

June 2001 Salary Survey - FOREWORD

APEGGA believes individual members are responsible for establishing with their employer the level of remuneration to be received in return for professional services provided. Using the information in the Value of Professional Services plus any other information accessible to you, you can judge if you are adequately paid given your industry sector and the economic activity within that sector, working conditions, responsibility, performance, utilization and situation.

Members work in a wide variety of organizations and carry out tasks which vary just as greatly. It is therefore impossible for the Association to judge whether any given member should get or be given a salary increase. However, to stay at par in terms of purchasing power, you could expect an increase equal to the Consumer Price Index (CPI) increase in your geographic area. If you are eligible for a performance increase and/or responsibility increase, these could be in addition to the CPI.

Program effectiveness is dependent on the integrity of the data in this booklet and your ability to incorporate it with other information obtained to provide your full compensation picture. It is recognized that not all employment sectors will be readily identified within the sample job descriptions and corresponding rates. However, using these as guidelines should enable you to arrive at a reasonable relationship between your situation and industry equivalents.

With the sustained support of members and employers, the Association believes this program will continue to be a positive influence in helping to maintain a reasonable balance between professional quality services, working conditions and remuneration.

The Value of Professional Services June 2001 has introduced a significant new category "Advanced Technologies", which will further enhance the value of the Salary Survey.

TABLE OF CONTENTS

Page

TABLE OF CONTENTS

PROCEDURE FOR USING THIS GUIDE

SECTION 1 DETERMINING YOUR LEVEL OF RESPONSIBILITY	1
Method 1: Job Evaluation Guide	1
Introduction	1
Job Rating Summary	1
Caution in Self-Evaluation.....	1
Bench-Mark Job Description	2
Job Rating Factors.....	3
Sample Bench-Mark Job Descriptions and Corresponding Ratings.....	10
Use of Point Count Results	17
Method 2: Job Classification Guide.....	18
SECTION 2 DETERMINING YOUR 2001 SALARY RANGE	19
Introduction	19
APEGGA Market Survey.....	19
Using Survey Results to Determine your 2001 Salary Range.....	19
Survey Notes	20
APEGGA 2001 Employer Salary Survey Highlights.....	21

SECTION 3 DETERMINING 2001 TO 2002 SALARY ADJUSTMENT.... 27
Inflation Factor27
Productivity Factor.....28
Demand Factor.....28
Example28

SECTION 4 2002 SALARY EXPECTATION..... 30

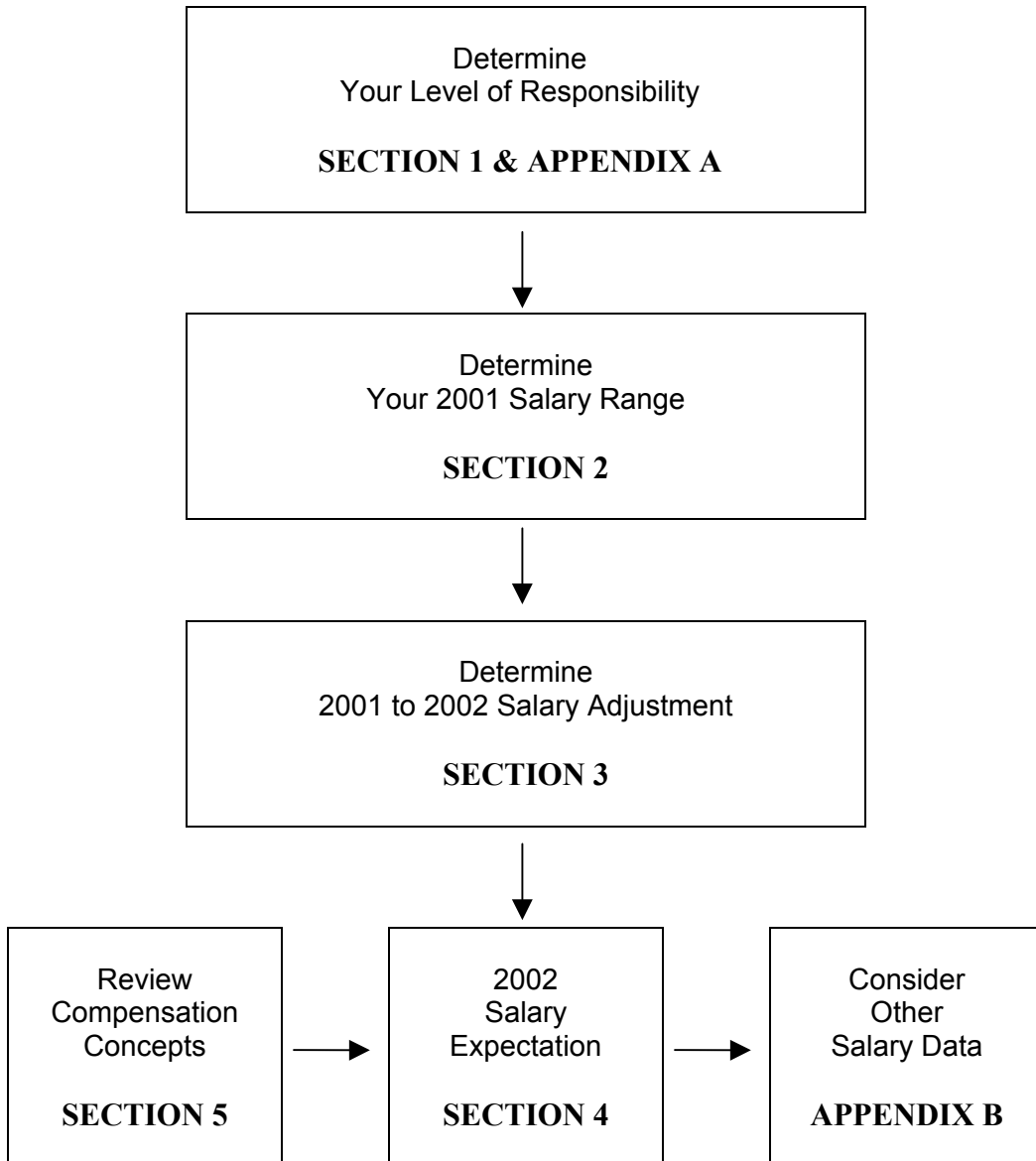
SECTION 5 COMPENSATION CONCEPTS..... 33
Compensation Concepts/Employee Benefits33
Employer Salary Survey Compensation Data34

APPENDICES

APPENDIX A.....DETAILED JOB CLASSIFICATION GUIDE 40

APPENDIX B..... APEGGA SALARY SURVEY DATA 44

FIGURE 1
PROCEDURE FOR USING THIS GUIDE



SECTION 1

DETERMINING YOUR LEVEL OF RESPONSIBILITY

Two methods of determining the level of responsibility of a job are outlined in this section.

The Job Evaluation Guide, which uses point scores to assess a job, is more precise and accurate. The Job Classification Guide is used by many companies but is less precise.

It is recommended the Job Classification Guide be used to verify the results obtained through job evaluation.

METHOD 1: JOB EVALUATION GUIDE

Introduction

This point score guide has been developed as a technique for providing members and employers of members with an accurate, yet easy to use, system for evaluating the level of responsibility of engineering, geological and geophysical jobs. Usage will undoubtedly reveal useful improvements. Used objectively, this guide provides a base whereby any particular engineering, geological and geophysical job can be classified and ranked relative to other engineering, geological and geophysical positions. This same job evaluation system can be used to evaluate other professional and near professional jobs, thus making comparisons with these occupational groups more systematic and credible.

Job Rating Summary

To provide the most objective rating for the job, the following procedure is recommended:

- rate the job in accordance with the points allocated for each factor: duties, education, experience, etc. on pages 3 to 9 and record points in the left hand column of the chart on the following page.
- compare the results with ratings assigned to the benchmark jobs in the tables on pages 10 to 16.
- make any necessary adjustments and record the final points in the right hand column of the chart.
- determine your classification (A,B,C, etc.) using the chart on page 17.
- Figure 2 is provided as additional information to be used for comparison.
- Method 2: Job Classification Guide can be used to verify self-evaluation.

Caution in Self-Evaluation

In self-evaluation there will be a tendency toward overrating on some factors, particularly **duties**, as well as **recommendations**, **decisions** and **commitments**. Where doubt exists, the next grade or half-grade lower in line will usually prove to be the more accurate choice.

Factor	Preliminary Rating Points	Final Rating Points
A. Duties		
B. Education		
C. Experience		
D. Recommendations, Decisions and Commitments		
E. Supervision Received		
F. Leadership Authority and/or Supervision Exercised		
G. Supervision Scope		
H. Physical Demands		
I. Job Environment		
J. Absence from Base of Operations		
K. Accident and Health Hazards		
Total Points		

Benchmark Job Description

A job evaluation guide is difficult to use without guidance from an experienced job analyst on how to apply the guide. To assist you in determining your level of responsibility, sample benchmark job descriptions have been provided on pages 10 to 16. The jobs range from the most junior, to that of a fairly senior manager.

As your job will not match exactly, the points you give your job will vary from the sample jobs evaluated (both on the various factors and in total points).

Job Rating Factors

A. DUTIES

This factor is concerned with the general nature of tasks assigned. The range includes duties performed in an entry level jobs to those carried out at an advanced level of administration. Select the description that fits your job most appropriately. Carefully consider the relationship that your duties have to those of others in your organization. If you cannot decide between two adjoining descriptions, use the midpoint value.

DESCRIPTION		POINTS
1.0	Receives training in the various phases of office, plant, field, or laboratory engineering, geological or geophysical work as on-the-job assignments. Tasks assigned include: preparation of simple plans, designs, plots, calculations, costs, and bills of material in accordance with established codes, standards, drawings, or other specifications. May carry out routine technical surveys or inspections and prepare reports.	10
1.5	.....	15
2.0	Normally regarded as a continuing portion of an engineer's, geologist's or geophysicist's training and development. Receives assignments of limited scope and complexity, usually minor phases of broader assignments. Uses a variety of standard engineering, geological or geophysical methods and techniques in solving problems. Assists more senior engineers, geologists or geophysicists in carrying out technical tasks requiring accuracy in calculations, completeness of data, and adherence to prescribed testing, analysis, design or combination of methods.	20
2.5	.....	30
3.0	This is typically regarded as a fully qualified professional engineering, geological or geophysical level. Carries out responsible and varied assignments requiring general familiarity with a broad field of engineering, geology or geophysics and knowledge or reciprocal effects of the work upon other fields. Problems usually solved by use of combinations of standard procedures, modifications of standard procedures, or methods developed in previous assignments. Participates in planning to achieve prescribed objectives.	40
3.5	.....	55
4.0	This is the first level of direct and sustained supervision of other professional engineers, geologists or geophysicists or full specialization. Requires application of mature engineering, geological or geophysical knowledge in planning and conducting projects having scope for independent accomplishment, and coordination of difficult and responsible assignments. Assigned problems make it necessary to modify established guides, devise new approaches, apply existing criteria in new manners and draw conclusions from comparative situations.	70
4.5	.....	90

DESCRIPTION		POINTS
5.0	Usually requires knowledge of more than one field of engineering, geology or geophysics or performance by a specialist in a particular field. Participates in short- and long-range planning. Makes independent decisions for devising practical and economical solutions to problems. May supervise large groups containing both professional and non-professional staff, or may exercise authority over a small group of highly qualified professional personnel engaged in complex technical applications.	110
5.5	.....	130
6.0	Usually responsible for an engineering, geological or geophysical administrative function; directing several professional and other groups engaged in interrelated engineering, geological or geophysical responsibilities; or as consultant, has achieved recognition as an authority in an engineering, geological or geophysical field of major importance to the organization. Independently conceives programs and problems to be investigated. Participates in discussions determining basic operating policies, devising ways of reaching program objectives in the most economical manner and of meeting unusual conditions affecting work progress.	150
6.5	.....	175
7.0	Within the framework of general policy, conceives independent programs and problems to be investigated. Plans or approves projects requiring the expenditure of a considerable amount of manpower and financial investment. Determines basic operating policies, and solves primary problems or programs to accomplish objectives in the most economical manner to meet any unusual condition.	200

B. EDUCATION

Rate the minimum university qualifications in an engineering, geological or geophysical discipline required in order to begin your job.

