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A COMPARISON OF TAX INCENTIVES  
FOR PERFORMING RESEARCH AND DEVELOPMENT  
IN CANADA AND THE UNITED STATES

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**A COMPARISON OF TAX INCENTIVES  
FOR PERFORMING RESEARCH AND DEVELOPMENT  
IN CANADA AND THE UNITED STATES  
PREPARED FOR INDUSTRY, SCIENCE  
AND TECHNOLOGY CANADA BY  
DELOITTE & TOUCHE**

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**MAY, 1990**

## EXECUTIVE SUMMARY

The definitions of research and development for R&D tax incentive purposes ("Scientific research and experimental development" in Canada and "research or experimental" activities in the U.S.) are remarkably similar both in law and as assessed by the tax authorities in the respective countries. In addition, costs explicitly excluded from the list of eligible expenses for R&D tax incentive purposes are similar. There are no apparent gaps in the Canadian definition of R&D for R&D tax incentive purposes when contrasted with the definition of R&D for U.S. taxation purposes.

The two main tax measures designed to encourage R&D activities in Canada and the U.S. are the R&D expense deduction and the R&D tax credit.

R&D expenditures that qualify for deduction from taxable income in the U.S. and Canada are similar with a number of minor exceptions. In Canada, however, the taxpayer is entitled to much greater flexibility in claiming such deductions through the indefinite carry-forward of any unused portion of qualified R&D expenditures to future years. In the U.S., R&D performers must write-off qualifying R&D expenses in the year in which they are incurred or make an election to capitalize R&D expenditures and write them off over a period of not less than five years.

The Canadian tax legislation appears much more flexible and generous in respect to the R&D tax credit than does that of the U.S. Not only does Revenue Canada - Taxation offer a refund to certain tax credit recipients for the unused portion of the R&D tax credit in any given taxation year, unlike the U.S., but the R&D tax credit rate is often higher for qualifying Canadian small businesses. In addition, more R&D expenditures qualify for the credit in Canada than in the U.S. Routine continuous engineering expenditures, however, do not qualify under R&D tax credit rules in either Canada or the U.S. Finally, the Canadian tax system makes special provision for small corporations performing R&D, according them greater incentives and expeditious administrative treatment, whereas the U.S. does not distinguish between large and small corporations for R&D tax credit purposes.

Auditing R&D tax incentive claims in the U.S. is apparently less rigorous than in Canada. This would appear to result from the more generous benefits accorded companies under the Canadian R&D tax credit system. As compared to the U.S., Revenue Canada - Taxation undertakes a formalized two step audit process which includes an audit review by both a scientist and a tax specialist. The IRS, on the other hand, does not appear to allocate special resources to audit R&D tax credit claims to the same extent. As a result, fewer R&D tax credit claims are audited in the U.S..





Provincial R&D tax incentives in Canada, designed to encourage R&D within the provinces of Ontario, Quebec and Nova Scotia, are much more generous and numerous than any state incentives that exist within the U.S. Although state sponsored R&D tax incentives do exist in New York and California, R&D tax incentives at the state level are not widespread.

Outright grants, subsidies and interest reduced loans from individual provincial governments to encourage R&D are available in Canada. With the exception of certain states which encourage R&D performers by exempting them from sales tax on purchases of R&D related equipment and supplies, no similar state sponsored grant or subsidy programs exist in the U.S.

At the federal level, direct non-tax R&D incentives in the U.S. are not as prevalent as in Canada. The current U.S. administration is resistant to adopting any explicit industrial policy and has not instituted any outright grant or assistance programs to encourage R&D. However, in any comparison, one must not ignore the tremendous impact on certain segments of the R&D community of the benefits of the spending by the U.S. military establishment. In Canada, on the other hand, federally sponsored R&D specific grant and assistance programs are much more prevalent than in the U.S. As a result of the recent budget, such assistance programs in the future are more likely to be beneficial loan arrangements as opposed to outright grants. Such programs are designed to encourage R&D in very specific industrial sectors or geographic regions. In addition, a number of programs in Canada are specifically designed to encourage industry based R&D consortia. The U.S. Government, on the other hand, provides fewer direct financial assistance programs to industry based R&D consortia.

Non-tax R&D incentives and payments under government and other R&D contracts are treated similarly in the U.S. and Canada, for R&D tax credit purposes. R&D tax credits are calculated on qualified R&D expenditures net of all government grants, non-tax incentives or payment amounts for R&D performed on a contracted basis, except as noted in 6.2.2.

The automotive sector is accorded no special treatment under R&D tax incentive provisions in either country. The North American automobile and auto parts industries will continue to experience frustration in realizing their R&D tax credit claims. The integration of R&D and manufacturing continues to blur the line between what are qualified R&D expenditures for taxation purposes and what constitute expenditures on style changes and production line upgrades. Questionable claims will continue to be scrutinized by both the IRS and Revenue Canada - Taxation thereby generating the jurisprudence necessary on which to base future similar claims.

Software development costs are also treated similarly in both the U.S. and Canada for R&D tax incentive purposes. Provided the expenditure is qualified R&D based on generic criteria, software is treated no differently than any other R&D expenditure.

Unlike Canadian R&D tax incentives, the U.S. incentives are subject to periodic reviews. Each review raises another opportunity to change U.S. R&D tax incentives. Consequently, U.S. R&D performers cannot depend on current R&D tax provisions being in existence over the longer term and have difficulty planning around such legislative changes. In Canada, on the other hand, since 1985, R&D policy has been relatively static and the Canadian Government appears genuinely committed to encouraging R&D through its R&D incentives (both tax and non-tax), and its industrial and regional policies. Such commitment creates a more certain legislative environment in which R&D performers can operate.

The current Canadian system of R&D tax incentives caters specifically to the smaller Canadian R&D performer. Such performers have demonstrated their support for R&D tax incentives by working with Government, in a remarkable example of co-operation, in an effort to fully tailor the system to meet their specific needs. It appears the current Canadian system is most effective in encouraging R&D activities among smaller companies. Some large R&D performers, on the other hand, continue to be frustrated by the current system in both countries and might benefit more from a reduction in the corporate tax rate than by an increased credit amount or a more liberal R&D tax incentive system.

The Canadian system provides Canadian corporations with a significant cost advantage over U.S. firms when vying for R&D work in the U.S. The Canadian R&D tax incentive system is more flexible and generous than that of the U.S. Non-tax incentives offered by the federal and provincial governments add to the competitiveness of Canadian R&D performers when competing with foreign companies for R&D work.



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## CHAPTER 1

### 1.0 THE DEFINITION OF R&D

#### 1.1 The Canadian Definition

In Canada, for taxation purposes, "scientific research and experimental development" is defined as:

a systematic investigation or search carried out in a field of science or technology by means of experiment or analysis.

This definition includes activities in three areas:

- Basic research, namely, work undertaken for the advancement of scientific knowledge without a specific practical application in view;
- Applied research, namely, work undertaken for the advancement of scientific knowledge with a specific application in view; or
- Development, namely, use of the results of basic or applied research for the purpose of creating new, or improving existing materials, devices, products or processes,

and where such activities are undertaken directly in support of a systematic investigation or search carried out in a field of science and technology by means of experiment or analysis.

Development includes activities with respect to engineering or design, operations research, mathematical analysis or computer programming and psychological research.

Canadian income tax regulations provide that "scientific research and experimental development" excludes:

- market research and sales promotions;
- quality control or routine testing of material, devices or products;
- research in the social sciences or the humanities;
- prospecting, exploring or drilling for or producing minerals, petroleum or natural gas;
- the commercial production of a new or improved material, device or product or the commercial use of a new or improved process;
- style changes;
- routine data collection.



## 1.2 The U.S. Definition

In the U.S., although no formal definition of "research or experimental" activities exists under section 174 of the Internal Revenue Code, the Internal Revenue Service has issued regulations defining the term as follows:

- expenditures incurred in connection with the taxpayer's trade or business which represent research and development costs in the experimental or laboratory sense. The term includes generally all such experimental or laboratory costs incident to the development or improvement of an experimental or pilot model, a plant process, a product, a formula, an invention, or a similar property. It includes research and experimentation aimed at the discovery of new knowledge and research or experimentation searching for new applications of either research or experimentation findings or other knowledge.

Expenditures incurred after the point that the product or property (or component of the product or property ) meets its basic design specifications related to function and performance level generally will not qualify as research or experimental expenditures under Section 174. An exception is made for expenditures relating to modifications to the basic design specifications for the purpose of curing significant defects in design, obtaining significant cost reductions or achieving significant enhanced function or performance level. The notion of "significant" creates an obstacle to incremental improvements qualifying as formal R&D.

