs a program of applied climatological consultation, analysis and meteorological investigation required in the support of Canadian industry, urban and rural development, particularly in the areas of transportation, communications and construction.

1. Recommends to the Division Chief analytic studies and climatological analyses to be undertaken, and determines personnel and financial resources required for this purpose, and carries our feasibility studies on areas of analysis proposed by other internal or external agencies. Plans the use of resources and determines the analytical procedures to be used in order that estimates of meteorological parameters for industrial and commercial concerns (including airports, transmission towers, transmission lines, building, etc.) are of optimal quality and reliability, and these fully satisfy user requirements.

2. Initiates, directs, coordinates and supervises consultative investigations and analytical projects.

3. Critically reviews on-going scientific programs and special projects in the area of industrial development, and makes revisions as necessary.

4. Evaluates program results, making economic and cost-benefit studies as required.

5. Negotiates with other AES components and outside AES to obtain required support for climatological studies undertaken (such as basic research, statistical procedures, logistics, data processing, transportation, equipment selection, purchase, calibration, siting and repair).

6. Initiates, ensures the preparation of, and reviews reports on appliedclimatology as required by industry, commerce, etc.

7. Provides consultation and advice on climatic problems and applications onlocal, regional or national basis to a variety of users.

% of Time

8. Initiates and carries out applied meteorological investigative analyses,mapping, etc. to provide solutions to industrially or commercially orientedclimatic problem as required in support of AES Regional Scientific SupportServices Units.

9. Consults with other scientists in universities, research councils andgovernment on programs, collaborative activities and negotiates contract to effect programs of Section consistent with objectives.

B. Participates with others in the Division in coordinated programs of application and consultation and in environmental impact studies. 30

1. Maintains close contact with industrial and commercial development problems in order to remain knowledgeable and to identify areas meriting meteorological support and maintains a current knowledge of applied climatic research and requirements across Canada.

2. Cooperates with operational and research units within the Service, the Meteorological Applications Branch and other Services of DOE or Departments of Government, collaborating and recommending on programs, procedures and objectives.

3. Serves on committees and working groups relating to applied meteorological research on specific projects, and participates in inter-agency planning conferences.

4. Negotiates and undertakes cooperative studies of a climatic nature (including environmental impact studies) with representatives of other Government Departments or outside Agencies.

5. Prepares or assists in the development of position papers on policy and other applied meteorological issues.

D. Performs other duties as required. 15

1. Lectures to professional, undergraduate and technical groups on applied climatology.
2. Assists colleagues in the Division in the coordination, supervision, execution, and reporting of assignments.
3. As required, acts for Division Chief.
4. Represents the Division, Branch and occasionally AES at national and international conferences and meetings.
5. Reviews critically papers prepared by other professional meteorologists.
6. 6.Prepares consumer-oriented reports and maps on climatological applications.

$ of Time

7. Prepares reports on applied investigations, studies, and analyses for publication in AES circulars, atlases, and other documents serving development, planning, research and educational interests.
8. 8.Assists in training courses and recruiting programs.

Job Requirements — Degree/Points

Knowledge — Db3/157

The work requires a sufficient depth of theoretical and applied meteorology to determine areas where applied climatological investigations and studies can be used to solve industrial and commercial problems.This theoretical knowledge is also essential in the conduct of investigations and the analysis of results and the estimation of relevant meteorological parameters.A knowledge of statistical and mathematical techniques and computer data processing is necessary to use the meteorological archives to employ proper measurement practices inthe studies and analyses undertaken.In order to understand user problems and determine methods to be used in their solution, particularly problems related to construction (airports, runways, transmission towers,etc.) and industrial development. The work necessitates a knowledge of civil engineering, architectural principles and practices and of civil aviation requirements.

Problem Solving/Decision Making — C4/120

Complexity

Decisions are made in the identification and resolution of climatic problems in industrial and commercial development. Judgement is required in the selection of meteorological data and using this data to assess, for a particular area, the influence of factors such as altitude, exposure, terrain, neighbouring bodies of water, etc., on required meteorological parameters such as wind, precipitation, cloud, temperature, humidity, air pressure,etc. Programs and projects must be continuously evaluated and reviewed to assess their effectiveness in meeting user requirements.

Impact on End Results

Decisions affect the efficient use of required support including special instrument acquisition, maintenance and repair, computer time for data processing, transportation, the work of the Section's technician and student assistants. Decisions can result in the development of new meteorological applications to industrial and commercial activity and the use of new techniques and practices in the resolution of problems.

Degree/
Points

Because the work of the Applications and Consultation Division, particularly the industrial Meteorology Section, is oriented toward the service of external users, decisions directly affect the image of and confidence in the AES. Errors in the estimation of meteorological parameters such as wind and weather patterns can affect the selection of airports and industrial sites. Construction costs of transmission towers, transmission lines and buildings can be increased or decreased by estimates made of wind-, ice- or snow-loads, and could result in construction failure.The effect of these decisions is direct on industrial and commercial users, e.g., Quebec Hydro in 1969 suffered over $20 million replacement cost for power lines due to under design.