Note: A rather special situation develops with the factors of **education** and **experience**. Do not rate your position on the basis of level of education and years of experience you have attained. You may have a Master's degree and thirty years of experience. However, if the job requires neither an advanced degree nor extensive experience, rating the job according to your own qualifications will result in a point score that is unreasonably high. Members should estimate the education and experience combination required by the job.

LEVEL OF EDUCATION	POINTS
No degree but with standing as Engineer-, Geologist-, or Geophysicist-in-Training or registration in APEGGA	65
Bachelor's Degree	65
Master's Degree	90
Doctorate Degree	125

C. EXPERIENCE (See "Note" in Education on previous page)

Rate the minimum number of years in full-time, permanent engineering, geological or geophysical work and/or work where an engineering, geological or geophysical background was a distinct asset which would normally be required by a person starting the job. Take your count to the nearest whole or half year.

EXP.	POINTS	EXP.	POINTS	EXP.	POINTS	EXP.	POINTS
<1 year	25	3 years	45	7-8 years	70	15-17 years	113
1 year	30	4 years	50	9-10 years	80	18-20 years	125
1½ years	35	5 years	55	11-12 years	90	21-24 years	138
2 years	40	6 years	60	13-14 years	100	25 years	150

D. RECOMMENDATIONS, DECISIONS AND COMMITMENTS

Select the category that fits your job most appropriately. If you cannot decide between two categories, use the midpoint value.

DESCRIPTION	POINTS
1.0 Few technical decisions called for and these will be of routine nature with ample precedent or clearly defined procedures.	35
1.5	40
2.0 Recommendations limited to solution of the problem rather than end results. Decisions made are normally within established guidelines.	45
2.5	50
3.0 Makes independent studies, analyses, interpretations and conclusions. Difficult, complex, or unusual matters or decisions are usually referred to more senior authority.	55
3.5	60
4.0 Recommendations reviewed for soundness of judgement, but usually accepted as technically accurate and feasible.	70
4.5	80
5.0 Makes responsible decisions not usually subject to technical review, on all matters assigned, except those involving large sums of money or long-range objectives. Takes courses of action necessary to expedite the successful accomplishment of assigned projects.	90
5.5	105
6.0 Makes responsible decisions on all matters, including the establishment of policies and expenditures of large sums of money and/or implementation of major programs, subject only to overall policy and financial controls.	120
6.5	135
7.0 Responsible for long-range planning, coordination and making specific and far-reaching management decisions. Keeps management associates informed of all matters of significant importance.	150

E. SUPERVISION RECEIVED

This factor is concerned with the degree to which independent action is required or permitted. It will be limited by the amount of direction received from supervisors or provided through standard practice instructions, precedents or practice. Select the category that fits your job most appropriately. If you cannot decide between two categories, use the midpoint value.

DESCRIPTION		POINTS
1.0	Works under close supervision. Work is reviewed for accuracy, adequacy and conformance with prescribed procedures.	20
1.5	.....	25
2.0	Duties are assigned with detailed oral and occasionally written instructions, as to methods and procedures to be followed. Results are usually reviewed in detail and technical guidance is usually available.	30
2.5	.....	35
3.0	Work is not generally supervised in detail and amount of supervision varies depending upon the assignment. Usually technical guidance is available to review work programs and advise on unusual features of assignment.	40
3.5	.....	45
4.0	Work is assigned in terms of objectives, relative priorities, and critical areas that impinge on work of other units. Work is carried out within broad guidelines, but informed guidance is available.	50
4.5	.....	55
5.0	Work is assigned only in terms of broad objectives to be accomplished, and is reviewed for policy, soundness of approach and general effectiveness.	60
5.5	.....	70
6.0	Receives administrative direction based on organization policies and objectives. Work is reviewed to ensure conformity with policy and coordination with other functions.	80
6.5	.....	90
7.0	Operates with broad management authority, receiving virtually no technical guidance and control; limited only by general objectives and policies of the organization.	105

F. LEADERSHIP AUTHORITY AND/OR SUPERVISION EXERCISED

This factor is concerned with the character of the supervisory responsibility. This may be direct (line) or indirect (staff). Select the category that fits your job most appropriately.

DESCRIPTION		POINTS
1	Has no supervisory role.	0
2	May assign and check work of one to five technicians or helpers.	5
3	May give technical guidance to one or two junior engineers, geologists or geophysicists or technicians assigned to work on a common project.	10

DESCRIPTION		POINTS
4	May give technical guidance to engineers, geologists or geophysicists of less standing or technicians assigned to work on a common project. Supervision over other engineers, geologists or geophysicists not usually a regular or continuing responsibility.	15
5	Assigns and outlines work; advises on technical problems; reviews work for technical accuracy and adequacy. Supervision may call for recommendations concerning selection, training, rating and discipline of staff.	20
6	Outlines more difficult problems and methods of approach. Coordinates work programs and directs use of equipment and material. Generally makes recommendations as to the selection, training, discipline and remuneration of staff.	40
7	Reviews and evaluates technical work; selects schedules, and coordinates to attain program objectives; and/or as an administrator, makes decisions concerning selection, training, rating, discipline and remuneration of staff.	60
8	Gives administrative direction to subordinate supervision, and contact with the work force is normally through such levels rather than direct.	80

G. SUPERVISION SCOPE

This factor is concerned with the size of the direct (line) responsibility and is rated in terms of the total number of persons falling into that category. Count your immediate subordinates together with all employees reporting to them, either directly or through other levels of supervision. If numbers vary seasonally or for other reasons, compute an average for the year. Exclude persons, such as students, for whose work you have no continuing responsibility. As well, do not count persons to whom you give occasional technical direction or functional guidance. In short, count persons only for whose work you are fully accountable.

Employees Supervised	0	1	2-3	4-7	8-13	14-20
Points	1	3	5	8	10	15

Employees Supervised	21-30	31-40	41-50	51-75	76-100	101-200
Points	20	25	30	35	40	45

Employees Supervised	201-400	401-750	751-1200	1201-2000	Over 2000
Points	50	55	60	65	70

H. PHYSICAL DEMANDS

This factor is concerned with the intensity and severity of the physical effort required of the job and with the continuity and frequency of that effort. Of those listed below, choose the level of exposure that most closely describes your situation and select the one value that carries the highest point score.

DEMAND	LEVEL OF EXPOSURE				
	Not Applicable	Limited	Occasional	Frequent	Continuing
Standing or Moving About (Inside Position)	0	5	8	10	15
Walking over Rough Ground, Climbing, etc. (Outside Position)	0	8	10	15	20
Heavy Physical Exertion	0	10	15	25	40
Uninterrupted Visual Concentration (as in drafting work)	0	5	10	20	30
Uninterrupted and Intense Mental Concentration	0	5	8	15	20

I. JOB ENVIRONMENT

Under this factor, select the category that describes most clearly the conditions under which your work is normally carried out.

DESCRIPTION	POINTS
1 Office and comparable conditions.	0
2 Best shop, plant or laboratory conditions. Little exposure to dirt, heat, noise, fumes or other disagreeable factors.	3
3 Average shop, plant or laboratory conditions. Would cover positions that are generally conducted under clean and pleasant conditions, but with some exposure to noise, severe weather, dust, wet, fumes or other disagreeable factors.	5
4 Conditions that are especially dirty, oily, noisy or otherwise disagreeable. Would cover positions involving continuous outside work in all weather.	10
5 Conditions involving continuous exposure to heat and fumes, cold and wet, or to combinations of other disagreeable factors, but where continuous attention to work is possible.	20

J. ABSENCE FROM BASE OF OPERATIONS

Under this factor, select the category that most closely describes the demands of your job for travelling and being absent from your base of operations.

DESCRIPTION		POINTS
1	Seldom absent.	
2	Occasionally absent. Perhaps a day a week on average.	5
3	Frequently absent. Commonly for a couple of days a week, sometimes longer, with considerable travel.	10
4	Absent more than 50 percent of the time, sometimes including weekends, with much travel.	15
5	Absent for long periods from base of operations and/or travel on an almost continuous basis.	20

K. ACCIDENT AND HEALTH HAZARDS

Under this factor, rate your job in terms of conditions that might result in accident or occupational disease. Consider the most prevalent hazard to which you are exposed, not some remote possibility. Select one value only.

HAZARD LEVEL	LEVEL OF EXPOSURE			
	Limited	Occasional	Frequent	Continuing
Low	0	3	5	10
Moderate	3	5	10	15
High	5	10	15	20
Extreme	10	15	20	25

SAMPLE BENCHMARK JOB DESCRIPTIONS AND CORRESPONDING RATINGS

	Engineer-In-Training	Jr. Design Engineer
Summary	For training and development in various phases of engineering work in office, sales, plant, field or laboratory, performs various assigned tasks of comparatively low complexity, normally assisting other engineers.	Assists in the design of new or revised products, equipment, installations or processes, based on established engineering principles to meet functional requirements or performance specifications. Using a variety of standard engineering methods and techniques, will usually handle design problems of moderate complexity or assist more senior engineers to solve difficult problems.
Duties	Performs a variety of tasks such as the preparation of simple plans, designs, calculations, costs and bills of material, catalogues, in accordance with established codes, standards, drawings or other specifications.	Receives assignments of limited scope and complexity, usually minor phases of broader assignments which may include one or more of: <ul style="list-style-type: none"> - The design of components within the particular branch of engineering (civil, mechanical, electrical, etc.) of a larger design project; - The modification of tooling, plant equipment, imported designs or prototypes of new development, to permit economical manufacturing or to meet performance specifications and requirements or serviceability; - The design of ancillary parts, not within the particular branch of engineering, or equipment pertaining to the branch e.g. foundations and supports for heavy machinery, transports for heavy machinery, transformer housings, etc.; - Confers with shop and departmental personnel while gathering information, seldom outside the company; - May prepare reports such as equipment surveys, cost estimates, process investigations, within the scope of assigned work.
Recommendations, Decisions and Commitments	Normally, decisions made will be of a routine nature invariably having ample precedent or in line with clearly defined procedures.	Recommendations are limited to the solution of the problems rather than the end results. Work requires accuracy in calculations, completeness of data and adherence to prescribed testing, analysis, design or computation methods. Refers unusual problems to more senior engineers. Errors in work would usually be detected before results become serious.
Supervision Received	Works under supervision where the work is reviewed for accuracy, adequacy and conformance with prescribed procedures.	Tasks and duties are assigned in detail and work is under close review by more senior engineers.
Leadership Authority	May give work assignments and check work of 1-5 technicians or helpers.	May give technical guidance to one or two junior engineers or draftspersons.
Guide to Entrance Qualifications	Bachelor's degree in Engineering or Applied Science or its equivalent; little or no practical experience.	Bachelor's degree in Engineering or Applied Science or its equivalent, normally with two to three years working experience from the graduation level.
Job Rating Factor	A — 20 B — 65 C — 25 D — 45 E — 25 F — 5 G — 0 H — 10 I — 5 J — 0 K — 5	A — 40 B — 65 C — 45 D — 50 E — 30 F — 10 G — 0 H — 10 I — 0 J — 0 K — 0
Total Points	205	250