The term "research and experimental expenditure" does not include any cost incurred in connection with the following activities unless the expenditures relating to such activities qualify separately under Section 174:

- efficiency surveys or management studies;
- consumer surveys, market development, or market testing (including market research, advertising, or promotions);
- the routine or ordinary testing or inspection of materials or products for quality control;
- activities relating to the management functions or techniques developed primarily for internal use of the taxpayer in its trade or business and not generally intended for sale to customers;
- activities not directed at the functional aspects of products including expenses relating to style, taste, cosmetic, or seasonal design factors;
- activities relating to the implementation of commercial production;
- the construction of duplicate prototypes used for market testing purposes or held for sale;

- the adaption of an existing capability to a particular requirement or customer's need;
- routine data collection;
- the acquisition of another person's patent, model or production process;
- literary, historical or similar projects. However, the term includes the cost of obtaining a patent.

1.3 Comparison and Commentary

- Activities that are considered research and development in Canada and the U.S., for purposes of R&D tax incentives, appear similar.



## CHAPTER 2

### 2.0 THE R&D EXPENSE DEDUCTION

#### 2.1 The Nature of the Deduction

##### 2.1.1 U.S.

In the U.S. a taxpayer may elect to deduct research or experimental expenditures paid or incurred "in connection with" a present or future trade or business or he or she can amortize these research and development costs over a period not less than 60 months, beginning with the month the taxpayer first realizes benefits from the results of such research. A U.S. taxpayer cannot write-off the cost of capital equipment purchased in the year, however, the tax depreciation expense of such equipment will qualify for the deduction. In addition, R&D performers in the U.S. can immediately write-off current R&D expenses incurred outside of the U.S.

In the U.S. there are no specific carry-forward provisions for R&D expenses. Eligible expenses must be written-off in the year in which they are incurred or, by tax election, amortized over future years, beginning at the time the R&D project translates into actual product.

##### 2.1.2 Canada

In Canada, a taxpayer may immediately write-off current R&D expenses and capital R&D expenditures made in Canada. The taxpayer can also choose to defer or claim such expenditures in a future year. In addition, R&D performers in Canada can immediately write-off current R&D expenses incurred outside of Canada. Capital R&D expenditures outside of Canada are subject to the normal capital cost allowance rules.

#### 2.2 Deductible R&D Expenses

##### 2.2.1 U.S.

In the U.S., the following expenses are eligible for deduction:

- In-House R&D Expenditures:
  - a) Direct costs;
  - b) Depreciation of property used in the conduct of research;





c) Costs of obtaining a patent.

- Costs of research carried out on the taxpayer's behalf by another person, provided that the taxpayer owns the technology developed.

2.2.2 Canada

In Canada, the following expenses are eligible for immediate write-off or indefinite carry-forward:

- in-house R&D expenditures undertaken by any corporation resident in Canada;
- costs of research carried out on the taxpayer's behalf by an approved association, educational institution or non-profit corporation;
- expenditures with respect to depreciable property;
- costs of research carried out on the taxpayer's behalf by other corporations resident in Canada including associated corporations, provided that the taxpayer owns the technology developed.



### 2.3 Comparison and Commentary

The following matrix compares the deductibility of certain types of R&D expenditures in Canada and the U.S.:

#### Eligible Deduction of R&D Expenses

| <u>Expense</u>                      | <u>Canada</u>    | <u>U.S.</u>              |
|-------------------------------------|------------------|--------------------------|
| • Land                              | No               | No                       |
| • Wages                             | Yes              | Yes                      |
| • Contract R&D                      | Yes              | Yes                      |
| • Buildings                         | CCA <sup>1</sup> | Depreciated <sup>1</sup> |
| • Acquired Technology               | No <sup>2</sup>  | No <sup>2</sup>          |
| • New and Used Equipment            | Yes              | Depreciated              |
| • License                           | Yes              | Yes                      |
| • Patented Technology               | Yes <sup>3</sup> | Yes <sup>3</sup>         |
| • Acquired Patents                  | Yes <sup>4</sup> | Yes <sup>4</sup>         |
| • Contracted R&D in Home Country    | Yes              | Yes                      |
| • Contracted R&D in Foreign Country | Yes              | Yes                      |
| • Foreign Depreciable Property      | CCA              | Depreciated <sup>5</sup> |

#### LEGEND:

- <sup>1</sup> Depreciated under Capital Cost Allowance rules in Canada and over 7 years in the U.S.
- <sup>2</sup> Limited write-off in Canada as an eligible capital expenditure. In the U.S., it can be amortized if the useful life of the technology can be proven.
- <sup>3</sup> In both Canada and the U.S., the cost of patented technology is deductible over the life of the patent.
- <sup>4</sup> In both Canada and the U.S., the cost of obtaining a patent is deductible over the life of the patent as an amortization expense.
- <sup>5</sup> In the U.S., acquired depreciable property situated in a foreign country is amortized at a slower than normal rate.



## CHAPTER 3

### 3.0 THE R&D TAX CREDIT IN CANADA AND THE U.S.

#### 3.1 The Nature of the Credit

##### 3.1.1 U.S.

In the U.S., a non-refundable R&D tax credit is available for certain qualified research and experimental expenditures paid or incurred in carrying on an active trade or business of the taxpayer, but only to the extent that current year research expenditures exceed the average annual amount of such expenditures in the specified base period. This base period was formerly the three immediately preceding taxation years. Under the 1989 Tax Act, the base is a fixed ratio of research and experimentation expenses to gross receipts for any five years during 1983-1988. The base is deemed always to be at least 50% of current year's research and experimental expenditures. The total R&D credit for the current year equals 20% of this incremental research amount.

Subject to certain exclusions, the 1981 Tax Act provision adopted the U.S. definition of research presented in Chapter 2. Expenditures for research qualifying for the R&D tax credit consisted of :

- in-house expenditures for salaries and wages, supplies, and the leasing of personal property for the conduct of qualified research;
- 65% of the amounts paid to others for contract research conducted on the taxpayer's behalf; and
- 65% of payments by a corporate taxpayer to universities and other non-profit, tax-exempt research organizations for the conduct of basic research.

The credit under the 1981 Tax Act was applicable to research expenditures paid or incurred after June 30, 1981 and before January 1, 1986.

The Tax Reform Act of 1986 (1986 TRA) extended the R&D tax credit for expenditures incurred after December 31, 1985. The 1986 TRA:



- reduced the credit rate to 20% from the previous 25% for taxable years beginning after 1985;
- adopted a new and more limited definition of qualified research;
- excluded expenses of leasing personal property from qualified research expenditure; and

Finally, the 1989 Tax Act changed the calculation of the credit but did not change the definition of qualified R&D. Under the 1989 Tax Act, the credit will expire during 1990 unless further extended by legislation. In addition, under the 1989 Tax Act, the amount of the R&D tax credit that is received reduces the amount of R&D deduction available to the taxpayer.

### 3.1.2 Canada

In Canada, a 20% R&D tax credit, known as the investment tax credit, is allowed for the amount of net qualifying scientific research and experimental development expenditures. The credit is increased to 30% in the Maritime provinces and the Gaspé peninsula of Quebec. The credit is increased to 35% for qualifying Canadian-controlled private corporations (CCPC's). The credit is considered to be income for tax purposes in the year following the year it is applied to reduce federal taxes payable.

For qualifying CCPCs, the applicable investment tax credit is 35% of the first \$2 million of qualifying R&D expenditures where the following conditions are met:

- the corporation was a Canadian-controlled private corporation throughout the taxation year; and
- the corporation's taxable income, together with the taxable incomes of all its associated corporations, was less than or equal to \$200,000 in the preceding taxation year.

R&D tax credits, earned by a taxpayer may be used to offset federal taxes payable for the year, within limits. Federal taxes payable of a corporation earning 100% active business income may be offset in the following manner:

|                                 | <u>Non CCPC</u>          | <u>CCPC with<br/>taxable<br/>income<br/>below<br/>\$200,000</u> | <u>CCPC with<br/>taxable<br/>income<br/>above<br/>\$200,000</u> |
|---------------------------------|--------------------------|---|---|
| First<br>\$24,000               | 75% of Tax<br>and surtax | 100% of Tax<br>except surtax                                    | 100% of Tax<br>except surtax                                    |
| Tax in<br>excess of<br>\$24,000 | 75% of Tax<br>and surtax |   | 75% of Tax<br>and surtax  |

Any R&D tax credit not used or refunded in the year in which it is earned may be carried back three years and forward ten years.

