SR&ED - COURSE & CASE STUDY CONTENTS SUMMARY
For the fiscal year ended: December 31, 2013

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I) Contents & purpose:

The study contains all information required to:

- Recognize eligible SR&ED activities and
- File and support a claim for Canadian SR&ED tax credits

A What is the SR&ED program?

A.1 SR&ED Incentive Program

The federal Scientific Research and Experimental Development (SR&ED) incentive program is designed by the Department of Finance, legislated in the *Income Tax Act* of Canada and administered by the Canada Revenue Agency (CRA).

These tax-based incentives for research and development provide direct financial support for taxpayers that are performing eligible activities in Canada. The program is intended to increase Canadian competitiveness in the world marketplace and to stimulate domestic economic growth. The government is committed to providing benefits to SR&ED performers by reducing the after-tax cost of doing research and development in Canada in the private sector. Most provinces offer additional incentives.

There are over 20,000 taxpayers claiming over $4.7 billion in SR&ED tax credits annually. The SR&ED incentive program represents a major portion of federal government funding for industrial research and development in Canada. The balance of government financial support comes through grants and loans administered by various departments and agencies such as Industry Canada.

There are a number of criteria for eligibility under the program and many claims are audited by the CRA to ensure that these criteria are met. Claims will only be successful if a complete claim is filed before the deadline, the research and technology advisors are satisfied that the work meets the eligibility criteria, and the financial audit results in an assessment for qualified expenditures.

A.1 Objectives of the program:

Currently, the federal government has three stated objectives for its science policy[1]:

1) Sustainable job creation and economic growth;
2) Improved quality of life; and
3) Advancement of knowledge.

With respect to the third criteria, the expanded explanation of the objective is as follows:

> "To create in Canada world centres of excellence in scientific discovery; to build a broad base of scientific inquiry; to foster Canadian participation in all major fields of science and technology; and to ensure that new knowledge can be acquired and disseminated widely, from Canadian sources and from around the world."[2]

One way to summarize the current Canadian SR&ED tax credit system is to describe it as a hedged transaction. By this, I mean that the types of expenses which qualify for credit are mainly:

- Salaries paid to Canadian employees, taxable on their wages; and
- Payments to taxable subcontractors, who must pay Canadian employees and related income taxes.

[1] Science & Technology for the New Century – A Federal Strategy, March 1996, Industry Canada
[2] Ibid.

These types of payments will generally create more tax revenue for the CRA than they will pay out in related Investment Tax Credits (ITCs).

While other types of qualified SR&ED expenses, namely foreign materials and capital equipment, consumed in Canadian SR&ED may create profits attributable outside Canada, they are typically a smaller component of most claims. The policy objective behind funding these purchases is directed to the stated science policy objective of "[ensuring] that new knowledge can be acquired and disseminated widely, from Canadian sources and from around the world."[3]

Furthermore, certain provinces, such as Quebec, do not provide ITCs from materials or capital. Instead, Quebec bases their credits primarily on SR&ED wages.

A.2 The main benefits of the SR&ED incentive program are:

- Deductions for SR&ED expenditures
- Investment tax credits for qualified expenditures
- Refundable ITCs for certain Canadian controlled private corporations.

SR&ED Benefits for Taxpayers in Canada

Benefits available to taxpayers who:

1. Carry on business in Canada
2. Perform eligible SR&ED in Canada that is related to that business
3. Make qualifying SR&ED expenditures and
4. File claim within the filing deadlines

The SR&ED incentive program is available to most taxpayers in Canada, including:

- Individuals and trusts
- Public corporations
- Private corporations
- Qualified Canadian controlled private corporations
- Foreign corporations
- General partnerships

It is not available to limited/passive partners due to the restrictions on allocating SR&ED expenditures and ITCs to specified members.[4]

According to recent statistics, the program is growing each year and the benefits are being claimed by more taxpayers. "The number of corporations earning SR&ED tax credits reached 19,685 in 2004, while the value of allowable SR&ED expenditures reached $14.4 billion. Corporations deducted $8.3 billion of allowable SR&ED expenditures to reduce their taxable income in 2004, and earned $3.4 billion of SR&ED ITCs.

[3] Ibid.

[4] Partnership losses of "specified members" are calculated without reference to SR&ED deductions that might otherwise be allocated to that member. Prior to 2007 these expenditures and ITCs were lost; they could not be allocated to the general partners. After February 2007 the limited partners' portions of the ITC may be allocated to partners that are not specified members. (The term "Specified members" is defined in subsection 248(1). Specified members include all limited partners and any general partners who are not directly involved in the operation of the partnership's business.)

A large majority of SR&ED performers are CCPCs, with most of them meeting the taxable capital and taxable income tests qualifying them for enhanced small business SR&ED incentives.

While small CCPCs account for around 80% of corporate SR&ED performers, they account for only 23% of allowable SR&ED expenditures.

However, the enhanced ITCs earned by smaller CCPCs at a rate of 35% made up 32% of total credits earned, while refunds of ITCs to these performers accounted for 29% of total credits earned in 2004.

The manufacturing sector is the largest beneficiary of the SR&ED ITCs, accounting for nearly one-half of ITCs earned. Within the manufacturing sector, computer and computer product manufacturing, transportation equipment manufacturing and chemical manufacturing are the largest users of the SR&ED program. Service industries, particularly professional, scientific and technical industries, and information and cultural industries are also significant users of SR&ED tax credits."[5]

There is a significant push to encourage small businesses to increase their participation in the program, through training seminars, new tools to simplify access to the program and increases to the expenditure limit for refundable claims.

A.3 Federal & Provincial SR&ED Funding[6]

The most recent Federal and Provincial budgets indicate the Canada SR&ED program has now reached funding levels of nearly $6 billion annually!

These annual spending levels are shown on the following charts which illustrate;

- the **federal government (CRA) provide**s almost $4.8 of the total $5.9 billion of SR&ED ITCs representing over **80% of funding**
- $1.6 billion (or 33%) of the CRA's expected 2008 ITCs payouts are non-refundable ITCs from prior years
- **Quebec** SR&ED credits ($689 million) represent almost **60% of total provincial spending**.

[5] Supra Footnote 1
[6] For sources of information please go to www.meuk.net / tax credit rates

Budgeted Expenditures for R&D Tax Credits		
	2008 Expenditures	
Federal	**($ Millions)**	
Earned & Claimed in Current Year	3,000	
Claimed Current Year but Earned in Prior Years	1,655	
Earned current year but carried back to prior years	100	
Total	**4,755**	**4,755.0**
Provinces / Territories		
AB	60	
BC	150	
MB	15	
NB	4.6	
NL	12.1	
NS	14	
ON	215	
PEI	0	
QC	689	
SK	12	
YK	0.2	
NWT	0	
NV	0	
Total		**1,171.9**
Total Expenditures in Canada		**5,926.9**

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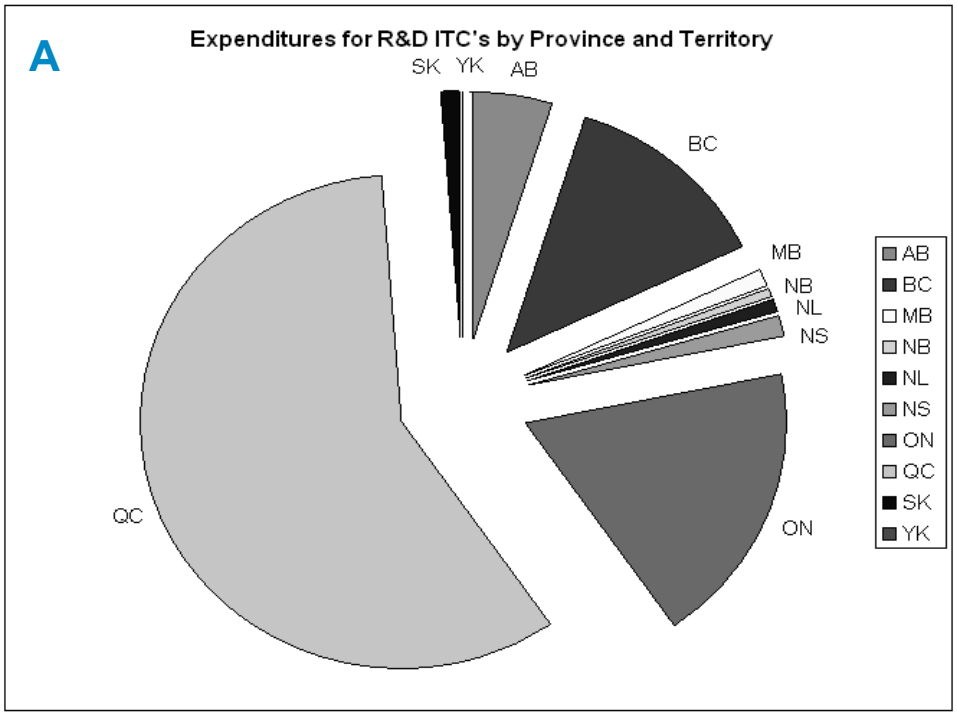
A.3.1 Expenditures by Province



A.4 Number of companies claiming SR&ED credits[7]

Credits Earned by Rate							
By Value of Credits - $ millions				By Number of Corporations			
	Earned at 35% rate	Earned at 20% rate	Total credits earned	Earning at 35% rate	Earning at 20% rate	Earning Both 35% & 20% rates	Total corporations earning credits
2002	865	2,397	3,262	11,603	4,133	325	16,061
2003	954	2,238	3,193	13,418	4,309	339	18,066
2004	1,083	2,271	3,354	15,295	4,051	339	19,685

A.5 Credits earned by rate of ITCs

The enhanced ITCs earned by smaller Canadian Controlled Private Corporations (CCPCs) at a rate of 35 per cent made up 32 per cent of total credits earned, while refunds of ITCs to these performers accounted for 29 per cent of total credits earned in 2004.