Jr. Geologist	Electrical Design Engineer	Manufacturing Engineer
Assists in the accumulation and analysis of geological data, conducts geological surveys and keeps up-to-date on current activities in the industry.	Performs assigned duties associated with electrical layout design of projects. These projects include complete substation and diesel station layouts, proposals for the same and modifications to those stations. Will use a variety of standard engineering methods and techniques and will assume responsibility for moderately complex layouts.	Performs a variety of engineering tasks including the development of plant layouts, work methods and manufacturing processes; designing tools; selecting, procuring and installing machines, tools and material-handling equipment; and establishing standard time values for production and non-production operations.
<ul style="list-style-type: none"> - Maintains subsurface information on a current basis and suggests lease purchases and geophysical programs to the immediate supervisor; - Makes field studies as assigned and prepares both surface and subsurface maps; - Performs microscopic examinations of samples and cores of wells for stratigraphic and reservoir studies; - Assists with the accumulation and the analysis of geological data for an exploratory and/or development drilling program; - As requested, guides the work and assists in the training of first year geologists; - Assists the immediate supervisor to keep informed of current activities in industry that might affect company performance. 	<p>The electrical engineering work includes:</p> <ul style="list-style-type: none"> - preparing preliminary, and detailed electrical layout, other than that performed by Protection and Control, based on Assignment Sheets and one line diagrams supplied by client; - liaising with Civil Engineering Section to achieve compatibility of respective proposals; - writing specifications, usually for installation work; - checking information provided by contractors who are bidding on contracts to ensure adequacy of proposals and recommending contract awards based on that information, past experience with the contractor, capability (equipment, etc.) and price; - investigating complaints regarding design received from the field during construction and from operating staff following construction, and making design changes if justified; - making design calculations as required, applying standardized details and devising non-standard details as necessary; - reviewing manufacturers' drawings on request by the Equipment and Materials Branch. 	<p>Under general direction, makes independent studies, analyses, interpretations and conclusions in one or a combination of the following assignments:</p> <ul style="list-style-type: none"> - Process Engineering - determines tools, equipment and dies required for shaping, finishing and assembling an assigned product, thus planning the sequence of operations; - Machine and Tool Design - designs and develops machinery, machine tools, gauges, dies, jigs, fixtures and special tools required as most suitable to the prescribed volume of production, materials and surfaces; - Gauge design - develops special gauges and instruments and applies statistical methods in order to attain precision specified; - Plant or Layout Engineering - arranges machines, lays out plant facilities and set-ups to ensure the most efficient and productive layout. Designs material-handling methods. Develops, designs and recommends long- and short-term plans for maintenance, repair and expansion of buildings, equipment and facilities including power plant and utilities; - Time and Motion Study - makes studies to determine standard rates and eliminate waste of time, labour and materials; - Quality Control - develops, recommends and administers quality control techniques. Utilizes industrial statistics for the presentation and analysis of quality control and other manufacturing data. Prepares cost estimates, makes studies of feasibility and provides information, advice and engineering assistance within the scope of assigned work.
Recommendations limited to the solution of immediate problems relating to a phase of a project. Decisions relate to the selection of data and the application of techniques. Such judgments are normally made by following established guidelines and practice. Refers unusual problems to a more senior geologist.	Recommendations will include complete solutions within the scope of the job. Unusual problems and techniques of a novel nature will normally be referred to a senior engineer.	Recommendations and decisions are usually based on operational experience. Work is relied upon as sound and authoritative within the scope of an assignment. Difficult, complex or unusual decisions are usually referred to higher authority. Errors of judgement could cause serious loss of manufacturing time and material.
Work is assigned in detail and the incumbent works under close supervision. Work is normally checked for accuracy and completeness.	Projects are assigned and work will be reviewed in detail by more senior engineers.	Work is not generally supervised in detail and the amount of supervision varies depending upon the assignment. More senior supervision is usually available to review work programs and give guidance.
May check the work of one or two more junior geologists and assist them with the application of standard techniques and the interpretation of data.	Checks the work of one or two junior engineers and technicians.	May guide the work of several more junior engineers or technicians when they are employed on the same projects.
Appropriate B.Sc. degree, normally with two years of relevant experience since graduation.	Bachelor's degree in Applied Science or its equivalent, normally with three years working experience since graduation.	Bachelor's degree in Engineering or Applied Science or its equivalent, normally with three to five years of related working experience since graduation.
A — 40 B — 65 C — 40 D — 50 E — 30 F — 10 G — 0 H — 10 I — 5 J — 5 K — 5	A — 40 B — 65 C — 45 D — 55 E — 40 F — 10 G — 1 H — 10 I — 0 J — 0 K — 0	A — 55 B — 65 C — 50 D — 60 E — 40 F — 15 G — 5 H — 10 I — 3 J — 0 K — 3
260	266	306

	Senior (Petroleum) Geologist	Design Engineer
Summary	Conducts special geological studies and prepares recommendations for lease acquisitions. Conducts geophysical investigations and exploratory well drillings in areas that have been approved for a geological program. Carries out necessary geological work for the development of proven and semi-proven leases.	In a specialized field of experience within a branch of engineering (e.g. civil, mechanical, electrical, etc.) develops designs for complicated components of engineering works, structures, installations, processes. Develops plans for the modification of extension of existing facilities.
Duties	<ul style="list-style-type: none"> - Prepares and reviews with the District Geologist, recommendations for lease acquisitions, geophysical investigations, exploratory well drillings and other special geological studies; - Assists in making economic analyses pertaining to exploration projects, exploratory well proposals, farm-ins and farm-outs, drilling contributions, rental payments and the purchase and sale of oil and gas leases as well as other financial interests; - Reviews proposals for the abandonment of wells and/or dropping of leases and makes recommendations for company action to the District Geologist; - Collaborates with other company exploration personnel including landmen, geophysicists and engineers in matters of mutual interest; - Maintains contacts with external geological personnel, associations and others. 	<ul style="list-style-type: none"> - Makes independent studies, analyses, interpretations and conclusions within the scope of various assigned projects; - May design structural frames in steel reinforced concrete, timber; make layouts and designs of municipal services, industrial buildings, mining plants; - May design mechanical or electrical services of buildings; materials handling installations; power installations; industrial drives; - May be concerned with the design of communications circuitry or power generation and/or transmission, including repeater stations or transformer substations; - May be concerned with the design of chemical or metallurgical process plant installations; - Based on knowledge of site conditions, methods and materials available, time factors and costs, works up a design and/or alternative designs to achieve the desired end, recommending optimum solution; - Prepares reports, cost estimates, specifications; - Consults with and provides specialized instruction for Drafting Department in respect of design notes and sketches; - Confers with more senior design engineers and one of a design project team and with Manufacturing and Purchasing personnel, as necessary to exchange information; - Confers with senior members of consultant's (or client's) organization; with contractors and suppliers.
Recommendations, Decisions and Commitments	Recommendations are usually based on operational experience and are relied upon as sound and authoritative within the scope of an assignment. Errors of judgement could cause considerable financial loss.	Assignments are responsible and varied. Within the scope of an assignment, work is relied upon as sound and authoritative. Recommendations and decisions are usually based on precedent. Difficult, complex or unusual decisions are usually referred to more senior authority. Errors of judgement might cause serious losses.
Supervision Received	Work not generally supervised in detail. More senior geological expertise is generally available for consultation.	Work is not generally supervised in detail and the amount of supervision varies with the assignment. Usually more senior supervision is available to review work programs to give guidance.
Leadership Authority	May guide the work of several more junior geologists and/or technologists when they are assigned to the same project.	May guide the work of several more junior engineers or technicians when they are employed on the same projects.
Guide to Entrance Qualifications	Appropriate B.Sc. degree, normally with three to five years' working experience since graduation.	Bachelor's degree in Engineering or Applied Science or its equivalent, normally with three to five years' related working experience since the graduation level.
Job Rating Factor	A — 55 B — 65 C — 50 D — 60 E — 40 F — 15 G — 0 H — 10 I — 5 J — 5 K — 3	A — 55 B — 65 C — 50 D — 60 E — 40 F — 20 G — 8 H — 5 I — 3 J — 0 K — 3
Total Points	308	309

Sales Engineer	Specialist (Petroleum) Geologist	Production Engineer
Responsible for field sales of apparatus and other delegated products to prospective and established customers. Discusses product application with a good knowledge of customers' technical problems. Determines customers' requirements and takes orders or reports to own department. Expedites deliveries and follow up to ensure satisfaction.	Conducts comprehensive geological studies and prepares recommendations relative to lease acquisitions and exploratory activities in areas approved for activity.	Directs the operation of two or more production units comprising a distinct area or segment of the total process, each unit being supervised by a foreperson or a series of forepersons, one or more of whom may be an engineer. Maintenance and control systems based on engineering principles, as well as the susceptibility of the process to variations from standard, require an engineering background for sustained successful direction of the operation.
<ul style="list-style-type: none"> - Visits new or prospective customers to discuss products on the basis of the company's experience in similar fields and a knowledge of the technical customers requirements; - Investigates product applications, recommends modifications; ensures proper servicing; proposes adjustments as required; - For fairly standardized products and adaptation, quotes prices, terms and deliveries; - May conduct correspondence on product applications and adjustments; - Transmits all pertinent information to Sales Department to facilitate cost estimating, proper design or modifications where necessary, and ensures that the requirements will be met; - Acts as technical consultant to customers on their problems to ensure best use of the company's products. May participate in the sales planning of the department; - May be required to travel extensively and to entertain customers' representatives. 	<p>In collaboration with other company personnel, including landmen, geophysicists and engineers:</p> <ul style="list-style-type: none"> - Prepares and reviews with the District Geologist, recommendations for lease acquisitions, geo-physical investigations, drilling of exploratory wells and other technical studies to further the district exploratory effort; - Collects and analyzes, or directs, the preparation and analysis of geophysical data in order to recommend appropriate development procedures to the District Geologist; - Prepares and/or supervises the preparation of maps and provides interpretations to aid the production department in making economic analyses and reserve estimates; - Maintains contact with outside geological personnel, associations and others in order to keep up to date on current events in the industry; - Assists in making or makes economic analyses pertaining to exploration plays, exploratory well proposals, farm-ins and farm-outs, drilling contributions, rental payments, and purchase and sale of oil and gas leases. 	<ul style="list-style-type: none"> - Instructs forepersons regarding objectives. Participates with technical control, development, design and maintenance engineers in analyzing off- standard conditions and the feasibility of new procedures; - Accountable for quality, quantity, cost, safety and employee relations in the area under direction.
Within the scope of the assigned working area, work is relied upon by customers and employer superiors as accurate and sound. Recommendations and decisions are usually based on precedent. Difficult, complex or unusual decisions are usually referred to more senior authority. Errors of judgement might cause serious losses to a customer which could result in large losses to the employer.	Recommends to the District Geologist and other senior personnel in the company, lease acquisitions, geological investigations, exploratory well drilling programs, and technical studies to further the district exploratory effort.	Recommends improvements in procedures and changes in policy. Participates in formulation of policy. Approves transfers and promotions. Recommends salary increases. May approve wage rate changes. Major problems normally referred to higher authority but in emergency must be decided directly and quickly.
Work is not generally supervised in detail and the amount of supervision varies with the assignment. Usually more senior supervision is available to review work programs to give guidance.	General supervision is provided; work is assigned in terms of well-defined objectives and the results desired; informed guidance is readily available.	Daily contact with next level of supervision shared with other area supervisors.
May guide the work of several more junior sales engineers or technicians.	Supervision is incidental to other work performed. May train and direct junior professionals and technologists in work methods relating to assigned projects. May allocate and check work for accuracy and completeness. May assist in the training and development of geological personnel.	General supervision over area. Available for consultation by subordinates 24-hour basis, but normally constantly available during day shift only.
Bachelor's degree in Engineering or Applied Science or its equivalent, normally with three to five years' related working experience since the graduation.	B.Sc. in Geology or Geophysics with normally five to ten years of related experience, or a Master's Degree in Geology or Geophysics with four to six years of related experience.	Bachelor's degree in Engineering or Applied Science or its equivalent, normally with five to eight years' experience from graduation, preferably including three to five years in a supervisory capacity.
A — 70 B — 65 C — 50 D — 60 E — 40 F — 15 G — 5 H — 5 I — 0 J — 10 K — 0	A — 70 B — 65 C — 70 D — 80 E — 45 F — 20 G — 3 H — 8 I — 0 J — 5 K — 3	A — 70 B — 65 C — 60 D — 70 E — 50 F — 20 G — 20 H — 10 I — 5 J — 0 K — 5
320	369	375