### 3.2 Eligible Expenditures for the Credit

#### 3.2.1 U.S.

In the U.S., qualified research expenditures for the R&D tax credit are broadly defined as either qualified in-house research expenses or qualified contract research expenses paid to third parties. The term "qualified research" is defined as research which is eligible for the R&D expense deduction (as discussed in Chapter 2), except that the research must relate to a business presently carried on by the taxpayer (pursuant to the 1989 Tax Act, the research tax credit is expressly made available to "start-up" companies). The research must be undertaken for the purpose of discovering information which is technical in nature and the application of which is intended to be useful in the development of a new or improved product, process, computer software, technique, formula or invention which is to be held for sale, lease or license, or to be used by the taxpayer in trade or business.

Certain specified activities do not qualify as research for the purposes of the U.S. R&D tax credit. In addition research conducted in relation to style, taste, cosmetic, or seasonal design factors do not qualify. The prohibited activities include:





- research conducted in relation to a product after the beginning of the commercial production of that product;
- research related to the adaption of an existing product to a customer's particular requirement or need;
- research related to the reproduction of an existing product from a physical examination of the product itself, or from plans, blueprints, detailed specifications, or publicly available information on the product (reverse engineering);
- research related to any efficiency study, activity relating to management function or technique, market research, routine data collection, routine or ordinary testing or inspection for quality control;
- research conducted outside the U.S.;
- research in the social sciences, arts, or humanities;
- research funded by grant, contract or otherwise by another party.

### 3.2.2 Canada

In Canada, net qualifying scientific research and development for R&D tax credit purposes means the actual amount of R&D expenditure (as defined for deduction purposes) reduced by government grants, domestic contract payments, reimbursements under domestic cost-sharing arrangements, and other forms of government or non-government assistance for the expenditure.

Canadian tax legislation limits the eligibility of certain expenditures that may otherwise qualify as R&D for deduction purposes. A number of prescribed expenditures will not qualify for the R&D tax credit (with certain exceptions explained in Section 3.2.2.1):

- general and administrative expenses including salaries of non-R&D personnel to the extent that they would have been incurred if the R&D had not been carried on;
- legal or accounting fees;
- interest or other financing costs;
- entertainment;
- advertising or selling expenses;
- convention expenses;
- membership fees;
- fines or penalties;
- expenditures to acquire rights in or arising out of scientific research and experimental development;

- capital expenditures not "all or substantially all" utilized in R&D activities;
- expenditures made outside of Canada;
- expenditures to acquire "used fixed assets".

### **3.2.2.1 The "All or Substantially All" Exception to the Canadian Rule**

In Canada, Regulation 2902 under the Income Tax Act lists certain types of "prescribed expenditures" that do not qualify for the R&D tax credit (presented above). This regulation also contains an exempting provision. To qualify for the exemption, costs must be incurred "by a taxpayer who derives all or substantially all of his revenue from the prosecution of scientific research and experimental development or the sale of rights arising out of scientific research and experimental development carried on by him". Qualifying for the exemption entitles the taxpayer to claim otherwise prescribed expenditures for R&D tax credit purposes.

Revenue Canada - Taxation's view is that "substantially all" means at least 90%. The department considers not only the particular taxation year but also the pattern of revenue established over a number of taxation years. For a start-up company, the department takes into account the manner in which the taxpayer proposes to derive his revenue.

### **3.2.2.2 Refundability of the Tax Credit in Canada**

For CCPC's who have applied for and received a 35% R&D tax credit but been unable to exhaust the entire credit by offsetting federal taxes, the unused portion of the 35% R&D tax credit is eligible for refund as follows:

| <u>Type of Qualifying Taxpayer</u> | <u>Types of Expenditure</u>            | <u>Rate at Which Investment Tax Credit can be Refunded</u> |
|------------------------------------|--|--|
| Individual                         | - current                              | 40%  |
|                                    | - capital                              | 40%  |
| Qualifying corporation             | - current (up to \$2 million per year) | 100%   |
|                                    | - capital                              | 40%  |
|                                    | - current (in excess of \$2 million)   | 40%  |

Qualifying corporation: Canadian-controlled private corporation (CCPC) whose taxable income, together with the taxable incomes of all its associated corporations was not greater than \$200,000 in the preceding taxation year.

### 3.3. After-Tax Cost of Incremental R&D Expenditures

The following tables contrast the after-tax cost of incremental R&D expenditures in both countries. This table clearly demonstrates the more generous provisions of the Canadian tax system towards R&D performers. Additional factors that make the Canadian system more generous are:

1. The ability to write-off capital expenditures immediately rather than over their useful life as under the U.S. rules.
2. The greater flexibility in determining when one writes-off R&D expenditures.
3. In certain cases, the refundability of the R&D tax credit in Canada versus non-refundability in the U.S.
4. The R&D tax credit in the U.S. is for incremental expenditures only and therefore, is of far more limited value than the Canadian R&D tax credit.

For comparison purposes the following assumptions apply:

1. That R&D expenditures are incremental expenditures only.
2. That all figures in the tables are expressed in \$000's.
3. That incremental R&D expenditures are wages and direct salary expenses only.
4. That the base year amount is zero in the case of the U.S. after-tax cost calculation.
5. That a 44% tax rate represents the combined effective federal and provincial corporate tax rate for a large Canadian company, except in Quebec (taxable income of greater than \$200,000 Canadian per annum).
6. That a 23% tax rate represents the combined effective federal and provincial corporate tax rate for a CCPC in Canada, except in Quebec (taxable income of less than \$200,000 Canadian per annum).
7. That a 40% tax rate represents the combined effective federal and state corporate tax rate for large corporations in the U.S. (taxable income greater than \$335,000 U.S. per annum).
8. That a 37% tax rate represents the combined effective federal and state corporate tax rate for small corporations in the U.S. (taxable income of \$200,000 U.S. per annum). See Appendix 2 for additional details.
9. In the case of a large U.S. company undertaking R&D expenditures which are not incremental, the company would receive no R&D tax credit and the after-tax cost of non-incremental R&D expenditures in this example would be \$600,000 U.S.
10. Comparisons assume that \$1.00 Canadian = \$1.00 U.S.
11. That \$1.00 of R&D expenditure in Canada has the same value as \$1.00 of R&D expenditure in the U.S.
12. Incrementality is important for Ontario super-allowance.



**3.3.1 For Small R&D Performers in Canada Eligible for the 35% Tax Credit Rate**

|   | <u>Ontario</u>          | <u>Quebec</u>        | <u>Other<sup>1</sup></u> |
|---|-------------------------|----------------------|--------------------------|
| Incremental or non-incremental R&D expenditure                    | \$1,000                 | \$1,000 <sup>2</sup> | \$1,000                  |
| Quebec R&D Wage Tax Credit (40% of \$500)                         | -                       | (200)                | -                        |
| Federal R&D Tax Credit (35% x \$1,000)                            | (350)                   | -                    | (350)                    |
| (35% x (\$1,000 - \$200))   | -                       | (280)                | -                        |
| Tax Saving from Deduction (23% <sup>3</sup> of (\$1,000 - \$350)) | (150)                   | -                    | (150)                    |
| <u>Quebec only</u>  |                         |                      |                          |
| Federal 13% of (\$1,000 - \$480)                                  | -                       | (68)                 | -                        |
| Quebec 3% of \$1,000  | -                       | (30)                 | -                        |
| <u>Ontario only</u>   |                         |                      |                          |
| Tax Saving from Super Allowance                                   | <u>(34)<sup>4</sup></u> | <u>-</u>             | <u>-</u>                 |
| <b>After-tax Cost</b>   | <b><u>\$ 466</u></b>    | <b><u>\$ 422</u></b> | <b><u>\$ 500</u></b>     |

<sup>1</sup> Effective provincial tax rates may vary. Nova Scotia has a special tax incentive which will further reduce after-tax costs.

<sup>2</sup> Assume that 50% of R&D expenditures is salary and wages.

<sup>3</sup> 23% is an estimated combined effective federal and provincial tax rate for CCPCs.