Accountability C4/113

Supervisory/Managerial Responsibility

With the advice of the Division Chief, the work requires planning, organizing andcontrolling of the work of the Industrial Meteorology Section, and directing the work ofan engineer, a technician and part-time employees to meet objectives. The work also requires that certain aspects be coordinated with other sections in the Applications and Consultation Division or other AES components. Recommendations are made in changing work methods and procedures in order to meet objectives or changing priorities and resource requirements for programs and projects are determined and recommended. Advice and consultation is provided to a variety of external users in industry and commerce, and to AES groups such as Regional Scientific Support Units.

Freedom to Act

Direction is received form the Division Chief in the solution of priorities and assignments. Investigations, analyses and consultations are carried out subject only to restrictions imposed by scientific considerations, subsequent judgement of other professionals and AES scientific standards.

Communications Requirements C2/39

Oral and/or Written Communications

Requests for information, consultation and investigation are reviewed from within AES and DOE, from other Government Departments such as MOT, and from engineering and architectural firms. Reports are written, and occasionally oral presentation, of reports on scientific investigations, is required.

Human Relations Skills

Relationships have to be developed and maintained with officials in industry and commerce, and with representatives of other Government Departments in the support and confidence of external users must be elicited. Subordinate staff and AES colleagues must be motivated to provide necessary cooperation and support.

25.1

ILLUSTRATIVE POSITION DESCRIPTION

I.P.D. No.:25 Level: 6

Position Title: Shift Supervisor,Major Weather Office Point Rating: 338

Summary

Reporting to the Chief Meteorologist of the weather office directs, coordinates and controls the scientific and technical operations; supervises and participates in the analysis, prognosis, weather forecasting and warning programs; monitors output and supervises service programs; supervises the subordinate staff; initiates scientific studies; performs other duties.

Duties	% of Time
A.Directs, coordinates and controls the scientific and technical operations of theoffice during a shift, to ensure they meet required standards.	30

1. Ensures that approved scientific and technical procedures are utilized in the provision of weather support services.
2. Ensures that there is coordination and standardization of weather analyses and prognoses between the weather office and Canadian Meteorological Centre (CMC).
3. Provides scientific and technical guidance to subordinate meteorologists in the interpretation of complex weather problems, Numerical Weather Prediction (NWP)products, diagnostic charts, etc.
4. Directs the operation of the local computer and the technical staff to ensure necessary support during the shift, selecting programs, and setting priorities.
5. Establishes alternate procedures for meeting unusual situations, such as computer or communications failures.
6. Coordinates the activities of all staff on a shift.

B.Supervises and participates in the analysis, prognosis, weather forecasting and warning programs, to ensure the quality of the office output is maintained at a highlevel.	20

1. Evaluates the routine shift change briefings, to ensure continuity in the analysis, prediction, advisory, and forecast programs.

2. Maintains a thorough understanding of the current and expected weather situation, through study of reports, charts, computer products and bulletins.

3. Discusses the main features of the meteorological situation throughout the shift with subordinate meteorologist staff to resolve problems of weather analysis and prediction.

% of Time

4. Discusses and resolves weather analysis and prognosis problems with the CMC and adjacent weather offices.

5. Evaluates advisories and bulletins issued by CMC, U.S. National Meteorological Centre (NMC) and other weather offices and if relevant to the local area of responsibility, coordinates their contents with the weather office output.

6. Coordinates the composition of the various products issued by the office for consistency and compatibility.

7. Ensures the issuance of warnings of severe weather conditions, e.g., heavy snow, high winds, freezing rain, etc.

C. Monitors output and supervises service programs during the shift to ensure the effectiveness of weather services. 15

1. Studies and assesses the locally produced past and current analyses and the most recently issued prognostics, forecasts, warnings and other products of quality.

2. Monitors the forecast output of the dependent offices to ensure consistency with the weather office guidance.

3. Monitors the forecast output of the offices in adjacent regions to ensure compatibility.

4. Ensures the issuance of revised prognostics and forecasts when actual conditions deviate from those expected earlier or when indications are that they will deviate.

5. Monitors and participates in the provision of consultation and guidance on meteorological problems to a wide variety of users.

6. Provides consultation and advice to all offices in the area of responsibility in providing weather forecasts, advisories, consultation and briefing services.

7. Provides or arranges interim new weather services on the shift on request of a user group, with continuing arrangements subject to approval of the Officer-in-Charge (OIC).

8. Maintains effective relations with news media and other users of weather services.

D. Supervises the subordinate professional, technical and clerical staff of the office while on shift, to ensure that staff works as an efficient team and that the work program is carried out effectively, economically and in accordance with approved procedures. 15

1. Arranges for replacement of personnel on present and succeeding shifts in emergencies, e.g., staff illness or by reassignment of staff duties if replacement is unavailable for the whole or part of a shift.