A.6 Credits earned by size of corporation

While small CCPCs account for around 80 per cent of corporate SR&ED performers, they account for only 35% of allowable SR&ED ITCs. These small CCPCs also represent the largest growth segment of the population.

[7] Tax Incentives for Scientific Research and Experimental Development, October 2007 consultation Paper, Department of Finance Canada

Distribution of Credits Earned by Corporation Size

	By Value of Credits			By Number of Corporations		
	2002	2003	2004	2002	2003	2004
	% of total credits earned			*% of total corporatioins earning credits*		
CCPCs. by taxable income ($000)						
0 - 400	31.7	34.8	35.6	79.1	80.8	81.8
400 - 600	0.7	0.9	1.2	1.9	2.3	2.4
600 - 1,000	0.9	0.8	1.0	2.0	1.8	1.9
1,000 +	4.7	4.2	4.4	4.4	4.0	4.1
Total CCPCs	38.1	40.8	42.1	87.4	88.9	90.1
All other corporations	61.9	59.2	57.9	12.6	11.1	9.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
CCPCs, by taxable capital ($000,000)						
0 - 10	31.3	35.0	n/a	82.8	84.7	n/a
10 - 15	1.3	1.1	n/a	1.5	1.5	n/a
15 - 25	1.4	1.2	n/a	1.4	1.1	n/a
25 - 50	2.0	1.3	n/a	1.0	0.9	n/a
50 - 75	0.5	0.5	n/a	0.3	0.3	n/a
75+	1.6	1.7	n/a	0.3	0.3	n/a
Total CCPCs	38.1	40.8	42.1	87.4	88.9	90.1
All other corporations	61.9	59.2	57.9	12.6	11.1	9.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note: Due to changes in reporting requirements, detailed breakdowns by taxable capital are not available for 2004.

A.7 Credits earned by industry sector

Manufacturing = 50%

The manufacturing sector is the largest beneficiary of the SR&ED ITCs, accounting for nearly one-half of ITCs earned. The following are the largest users of the SR&ED program within the manufacturing sector:

- Computer and computer product manufacturing;
- Transportation equipment manufacturing: and
- Chemical manufacturing.

Service & Information Technology > 35%

The following service industries are significant users of SR&ED tax credits comprising the majority of non-manufacturing claimants:

- Professional;
- Scientific;
- Technical; and
- Information.

Distribution of Credits Earned by Sector

	By Value of Credits			By Number of Corporations		
	2002	2003	2004	2002	2003	2004
Industrial Sector	*% of total credits earned*			*% of total corps. earning credits*		
Agriculture, forestry, fishing	1.4	1.6	2.1	7.1	9.0	10.3
Manufacturing	**47.0**	**47.7**	**47.6**	**41.7**	**41.2**	**40.5**
Construction	0.6	0.7	0.7	2.4	2.4	2.5
Transportation/warehousing	0.5	0.4	0.3	0.7	0.7	0.7
Information/cultural industries	**12.9**	**11.8**	**11.6**	**3.6**	**3.4**	**3.1**
Utilites	0.1	0.1	0.1	0.1	0.1	0.1
Wholesale trade	4.2	4.7	4.6	7.3	7.4	7.8
Retail trade	0.8	0.8	0.8	1.6	1.7	1.7
Financial intermediaries	1.0	1.3	1.3	1.3	1.3	1.4
Management companies	0.6	0.4	0.5	1.1	1.0	1.0
Other services	**27.8**	**27.3**	**26.7**	**30.7**	**29.6**	**28.7**
Oil and gas	2.3	2.5	2.7	1.0	0.9	0.8
Mining	0.4	0.7	0.5	0.3	0.3	0.2
Other	0.2	0.3	0.6	0.8	1.0	1.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

D. Seminar Format

There is a substantial amount of published interpretation, most representing the views of the CRA. These views are not always shared by industry, but for the most part, provide excellent assistance in understanding the program.

This seminar will often bring participants back to the legislative foundation to better understand the rules of the SR&ED program. This should better allow the participants to later refer to the various interpretations and determine the extent to which they could take a different view.

These seminar notes are intending to introduce participants to the SR&ED program, more particularly to provide a bridge between interpretation documents and the legislation. The seminar and the seminar notes should not be relied upon in planning for or reporting on SR&ED work. Participants should rely on the provisions in the *Income Tax Act* (Canada) and the various Provincial Acts relevant to the time period covering the issues under consideration.

A.8 Comparing R&D Funding by Country[8]

If we want to make a rough comparison of Canada's funding vs. other industrialized countries we can use a ration named the "Beta Index" (B-Index).

It is calculated as:

After tax cost of $1 of R&D / (1- tax rate)

Simply stated:

B-Index is the before-tax income needed to break even on one dollar of R&D spent.

The **lower** the B-Index the more **favorable** it is for a company to perform R&D in a particular country.

As we can see from this comparative that Canada does in fact have one of the lowest B-Indices however, **many countries provide other "direct" funding** instead of "tax incentives."

The OECD report provides a further comparison of the total % of "Business Expenditures on Research & Development" (BERD) which are financed by the government (next page).

Comparing the value of B-indexes 2002

(manufacturing companies, by country)

Country	Large company	Small company
Australia	0.801	0.801
Austria	0.875	0.875
Belgium	1.009	1.006
Canada	**0.827**	**0.678**
Denmark	0.893	0.893
Finland	1.01	1.01
France	0.939	0.939
Germany	1.025	1.025
Greece	1.015	1.015
Iceland	1.012	1.012
Ireland	1	1
Italy	1.026	0.557
Japan	0.991	0.879
Korea	0.874	0.821
Mexico	0.969	0.969
Netherlands	0.901	0.647
New Zealand	1.023	1.023
Norway	1.018	0.768
Portugal	0.665	0.665
Spain	0.559	0.559
Sweden	1.015	1.015
Switzerland	1.01	1.01
United Kingdom	0.904	0.894
United States	0.934	0.934

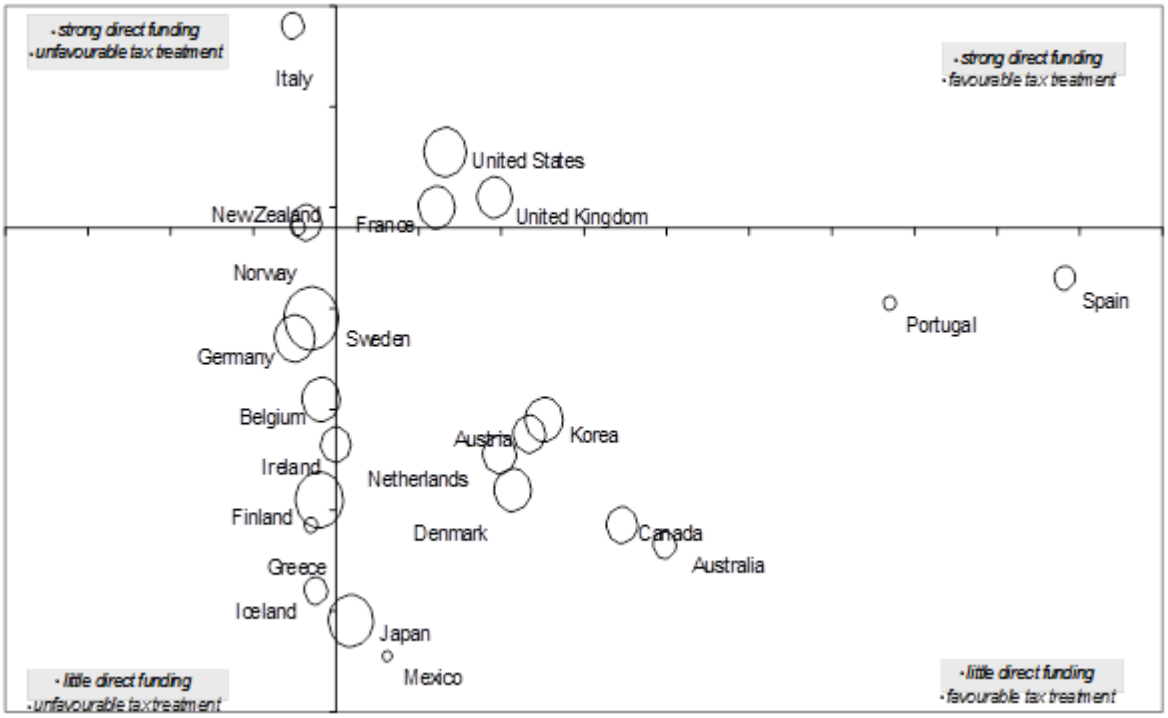
Notable quote:

"He who asks a question is a fool for 5 minutes.
He who does not ask a question remains a fool forever."

- Chinese proverb

[8] Tax Incentives for Research and Development: Trends and Issues, OECD, 2002

Government funding of business (OECD)
Direct (Grants) vs. Indirect (Tax Credits)



Authors Analysis & commentary:

This table indicates that the Canadian government finances approximately 4% of total business research whereas most other countries are significantly higher (e.g. France, US & UK are all >10%).

As a result it appears that the Canadian government is not nearly as generous as other countries in funding SR&ED.

Despite this fact the SR&ED credit appears to have created a scenario where a smaller amount of funding is in fact creating a significant amount of SR&ED.