	Project Engineer	Supervising Engineer
Summary	Acts in a staff role in the design of buildings and machinery. Coordinates design work of subordinates and supervises construction in the course of duties, may supervise a group of ten other engineers, technicians and draftspersons.	Supervises an engineering group of up to about ten professional and/or non-professional technical people performing a variety of duties, normally in a single field of engineering, e.g. structural design, mechanical design, electrical design or concerned with a single product design.
Duties	<ul style="list-style-type: none"> - Prepares studies and financial analyses of proposed capital expenditures. Advises management on choice of equipment and process design for these expenditures. Prepares specifications and orders for material and machinery for new installation; - Designs buildings and machinery, assisted by subordinates; - Prepares contracts, advises on choice of contractors, directs and supervises the selected contractors. Evaluates machinery; - Controls the project until it is completed. 	<ul style="list-style-type: none"> - Plans detailed methods of solving assigned problems such as: the design of new structures; modifications or additions to existing structures; project concerned with product improvements, manufacturing method changes, equipment or process changes; - Delegates components to staff, sees the work through to meet schedules and coordinates assignments with other groups; - Prepares or requests preparation of design notes, drawings, specifications and occasionally prototypes or models; - May give technical direction to construction or installation or design projects to ensure adherence to specifications; - Prepares or requests preparation of cost estimates, engineering studies and reports as required; - Responsible for the maintenance of engineering office files, equipment and procedures; - Confers, as required, with senior engineers and management of the company, occasionally with contractors, consultants and suppliers.
Recommendations, Decisions and Commitments	Recommendations include choice among alternatives in design, machinery and process. Will be required to devise new approaches to methods of reaching solutions. Errors could cause extra expenditures in money or time.	Recommendations will normally relate to alternatives in design or use of different materials to achieve the same purpose and are subject to review to ensure accordance with overall plans and company policies. Modifies existing engineering criteria as occasion demands by devising new approaches to the solution of problems. Errors could cause delays, possibly extending into areas where expenditures might be involved.
Supervision Received	Works under general direction and guidance in order to reach objectives. Reacts to priorities. Cooperates with peer groups.	Works under general direction and guidance following instructions relating to objectives, relative priorities and necessary cooperation with other units.
Leadership Authority	Outlines work for subordinates and review of adequacy. Responsible for personnel assigned on a permanent or temporary basis. Acts as company representative in dealing with contractors.	Makes recommendations concerning selection and termination, and is responsible for the training, rating and discipline of staff. Outlines and assigns work, and reviews it for technical adequacy.
Guide to Entrance Qualifications	Bachelor's degree in Applied Science or its equivalent, normally with seven to ten years' experience in the related field since graduation.	Bachelor's degree in Engineering or Applied Science or its equivalent, normally with nine to twelve years' experience related to the type of work since graduation.
Job Rating Factor	A — 70 B — 65 C — 70 D — 80 E — 55 F — 20 G — 10 H — 5 I — 5 J — 2 K — 5	A — 70 B — 65 C — 90 D — 80 E — 55 F — 30 G — 10 H — 5 I — 0 J — 0 K — 0
Total Points	387	405

Supervising Highway Const. Engineer	Senior Engineer - Specialist	Senior Production Engineer
Supervises highway construction projects. Responsible for hiring, firing, promotion, training and discipline of about 70 professional and other subordinates. Designs certain non-complex structures. Department representative in control of contractor's work.	Under administrative and/or high technical direction, works as a senior engineer-specialist or consultant in a particular field of engineering, development or research. Participates in planning, organizes work methods and procedures. Makes independent decisions within own sphere, usually exercising technical authority over a small group of engineer specialists.	Directs the operation of two or more complex continuous processes, i.e. chemical, mining, etc., producing large quantities of product with reliance upon engineering control and maintenance systems.
<ul style="list-style-type: none"> - Through subordinates, supervises field crews and control equipment. Administers the personnel aspect for group; - Ensures that contractors observe the terms of the contract and adhere to specifications. Authorizes changes to specifications where necessary and negotiates bids for work not covered by the contract. - Liaises between own crew or contractors and other agencies or group; - Designs certain structures such as retaining walls, culverts and super-span culverts; - Checks claims from contractors when these refer to extras or alterations to contract. 	<ul style="list-style-type: none"> - Provides specialized advice of an advanced technological nature for the solution of specific problems; - Participates in planning by providing original and ingenious approaches to the practical and economical solution of problems; - Within own specialized sphere, directs research into new resources, products, processes or methods; - Interprets and evaluates data obtained from various engineering and/or research investigations; - Keeps well informed of the latest technological developments relating to field of practice; - Ensures that staff morale is maintained at a high level by building a reputation for efficient planning and a high level of creative thinking. 	<ul style="list-style-type: none"> - Plans production in coordination with other operations and customer demand; - Assists technical control personnel in establishing standards and field tests; - Coordinates, specifies and schedules production and maintenance. Analyzes and corrects off-standard conditions with specialized technical assistance; - Accountable for quality, quantity, costs, safety and employee relations.
Recommendations are of broad scope in achievement of objectives. Required to make decisions in the field when plans and contact require alteration. Responsible for the overall performance of crews.	Makes responsible decisions, subject only to highest technical review, on all matters assigned to jurisdiction. Decisions involving large sums of money or the selection of long-range objectives are usually referred to higher authority. Takes courses of action necessary to expedite the successful accomplishment of assigned projects.	Recommends improvements in plant procedures and changes in policy. Participates in policy formulation. Approves salary increases. Has wide latitude for decisions affecting operations.
Works from generally accepted departmental policy and from established priorities. Considers relations with municipalities and other agencies affected by construction.	Work is assigned in terms of broad objectives to be accomplished, leaving wide authority within sphere, with virtually no technical guidance, but subject to general administrative control.	Broad direction received from Plant Manager in a small plant varying to limited supervision from Production Superintendent in a large plant.
Responsible for all aspects of the work of assigned subordinates.	Gives technological advice and direction to a group of professional specialists. With an appreciation of the necessity of maintaining an atmosphere of free-thinking creativity, outlines difficult problems and methods of approach. Coordinates work programs and directs use of equipment and material.	Directs activities of from 50 to over 200 people depending upon complexity of operation.
Bachelor's degree in Engineering or Applied Science or its equivalent, normally with seven to ten years' related experience since graduation.	Bachelor's degree in Engineering or Applied Science or its equivalent, normally with nine to twelve years (or Master's or other advanced degree with six or more years) of diversified research-development and/or design experience from the graduation level.	Bachelor's degree in Engineering or Applied Science or its equivalent, normally with nine to twelve years' experience since graduation including five to ten years in a supervisory capacity.
A — 70 B — 65 C — 70 D — 70 E — 50 F — 30 G — 35 H — 10 I — 5 J — 12 K — 5	A — 90 B — 90 C — 90 D — 80 E — 60 F — 40 G — 10 H — 5 I — 5 J — 0 K — 5	A — 90 B — 65 C — 90 D — 90 E — 60 F — 40 G — 40 H — 5 I — 5 J — 5 K — 3
422	475	493

	Chief Design Engineer	Engineering Manager
Summary	Directs the staff of an engineering office and coordinates the work of the design staff with that of field staff including several professional functions.	Manages a large staff, administers and coordinates several professional, sub-professional and/or mechanical trades functions.
Duties	<ul style="list-style-type: none"> - Plans and allocates work on broad general assignments with the limits of company policy; - Establishes working programs to attain objective in the most economical manner; - Acts as engineering consultant and advisor to the company; - Assists in developing and maintaining contacts inside and outside the company; - Makes direct contact with clients. 	<ul style="list-style-type: none"> - Works independently on broad general assignments with responsibility for planning associated activities, limited only by company policy; - Participates in establishing objectives and basic operating policies. Devises ways of reaching program objectives in the most economical manner and of meeting any unusual conditions affecting work progress; - Conducts the normal administrative functions related to position; - Acts as engineering consultant and advisor to the organization; - Develops and maintains top level contacts inside and outside the company.
Recommendations, Decisions and ComCommitments	Makes responsible decisions within the limits of company policy. Recommends changes in company policy. Implements policies affecting company expenditure and makes decisions affecting operations.	Makes responsible decisions without reference to superiors. Implements approved major programs involving expenditures of large sums of money. Errors in judgement could cause grave losses.
Supervision Received	Broad direction from President or Vice President of company. Work is reviewed for adherence to company policy. Occasional review of technical matters.	Work is reviewed for accomplishment, adherence to company policy and coordination with other phases of company's operations.
Leadership Authority	Selects, rates, disciplines and terminates staff. Reviews and evaluates technical work. Coordinates staff requirements and disposition to suit schedule of work in hand and work planned. Allocates work to various section or project heads.	Makes decisions regarding the selection, development, rating, discipline and termination of staff. Reviews and evaluates technical work. Selects, schedules and coordinates to attain program objectives.
Guide to Entrance Qualifications	Bachelor's degree (Honours preferred) in Engineering and broad engineering experience of fifteen years or more, of which about three to five years should have been in responsible administrative duties.	Bachelor's degree in Engineering or Applied Science or its equivalent, normally with broad engineering experience including responsible administrative duties.
Job Rating Factor	A — 130 B — 65 C — 113 D — 90 E — 70 F — 60 G — 20 H — 5 I — 0 J — 5 K — 3	A — 130 B — 65 C — 138 D — 105 E — 80 F — 60 G — 40 H — 5 I — 0 J — 0 K — 0
Total Points	561	623

Use of Point Count Results

After completing the Job Rating Summary, refer to the chart below in order to determine the **classification** of the job. As it is not practical to have a pay range for each point count, jobs are classed together in one level or classification.

Point Count	Classification
0 to 250	A
251 to 300	B
301 to 375	C
376 to 480	D
481 to 595	E
596 to 700	F
over 700	F+

The following table correlates responsibility level with years of experience. This table is provided for use as a general check of self-evaluation.