<sup>4</sup> Expenditures net of investment tax credits times percentage for incremental costs for small performers times the provincial tax rate [(\$1,000 - 350) x .525 x .10]



**3.3.2 For Large R&D Performers in Canada Eligible for the 20% Tax Credit Rate**

|   | <u>Ontario</u>          | <u>Quebec</u>        | <u>Other<sup>1</sup></u> |
|---|-------------------------|----------------------|--------------------------|
| Incremental or non-incremental R&D expenditures               | \$1,000                 | \$1,000 <sup>2</sup> | \$1,000                  |
| Quebec R&D Wage Tax Credit (20% of \$500)                     | -                       | (100)                | -                        |
| Federal R&D Tax Credit (20% x \$1,000)                        | (200)                   | -                    | (200)                    |
| (20% x (\$1,000 - 100))                                       | -                       | (180)                | -                        |
| Tax Saving from Deduction (44% <sup>3</sup> of \$1,000 - 200) | (352)                   | -                    | (352)                    |
| <u>Quebec only</u>  |                         |                      |                          |
| Federal 29% of (\$1,000 - 280)                                | -                       | (209)                | -                        |
| Quebec 6% of \$1,000  | -                       | (60)                 | -                        |
| <u>Ontario only</u>   |                         |                      |                          |
| Tax Saving from Super Allowance                               | <u>(46)<sup>4</sup></u> | <u>-</u>             | <u>-</u>                 |
| After-tax cost  | <u>\$ 402</u>           | <u>\$ 451</u>        | <u>\$ 448</u>            |

<sup>1</sup> Effective provincial tax rates may vary. Nova Scotia has a special tax incentive which will further reduce after-tax cost.

<sup>2</sup> Assume that 50% of R&D expenditures is salary and wages.

<sup>3</sup> 44% is an estimated combined effective federal and provincial tax rate for non-CCPCs.

<sup>4</sup> Expenditures net of investment tax credits times percentage for incremental costs for large performers times the provincial tax rate [(\$1,000 - 200) x .375 x .155]

### 3.3.3 For Small R&D Performers in the U.S.

|   | <u>Most Likely<br/>U.S.A.</u> |
|---|-------------------------------|
| R&D<br>Expenditure  | \$1,000                       |
| Federal Investment<br>Tax Credit<br>(20% x 0.5 (\$1,000))               | (100) <sup>1</sup>            |
| Tax Saving from<br>Deduction<br>(37% <sup>2</sup> of (\$1,000 - \$100)) | <u>(333)</u>                  |
| After-Tax Cost  | <u>\$ 567</u>                 |

<sup>1</sup> Qualifying base period expenses must be at least 50% of the current year qualifying expenditures. Only \$500 of the \$1,000 in R&D expenditure is qualifying R&D expenditure for tax credit purposes.

<sup>2</sup> 37% is an estimated combined federal and state income tax rate for U.S. companies with taxable income of \$200,000 U.S. per annum.



3.3.4 For Large R&D Performers in the U.S.

|   | <u>Most Likely<br/>U.S.A.</u> |
|---|-------------------------------|
| R&D<br>Expenditure  | \$1,000                       |
| Federal Investment<br>Tax Credit<br>(20% x 0.5 (\$1,000))               | (100) <sup>1</sup>            |
| Tax Saving from<br>Deduction<br>(40% <sup>2</sup> of (\$1,000 - \$100)) | <u>(360)</u>                  |
| After-Tax Cost  | <u>\$ 540</u>                 |

<sup>1</sup> Qualifying base period expenses must be at least 50% of the current year qualifying expenditures. Only \$500 of the \$1,000 in R&D expenditure is qualifying R&D expenditure for tax credit purposes.

<sup>2</sup> 40% is an estimated combined federal and state income tax rate for U.S. companies with taxable income above \$335,000 U.S. per annum.

### 3.4 Credit Comparison and Commentary

The following matrix compares the eligibility of certain types of R&D expenditures in Canada and the U.S. for the R&D tax credit:

Eligible R&D Expenditure for R&D tax Credit in Canada and the U.S.:

| Expenditure  | <u>Canada</u>    | <u>U.S.</u>         |
|--|------------------|---------------------|
| • Land   | No               | No                  |
| • Wages  | Yes <sup>1</sup> | Yes <sup>1</sup>    |
| • Contract R&D                                       | Yes <sup>2</sup> | Yes/No <sup>2</sup> |
| • Buildings  | No <sup>3</sup>  | No                  |
| • Acquired Technology                                | No               | No                  |
| • Used Equipment                                     | No               | No                  |
| • New Equipment                                      | Yes              | No                  |
| • License  | No               | Yes                 |
| • Patented Technology                                | No               | No                  |
| • Acquired Patents                                   | No               | No                  |
| • Contracted R&D in a Foreign Country                | No               | No <sup>4</sup>     |
| • Foreign Depreciable Property                       | No               | No                  |
| • Leases on Land and Buildings                       | No               | No                  |
| • Leases on Equipment                                | Yes              | No                  |
| • Travel   | Yes <sup>5</sup> | No                  |
| • Adaption for specific customer need or requirement | No               | No                  |
| • Studies in social sciences or humanities           | No               | No                  |
| • Manufacturing and commercialization                | No               | No                  |
| • Developing to the point of a finished product      | No               | No                  |
| • Product improvement                                | No <sup>6</sup>  | No <sup>6</sup>     |
| • Style changes                                      | No               | No                  |
| • 1st prototype                                      | Yes              | Yes                 |
| • 2nd prototype                                      | No <sup>7</sup>  | No <sup>7</sup>     |
| • Debugging in R&D                                   | Yes              | Yes                 |
| • Debugging production process                       | No               | No                  |
| • Improving production process                       | No <sup>8</sup>  | No <sup>8</sup>     |
| • R&D employee bonuses                               | Yes <sup>9</sup> | Yes <sup>9</sup>    |
| • R&D employee benefits                              | Yes              | No                  |
| • Incremental utilities expense                      | Yes              | No                  |
| • Incremental overhead expense                       | Yes              | No                  |
| • Supplies   | Yes              | Yes                 |
| • Computer time-sharing                              | Yes              | Yes                 |
| • Incremental General Administrative Expenses        | Yes              | No                  |



## Legend:

- 1 In Canada, wages directly related to R&D conducted in Canada are eligible for the R&D tax credit. In the U.S. direct wages related to R&D conducted in the U.S. are eligible for the R&D tax credit.
- 2 In Canada, the cost of R&D contracted within Canada is eligible for the credit. In the U.S., 65% of the cost of R&D contracted within the U.S. is eligible for the R&D tax credit.
- 3 In Canada, certain special purpose buildings used exclusively for R&D purposes are eligible for R&D tax credit
- 4 In the U.S., the cost of R&D contracted in a foreign country does not usually qualify for the R&D tax credit except in one or two very specific cases.
- 5 In Canada, travel costs related to attendance at R&D related conferences or seminars are eligible for the R&D tax credit.
- 6 In both Canada and the U.S., the cost of product improvement is eligible for the R&D tax credit if a significant degree of risk, innovation and uncertainty can be demonstrated.
- 7 In both Canada and the U.S., the cost of a 2nd prototype could be eligible for the R&D tax credit if it was needed for added testing.
- 8 In both Canada and the U.S., the cost of improving a manufacturing process is eligible for the R&D tax credit if a significant degree of risk, innovation and uncertainty can be demonstrated.
- 9 In both Canada and the U.S., the cost of R&D employee bonuses, if directly tied to profits, apply.

### 3.4.1. Commentary

- Overall, the R&D tax credit in Canada is much more generous than that in the U.S. Effectively, the R&D Tax credit represents a much more significant dollar item to Canadian R&D performers (ranging from 20% to 35%) than it is to U.S. R&D performers (< or equal to 10% on average because the 50% rule applies which restricts the amount of qualified expenditures).
- For Canadian companies, the cost of R&D contracted within Canada is eligible for the credit. For U.S. companies only 65% of the cost of R&D contracted within the U.S. is eligible for the R&D tax credit.
- In Canada, the cost of R&D equipment qualifies for the R&D tax credit whereas in the U.S. such costs do not qualify.





- In Canada, travel costs related to attendance at R&D conferences or seminars are eligible for the R&D tax credit whereas, in the U.S. such costs do not qualify.
- In Canada, R&D employee benefits are eligible for the R&D tax credit whereas, in the U.S. only the direct salary and wages of R&D personnel qualify under R&D tax credit rules.
- In Canada, incremental overhead, utilities expenses and general and administrative expenses directly related to R&D are eligible for the R&D tax credit whereas, in the U.S. such is not the case.

### 3.5 Auditing Practices

#### 3.5.1 In the U.S.

In the U.S., perhaps because the R&D tax credit is non-refundable and represents less of a cash benefit to applicants, there is no mandatory audit program undertaken by the Internal Revenue Service. Audits, when they do occur, are undertaken by generalists on staff at the IRS who may not be familiar with the company, or the industry in which it operates.

Although the IRS does not have specific industry specialist auditors on staff for R&D tax credit purposes, geographic specialities do exist. For example, as a function of auditing frequency, IRS auditors in the Boston area are more prone to be specialists in auditing R&D tax credit applications from high technology companies. On the other hand, IRS auditors in the Detroit area would be more familiar with auditing the R&D tax credit applications of large automobile manufacturers. Nevertheless, the IRS does not hire specialist auditors, nor does it seek outside assistance from a specialist when auditing an R&D tax credit claim.