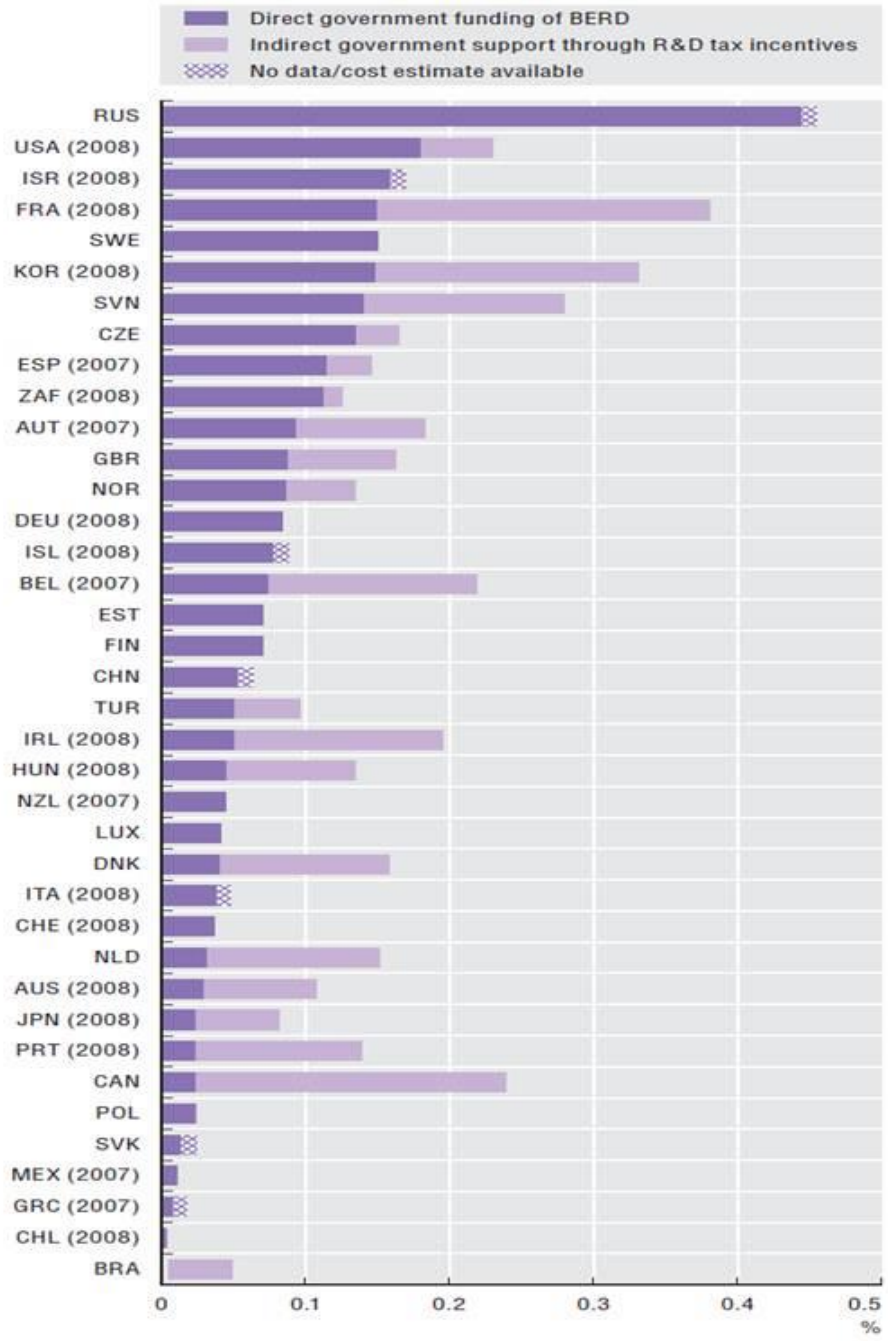
The next page provides a comparison of the funding provided directly (grants & contracts) vs. indirectly (tax credits). NOTE: These balances **do NOT** include "military & defence" related R&D spending.

Notable quote:

"The best way to have a good idea
is to have a lot of ideas."

- Dr. Linus Pauling

Government Funding of Business R&D - Direct vs. Tax Credits[9]



Source: OECD, based on OECD R&D tax incentives questionnaires, January 2010 and June 2011; and OECD, Main Science and Technology Indicators Database, June 2011. See chapter notes.

[9] OECD SCIENCE, TECHNOLOGY AND INDUSTRY SCOREBOARD 2011 © OECD 2011

B SR&ED Eligibility

B.1 International R&D Tax Credits

Often companies perform eligible research in several countries.

A detailed review of the government funding methods in most countries illustrates that almost all countries use a similar definition of the R&D project and thus the eligible activities.

B.1.1 History of the international definition

The **Frascati Manual** is a document setting forth the methodology for collecting statistics about research and development. The Manual was prepared and published by the Organisation for Economic Co-operation and Development (OECD).

In June 1963, OECD experts met with the NESTI group (National Experts on Science and Technology Indicators) at the Villa Falconieri in Frascati, Italy. Since then it has been revised several times. In 2002 the 6th edition was published.

The manual sets forth fundamental definitions for: basic research, applied research, and research & development. It also organizes Fields of science into main and sub-categories.

Over the past 40 years, the NESTI group has developed a series of documents, known as "Frascati Family", which includes manuals on:

- R&D (Frascati Manual),
- innovation (Oslo Manual),
- human resources (Canberra Manual),
- technology balance of payments and
- patents as science and technology indicators.

Originally an OECD standard, it has become an acknowledged standard in R&D studies all over the world and is widely used by various organisations associated with the United Nations and European Union.

B.1.2 Three forms of research

The Frascati Manual outlines three forms of research. These are basic research, applied research and experimental development[10]:

1. **Basic research** is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, **without any particular application or use in view**.

2. **Applied research** is also original investigation undertaken in order to acquire new knowledge but **directed towards a specific practical aim or objective**.

3. **Experimental development** is systematic work, drawing on existing knowledge gained from research and/or practical experience, which is directed to producing **new materials, products or devices**, to installing new processes, systems and services, or to improving substantially those already produced or installed.

B.2 Definition of Qualified Activities via Eligible Projects (Scientific Method)

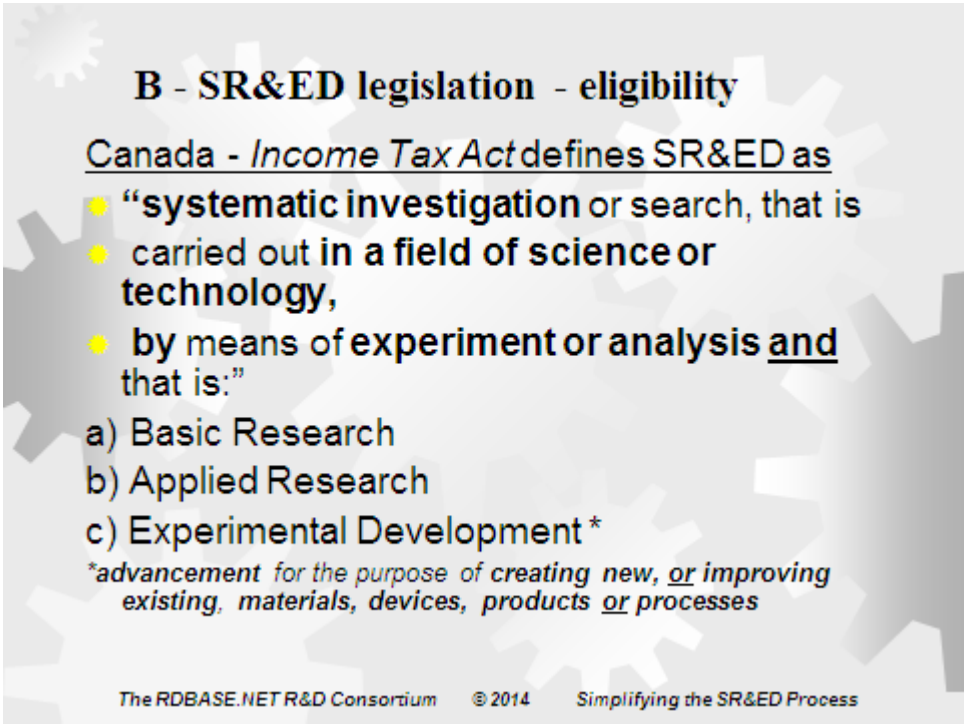
"For a … project to be classified as R&D, its completion must be dependent on a scientific &/or **technological advance**, the aim of the project must be the **systematic resolution** of a scientific and/or **technological uncertainty**."[10]

[10] Frascati Manual 2002 paragraph 135

International definition of an R&D project

- "For a … project to be classified as R&D, its completion must be dependent on a scientific &/or **technological advance**, the aim of the project must be the **systematic resolution** of a scientific and/or **technological uncertainty**."