FIGURE 2

APEGGA 2001 Employer Salary Survey							
Years of Experience by Level of Responsibility							
All Professions - All Organizations							
		2001 Years of Experience					
Level	Total Eng, Gl, Gp	Mean	D ₁	Q ₁	Median	Q ₃	D ₉
A	382	1.0	0.0	0.0	0.0	1.0	4.0
B	434	4.0	1.0	2.0	3.0	5.0	8.0
C	558	9.0	3.0	5.0	7.0	12.0	18.0
D	884	15.0	7.0	9.0	14.0	20.0	27.0
E	890	20.0	12.0	15.0	20.0	25.0	30.0
F	606	23.0	14.0	19.0	23.0	27.0	33.0
F+	220	24.0	16.0	20.0	24.0	28.0	32.0

See Section 2 for definition of survey statistical measures (D1, Q1, etc.)

METHOD 2: JOB CLASSIFICATION GUIDE

Many companies use the generally adequate and less time consuming (but less precise) classification system commonly called the ABC system. This system broadly describes each level of responsibility according to five factors: Duties; Recommendations, Decisions and Commitments; Supervision Received; Leadership Authority and/or Supervision Exercised; and Guide to Entrance Qualifications. A copy of the description for each level of responsibility is provided in Appendix A. An abbreviated Job Classification Guide of the ABC system is shown below.

As many salary surveys are carried out using the ABC system, it is useful to be able to equate the results of the Point-Count Job Evaluation system and the Job Classification system. Application of the two systems has not been completely standardized across companies so absolute relationships cannot be set. A reasonable relationship between the two systems can established and this is shown in the chart below. Individual companies will vary to some degree.

FIGURE 3

SECTION 2

DETERMINING YOUR 2001 SALARY RANGE

INTRODUCTION

The most important variable operating to determine salary ranges for any given occupational group is the market, the relationship between the supply of and the demand for the services of a particular occupational group: a single supply/demand market.

There are many factors affecting the market and those affecting the market for one occupational group are different from those affecting the market for another occupational group. Market surveys to determine the salaries paid by similar companies to members of the occupational group being studied are therefore widely used and consulted.

APEGGA MARKET SURVEY

In June of 2001 APEGGA conducted its annual Employer Salary Survey. A total of 6,846 salary statistics for Alberta engineers, geologists and geophysicists were supplied by 83 employers who are identified in Appendix B (Page 49).

Participating organizations provided salary information based on the level of responsibility of each employee's position, data on year of graduation, if available, and information on the classification of their organization.

Selected results from this year's survey are reported here and other survey results are given in Appendix B.

USING SURVEY RESULTS TO DETERMINE YOUR 2001 SALARY RANGE

To use salary survey data as a guideline it is important to consider all reported results and to keep in mind the following remuneration concepts.

- Salary is basically determined by the level of responsibility of the position.
- Salary levels vary between professional groups. Survey results are reported in Figures 4, 5 and 6.
- Salary levels also vary among industry sectors. Survey results are reported in Figures 7 and 8.
- Data on weekly hours of work and overtime payment are given in Figures 12, 13, and 14 in Section 5 (Pages 35 – 37).
- Data on Additional Cash Compensation is noted in Figure 15.
- Salaries by year of graduation should only be used as a check on career progress relative to others of an equivalent age and as a check on the more basic level-of-responsibility concept. Figure B2 in Appendix B provides survey results on salaries by year of graduation and level of responsibility.

SURVEY NOTES

- The salaries quoted in the tables that follow are base salaries in effect as of June 2001. Base salaries include cost of living allowances, bonuses which have a continuing relationship to salary, pay for holiday days (statutory and declared) and vacation days. The base salary does not include bonuses based on unusual performance or which do not become, for the next year or the next pay period, part of the base salary. Commissions, fringe benefits, profit sharing are not included.
- The statistical measures used in compiling the tables are:
 - Mean:** Numerical average. The mean is not shown where there are fewer than three observations.
 - Low Decile (D1):** 90% of the salaries were above this point and 10% were below it. The decile rate is not shown where there are fewer than 11 observations.
 - Low Quartile (Q1):** 75% of the salaries were above this point and 25% were below it. The low quartile rate is not shown where there are fewer than 11 observations.
 - Median:** 50% of the salaries were above this point and 50% were below it. The median rate is not shown where there are fewer than five observations.
 - High Quartile (Q3):** 25% of the salaries were above this point and 75% were below. The high quartile rate is not shown where there are fewer than five observations.
 - High Decile (D9):** 10% of the salaries were above this point and 90% were below it. The high decile rate is not shown where there are fewer than 11 observations.
- Where no significant differences were found between salaries paid to engineers, geologists and geophysicists in a particular industry sector, or where there was insufficient data to break responses down by professions, data from all three professions were combined into a single table for that specific industry sector. Resource Exploitation (oil & gas) was the only industry sector where sufficient data was available to report professions separately.
- Negative figures are indicated by parentheses.

ANNUAL SALARIES BY LEVEL OF RESPONSIBILITY

FIGURE 4

Engineers - All Industries								
Level	# of Engs.	Change in Mean 00-01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	563	1.9	45,420	39,300	42,000	45,420	48,708	51,396
B	595	6.7	53,850	46,500	50,045	54,000	57,200	60,600
C	1,124	5.4	66,070	56,772	61,188	65,986	69,586	75,600
D	1,487	3.3	79,308	67,886	72,864	78,780	85,200	91,100
E	1,293	3.2	96,260	81,900	89,000	97,200	103,968	109,260
F	700	4.6	112,869	93,000	102,300	112,200	121,200	132,000
F+	268	5.8	133,361	110,000	120,000	128,100	140,200	165,000

FIGURE 5

Geologists - All Industries								
Level	# of Geols.	Change in Mean 00-01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	36	8.2	48,626	45,000	47,500	49,200	50,064	51,192
B	41	8.7	54,544	49,824	52,800	54,000	56,700	60,540
C	74	9.9	68,279	58,905	62,773	67,652	72,576	78,000
D	103	11.6	87,911	76,800	81,216	88,200	93,450	97,392
E	145	5.3	104,647	96,900	100,700	104,400	109,000	114,000
F	137	3.6	121,006	111,300	115,836	120,000	124,800	131,700
F+	35	5.3	144,625	120,700	125,000	133,750	146,850	170,000

FIGURE 6

Geophysicists - All Industries								
Level	# of Geophs.	Change in Mean 00-01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	10	10.9	50,471	47,500	48,792	49,200	50,760	51,192
B	14	7.5	56,172	52,000	54,924	56,000	57,750	59,200
C	20	6.2	71,162	58,140	60,660	70,000	79,000	83,000
D	30	8.2	88,893	79,000	80,600	89,103	94,000	98,800
E	89	2.7	105,130	95,551	99,840	105,000	110,772	113,784
F	66	5.8	122,922	113,100	117,300	120,750	123,600	132,900
F+	16	(2.6)	136,168	123,200	125,200	132,000	135,500	144,000

ANNUAL SALARIES BY INDUSTRY SECTOR

FIGURE 7

Engineers by Industry Sector								
CONSULTING SERVICE								
Level	# of Engineers	Change in Mean 00-01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	101	4.7	40,141	34,528	39,000	41,067	42,500	44,012
B	92	10.6	47,193	42,994	44,800	46,900	49,433	51,090
C	94	5.5	57,010	51,929	53,177	56,800	60,000	63,800
D	86	(1.4)	68,699	60,100	63,107	68,848	72,800	77,800
E	106	(2.0)	79,210	70,586	73,800	79,997	84,009	87,279
F	93	(2.0)	94,940	87,400	90,000	93,600	100,035	105,000
F+	44	3.8	122,281	105,000	110,000	119,808	125,015	150,010
ENGINEERING, PROCUREMENT AND CONSTRUCTION								
Level	# of Engineers	Change in Mean 00-01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	182	1.2	46,477	40,000	44,000	46,200	49,200	51,800
B	200	6.7	57,462	51,397	54,000	57,000	60,540	63,300
C	296	4.8	70,478	60,000	65,395	70,200	75,000	79,200
D	391	3.6	85,116	75,858	80,400	85,009	89,400	94,746
E	385	3.5	100,085	89,000	95,000	100,800	105,600	109,200
F	211	7.7	117,113	105,789	110,496	116,400	121,126	127,929
F+	70	10.2	134,352	120,000	123,984	128,400	136,992	155,305
RESOURCE EXPLOITATION - EXCEPT OIL & GAS								
Level	# of Engineers	Change in Mean 00-01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	2	NO DATA REPORTED AT THESE LEVELS						
B	2							
C	2							
D	7	(7.9)	72,251	68,210		72,060		76,050
E	7	(1.7)	95,530	92,950		95,610		98,000
F	6	5.8	119,838	101,030		118,500		160,500
F+	0	NO DATA REPORTED AT THIS LEVEL						

FIGURE 7 (con't.)

Engineers by Industry Sector								
RESOURCE EXPLOITATION - OIL & GAS								
Level	# of Engineers	Change in Mean 00-01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	83	2.4	48,784	46,000	47,481	49,200	50,400	51,000
B	106	3.3	54,456	51,600	53,040	54,700	56,000	57,420
C	195	6.7	68,309	60,000	62,700	67,000	72,800	78,620
D	258	6.4	85,818	74,800	79,620	85,000	91,200	98,800
E	362	5.0	103,701	94,500	99,000	103,000	108,000	113,000
F	287	2.2	121,696	110,000	114,300	120,000	124,800	134,400
F+	131	(4.4)	145,200	123,800	127,100	134,600	148,400	193,600
MANUFACTURING - DURABLES (Includes machinery, equipment, tools, furniture, wood, concrete, steel and plastic products.)								
Level	# of Engineers	Change in Mean 00-01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	67	16.5	50,275	46,200	47,880	50,364	51,900	54,000
B	60	20.5	58,877	53,148	57,000	59,360	60,996	63,000
C	148	15.2	68,556	61,600	65,986	67,785	70,740	76,800
D	168	18.5	85,105	74,195	79,361	86,268	89,700	95,748
E	325	9.6	102,490	92,762	97,089	101,436	109,369	112,200
F	126	8.8	126,043	109,008	118,364	123,912	133,680	147,720
F+	24	18.9	133,853	111,815	118,800	130,008	146,850	155,000
MANUFACTURING - NON-DURABLES (Includes food products, beverages, rubber, leather, textiles, pharmaceuticals, chemicals, plants, and pulp & paper.)								
Level	# of Engineers	Change in Mean 00-01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	43	2.7	47,580	42,000	44,000	47,320	49,590	51,600
B	40	3.0	53,389	50,232	51,612	53,040	54,624	58,100
C	59	2.3	69,722	60,168	63,200	66,852	75,000	81,500
D	129	4.0	79,546	73,236	75,252	77,856	81,600	90,000
E	87	0.6	91,100	83,940	86,448	89,112	92,844	100,000
F	40	(6.2)	105,763	95,652	100,200	104,472	107,544	115,000
F+	19	(9.4)	120,500	113,376	115,764	119,340	119,340	125,304

FIGURE 7 (cont'd.)