#### 3.5.2 In Canada

In Canada, in 1985, when the current regime of R&D tax incentives came into existence, Revenue Canada - Taxation insisted on auditing every taxpayer making a claim for a refundable R&D tax credit. Such a process, although thorough, entailed significant delays for applicants. Delays of up to two years discouraged and frustrated applicants and had an important impact on the smaller R&D performers whose needs for cash refunds were immediate.



In 1988, however, the Canadian government established a "Fast Track" program under which CCPCs are eligible to receive their refund claims prior to an audit, provided that they have been previously audited for R&D claims and their R&D activities remained within certain boundaries. "The Fast Track" program has proven effective and some small R&D performers are now receiving their refund cheques within two months of filing.

The audit process for R&D tax credit claims in Canada consists of two audits, one by a science advisor either on the staff of, or under contract to, Revenue Canada - Taxation to determine which activities qualify as R&D, and a second audit by a financial auditor to determine what costs qualify.

In Canada, as in the U.S., the onus is on the taxpayer to prove that his claim is legitimate. The audit process in Canada is undertaken by specialists at Revenue Canada - Taxation and can be a detailed and time consuming process.

### 3.5.3 Comparison and Commentary

- Clearly, the auditing program undertaken by Revenue Canada - Taxation is much more stringent than that undertaken by the IRS in the U.S. The difference in auditing practices between the U.S. and Canada is based on the perceived relative importance of the R&D tax credit and the non-refundable element of the U.S. R&D tax credit.



CHAPTER 4

4.0 AFTER-TAX R&D COST COMPARISON

The following chapter explores and compares the after-tax cost of incurring \$1,000,000 in qualified R&D expense in various locations and under different R&D tax incentive regimes.

4.1 After-Tax R&D Cost Comparison of a Large U.S. Company Performing R&D In-House vs. Contracting out to a Large U.S. R&D Performer

|   | <u>In-House<br/>R&amp;D</u> | <u>U.S.<br/>Contracted<br/>R&amp;D</u> |
|---|-----------------------------|--|
| Incremental R&D <sup>1</sup><br>Expenditure                         | \$1,000                     | \$1,000                                |
| R&D Tax Credit<br>(20% x \$1,000)                                   | 200                         | -                                      |
| (20% x (65% x \$1,000))   | -                           | 130                                    |
| Tax Saving from Deduction<br>(40% <sup>2</sup> x (\$1,000 - \$200)) | 320                         | -                                      |
| (40% <sup>2</sup> x (\$1,000 - \$130))                              | <u>-</u>                    | <u>348</u>                             |
| After-tax cost  | <u>\$ 480</u>               | <u>\$ 522</u>                          |
| Non-Incremental R&D<br>Expenditure                                  | \$1,000                     | \$1,000                                |
| R&D Tax Credit  | -                           | -                                      |
| Tax Saving from Deduction<br>(40% x \$1,000)                        | <u>400</u>                  | <u>400</u>                             |
| After-tax cost  | <u>\$ 600</u>               | <u>\$ 600</u>                          |

<sup>1</sup> Assumes that U.S. company performing R&D in-house or contracting R&D out to a U.S. based R&D performer spent \$5,000 in direct salary and wages related to qualified R&D last year and \$6,000 in the current taxation year.

<sup>2</sup> Assumes that a 40% tax rate represents the combined effective federal and state corporate tax rate for a large U.S. corporation (taxable income greater than \$335,000 U.S. per annum).



#### Other Assumptions:

- All figures in the table are expressed in \$000's.
- \$1.00 of in-house R&D = \$1.00 of contracted R&D

#### 4.1.1 Comparison and Commentary

- It is least costly, after-tax, for a large U.S. company to perform \$1,000,000 in incremental R&D in-house than to contract \$1,000,000 in incremental R&D out to a large U.S. based R&D performer.
- There is no difference in after-tax cost for a large U.S. company to perform non-incremental R&D in-house vs. contracting non-incremental R&D out to a large U.S. based R&D performer.
- The U.S. R&D tax credit does not apply to non-incremental R&D expenditures.



4.2 After-Tax R&D Cost Comparison of a Small U.S. Company Performing R&D In-House vs. Contracting out to a Small U.S. R&D Performer

|   | <u>In-House<br/>R&amp;D</u> | <u>U.S.<br/>Contracted<br/>R&amp;D</u> |
|---|-----------------------------|--|
| Incremental R&D <sup>1</sup><br>Expenditure                         | \$1,000                     | \$1,000                                |
| R&D Tax Credit<br>(20% x \$1,000)                                   | 200                         | -                                      |
| (20% x (65% x \$1,000))   | -                           | 130                                    |
| Tax Saving from Deduction<br>(37% <sup>2</sup> x (\$1,000 - \$200)) | 296                         | -                                      |
| (37% <sup>2</sup> x (\$1,000 - \$130))                              | <u>-</u>                    | <u>322</u>                             |
| After-tax cost  | <u>\$ 504</u>               | <u>\$ 548</u>                          |
| Non-Incremental R&D<br>Expenditure                                  | \$1,000                     | \$1,000                                |
| R&D Tax Credit  | -                           | -                                      |
| Tax Saving from Deduction<br>(37% x \$1,000)                        | <u>370</u>                  | <u>370</u>                             |
| After-tax cost  | <u>\$ 630</u>               | <u>\$ 630</u>                          |

<sup>1</sup> Assumes that U.S. company performing R&D in-house or contracting R&D out to a U.S. based R&D performer spent \$5,000 in direct salary and wages related to qualified R&D last year and \$6,000 in the current taxation year.

<sup>2</sup> Assumes that a 37% tax rate represents the combined effective federal and state corporate tax rate for a small U.S. corporation (taxable income of \$200,000 U.S. per annum).

Other Assumptions:

- All figures in the table are expressed in \$000's.
- \$1.00 of in-house R&D = \$1.00 of contracted R&D.

#### 4.2.1 Comparison and Commentary

- It is least costly, after-tax, for a small U.S. company to perform \$1,000,000 in incremental R&D in-house than to contract \$1,000,000 in incremental R&D out to a small U.S. based R&D performer.
- There is no difference in after-tax cost for a small U.S. company to perform non-incremental R&D in-house vs. contracting non-incremental R&D out to a small U.S. based R&D performer.
- The U.S. R&D tax credit does not apply to non-incremental R&D expenditures.



**4.3 After-tax R&D Cost Comparison of a Large Canadian R&D Performer Eligible for the 20% Tax Credit Rate and a Large U.S. R&D Performer**

|   | <u>Ontario</u> | <u>Quebec</u> | <u>Other Canadian Province</u> | <u>Incremental U.S.A.</u> | <u>Non-Incremental U.S.A.</u> |
|---|----------------|---------------|--------------------------------|---------------------------|-------------------------------|
| R&D Expenditure                                     | \$1,000        | \$1,000       | \$1,000                        | \$1,000 <sup>1</sup>      | \$1,000 <sup>2</sup>          |
| Quebec R&D Tax Credit<br>(20% of \$1,000)           | -              | (200)         | -                              | -                         | -                             |
| Federal R&D Tax Credit<br>(20% x \$1,000)           | (200)          | -             | (200)                          | -                         | -                             |
| (20% x (\$1,000-200))                               | -              | (160)         | -                              | -                         | -                             |
| U.S. R&D Tax Credit<br>(20% x \$1,000)              | -              | -             | -                              | (200)                     | -                             |
| Tax Saving from Deduction<br>(44% of (\$1,000-200)) | (352)          | -             | (352) <sup>4</sup>             | -                         | -                             |
| Tax Saving from Deduction:                          |                |               |                                |                           |                               |
| <u>Quebec only</u>                                  |                |               |                                |                           |                               |
| Federal<br>(29% of (\$1,000-360))                   | -              | (186)         | -                              | -                         | -                             |
| Quebec<br>(6% of \$1,000)                           | -              | (60)          | -                              | -                         | -                             |
| <u>Ontario only</u>                                 |                |               |                                |                           |                               |
| Tax Saving from Super Allowance                     | (46)           | -             | -                              | -                         | -                             |
| Tax Saving from Deduction:                          |                |               |                                |                           |                               |
| <u>U.S. only</u>                                    |                |               |                                |                           |                               |
| (40% <sup>3</sup> x (\$1,000 - 200))                | -              | -             | -                              | (320)                     | -                             |
| (40% <sup>3</sup> x \$1,000)                        | -              | -             | -                              | -                         | (400)                         |
| After tax cost                                      | <u>\$ 402</u>  | <u>\$ 394</u> | <u>\$ 448</u>                  | <u>\$ 480</u>             | <u>\$ 600</u>                 |



- 1 Assumes that U.S. R&D performer spent \$5,000 in direct salary and wages related to qualified R&D last year and \$6,000 in the current taxation year.
- 2 Assumes that R&D expenditure is not incremental or does not qualify for credit.
- 3 Assumes that a 40% tax rate represents the combined effective federal and state corporate tax rate for large U.S. corporations (taxable income greater than \$335,000 U.S. per annum).
- 4 Effective provincial tax rates may vary. Nova Scotia has a special tax incentive which will further reduce after-tax cost.