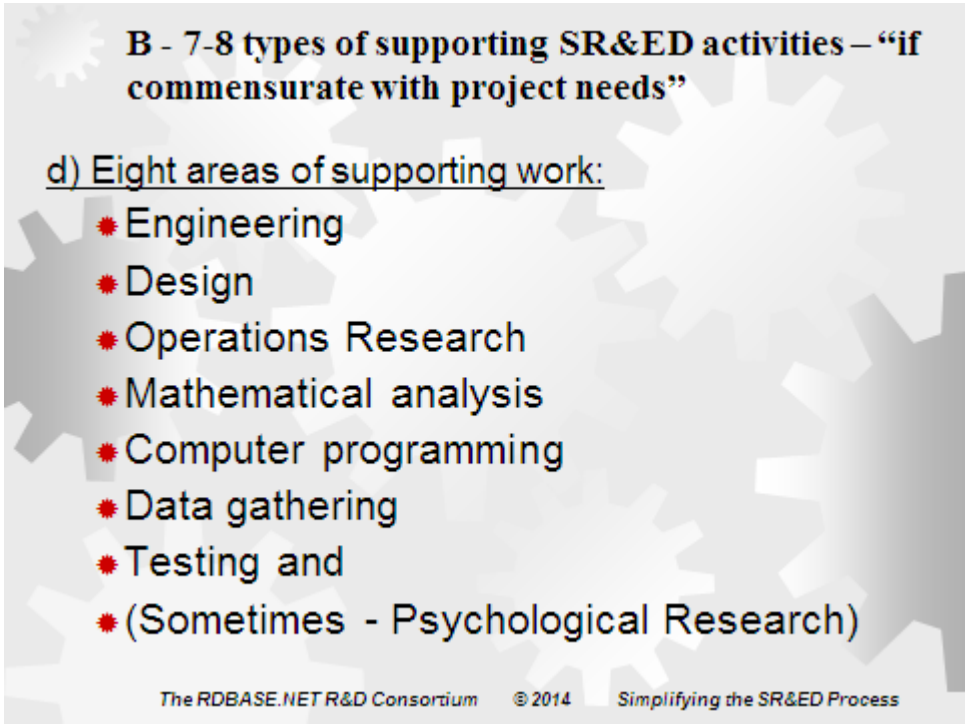
- Source: Frascati Manual 2002, paragraph 135



B.3 Legislative definitions of SR&ED – inclusions & exclusions

The definition of scientific research and experimental development appears in subsection 248 (1) of the ITA

> "**scientific research and experimental development** means **systematic investigation** or search that is carried out **in a field of science or technology by** means of **experiment or analysis and** that is:
>
> (a) **basic research**, namely, work undertaken for the advancement of scientific knowledge without a specific practical application in view,
>
> (b) **applied research**, namely, work undertaken for the advancement of scientific knowledge with a specific practical application in view, **or**
>
> (c) **experimental development**, namely, work undertaken for the purpose of achieving technological advancement for the purpose of **creating new, or improving existing**, **materials, devices, products or processes, including incremental improvements thereto**, and, in applying this definition to a taxpayer,
>
> **includes:**



(d) work undertaken by or on behalf of the taxpayer with respect to **engineering, design**, operations research, mathematical analysis, **computer programming, data collection**, **testing** or psychological research, where the **work is commensurate with the needs, and directly in support, of work described in paragraph (a), (b) or (c)** that is undertaken in Canada by or on behalf of the taxpayer,

but does not include work with respect to

(e) **market research** or **sales promotion**,

(f) **quality control or routine testing** of materials, devices, products or processes,

(g) research in the **social sciences or the humanities**,

(h) prospecting, exploring or drilling for, or producing, minerals, petroleum or natural gas,

(i) the **commercial production** of a new or improved material, device or product or the commercial use of a new or improved process,

(j) **style changes**, or

(k) **routine** data collection."[11]

[11] end of ITA subsection 248(1) definition of SR&ED

B.3.1 Analysis of inclusions and exclusions

Inclusions:

(a-d) Generally speaking, the legislation on the previous page provides that all work aimed at incremental technical improvements is eligible for credit to the extent that it was **"commensurate with the needs" involved with the resolution of some predetermined technological uncertainty**.

Exclusions:

(e, f & k) **Market research and sales promotion**, quality control, routine testing and routine data collection are excluded activities to the extent that they extend beyond the resolution of the significant technical uncertainties. Where work which may normally be considered market research involves issues such as the quantification of future project objectives, this work may be eligible SR&ED. Quality control, testing and data collection are eligible, to extent that they are required to resolve technological uncertainties.

(j) **Style changes** are excluded activities unless the design change has a technological aspect that is tied to an eligible project. Generally speaking, style changes are routine activities which can not be considered, "commensurate with the needs, and," the resolution of one or more technical uncertainties.

(g) **Research in the social sciences or the humanities** is a deliberate exclusion that covers work in any non-technical field such as accounting, finance, business studies, economics and psychology to name a few. Some may note that psychological research is mentioned as a potentially supporting activity in paragraph (d) of the legislation. The CRA's formal position is that this research will be limited to pharmaceutical medical industries where it is tied to other technical or scientific drug studies.

(h) **Prospecting,** exploring or drilling for, or producing, minerals, petroleum or natural gas are all excluded activities under the SR&ED program. However where activities are undertaken in the resource sector and are primarily undertaken to achieve a technological advance that meets the

criteria for SR&ED, such activities will be allowed. Where the SR&ED activity is secondary the eligibility is not likely to be accepted by the CRA.

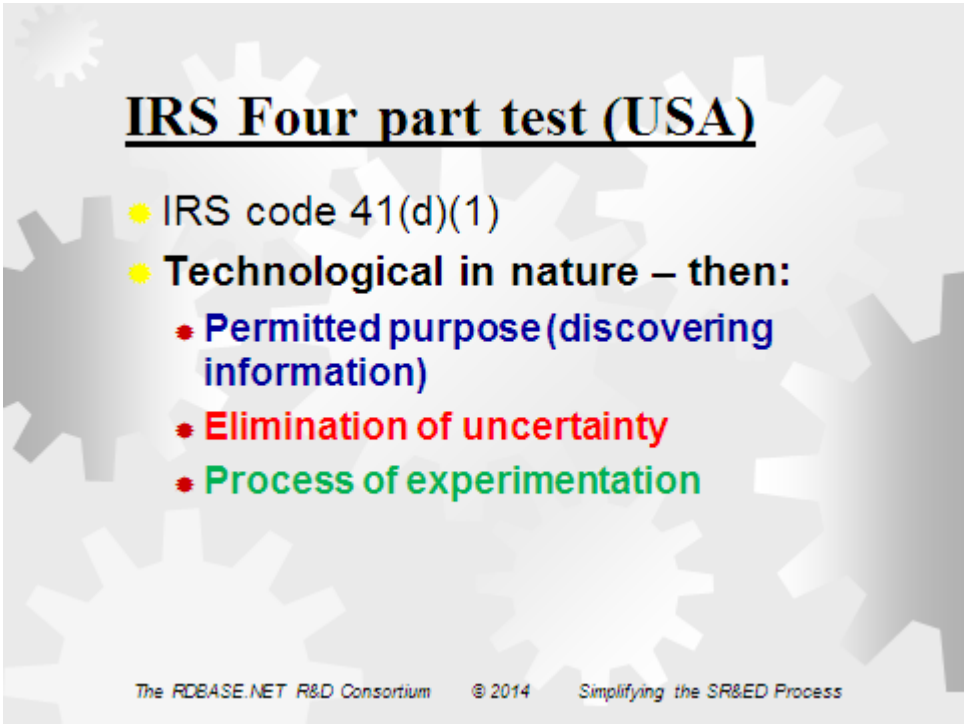
(i) **Commercial production** of a new or improved material, device or product or the commercial use of a new or improved process is excluded once the technological uncertainties related to achieving the technological advancement have been resolved. Some taxpayers are finding that claims involving experimental production are being challenged by the CRA on the basis of the (i) exclusion. This is an area that was raised in the 2007 consultation process.

This definition of scientific research and experimental development encompasses a wide variety of scientific and technological work. The Department of Finance, in defining scientific research and experimental development, generally followed the internationally accepted definition. It includes experimental development work outside the predictable “Research Lab” environment. Qualifying R&D work may take place in a lab, on “the shop floor”, and elsewhere.

It is important to note that the ITA defines scientific research and experimental development as work (i.e. systematic investigation or search) undertaken for the advancement of scientific knowledge or technological capability.

As a result, some work performed in the course of completing a business project is not considered to be eligible; they are not part of the SR&ED project. In order to differentiate between qualifying and non-qualifying R&D, the ITA refers to qualifying work as Scientific Research and Experimental Development, or SR&ED.

It is important to differentiate between excluded work and work that is necessary to support an eligible project. For example, testing to resolve a technological uncertainty is eligible, but routine testing not related to attempting to advance technology is excluded. The production of an experimental prototype may be eligible but the production of a unit strictly for the purpose of sale is not.



The IRA definition of eligible R&D expenses for ITC follows the CRA & International definition as illustrated in following pages

B.4 Eligible vs. ineligible fields of science

The complete listing of eligible vs. ineligible fields of science is provided on the next page.

This listing from OECD is also used by the CRA.