% of Time

2. Reassigns staff duties and selects appropriate procedures to meet unusualsituations, e.g., communications difficulties and unusually complex weathersituations.
3. Maintains discipline of subordinate staff and reports unresolved problems tothe Chief Meteorologist.
4. Interprets and indicates the local application of operational andadministrative directives for subordinate personnel.
5. Checks that all work is carried out and completed as prescribed by AESdirectives and office procedures.
6. Inspects office work area and ensures that map displays and weather data filesare up-to-date.
7. Ensures that office facilities, equipment and supplies are properly used.
8. Reports defects in operation of equipment and arranges for immediatemaintenance and repair of equipment essential to the work program of the shift.
9. Reports to the OIC or Chief Meteorologist either in person or in writingregarding problems or difficulties which occurred on the shift and makesrecommendations when appropriate.
10. Assists in the evaluation of the performance of subordinate staff.
11. Assists in the drawing up of work schedules for staff.
12. Ensures that all production deadlines are met.

E. Initiates scientific studies on operational problems, participating in OperationalDevelopment, Implementation and Training (ODIT) activities of the office on arotational basis. 15

1. Identifies operational problems peculiar to the area of responsibility.
2. Investigates, develops and tests improved techniques and procedures to solveoperational problems.
3. Identifies new or improved forms of service and the means of providing these.
4. Reviews the scientific literature for potential operational applications.
5. Initiates projects to exploit available facilities or to acquire improvedfacilities, such as the application of computer technology to office programs.
6. Attends and reports on seminars, conferences, and familiarization flights.

% of Time

7. Recommends changes and improvement in methods, procedures, working arrangements and programs.

8. Participates in on-the-job training of new assigned professional and technical staff.

9. Provides advice and guidance to summer student assistants.

F. Performs other duties as required. 5

1. Deputizes for the Officer-in-Charge or Chief Meteorologist.

2. Serves on rating boards.

3. Participates in public information program of the office through radio broadcasts, conducting office tours, etc.

4. Implements and supervises the operation of the departmental Health and Safety Program within the weather office.

Job Requirements — Degree/Points

Knowledge — Ca4/116

The work requires a knowledge of mathematics and physics as applied to the science of meteorology; a knowledge of weather analysis and prediction and a knowledge of meteorological principles and practices, and of the application of meteorological information to human activities carried out in the area of responsibility. The work also requires a knowledge of related scientific disciplines, e.g., computer science, oceanography, climatology, hydrology and air pollution as well as knowledge of the physical geography of North America and of the geography, meteorological peculiarities and climatology ofthe area of responsibility. Experience in weather analysis and prognosis, organizing and synthesizing large amounts of meteorological data is required along with experience in providing forecast and advisory services for a wide variety of users.

Problem Solving/Decision Making — C4/120

Complexity

The work requires solving diverse and complex problems in the analysis and prognosis of weather situations and in the preparation of weather forecasts and warnings. A large amount of often incomplete computer-processed data must be quickly and accurately analysed and synthesized and decisions made regarding future meteorological developments in a prescribed time to meet rigid deadlines. The work requires identifying problems that subordinate staff may have due to, and particularly in conjunction with, complex weather situations, and making immediate decisions to solve these problems.

Degree/
_ Points

Impact on End Results

The work involves the short-term allocation of the manpower and material resources of the weather office and the development of new routines, procedures and techniques. The work affects the public image of the weather office and maintains or enhances the professional status of the AES. Faulty forecasts, upon which users base operational decisions, can result in economic loss to commerce and industry, inconvenience to the general public andin case of inadequate warnings of hazardous weather conditions, may lead to unnecessary loss of life as well as extensive property damage.

Accountability 83/63

Supervisory/Managerial Responsibility

The work involves supervising the work of the shift, adjusting work schedules, changing methods or routines, setting up priorities, allocating work and recommending changes tothe Chief Meteorologist and OIC. It also involves providing advice on scientific and technical meteorological problems to governmental and outside agencies in such areas as pollution, air-sea interaction, and noise propagation. The work includes responsibility for maintaining standards of work during the shift, for the performance appraisal of assigned staff and for making recommendations as to the assignment of support staff.

Freedom to Act

Although the work is performed within the general policy and operational guidelines of the weather office, shift work is adjusted and conducted to meet the demands of the current weather situation. The work entails full responsibility for the technical and scientific operations of the office.

Communications Requirements C2/39

Oral and/or Written Communications

The work requires frequent contact with other meteorologists at the CMC, adjacent weather centrals, and/or offices, and with meteorologists and presentation technicians at other weather offices in the area of responsibility to exchange weather information, to discuss and resolve problems associated with weather analysis, prognosis and forecasts. Contacts are also make with members of the general public, representatives of industry, commerce, agriculture, etc., to explain and discuss the current and predicated meteorological situation.

Human Relations Skills

The work involves the allocation of duties, the discussion of operational problems and also the motivation of staff. Contacts with regional meteorological personnel requires understanding the operational problems of satellite offices and maintaining their cooperation. There is a need to represent the Service in dealings (usually by telephone) with such groups as airlines, construction companies and radio and TV personnel associated with weather broadcasts.