Other Assumptions:

- All figures in the table are expressed in \$000's.
- Assumes that R&D expenditure is wages and salaries.
- Assumes that \$1.00 of R&D in Canada = \$1.00 of R&D in the U.S.
- R&D expenditure is in-house expenditure.

4.3.1. Comparison and Commentary

- It is least costly, after-tax, to incur \$1,000,000 of qualified R&D expenditure anywhere in Canada than it is for a large U.S. R&D performer to incur \$1,000,000 of qualified R&D expenditure in most U.S. states (whether R&D expenditure is incremental or not).



4.4 After-tax R&D Cost Comparison of a Small Canadian R&D Performer Eligible for the 35% Tax Credit Rate and a Small U.S. R&D Performer

|  | <u>Ontario</u> | <u>Quebec</u> | <u>Other Canadian Province</u> | <u>Incremental U.S.A.</u> | <u>Non-Incremental U.S.A.</u> |
|--|----------------|---------------|--------------------------------|---------------------------|-------------------------------|
| R&D Expenditure                                      | \$1,000        | \$1,000       | \$1,000                        | \$1,000 <sup>1</sup>      | \$1,000 <sup>2</sup>          |
| Quebec R&D Wage Tax Credit<br>(40% of \$1,000)       | -              | (400)         | -                              | -                         | -                             |
| Federal R&D Tax Credit<br>(35% x \$1,000)            | (350)          | -             | (350)                          | -                         | -                             |
| (35% x (\$1,000-400))                                | -              | (210)         | -                              | -                         | -                             |
| U.S. R&D Tax Credit<br>(20% x \$1,000)               | -              | -             | -                              | (200)                     | -                             |
| Tax Saving from Deduction:<br>(23% of (\$1,000-350)) | (150)          | -             | (150) <sup>4</sup>             | -                         | -                             |
| Tax Saving from Deduction                            |                |               |                                |                           |                               |
| <u>Quebec only</u>                                   |                |               |                                |                           |                               |
| Federal<br>(13% of (\$1,000-610))                    | -              | (51)          | -                              | -                         | -                             |
| Quebec<br>(3% of \$1,000)                            | -              | (30)          | -                              | -                         | -                             |
| <u>Ontario only</u>                                  |                |               |                                |                           |                               |
| Tax Saving from Super Allowance                      | (34)           | -             | -                              | -                         | -                             |
| Tax Saving from Deduction:                           |                |               |                                |                           |                               |
| <u>U.S. only</u>                                     |                |               |                                |                           |                               |
| (37% <sup>3</sup> x (\$1,000 - 200))                 | -              | -             | -                              | (296)                     | -                             |
| (37% <sup>3</sup> x \$1,000)                         | -              | -             | -                              | -                         | (370)                         |
| After tax cost                                       | <u>\$ 466</u>  | <u>\$ 309</u> | <u>\$ 500</u>                  | <u>\$ 504</u>             | <u>\$ 630</u>                 |

- 1 U.S. R&D performer spent \$5,000 in direct salary and wages related  
to qualified R&D last year and \$6,000 in the current taxation year.
- 2 R&D expenditure is not an incremental expenditure or does not  
otherwise qualify for credit.
- 3 A 37% tax rate represents the combined effective federal and state  
corporate tax rate for small U.S. corporations (taxable income of  
\$200,000 U.S. per annum).
- 4 Effective provincial tax rates may vary. Nova Scotia has a special tax  
incentive which will further reduce after-tax cost.

Other Assumptions:

- All figures in the table are expressed in \$000's.
- R&D expenditure is wages and salaries.
- \$1.00 of R&D in Canada = \$1.00 of R&D in the U.S.
- R&D expenditure is in-house expenditure.

4.4.1. Comparison and Commentary

- It is least costly, after-tax, to incur \$1,000,000 of qualified R&D expenditure in the province of Quebec than it is to incur \$1,000,000 of qualified R&D expenditure anywhere else in Canada or in the U.S.
- The after-tax cost differential of incurring qualified R&D expenditure in the province of Quebec vs. other locations depends on the percentage of wage and salary costs in the R&D expenditures.
- It is less costly, after-tax, to incur \$1,000,000 of qualified R&D expenditures anywhere in Canada than it is for a small U.S. R&D performer to incur \$1,000,000 of qualified R&D expenditure in most U.S. states.



#### 4.5 Market Opportunity and Implications

The following comparison matrix reveals the least net after-tax cost of performing \$1,000,000 of qualified R&D.

##### 4.5.1 After-tax R&D Cost Comparison of both Large and Small U.S. Companies Performing R&D In-House vs. Contracting R&D out to both Large and Small U.S. R&D Performers - Summary Matrix

|                                 | <u>Large U.S. Co.</u> | Contracted | <u>Small U.S. Co.</u> | Contracted |
|---------------------------------|-----------------------|------------|-----------------------|------------|
|                                 | In - House R&D        | R&D        | In - House R&D        | R&D        |
| Incremental R&D expenditure     | \$480                 | \$522      | \$504                 | \$548      |
| Non-incremental R&D expenditure | \$600                 | \$600      | \$630                 | \$630      |

#### Assumptions:

- All figures in the table are expressed in \$000's.
- U.S. company performing R&D in-house or contracting R&D out to a U.S. based R&D performer spent \$5,000 in direct salary and wages related to qualified R&D last year and \$6,000 in the current taxation year.
- The effective combined federal and state tax rate for large U.S. companies is 40%.
- The effective combined federal and state tax rate for small U.S. companies is 37%.
- \$1.00 of R&D in Canada = \$1.00 of R&D in the U.S.
- \$1.00 of in-house R&D = \$1.00 of contracted R&D



**4.5.2. After-tax R&D Cost Comparison of a Large Canadian R&D Performer Eligible for 20% R&D Tax Credit Rate vs. a Large U.S. R&D Performer - Summary Matrix**

|                     | <u>Ontario</u> | <u>Quebec</u> | <u>Other Canadian Provinces</u> | <u>U.S.A.</u>      |
|---------------------|----------------|---------------|---------------------------------|--------------------|
| Incremental R&D     | \$402          | \$394         | \$448                           | \$480              |
| Non-incremental R&D | \$417          | \$394         | \$448                           | \$600 <sup>1</sup> |

<sup>1</sup> In Canada, as opposed to the U.S., there is no difference between incremental and non-incremental R&D expenditures for R&D tax credit purposes, except in the case of Ontario's Super-Allowance.

Other Assumptions:

- All figures in the table are expressed in \$000's.
- R&D expenditure is wages and salaries.
- \$1.00 of R&D in Canada = \$1.00 of R&D in the U.S.
- R&D expenditure is in-house expenditure.

**4.5.3. After-tax R&D Cost Comparison of a Small Canadian R&D Performer Eligible for 35% R&D Tax Credit Rate vs. a Small U.S. R&D Performer - Summary Matrix**

|                     | <u>Ontario</u> | <u>Quebec</u> | <u>Other Canadian Province</u> | <u>U.S.A.</u>      |
|---------------------|----------------|---------------|--------------------------------|--------------------|
| Incremental R&D     | \$466          | \$309         | \$500                          | \$504              |
| Non-incremental R&D | \$477          | \$309         | \$500                          | \$630 <sup>1</sup> |

<sup>1</sup> In Canada, as opposed to the U.S., there is no difference between incremental and non-incremental R&D expenditures for R&D tax credit purposes, except in the case of Ontario's Super-Allowance.

Other Assumptions:

- All figures in the table are expressed in \$000's.
- R&D expenditure is wages and salaries.
- \$1.00 of R&D in Canada = \$1.00 of R&D in the U.S.
- R&D expenditure is in-house expenditure.

4.5.4. Comparison and Commentary

- It is least costly, after-tax, overall to incur \$1,000,000 of qualified R&D expenditure in the province of Quebec.
- It is less costly, after-tax, to incur \$1,000,000 of qualified R&D expenditure in Canada rather than the U.S.

As is apparent from the after-tax cost comparison, it is less expensive to incur \$1,000,000 of qualified R&D expenditure in Canada than in most U.S. states as a result of a more favourable R&D tax incentive climate.