B.4.1 Fields of Science or Technology – International

Fields of science - OECD classifications 2007

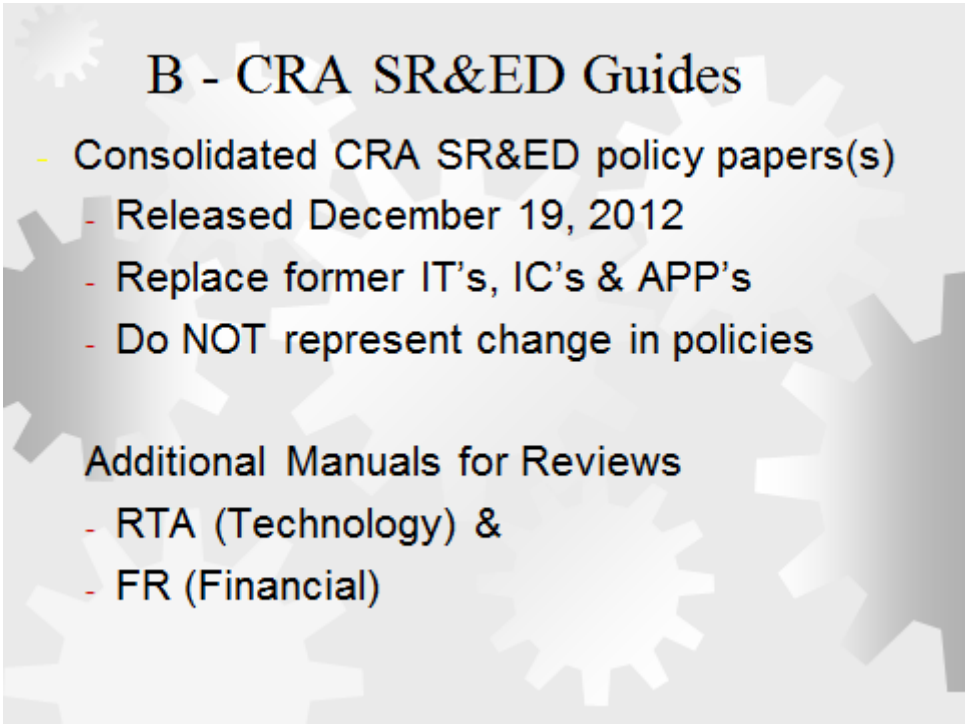
1. Natural Sciences	1.1 Mathematics 1.2 Computer and information sciences 1.3 Physical sciences 1.4 Chemical sciences 1.5 Earth and related environmental sciences 1.6 Biological sciences 1.7 Other natural sciences	**ELIGIBLE for R&D tax credits**
2. Engineering & Technology	2.1 Civil engineering 2.2 Electrical engineering, electronic engineering, information engineering 2.3 Mechanical engineering 2.4 Chemical engineering 2.5 Materials engineering 2.6 Medical engineering 2.7 Environmental engineering 2.8 Environmental biotechnology 2.9 Industrial Biotechnology 2.10 Nano-technology 2.11 Other engineering and technologies	
3. Medical & Health Sciences	3.1 Basic medicine 3.2 Clinical medicine 3.3 Health sciences 3.4 Health biotechnology 3.5 Other medical sciences	
4. Agricultural Sciences	4.1 Agriculture, forestry, and fisheries 4.2 Animal and dairy science 4.3 Veterinary science 4.4 Agricultural biotechnology 4.5 Other agricultural sciences	
5. Social Sciences	5.1 Psychology 5.2 Economics and business 5.3 Educational sciences 5.3 Sociology 5.5 Law 5.6 Political Science 5.7 Social and economic geography 5.8 Media and communications 5.7 Other social sciences	**NOT ELIGIBLE for R&D tax credits**
6. Humanities	6.1 History and archaeology 6.2 Languages and literature 6.3 Philosophy, ethics and religion 6.4 Art (arts, history of arts, performing arts,music) 6.5 Other humanities	

B.5 Summary of Federal (CRA) and Provincial Guides

In order to prepare the SR&ED forms (listed in section ***T***) the Federal and Provincial governments have prepared a series of guidelines. The documents of greatest relevance have been cited in this section.

Each of these documents are also available for download over the Internet at http://www.cra-arc.gc.ca/txcrdt/sred-rsde/frh-eng.html.

B.5.1 Overview of CRA guides regarding SR&ED eligibility



B.5.1.1 Former GuidanceTechnical eligibility (See additional guides in APP section)

Plastics Guidance Document - New section (April 2004) on **moulds, tools and dies**

Chemicals Guidance Document #1 - Shop floor SR&ED
Chemicals Guidance Document #2 - Qualifying Work

Food and Consumer Packaged Goods Sector - SR&ED Guidance Document

Plant Breeding and Seed Industry Scientific Research and Experimental Development (SR&ED) - Program Guidance Paper

Textile Industry Guidance Document

SR&ED Investment Tax Credits for **Farm Producers**

SR&ED **software** guidance paper - CRA with CATA (September 2000)
IC 97-1 - Scientific Research and Experimental Development - Administrative Guidelines for **Software Development**

IC94-1 - SR & ED – **Plastics Industry** Application Paper

IC94-2 - SR & ED **Machinery and Equipment Industry** Application Paper

IC86-4R3 - Experimental Development and Scientific Research **(general guidelines)**

IC86-4R2SUP1 - Scientific Research and Experimental Development **Automotive** Industry Application Paper

IC86-4R2SUP2 - Scientific Research and Experimental Development **Food Industry** Application Paper

B.5.1.2 Prior Guidance on Financial eligibility

B.5.1.3

IT151R5 - Scientific research and experimental development expenditures

T4088 - Claiming Scientific Research and Experimental Development Expenditures - Guide to Form T661

- Additional tax forms are listed and reproduced in section T.

B.6 December 2012 SR&ED Policy Papers:

The CRA released the following consolidated policy documents [2012-12-19].

They are available from the CRA website[12] and will be referred to in the case study examples.

- Assistance and Contract Payments Policy
- Contract Expenditures for SR&ED Performed on Behalf of a Claimant Policy
- **Eligibility of Work for SR&ED Investment Tax Credits Policy**
- Materials for SR&ED Policy
- Pool of Deductible SR&ED Expenditures Policy
- Prescribed Proxy Amount Policy
- Recapture of SR&ED Investment Tax Credit Policy
- SR&ED Capital Expenditures Policy
- SR&ED Claims for Partnerships Policy
- SR&ED During Production Runs Policy
- SR&ED Filing Requirements Policy
- SR&ED Glossary
- SR&ED Investment Tax Credit Policy
- SR&ED Lease Expenditures Policy
- SR&ED Overhead and Other Expenditures Policy
- SR&ED Salary or Wages Policy
- SR&ED Shared-Use-Equipment Policy
- SR&ED while Developing an Asset Policy
- Third-Party Payments Policy
- Total Qualified SR&ED Expenditures for Investment Tax Credit Purposes Policy
- Traditional and Proxy Methods Policy

[12] http://www.cra-arc.gc.ca/txcrdt/sred-rsde/whtsnw/menu-eng.html

B.7 New T661 form October 2013

According to the CRA website,

"SR&ED T661 Claim Form – 2013 Revision

In October 2013 the Canada Revenue Agency (CRA) will be releasing a revised Form T661, *Scientific Research and Experimental Development (SR&ED) Expenditures Claim,* to accommodate the legislative changes coming into effect on January 1, 2014, and to make sure the form is consistent with the consolidated SR&ED policy documents released in December 2012.

This version of the form will also consolidate former Sections B and C in Part 2 so that all claimants answer the same three questions in Section B.

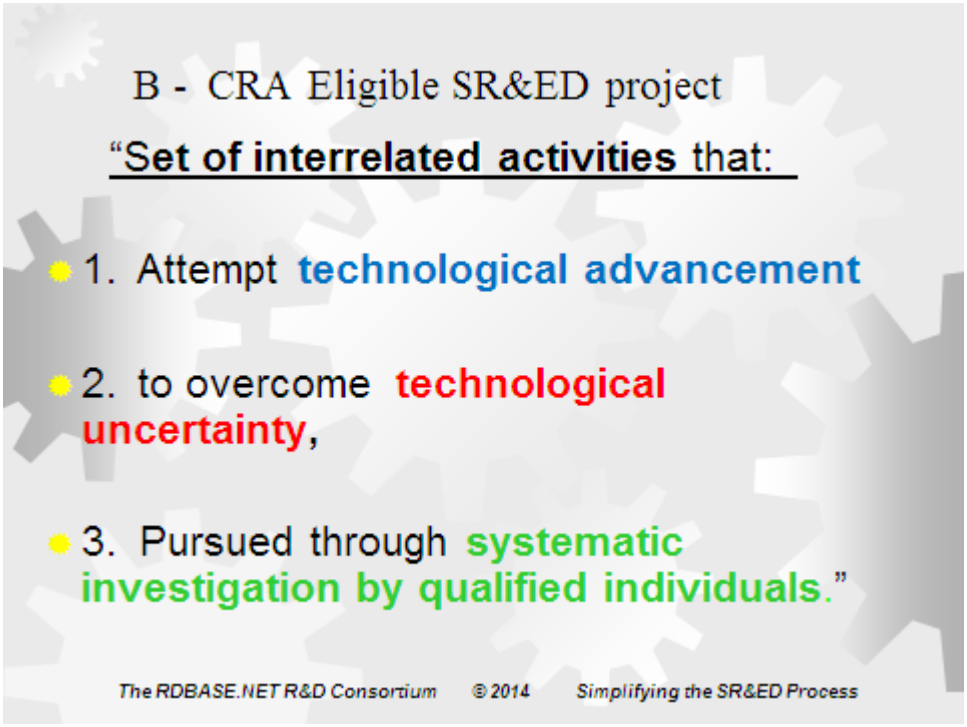
The order of the questions in Section B will also be changed for consistency with the *Eligibility of Work for SR&ED Investment Tax Credits Policy* document released in December 2012.

This revised version of Form T661 (13) (revision code 1301) will be effective as of its publication date. We encourage you to start using the new form as soon as it is available.

You can submit the T661(12) version of the form until December 31, 2013.

Starting January 1, 2014, we will accept only the T661(13) version of the form for all tax years.

B.8 CRA - definition of a project



B.8.1 Technical objectives

The CRA requires that the scientific or **technological objectives** you state:

- "be quantifiable or verifiable;
- contemplate a reasonable timeframe (generally <= 3 years)" and;[13]
- "be clearly stated at an early stage in the project's evolution"[14].