Engineers by Industry Sector								
SERVICE - NOT FOR PROFIT (Includes governments and their controlled R & D organizations, regulatory agencies, educational and health care organizations, and Crown corporations.)								
Level	# of Engineers	Change in Mean 00-01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	66	0.8	42,765	38,904	40,680	42,540	44,544	47,400
B	70	0.2	49,908	44,601	46,584	48,998	52,620	55,776
C	290	1.7	63,437	55,876	60,276	64,188	67,428	67,428
D	344	3.2	72,768	66,257	68,117	72,444	75,756	80,676
E	105	4.8	82,452	74,347	78,751	82,202	82,865	90,640
F	57	10.2	98,503	85,267	89,362	94,300	108,130	117,500
F+	13	3.0	111,410	100,009	100,900	104,213	113,568	131,469
SERVICE - FOR PROFIT (Includes transportation companies [pipeline, truck, etc.], storage, computer sales/maintenance, financial services, general sales and supply-wholesale or retail-manufacturers' associations.)								
Level	# of Engineers	Change in Mean 00-01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	20	(6.8)	41,891	38,563	38,954	39,913	45,081	47,254
B	0	NO DATA REPORTED AT THIS LEVEL						
C	21	(9.4)	57,402	51,991	54,047	56,650	60,017	65,796
D	37	(7.0)	69,009	62,327	65,459	70,059	72,525	73,308
E	17	0.6	86,515	80,199	84,642	85,484	88,792	89,196
F	3	NO DATA REPORTED AT THESE LEVELS						
F+	0							
UTILITY - RATE CONTROLLED								
Level	# of Engineers	Change in Mean 00-01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	32	5.1	46,601	43,500	43,500	45,756	48,000	50,700
B	54	5.9	52,327	47,760	50,400	53,040	54,000	55,416
C	79	6.0	64,744	59,676	63,000	65,808	66,720	68,700
D	172	4.7	78,701	72,132	74,988	79,140	81,852	84,108
E	121	5.7	94,464	86,292	89,400	94,632	99,108	102,684
F	70	12.5	106,292	96,876	101,184	104,532	111,564	116,000
F+	16	9.4	130,057	123,108	126,000	130,000	132,000	132,168

FIGURE 7 (con't.)

Engineers by Industry Sector								
ADVANCED TECHNOLOGIES			*New Category for 2001					
Level	# of Geols.	Change in Mean 00-*01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	13	N/A	46,326	42,000	45,200	46,500	48,300	48,300
B	26	N/A	52,440	47,600	48,000	53,800	55,650	56,650
C	34	N/A	61,724	58,000	58,000	60,000	65,000	68,000
D	28	N/A	76,266	64,800	70,100	76,000	81,000	86,100
E	12	N/A	88,622	74,400	89,700	90,000	92,000	94,760
F	10	N/A	102,585	76,500	100,000	102,000	108,000	110,250
F+	2	NO DATA REPORTED AT THIS LEVEL						

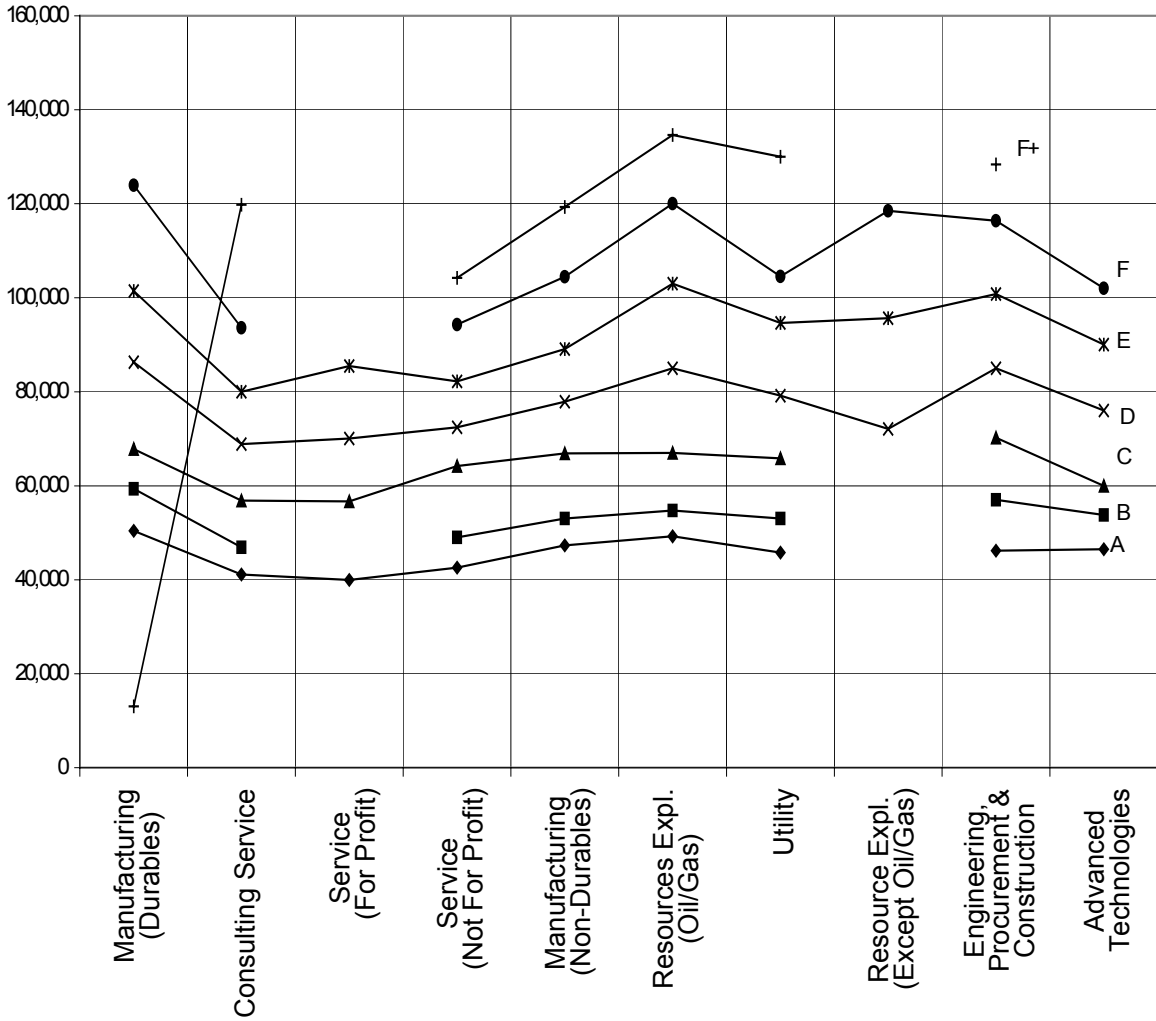
FIGURE 8

Geologists by Industry Sector								
RESOURCE EXPLOITATION - OIL & GAS								
Level	# of Geols.	Change in Mean 00-01%	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	17	3.6	48,696	45,000	47,500	49,200	50,000	50,500
B	26	2.1	53,599	49,824	52,400	54,000	55,500	56,000
C	28	1.9	67,209	58,080	60,564	65,000	71,100	78,000
D	57	7.6	88,484	76,704	80,100	88,000	93,000	102,000
E	90	4.4	104,592	96,900	100,800	104,160	107,940	113,100
F	107	1.8	120,797	112,000	115,000	120,000	123,100	130,000
F+	25	(2.1)	147,724	120,700	125,000	132,000	156,300	173,000

NOTE: Annual Salaries by Industry - Geophysicists - see Figure 6, Page 21.

FIGURE 9

**Median Yearly Salaries of Engineers, Geologists & Geophysicists
By Industry Type
June 2001**



SECTION 3

DETERMINING 2001 TO 2002

SALARY ADJUSTMENT

The market varies from year to year. After identifying your market salary for 2001 (Section 2), you should then examine the current market pressures on salaries.

1. INFLATION FACTOR

The inflation factor adds an amount (usually expressed in percent) to allow for the percentage increase in the Consumer Price Index (a restoration of the value of the dollar concept). National CPI increases as well as those for Alberta, Edmonton and Calgary are supplied below.

FIGURE 10

Consumer Price Increase Index (1991= 100)				
Year-Over-Year Percent Change				
	Canada	Alberta	Edmonton	Calgary
1991	5.6	5.9	5.6	6.0
1992	1.5	1.5	1.8	1.4
1993	1.8	1.2	0.8	1.3
1994	0.2	1.5	1.6	1.4
1995	2.5	2.4	1.9	2.7
1996	2.3	2.3	2.0	2.8
1997	1.8	1.8	1.6	2.0
1998	1.0	1.5	1.2	1.9
1999	1.8	2.1	2.1	2.0
2000	3.0	4.0	3.7	4.4
2001	2.8*	2.7*	2.7*	2.7*

* Estimated

2. PRODUCTIVITY FACTOR (Increase in Gross Domestic Product)

In addition to the percentage increase in the CPI, an amount is added to allow for sharing in economic growth. (The Gross Domestic Product is now used as the main aggregate for measuring Canada's economic development.)

Note: In its September 2001 report, the TD Bank Financial Group reported an expected 4.0 percent real GDP growth in the Alberta economy for 2001, and a forecast 2.8 percent real GDP growth for 2002.

3. DEMAND FACTOR

It is anticipated in 2002, that there will be reasonably strong demand in Alberta for many of the engineering and geoscience disciplines, despite considerable economic uncertainty in the world. While it is expected that demand factors for specific professions and industry sectors will vary considerably, an overall demand factor for the three professions is estimated at 1.0%. Members who are aware that their expertise is in short supply may want to use a higher estimate for their demand factor; members who are aware that supply in their field of practice is abundant, may want to use a lower estimate.

EXAMPLE

Using the factors outlined under our example, the June 2001 survey data in Section 2 can be adjusted to June 2002 by adding what you estimate the increase will be for each of three factors for the 12-month period.

The salary adjustment estimates (as explained under each factor) are as follows:

Inflation Factor (CPI)	2.7%
Productivity Factor (GDP)	2.8%
Demand Factor	<u>1.0%</u>
Estimated Salary Adjustment from 2001 to 2002	6.5%

This example is illustrative only. Individual situations may vary considerably.

FIGURE 11

APEGGA Employer Salary Surveys Percent Change in Mean Salaries By Level of Responsibility – 1991to 2001										
ENGINEERS										
Level	91-92 %	92-93 %	93-94 %	94-95 %	95-96 %	96-97 %	97-98 %	98-99 %	99-00 %	00-01 %
A	2.3	0.8	(0.7)	0.8	1.2	5.3	6.8	0.6	4.2	1.9
B	1.0	2.2	1.8	0.3	1.7	4.0	5.0	(0.5)	1.9	6.7
C	3.4	0.8	0.6	1.2	0.1	1.8	5.4	2.5	2.8	5.4
D	(0.3)	2.2	1.6	(0.5)	1.4	2.3	5.3	3.6	2.6	3.3
E	(0.7)	2.5	1.6	0.0	2.2	2.1	6.3	2.8	4.6	3.2
F	(1.4)	3.2	1.4	1.5	0.2	2.3	6.7	4.6	1.9	4.6
F+	(2.3)	3.9	2.2	1.6	(5.0)	4.3	7.6	5.1	0.6	5.8
GEOLOGISTS										
Level	91-92 %	92-93 %	93-94 %	94-95 %	95-96 %	96-97 %	97-98 %	98-99 %	99-00 %	00-01 %
A	(6.8)	6.1	0.5	7.6	5.1	0.6	9.2	1.3	1.1	8.2
B	(0.3)	0.7	0.7	1.4	5.8	1.3	5.4	2.5	1.6	8.7
C	0.5	(0.8)	1.3	6.4	1.6	(0.3)	6.4	1.9	2.0	9.9
D	(1.6)	2.1	1.4	3.3	1.8	0.2	5.9	(2.5)	4.6	11.6
E	(1.4)	1.7	(1.2)	2.0	4.1	2.5	7.0	(0.7)	4.5	5.3
F	(1.6)	0.6	0.9	2.3	(0.9)	3.7	5.1	(0.1)	5.5	3.6
F+	4.0	(0.9)	(11.2)	7.2	(1.8)	1.0	12.7	0.9	(0.7)	5.3
GEOPHYSICISTS										
Level	91-92 %	92-93 %	93-94 %	94-95 %	95-96 %	96-97 %	97-98 %	98-99 %	99-00 %	00-01 %
A	(2.6)	-	-	1.0	1.6	-	4.4	0.9	1.7	10.9
B	(3.2)	2.5	3.4	4.5	1.1	1.6	6.8	(0.6)	3.2	7.5
C	1.2	(2.1)	1.3	14.4	(0.5)	(0.2)	0.6	5.1	5.2	6.2
D	(3.6)	1.4	4.4	6.0	2.4	2.1	1.2	0.3	4.5	8.2
E	(2.8)	5.3	1.5	1.4	1.9	2.7	4.9	1.7	5.7	2.7
F	(3.9)	4.3	(2.0)	1.9	(0.7)	(0.1)	7.2	1.1	4.3	5.8
F+	(6.2)	0.0	(0.2)	6.2	(6.8)	2.8	3.0	(1.6)	15.5	(2.6)

SECTION 4

2002 SALARY EXPECTATION

STEP 1

DETERMINE YOUR LEVEL OF RESPONSIBILITY

Determine your level of responsibility (see Section 1) as you will want to make comparisons which relate to your level.