This fact presents Canadian R&D performers, especially those in Quebec with a significant competitive pricing advantage over U.S. R&D contractors when bidding on U.S. work.



## CHAPTER 5

### 5.0 R&D TAX INCENTIVES AND THE AUTOMOTIVE SECTOR

The Canadian and U.S. automotive sectors are accorded no special treatment in terms of respective R&D tax incentives in either country. For taxation purposes, the automotive sector is treated like any other manufacturing sector in North America. As such, U.S. automobile manufacturers operating in Canada and the U.S., as well as Canadian and U.S. auto parts manufacturers are subject to the respective rules of the country in which they operate.

#### 5.1 Current Issues and Future Implications

Despite the common treatment received by the automotive sector and other manufacturing sectors under U.S. and Canadian R&D tax incentive rules, there are a number of issues particular to R&D in the automotive industry that may be hindering the amount of R&D tax incentives realized by the sector; incentives critical to the future viability of an industry facing strong international competition.

Both the U.S. and Canadian automotive sectors suffer from what could be called the "style change enigma". Clearly, expenditures toward style changes do not qualify for the R&D expense deduction or the R&D tax credit in either country. However, style changes in the automotive sector remain difficult to define under the R&D tax incentive rules (i.e., do changes to the shape of an automobile in order to make it more aerodynamic constitute a "style change" or not?). As such, what may constitute R&D in other sectors is often dismissed as style changes in the automotive industry and will not qualify for R&D tax incentives.

The North American automobile industry has undergone a fair amount of transition in the last decade, struggling to become more efficient in the face of fierce international competition. As a result, manufacturing processes have been changed and assembly lines upgraded through use of CAD/CAM, robotics, and other manufacturing technologies. In Canada, in order for such expenditures to qualify under the R&D tax deduction or credit rules, line upgrades must be significantly uncertain, innovative and risky. In an Information Circular published by Revenue Canada - Taxation (IC 86-4R2) the tax authorities explain that:





- "Essential tests that must be met before any activity can be considered scientific research and experimental development include the criterion of scientific and technological advancement, the criterion of scientific and technological uncertainty, and the criterion of scientific and technical content".

In the U.S., such line upgrade expenditures must be greater than the amount spent to upgrade the line in the past three years, must result in "significant" cost reduction and must constitute risk and uncertainty. In both countries, it is difficult for automobile manufacturers to meet the rather stringent criteria set forth by the tax authorities. As such, technological innovation in manufacturing, so important for the sector to compete effectively, may be compromised.

Finally, as fully integrated manufacturing and design becomes the rule rather than the exception in the North American automotive industry, it will become more difficult for automobile manufacturers and tax authorities alike to differentiate between what constitutes qualified R&D under the current R&D tax incentive rules and what constitutes manufacturing expenditures. The line between manufacturing and R&D will become increasingly blurred as automobile design moves from the engineering department onto the plant floor and new manufacturing technology allows for the more efficient transformation of an idea into a final product.

The issues which are important to the automotive sector at present will become critical to the industry in future years. It is only through increased dialogue that representatives of the automotive sector and tax authorities in both the U.S. and Canada will be able to resolve these issues.

Recently, Industry Science and Technology Canada initiated the formation of an automotive R&D tax committee consisting of representatives from industry, ISTC and Revenue Canada - Taxation. The purpose of the committee is to facilitate increased dialogue between government and industry in an effort to resolve the issues identified as important to the industry.



## CHAPTER 6

### 6.0 R&D TAX INCENTIVES AND SPECIAL SITUATIONS

#### 6.1 Computer Software

##### 6.1.1 U.S.

In the U.S., the cost of developing computer software i.e., new or significantly improved programs or routines for computers, is eligible for the credit. However, the various limitations and exclusions built into the credit also apply to software.

For example, the costs of adapting or modifying previously developed software programs are not eligible for the R&D tax credit in the U.S. Only software that is developed primarily for internal use by the taxpayer, and meeting certain other criteria, will qualify. In general, in-house software costs will qualify if the software is used in qualified research conducted by the taxpayer or in an improved production process. The IRS will also consider the degree of innovation, the level of economic risk and the commercial viability of the software developed in determining whether or not costs qualify under the R&D tax credit. Costs of routine development of computer software for the taxpayer's own use in performing general and administrative functions (eg. payroll, bookkeeping or personnel management) do not qualify for the U.S. R&D tax credit.

##### 6.1.2 Canada

In Canada, figures show that more than one quarter of the claims by CCPCs under the R&D tax credit program, were generated by computer software firms (see table).



**R&D Tax Credit Claims by CCPC's  
in 1987**

| By Industry Sector          | \$millions            | %                    |
|-----------------------------|-----------------------|----------------------|
| Computer Software           | \$ 68.4               | 25.8                 |
| Telecommunications          | 35.7                  | 13.5                 |
| Aerospace                   | 31.2                  | 11.8                 |
| Electronics                 | 23.5                  | 8.9                  |
| Chemicals (including drugs) | 17.4                  | 6.6                  |
| Machinery                   | 16.9                  | 6.4                  |
| Office Equipment            | 10.0                  | 3.8                  |
| Other                       | <u>61.6</u>           | <u>23.2</u>          |
| <b>Total</b>                | <b><u>\$264.7</u></b> | <b><u>100.0%</u></b> |

Revenue Canada has made a particular effort to assist software developers in identifying those activities eligible for tax relief. Given the particular nature of computer software and its many applications it is often more difficult for the taxpayer to ascertain whether the R&D meet Revenue Canada - Taxation criteria of innovation, risk and uncertainty. Increased dialogue and a surprising level of co-operation between industry and the tax authorities has resulted in a streamlining of the R&D credit application process and clearer criteria for Canadian software developers.

**6.1.3 Comparison and Commentary**

The treatment of computer software in both the U.S. and Canada under the R&D tax credit rules appears similar.

- R&D expenditures related to the development of computer software is eligible for the R&D tax credit provided it is deemed as qualified R&D.

**6.2 Government Assistance and Contract Payments**

**6.2.1 U.S.**

In the U.S., in general, research does not constitute qualified research, for the purposes of the R&D tax credit, to the extent that it is funded by any grant, contract, or otherwise by another person (including any governmental entity).



Government sponsored grants are not common in the U.S. The current administration has not adopted any industrial policy and does not target specific industrial sectors in the U.S. for assistance. Certain types of assistance are available from state and municipal governments in their efforts to attract R&D investment. In certain states, R&D performers are exempted from paying sales tax on their purchases of R&D related supplies and equipment. Certain municipalities offer Mass Industrial Finance Assistance (MIFA) to R&D performers and other corporate concerns. The MIFA grants the applicant company the right to issue tax exempt bonds (bonds that earn interest which the holder does not have to declare for income tax purposes), thereby facilitating the company's efforts to raise capital. Although popular in Massachusetts and California, the use of MIFA's is not widespread.

In the case of a Government contract, in which the U.S. government is entitled to exploit or retain the resulting R&D, then the taxpayer is not entitled to the R&D tax credit. In the case of contracted R&D with a party other than government, only the party that maintains the rights to the R&D can claim the R&D tax credit. As such, both parties involved in an R&D contract in the U.S. cannot claim the R&D tax credit, thereby eliminating the possibility of a "Double Dip". (Two parties claiming the credit on the same expenditure)

#### 6.2.2 Canada

In Canada, qualifying R&D expenditures for investment tax credit purposes must be reduced by the amount of any government assistance, non-government assistance or Canadian sourced contract payment that the taxpayer has received or is entitled to receive, in respect to those expenditures.

The issue of government assistance is much more relevant to Canadian R&D performers who have much broader access to varied forms of government assistance both financial and other.

A "contract payment" received by a taxpayer reduces the amount of qualifying expenditure otherwise eligible for the R&D tax credit. These rules were introduced by Revenue Canada - Taxation to prevent the R&D performer and the taxpayer paying for the R&D efforts from both claiming the expenditures as qualifying R&D (or the "Double Dip").

It is important to note that there is no requirement to offset revenue received from a foreign company who is not carrying on business in Canada through a branch operation and therefore, is not claiming R&D credits on the same dollars. Thus, if a Canadian corporation contracts to provide R&D for a fee to a foreign company, even if the company has a subsidiary in Canada, there is no need to reduce qualifying expenditures by the amount of revenues received.

### 6.2.3 Comparison and Commentary

Under U.S. and Canadian R&D tax credit rules, treatment of government grants, government contracts and R&D contract arrangements in general, is similar:

- No "Double Dip" for contracted R&D.
- Qualifying R&D expenditures are net of government grants and other assistance.
- R&D expenditures incurred under Government contracted R&D, where the Government retains the right to the R&D, are not qualified R&D expenditures for tax credit purposes.