Excerpts from CRA form T4088[15]:

> "To establish whether or not the work you claim is eligible, we have to examine eligibility **at the project level**. You must present your claim showing your work organized as SR&ED projects."
>
> "**An SR&ED project consists of a set of interrelated activities** that meet the **three criteria** of SR&ED defined in the current version of Information Circular 86-4, *Scientific Research and Experimental Development*. This means that the set of activities must be necessary for:

[13] CRA form T4088, part 2, paragraph A – Guide to the T661 form.
[14] Information Circular 86-4R3, paragraph 2.10.3
[15] This is the CRA's guide to the T661 form

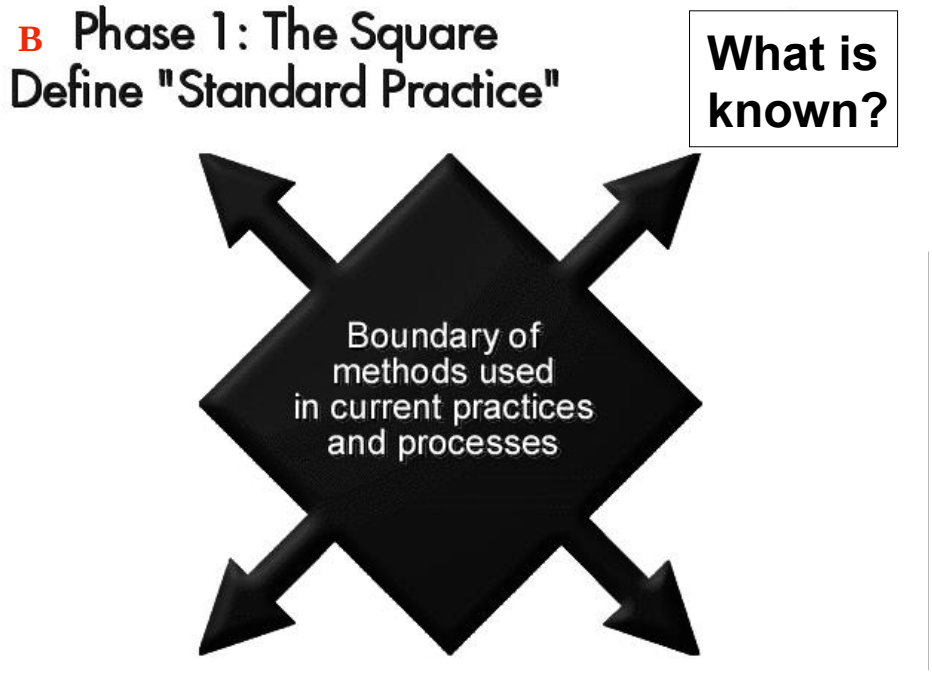
1. The attempt to achieve specific scientific or **technological advancement,** and

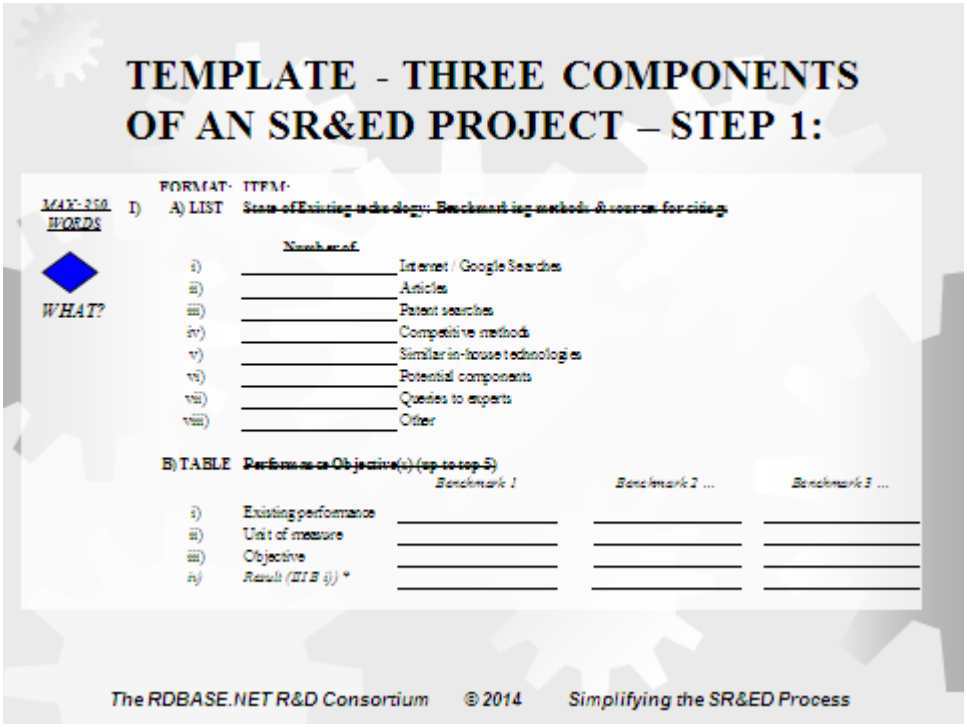
2. overcome scientific or **technological uncertainty,** and

3. must be pursued through a **systematic investigation** by means of experiment or analysis performed **by qualified individuals**."[16]

[16] Excerpts from CRA form T4088[16]- the Guide to completing an SR&ED claim

B.8.2 Phase 1: The Square - define standard practice





B.8.2.1 International directives

B.8.2.2 Define industry "standard practice"

"The basic criterion for distinguishing R&D from related activities is the presence in R&D of an appreciable element of novelty and the resolution of scientific and/or technological uncertainty,

i.e. when the solution to a problem is **not readily apparent to someone familiar with the basic stock of common knowledge** and techniques for the area concerned."[17]

B.8.2.3 Technological objective beyond standard practice

"…. If the primary objective is to make **further technical improvement** on the product or process then the work comes within the definition of R&D ……. if the primary objective is to develop markets, to do preproduction's planning or control system working smoothly, then the work is no longer R&D." [18]

B.8.2.4 CRA directives (Canada) – pre-Dec 19, 2013

"Commonly available sources of knowledge or experience are those that can reasonably be assumed to be **readily available to those with basic training or experience in the field of concern.**

These resources enable them to be sufficiently **qualified to participate** in SR&ED. They also include knowledge that is available in the **business context** of the firm….

An enterprise may not have **practical access** to information proprietary to a competitor, or known in specialist or academic circles." [19]

"Essentially, the **presence of a technological uncertainty puts the project into the realm of experimental development** when solutions cannot be based on standard practice alone.

A claim for qualifying expenditures should clearly explain all **departures from standard practice** in the experimental development activity."[20]

[17] Frascati Manual 2002 paragraph 84
[18] Frascati Manual (2002) proposed standard practice for survey on research and experimental development Paragraph 111
[19] CRA IC 86-4R3 – glossary
[20] Ibid paragraphs 4.3 & 4.4

B.8.2.5 CRA directives (Canada) – post Dec 19, 2013

"The company is expected to have information that is common knowledge ... to professionals familiar with the specific areas of science or technology…

Technology base or level

Refers to the existing level of technology and consists of the knowledge of the technological resources within the company & sources available publicly …. include:

- technical knowledge ...of **its personnel;**
- **current products**, techniques, practices & methodologies (trade secrets **& intellectual property**).
- **Publicly available sources** … publications, journals, textbooks, internet-based information & expertise ... through employees or contractors.

The technology base will vary from company to company even though the knowledge available publicly remains the same."[21]

B.8.2.6 IRS directives (USA)

Permitted purpose:

"Discovering information … application of which … development of a new or improved business component of the taxpayer ...

A business component may include a product, process, technique, formula, invention, or software."[22]

A) Define industry "standard practice":

"*discovering information [defined]* as obtaining knowledge that exceeds, expands, or refines the common knowledge of skilled professionals in a particular field of science or engineering."[23]

B) Objective beyond standard practice:

"Research is to be treated as conducted for a qualified purpose if it relates to (i) a new or improved function, (ii) performance, (iii) reliability or quality."[24]

---

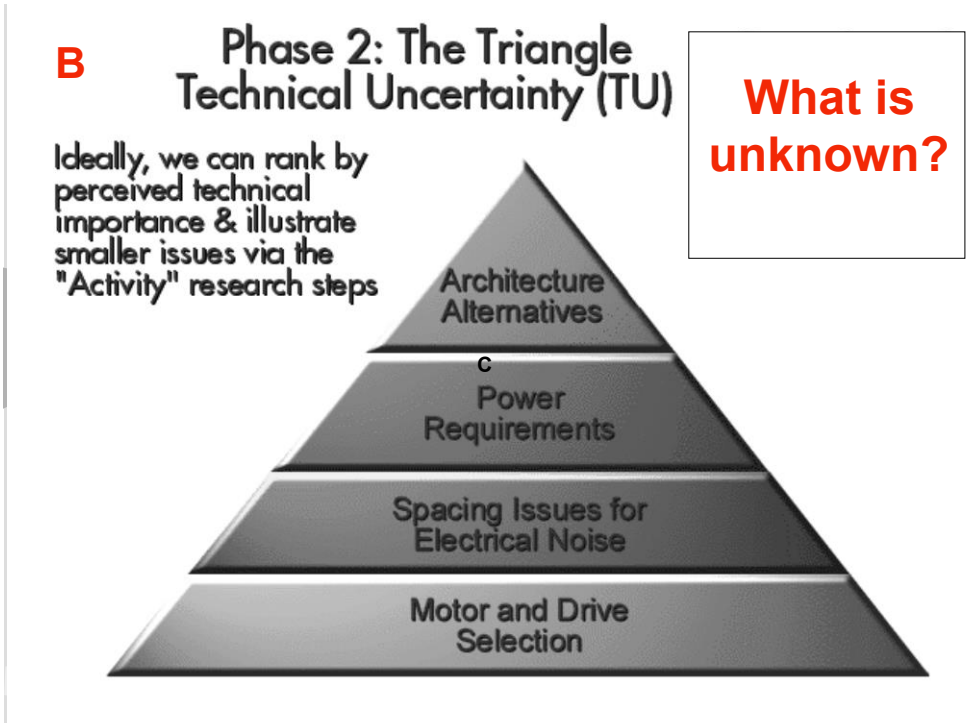
21 Source: CRA SR&ED Glossary Dec. 19, 2012 SR&ED policy papers