STEP 2

DETERMINE YOUR 2001 SALARY RANGE

Consult the salary survey data reported for your professional group (engineer, geologist or geophysicist) and the salary survey data reported for your industry sector in Section 2. This data plus other salary survey data on engineers, geologists and geophysicists in Appendix B will help you to determine your 2001 salary range.

STEP 3

DETERMINE 2001 TO 2002 SALARY ADJUSTMENT

Using the Example in Section 3 and/or other information available to you, determine what the estimated increase may be in salary from 2001 to 2002 Use this value to adjust your 2001 salary range in order to arrive at your 2002 salary range.

For example, the 2001 salary range for a level "C" engineer (all industries) ranges as follows:

D ₁	Median	D ₉
\$56,772	\$65,986	\$75,600

If the 2001-2002 increase in salaries is estimated to be 6.5% as shown in Example (page 28), the 2002 salary range for the level "C" engineer would be:

D ₁	Median	D ₉
\$60,462	\$70,275	\$80,514

STEP 4

2001 SALARY EXPECTATION

Performance

At this step you turn from evaluating the job to evaluating yourself, and how well you are performing the job you hold.

Performance can range from:

- (a) very low - new in the job, new in the company, with a minimum of directly related experience so that considerable and fairly close supervision is required, to
- (b) very high - five or six years in the job (assuming a "C" Level of Responsibility) so that you perform quickly (you don't have to double-check because you've handled that kind of problem before), you accomplish a great deal, it's accurate and you need little supervision (people know that you will get the job done and that it will be done well).

To illustrate further, if the level "C" engineer noted in Step 3, has a few years' experience in the job, brought no or very little directly relevant experience to the job, has come to the job from outside the company and is still having trouble arriving at a decision or makes poor decisions, submits reports that still need to be checked for accuracy, the level "C" engineer should expect to be paid in the range of \$61,000 to \$66,000 in 2001.

On the other hand, if after two years, the level "C" engineer makes good decisions quickly, presents reports and recommendations that are normally accepted, starts to see and suggest ways to improve the work and is generally accepted as a strong member of the team, the level "C" engineer should expect to be paid in the area of \$66,000 to \$70,000 per year.

Salary Trends

The APEGGA Survey collected additional information from employers on anticipated salary adjustments over the next 12 months:

- 88% of our 83 respondents estimated salaries will increase. (average increase – 3.7%)
- 3.6% of our 83 respondents estimated salaries will remain stable.
- 8.4% of our 83 had no response.

Other Considerations

- Salary is one of two major components of remuneration received by an employee; the other being benefits. In order to determine your total compensation, it is important to consider both parts. Section 5 contains information on employee benefits and compensation concepts.
- A weakness of the single market survey is that a strong market demand for the services of single occupational group will push salary rates for that group to unacceptably high levels (in relation to the level of responsibility assumed) causing dissatisfaction in related occupational groups and setting up high turnover rates later when demand declines. The opposite also happens when demand is low.

As such, salaries of an occupational group (determined by a strict application of the single market approach) are not efficient in encouraging a steady inflow of quality persons nor in encouraging persons already practicing the occupation to continue to practice. Both of these factors are of concern.

In order to stabilize salaries, some companies consider changes in the economy and actual salaries paid

to a variety of other occupational groups, as well as the trends in these.

There are many factors to consider and only some have been referred to above. However, using these factors and/or those considered important by your supervisor or company, you should be able to arrive at a dollar figure which will equate to the value of professional services you are providing for your company.

SECTION 5

COMPENSATION CONCEPTS

The total compensation of any employed individual or the total payroll cost of an employee is made up of two major segments — salary and benefits. Payroll costs do not include office space, secretarial help, insurance etc., which are created or added to when an employee is on or added to the payroll.

Salary is also made up of two parts - regular salary and overtime compensation (some employers do not provide overtime compensation). Figure 13 summarizes data obtained from the 2001 Employer Salary Survey regarding overtime compensation.

The benefit segment is made up of two parts - the time-not-worked benefits and what might be called the general benefits. Details of what is included in each segment are provided in Employee Benefits which follow.

The percentage (of the total compensation) proportions given in Figure 14 are averages which reflect values for 2001. No given company (or employee) will exactly match these.

EMPLOYEE BENEFITS

There is a wide variation of practice and opinion as to what should be classed as an employee benefit. The definitions described below have been used in this publication.

1. Quoted Yearly Salary or Base Salary

Pay for time worked at normal rates plus the cost of the time-not-worked benefits. Quoted yearly salary does not include payment of overtime.

2. General Benefits

A payment by the employer to the employee directly or to a third party on behalf of the employee to secure for the employee, an advantage or protection of benefit to the employee.

Provision by the employer or the making available of (at no or reduced cost) some facility, object or service of benefit to the employer.

(a) Cash Benefit Payments made by the employer on behalf of the employee for:

- i) pension or superannuation provisions.¹
- ii) a hospital, medical, dental, sickness, disability, life, income maintenance, etc., plan.
- iii) the Canada Pension Plan, Unemployment Insurance, Workers' Compensation plans (compulsory in Alberta).
- iv) termination or severance pay, the premium portion of premium pay, relocation assistance.

(b) No Cash Benefit Provision by the employer, at no or reduced cost to the employee, of: recreation facilities and/or equipment, food, lodging, loans, parking, transportation, educational opportunities, discounts on company products, etc.

¹ This category should not include amounts which the employer sets aside to fund what might be called incentive or productivity plans such as profit sharing plans and one-time bonus plans which are based on productivity measure. These plans should be considered and administered apart from the basic salary and benefit system in order to preserve the integrity of the basic system.

**3. Time-Not-Worked Benefits
(payments made by the employer to the employee for time not worked)**

This is included as part of the Quoted Yearly Salary.

- (a) For Monthly or Yearly Paid Employees:
Time off from work (the employee does not have to be at the place of work), or periods when the employee is at work but not working and for which there is no reduction to the quoted yearly salary.
- (b) For Hourly Paid Workers:
Payments in lieu of holiday days and vacation days.
- (c) Holiday Days
Includes the nine statutory (also called general) holidays in Alberta and declared holidays which may be declared by federal, provincial or municipal authorities (but they become a work holiday only if the employer so declares).
 - i) Statutory Holidays: New Year's Day, Family Day, Good Friday, Victoria Day, Canada Day, Labour Day, Thanksgiving Day, Remembrance Day, and Christmas Day.
 - ii) Declared Holidays: Boxing Day and Heritage Day.
- (d) Vacation Days
- (e) Other Days and/or Periods Sick Leave not covered by 2 (a)ii, travel time, clean-up time, rest and/or coffee periods, personal leave (jury duty, voting, bereavement, maternity, paternity, etc.).

EMPLOYER SALARY SURVEY COMPENSATION DATA

The APEGGA survey collected additional information on other compensation provided to employees. (see Figures 13, 14 and 15). This data indicated 91% of the organizations provide a comprehensive benefits package which includes dental, drug, long-term disability, life/accident insurance and medical plans. At least 83% of employers offered some form of pension plan.

Additional cash compensation was dispursed to approximately 38.6% of the engineers, 76.7% of the geologists and 79.2% of the geophysicists. Figures 15 reports other details on cash compensation.

Information from the survey pertaining to weekly hours of work and overtime compensation are reported in Figures 12, 13, 14, and 15. Vacation entitlement data is report in Figure 16.

FIGURE 12

**Weekly Hours of Work Based on No. of Employers (83)
June 2001**

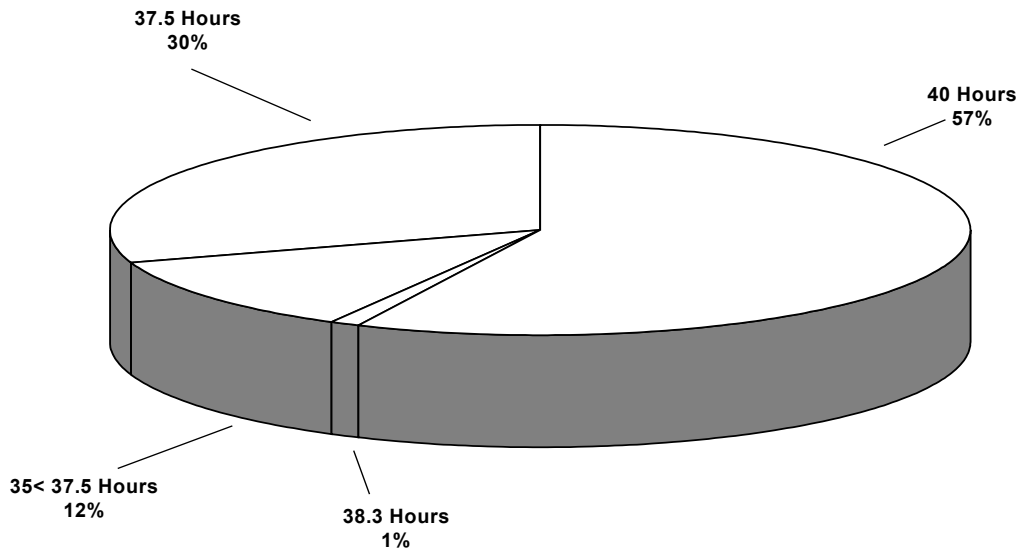


FIGURE 13

Percent of Employers Providing Overtime Compensation* (Based on Level of Responsibility - All Industries)		
Level	Cash	Time Off in Lieu
A	39%	51%
B	34%	53%
C	30%	51%
D	23%	46%
E	18%	39%
F	14%	33%
F+	10%	28%

* In some cases an employer may provide either cash or time off in lieu.