## 6.3 Cost-Sharing

### 6.3.1 Definition

Cost-sharing is an arrangement through which companies share the costs of research and development undertaken to create some intangible, such as a patent, a chemical formula, or manufacturing know-how. For example, a parent company may charge its subsidiary a pro-rata share of the cost of developing a patent and grant it a royalty-free license to the patent. The subsidiary should be deemed to own the patent for income tax purposes, and no royalty need be paid.

A cost-sharing arrangement does not involve the transfer of an intangible from one party to another, nor is it a contract for the performance of technical services by one party for another (except for R&D performed upon specific request). Cost-sharing is more in the nature of a joint-venture. A cost-sharing payment received by the party performing the research is generally not taxable income, but is a reduction of that party's research expenditures. The notable exception to this is that qualifying R&D expenditures in Canada for



investment tax credit purposes are not reduced by payments under an R&D cost-sharing agreement from parties outside Canada. The party outside Canada making the cost-sharing payment to the Canadian R&D performer, and who is receiving a right to the intangible developed, has incurred a research expenditure. Such expenditure is typically not subject to withholding tax in the country of the foreign payer.



## CHAPTER 7

### 7.0 THE FUTURE OF R&D TAX INCENTIVES

#### 7.1 The Canadian R&D Tax Incentive

##### 7.1.1 Large Companies

In 1987, the year in which the most reliable data is available, more than 5,000 R&D performers registered investment tax credit claims totalling almost \$730 million. Larger corporations and publicly traded companies generated claims amounting to \$465 million. This is consistent with the fact that the top 100 corporate R&D spenders in Canada account for roughly 75% of all industry-funded research.

The overall impact of the R&D tax incentive on the large Canadian corporation may be inconsequential given the fact that the incentives are taxable and the cost and amount of effort and time involved in substantiating claims under the current regime are significant. Many large companies might therefore prefer a reduction in corporate tax rates over changes to the current R&D tax incentive system.

##### 7.1.2 "Fast Trackers"

The current Canadian R&D tax incentive program appears expressly designed to benefit the smaller R&D performer. Many CCPC's conducting R&D, especially specialty R&D houses, can credit their very existence to a favourable R&D tax incentive climate in Canada and the R&D tax credit refund remains an important element of cash flow.

Revenue Canada - Taxation's creation of the "Fast Track" ITC process has yielded impressive results and is designed to reward companies that maintain a good track record of R&D tax credit claims. Early refunds of R&D tax credits are issued to "Fast Trackers" provided the company's "prior year's claim did not result in material adjustments"; current year R&D expenditures do not "substantially exceed" those of the preceding year; and "there has been no change in control or ownership". Such "Fast Track" measures have resulted in CCPC applicants receiving their refund cheques within two months of filing.



The R&D tax incentive system is of tremendous value to qualifying CCPC's and presents many firms doing or planning to do business in the U.S. with an impressive marketing opportunity and a distinct cost advantage for bidding on U.S. sourced contracting business.

## 7.2 The U.S. R&D Tax Incentive

R&D tax incentives in the U.S. are not a static element of the tax legislation. R&D tax legislation is subject to change as a result of Congressional review on a periodic basis.

Like many Congressional decisions in the U.S. the decision to maintain, amend or drop current R&D tax legislation is influenced by lobbyists and various interest groups in the U.S.. U.S. corporate applicants, aware of the dynamic nature of the current R&D legislation, cannot depend on current measures and, perhaps as a result, place less emphasis on the importance of the R&D tax credit and deduction than their Canadian counterparts.

As is the case for large R&D performers in Canada, many U.S. R&D performers might prefer a reduction in the corporate income tax rate as opposed to more generous provisions under the U.S. tax incentive legislation. In addition, a lowered tax rate might do as much to encourage R&D in the U.S.

Appendix 1

COMBINED FEDERAL AND PROVINCIAL

EFFECTIVE TAX RATES IN CANADA

JANUARY 1 - JUNE 30

|                | No SBD         |                   | SBD            |                   |
|----------------|----------------|-------------------|----------------|-------------------|
|                | <u>M&amp;P</u> | <u>NO M&amp;P</u> | <u>M&amp;P</u> | <u>NO M&amp;P</u> |
| Federal        | 25.84          | 28.84             | 12.84          | 12.84             |
| Provincial     |                |                   |                |                   |
| - B.C.         | 14             | 14                | 9              | 9                 |
| - Alberta (1)  | 15             | 15                | 5              | 5                 |
| - Saskatchewan | 15             | 15                | 10             | 10                |
| - Manitoba     | 17             | 17                | 10             | 10                |
| - Ontario      | 14.5           | 15.5              | 10             | 10                |
| - Quebec **    | 6.16           | 6.16              | 3.36           | 3.36              |
| - N.B.         | 16             | 16                | 9              | 9                 |
| - N.S.         | 15             | 15                | 10             | 10                |
| - PEI          | 15             | 15                | 10             | 10                |
| - Nfld.        | 17             | 17                | 10             | 10                |
| - Yukon        | 2.5            | 10                | 2.5            | 5                 |
| - NWT          | 10             | 10                | 10             | 10                |
| Combined       |                |                   |                |                   |
| - B.C.         | 39.84          | 42.84             | 21.84          | 21.84             |
| - Alberta      | 40.84          | 43.84             | 17.84          | 17.84             |
| - Saskatchewan | 40.84          | 43.84             | 22.84          | 22.84             |
| - Manitoba     | 42.84          | 45.84             | 22.84          | 22.84             |
| - Ontario      | 40.34          | 44.34             | 22.84          | 22.84             |
| - Quebec       | 32.00          | 35.00             | 16.20          | 16.20             |
| - N.B.         | 41.84          | 44.84             | 21.84          | 21.84             |
| - N.S.         | 40.84          | 43.84             | 22.84          | 22.84             |
| - PEI          | 40.84          | 43.84             | 22.84          | 22.84             |
| - Nfld.        | 42.84          | 45.84             | 22.84          | 22.84             |
| - Yukon        | 28.34          | 38.84             | 15.34          | 17.84             |
| - NWT          | 35.84          | 38.84             | 22.84          | 22.84             |

Notes

- Provincial tax holidays or reduced rates for new corporations are ignored
- SBD - small business deduction
- M&P - manufacturing and processing profits deduction

Quebec

\*\* Effective rate only for active business income

Effective after May 16, 1989 SBD - 3.36%, NO SBD - 6.16%

Rate prior to May 17, 1989 3.22% and 5.9% respectively

Inactive income - 13.94% before May 17, 1989 and 14.56% after May 16, 1989

(1) Alberta

Small business income derived from M&P reduced to nil from April 1, 1985 to March 31, 1990.

6% reduction on M&P income not subject to the small business deduction before March 31, 1990.



## Appendix 2

### COMBINED FEDERAL AND STATE EFFECTIVE TAX RATES IN THE U.S.

#### FEDERAL TAX RATES

- Top rate of 34% (both manufacturing and other business sectors)
- Graduated rates for small businesses, taxable income:
  - up to \$50,000 15%
  - between \$50,000 and \$75,000 25%
  - in excess of \$75,000 34%
- The benefit of the lower brackets is completely phased out at \$335,000 (rate of 39% between \$100,000 and \$335,000)

#### COMBINED EFFECTIVE FEDERAL AND STATE TAX RATES

- Rate of 34% - 42% (both manufacturing and other business sectors)
- Graduated rates for small businesses.

### Conference

The basis of this comparative study is an international conference held on February 15th and 16th at the offices of Deloitte & Touche, 99 Bank Street, Suite 630, Ottawa, Ontario. The objective of the conference was for international experts to contrast and compare the R&D tax incentives that exist in Canada and the U.S. The following individuals were in attendance:

- Edward Maguire, LLb, Principal, Deloitte & Touche, Washington, U.S.A.
- James D. Mungovan, CPA, MSc, BSc; Partner, Deloitte & Touche, Boston, U.S.A.
- Kenneth J. Murray, BA, CA; Partner, Deloitte & Touche, Ottawa
- Thomas D. Bourke, BComm, MBA; Consultant, Deloitte & Touche, Ottawa
- Gerald D. Tapp, Manager Tax Policy, Industry, Science and Technology Canada, Ottawa
- Pamela Miller, Automotive Corporate Development Division, Industry, Science and Technology Canada, Ottawa

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6. "Cash Refunds for R&D Tax Claims Arriving Much Quicker, New Data Shows", Re\$earch Money , January 24, 1990.
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