FIGURE 14

Number of Organizations Providing Additional Compensation & Benefits							
Organization Size: 1 - 500+ employees Total Organizations: 83							
Additional Compensation	Level of Responsibility						
	A	B	C	D	E	F	F+
Additional Cash Compensation							
a. Cash Bonus Payments	24	23	26	27	31	32	25
b. Profit Sharing Payments	18	17	18	19	20	17	14
c. Performance/Merit Bonus	32	31	33	33	36	35	30
d. Productivity/Gain Sharing	4	4	3	3	2	1	1
e. Commissions	0	0	0	0	1	1	1
f. Other	4	4	4	4	4	4	3
Overtime Compensation							
g. Cash	32	28	25	19	15	12	8
h. Time Off In-Lieu	42	44	42	38	32	27	23
Other Compensation							
i. Stock Options/Purchases	21	23	25	28	31	32	29
j. Car/Car Allowance	6	6	8	9	13	13	16

k. Vehicle Allowance	4	4	5	5	9	10	10
l. Consulting Fees	0	0	0	1	1	2	1
m. Other	2	3	3	4	6	9	9
Benefits Package							
n. Pension Plan	42	39	42	42	46	44	29
o. Employer Contribution to RRSP	31	30	30	30	32	29	28
p. Medical Beyond AHC	71	69	70	70	73	69	58
q. Long Term Disability	74	72	73	73	75	73	60
r. Life/Accident Insurance	74	71	73	73	77	74	62
s. Drug Plan	74	73	74	74	78	75	61
t. Dental Plan	74	72	73	73	77	74	60
u. Vision Care	50	49	50	50	53	51	41
v. Legal Plan	4	4	4	4	4	4	4
w. Savings Plan	28	28	29	29	30	28	23
x. Other	11	11	11	11	11	11	11

FIGURE 15

Additional Cash Compensation Disbursed June 2001							
ENGINEERS							
Level	# of Geols.	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	141	3,362	884	1,546	2,802	4,172	7,560
B	207	4,723	1,624	2,400	4,200	5,777	7,985
C	387	5,945	1,481	2,632	4,800	7,657	11,728
D	584	8,483	2,100	4,018	6,975	10,038	16,000
E	532	14,393	2,100	7,000	11,648	17,400	28,500
F	293	21,382	2,397	9,588	15,750	23,176	39,848
F+	187	36,286	2,100	11,000	24,351	34,588	64,000

GEOLOGISTS							
Level	# of Geols.	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	16	4,319	878	1,313	1,910	7,018	7,680
B	32	6,687	3,281	4,100	5,300	8,316	9,017
C	60	6,728	1,310	3,028	5,173	9,303	15,293
D	78	11,771	3,100	5,500	8,815	14,100	21,412
E	115	19,890	8,000	10,005	15,177	26,309	34,662
F	107	24,686	11,258	14,000	19,200	25,650	38,000
F+	30	37,137	20,200	23,200	26,700	41,200	56,748

GEOPHYSICISTS							
Level	# of Geophs.	Mean \$	D ₁ \$	Q ₁ \$	Median \$	Q ₃ \$	D ₉ \$
A	6	5,293		4,200	6,897	6,981	
B	13	5,693	3,574	4,870	5,500	6,648	7,150
C	13	5,693	3,574	4,870	5,500	6,648	7,150
D	21	9,422	5,528	6,861	7,900	11,985	17,946
E	69	21,084	9,000	10,200	16,900	32,596	35,312
F	55	23,191	10,616	12,962	17,400	25,122	37,934
F+	14	47,575	17,300	21,100	23,200	30,682	31,396

FIGURE 16

Vacation Entitlement		
Vacation Entitlement	Minimum Years of Service to Qualify	% of Employers Providing Entitlement
2 Weeks	0 - 1 Years	27%
	1 - 5 Year	5%
3 Weeks	0 - 1 Year	47%
	2 - 3 Years	17%
	4 - 15 Years	23%
4 Weeks	5 - 7 Years	12%
	8 - 10 Years	71%
	11 - 20+ Years	8%
5 Weeks	10 - 15 Years	16%
	16 - 19 Years	23%
	20 - 25 Years	27%
6 Weeks	15 - 20 Years	4%
	21 - 24 Years	10%
	25 Years	23%
	25+ Years	6%
7+ Weeks	20 - 30 Years	7%

APPENDIX A

DETAILED JOB CLASSIFICATION GUIDE

LEVEL OF RESPONSIBILITY	LEVEL A	LEVEL B
DUTIES	<p>Receives training in the various phases of office, plant, field or laboratory engineering work as classroom instruction or on-the-job assignments. Tasks assigned include: preparation of simple plans, designs, calculations, costs and bills of material in accordance with established codes, standards, drawings or other specifications. May carry out routine technical surveys or inspections and prepare reports.</p>	<p>Normally regarded as a continuing portion of an engineer's training and development.</p> <p>Receives assignment of limited scope and complexity, usually minor phases of broader assignments. Uses a variety of standard engineering methods and techniques in solving problems. Assists in carrying out technical tasks requiring accuracy in calculations, completeness of and adherence to prescribed data testing analysis, design or computation methods.</p>
RECOMMENDATIONS, DECISIONS AND COMMITMENTS	<p>Few technical decisions called for and these will be of routine nature with ample precedent or clearly defined procedures as guidance.</p>	<p>Recommendations limited to solution of the problem rather than end results. Decisions made are normally within established guidelines.</p>
SUPERVISION RECEIVED	<p>Works under close supervision. Work is reviewed for accuracy, adequacy and conformance with prescribed procedures.</p>	<p>Duties are assigned with detailed oral and occasionally written instructions, as to methods and procedures to be followed. Results are usually reviewed in detail and technical guidance is usually available.</p>
LEADERSHIP AUTHORITY AND/OR SUPERVISION EXERCISED	<p>May assign and check work of one to five technicians or helpers.</p>	<p>May give technical guidance to one or two junior engineers, or technicians, assigned to work on a common project.</p>

**GUIDE TO
ENTRANCE
QUALIFICATIONS**

Bachelor's degree in Engineering, or Applied Science, or its equivalent with little or no practical experience.

Bachelor's degree in Engineering or Applied Science, or its equivalent, normally with two to three years' working experience since graduation.

LEVEL OF RESPONSIBILITY	LEVEL C	LEVEL D
DUTIES	<p>This is typically regarded as a fully qualified professional engineering level. Carries out responsible and varied engineering assignments, requiring general familiarity with a broad field of engineering and knowledge of reciprocal effects of the work upon other fields. Problems usually solved by use of combination of standard procedures, or methods developed in previous assignments. Participates in planning to achieve prescribed objectives</p>	<p>This is typically the level of direct and sustained supervision of other professional engineers or the first level of full specialization. Requires application of mature engineering knowledge in planning and conducting projects having scope for independent accomplishment and coordination of the difficult and responsible assignments. Assigned problems make it necessary to modify established guides, devise new approaches, apply existing criteria in new manners, and draw conclusions for comparative situations.</p>
RECOMMENDATIONS, DECISIONS AND COMMITMENTS	<p>Makes independent studies, analyses, interpretations and conclusions. Difficult, complex or unusual matters of decisions are usually referred to more senior authority.</p>	<p>Recommendations reviewed for soundness of judgement but usually accepted as technically accurate and feasible.</p>

SUPERVISION RECEIVED

Work is not generally supervised in detail and amount of supervision varies depending upon the assignment. Usually technical guidance is available to review work programs and advise on unusual features of assignment.

Work is assigned in terms of objectives, relative priorities and critical areas that impinge on work of other units. Work is carried out within broad guidelines, but informed guidance is available.

LEADERSHIP AUTHORITY AND/OR SUPERVISION EXERCISED

May give technical guidance to engineers of less standing, or technicians assigned to work on a common project. Supervision over other engineers not usually a regular or continuing responsibility.

Assigns and outlines work; advises on technical problems; reviews work for technical accuracy and adequacy. Supervision may call for recommendations concerning selection, training, rating and disciplining staff.

GUIDE TO ENTRANCE QUALIFICATIONS

Bachelor's degree in Engineering or Applied Science, or its equivalent, normally with a minimum of five to six years' related working experience since graduation.

Bachelor's degree in Engineering or Applied Science, or its equivalent, normally with a minimum of seven to eight years' experience in the field of specialization since graduation.

LEVEL OF RESPONSIBILITY	LEVEL E	LEVEL F
DUTIES	<p>Usually requires knowledge of more than one field of engineering or performance by an engineering specialist in a particular field of engineering. Participates in short and long range planning; makes independent decisions on work methods and procedures within an overall program. Originality and ingenuity are required for devising practical and economical solutions to problems. May supervise large groups containing both professional and non-professional staff; or may exercise authority over a small group of highly qualified</p>	<p>Usually responsible for an engineering administrative function, directing several professional and other groups engaged in interrelated engineering responsibilities; or as an engineering consultant, achieving recognition as an authority in an engineering field of major importance to the organization. Independently conceives programs and problems to be investigated. Participates in discussion determining basic operating policies, devising ways of reaching program objectives in the</p>

professional personnel engaged in complex technical applications.

most economical manner and of meeting any unusual conditions affecting work progress.

RECOMMENDATIONS, DECISIONS AND COMMITMENTS

Makes responsible decisions not usually subject to technical review, on all matters assigned except those involving large sums of money or long-range objectives. Takes courses of action necessary to expedite the successful accomplishment of assigned projects.

Makes responsible decisions on all matters including the establishment of policies and expenditures of large sums of money and/or implementation of major programs, subject only to overall company policy and financial controls.

SUPERVISION RECEIVED

Work is assigned only in terms of broad objectives to be accomplished, and is reviewed for policy, soundness of approach and general effectiveness

Receives administrative direction based on organization policies and objectives. Work is reviewed to ensure conformity with policy and coordination with other functions.

LEADERSHIP AUTHORITY AND/OR SUPERVISION EXERCISED

Outlines more difficult problems and methods of approach. Coordinates work programs and directs use of equipment and material. Generally makes recommendations as to the selection training, discipline, and remuneration of staff.

Reviews and evaluates technical work; selects, schedules, and coordinates to attain program objectives; and/or as an administrator, makes decisions concerning selection, training, rating, discipline and remuneration of staff.

GUIDE TO ENTRANCE QUALIFICATIONS

Bachelor's degree in Engineering or Applied Science, or its equivalent, normally with a minimum of ten to twelve years of engineering, and/or administrative experience since graduation.

Bachelor's degree in Engineering or Applied Science, or its equivalent, with broad engineering experience, including responsible administrative duties.

LEVEL OF RESPONSIBILITY	LEVEL F+
DUTIES	<p>Within the framework of general policy, conceives independent programs and problems to be investigated. Plans or approves projects requiring the expenditure of a considerable amount of manpower and financial investment. Determines basic operating policies, and solves primary problems or programs to accomplish objectives in the most economical manner to meet any unusual condition.</p>
RECOMMENDATIONS, DECISIONS AND COMMITMENTS	<p>Responsible for long range planning, co-ordination, making specific and far-reaching management decisions. Keeps management associates informed of all matters of significant importance.</p>
SUPERVISION RECEIVED	<p>Operates with broad management authority, receiving virtually no technical guidance and control; limited only by general objectives and policies of the organization.</p>
LEADERSHIP AUTHORITY AND/OR SUPERVISION EXERCISED	<p>Gives administrative direction to subordinate managers and contact with the work force is normally through such levels rather than direct.</p>
GUIDE TO ENTRANCE QUALIFICATIONS	<p>Bachelor's degree in Engineering or Applied Science, or its equivalent with many years' authoritative engineering and administrative experience. The incumbent is expected to possess a high degree of originality, skill and proficiency in the various broad phases of engineering application.</p>