22 IRS code Section 41(d)(1 & 4)

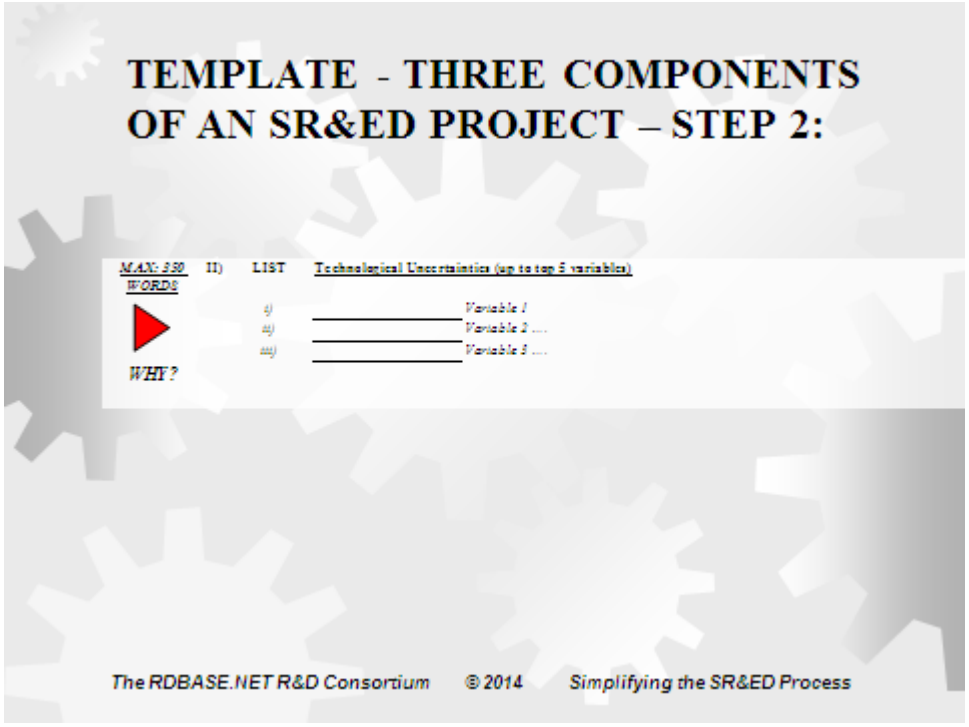
23 IRS code Section 41(d)(1 & 4)

24 IRS code Section 41(d)(3)(A)

B.8.3 Phase 2: The triangle - technical uncertainty



The CRA recognizes two specific sources of eligible technical uncertainty for SR&ED:



B.8.3.1 International Directives

"The basic criterion for distinguishing R&D from related activities is the presence in R&D of an appreciable element of novelty and the resolution of **scientific and/or technological uncertainty**,

i.e. when the solution to a problem is not readily apparent to someone familiar with the basic stock of common knowledge and techniques for the area concerned."[25]

The paper includes some supplementary criteria for distinguishing R&D:

- What is new or innovative about this project?
- Is it seeking previously undiscovered phenomena, structures or relationships?
- Does it apply knowledge or techniques in a new way?
- Is there a significant chance that it will result in new (extended or deeper) understanding of phenomena,
- relationships or manipulative principles of interest to more than one organization
- Are the results expected to be patentable?

B.8.3.2 CRA directives – pre Dec 19, 2012

"Specifically, **scientific or technological uncertainty** may occur in either of two ways:

- **[scientific uncertainty]** it may be uncertain whether the goals can be achieved at all; **or**

- **[system uncertainty]** the taxpayer may be fairly confident that the goals can be achieved, but may be **uncertain which of several alternatives (i.e., paths, routes, approaches, equipment configurations, system architectures, circuit techniques, etc.)** will either work at all, or be feasible to meet the desired **specifications or cost targets**, or both of these…Work on combining standard technologies, devices, and/or processes is **eligible if** non-trivial combinations of established (well-known) technologies and **principles for their integration carry a major element of technological uncertainty**; this may be called a "system uncertainty."[26]

In the author's opinion, this definition underlines the importance of continually outlining initial expectations and explaining resultant variances for work with any significant integration uncertainties.

[25] Frascati Manual 2002 paragraph 84
[26] CRA IC 86-4R3 paragraph 2.10.2

B.8.3.3 CRA directives (Canada) – post Dec 19, 2013

"Scientific or technological uncertainty:

Scientific uncertainty

- Whether a given result or objective can be achieved or ...

System uncertainty

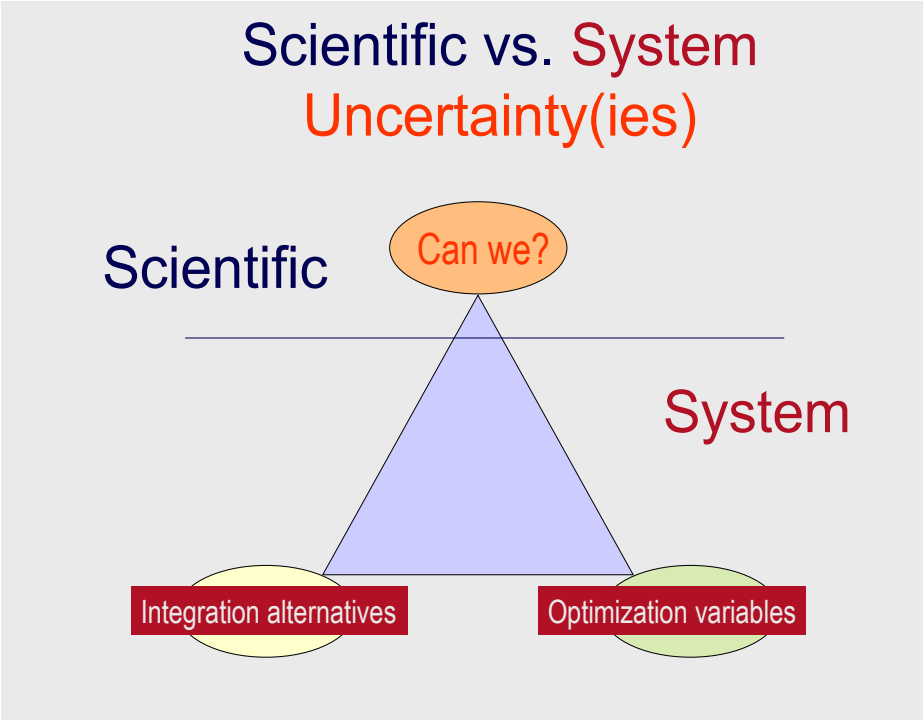
- what alternatives (for example, paths, routes, approaches, equipment configurations, system architectures, or circuit techniques) will enable the goals to be met based on the existing technology base or level.

Formulating a hypothesis

- means an idea, consistent with known facts, that serves as a starting point for further investigation to prove or disprove that idea."[27]

[27] Source: CRA Eligibility of Work for SR&ED Investment Tax Credits Policy paragraphs 2.1.1 & 2.1.2

Importance of continually documenting system uncertainties



CRA guidance on identifying system uncertainties

> "If the technological specifications or objectives to resolve the "system uncertainty" are such that the basic design of the **underlying technologies must be changed** to achieve the integration, the current **costs of the overall project may qualify**."[28]

Implications to documenting Activities

Once we can recognize system uncertainties, we can focus the documentation process on clarifying the need for any of the related activities.

B.8.3.4 IRS directives (USA)

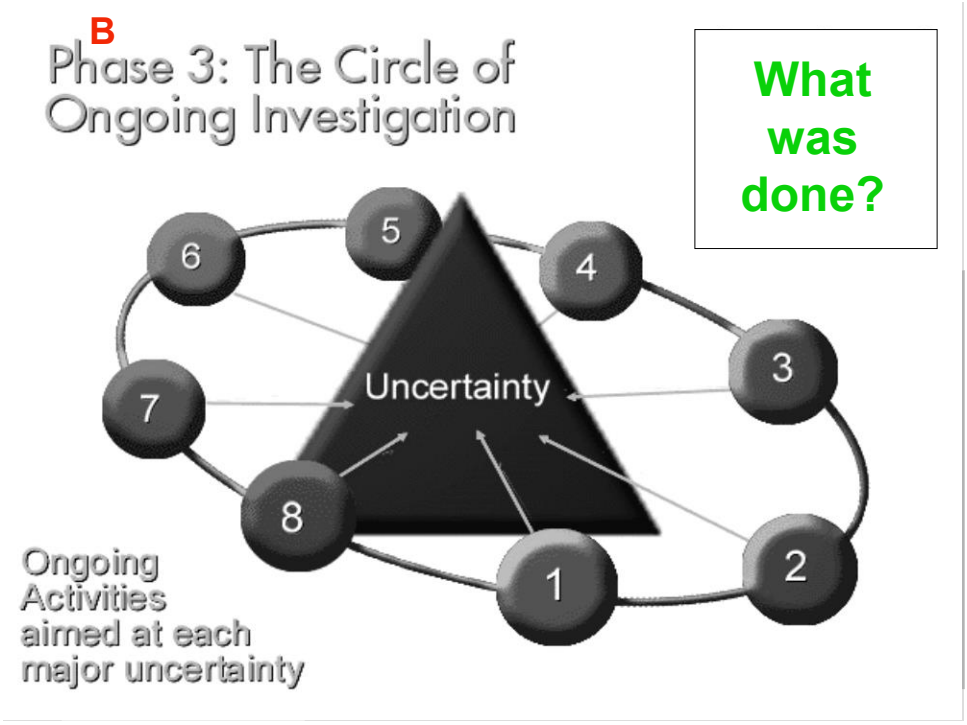
Illustrating Technological Uncertainty:

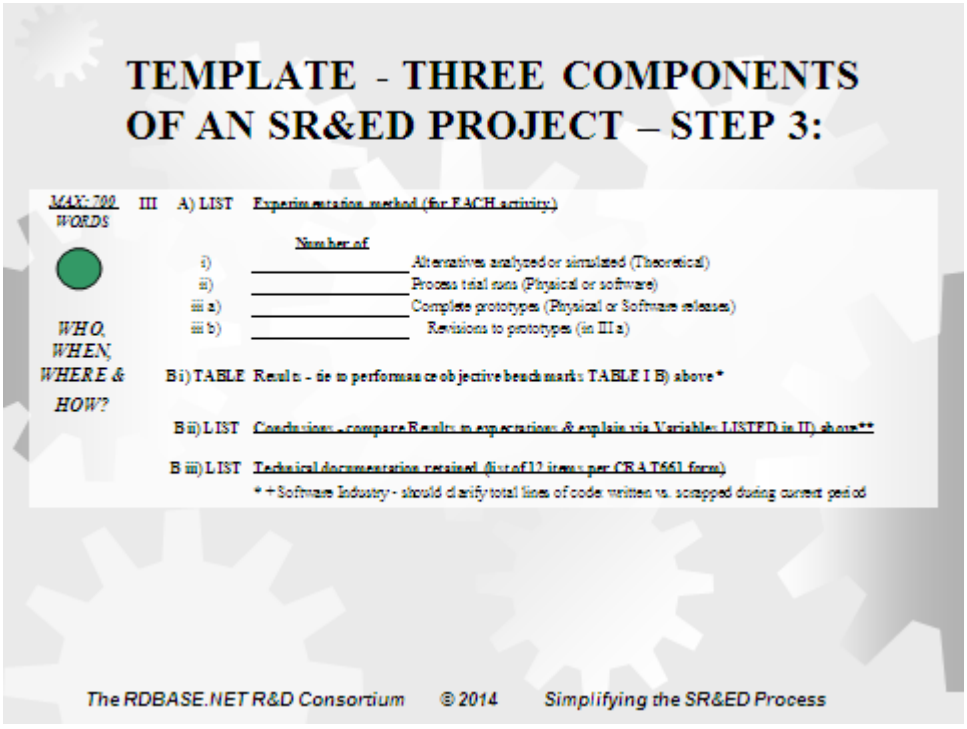
"The capability or the method of achieving that result, or the appropriate design (to achieve) that result, is uncertain as of the beginning of the taxpayer's research activities." [29]

[28] Excerpts from CRA IC 86-4R3 paragraph 4.8 – characteristics of SR&ED
[29] IRS code Section 41(d)(1 & 4)

"Discovering information ... **does not require that the taxpayer succeed** in developing a new or improved business component." [30]

B.8.4 Phase 3: The circle - Activities & conclusions





30 Regulations to S.41(3)(ii)

B.8.4.1 International Directives

"Research and experimental development is **creative work undertaken systematically** to increase the stock of knowledge, including knowledge of humanity, culture and society, and the use of this stock of knowledge to devise new applications."[31]

Research has been defined in a number of different ways. "In the broadest sense of the word, the definition of research includes **any gathering of data, information and facts for the advancement of knowledge."**[32]

Generally, **research is** understood to follow a certain structural process including[33]:

- Observations and Formation of the Objective
- Hypothesis: A testable prediction which designates the relationship between two or more variables.
- Gathering, Analysis & Interpretation of data
- Test, revising of hypothesis
- Conclusion, reiteration if necessary

B.8.4.2 CRA Directives – pre Dec 19, 2012

The CRA requires work **to be supervised by personnel with appropriate technical backgrounds** and clarifies that in describing activities performed:

"It **must demonstrate the presence of analysis or experiment** in the methodology you used to carry out the work. It must also include the results you obtained **and the conclusions you made.** For example, the types of technical records that are appropriate to support your claim are:

- an analysis of the problem,
- internal design documents and drawings,
- test data and results, &
- progress reports."[34]

"The improvement of existing technologies or methodologies using well-established routine engineering or routine development would be ineligible if the outcome is predictable. However…if the…**activity is carried out in support of an eligible** experimental development project, then the activity is eligible."[35]

Documentation

Claimants need to retain evidence of the work that was performed and support for eligibility under the program. Possible types of supporting information:[36]

- planning documents
- resource allocation records

[31] (OECD (2002) Frascati Manual: proposed standard practice for surveys on research and experimental development, 6th edition
[32] Wikipedia definition of "Research"
[33] Wikipedia definition of "Scientific Method"
[34] Form T4088 – Guide to form T661
[35] Excerpt from IC 86-4R3 paragraph 2.13
[36] CRA Guide to Supporting Technical Aspects of a SR&ED Claim

- documents of discussions dealing with unexpected obstacles encountered
- minutes of the meetings
- records of trial
- project notebooks
- technical drawings
- photographs
- test records, protocols and results
- quantitative measurement data
- results of analytical and/or statistical analysis
- progress and final project reports, etc.
- physical samples
- scrap

B.8.4.3 CRA Directives – post Dec 19, 2012

"The **systematic investigation** or search called for in the definition of SR&ED is an approach that includes defining a problem, advancing a hypothesis towards resolving that problem, planning and testing the hypothesis by experiment or analysis, and developing logical conclusions based on the results.

- **An experiment is** the test of a hypothesis under controlled conditions.

- **Analysis is** the detailed examination of information to differentiate the **various parts** of a whole, determine their attributes, or **explain their relationships**. It is performed against the background of available knowledge and experience."[37]

B.8.4.4 IRS directives (USA)

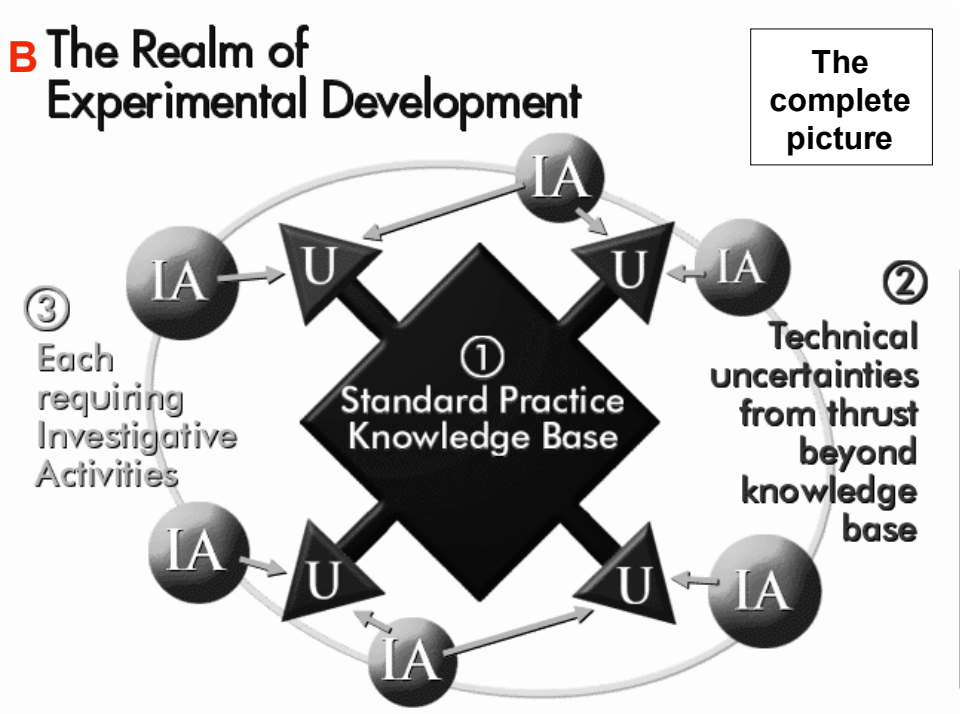
Process of Experimentation:

" is a process to evaluate more than one alternative designed to achieve a result where the capability or method of achieving that result is uncertain at the outset ... [it] may involve

(i) Developing hypotheses
(ii) Experiment
(iii) Rejection & refining hypotheses" [38]

[37] Source: CRA SR&ED Glossary Dec. 19, 2012 SR&ED policy papers
[38] Regulations to S.41 para 5 ,

B.9 Putting it all together



Technical advancement requires technical uncertainty

"Essentially, the **presence of a technological uncertainty puts the project into the realm of experimental development** when solutions cannot be based on standard practice alone."[39]

"Achieving a **technological advance** would require removing the element of **technological uncertainty** through a process **of systematic investigation**…For an experimental development activity to be eligible the **technological advance** achieved **has only to be slight."**[40]

"In the context of experimental development, scientific or **technological advancement is the knowledge acquired in carrying out the SR&ED project**, which advances the understanding of the underlying scientific relations or technology…For an experimental development activity to be eligible…it must seek to advance the taxpayer's technological knowledge base. The **technological advance** achieved **has only to be slight."**[41]

[39] Excerpt from IC 86-4R3 paragraph 4.3
[40] Excerpt from CRA, IC 86-4R3 paragraph 2.13
[41] Excerpt from IC 86-4R3 paragraph 2.13

B.9.1.1 CRA Directives – post Dec 19, 2012

"Scientific or **technological advancement** is the generation of information or the discovery of knowledge that advances the understanding of scientific **relations** or technology. …

If … process optimization efforts do not face and address one or more clearly articulated technological uncertainties, then they are not experimental development.

The rejection of a hypothesis is advancement because it eliminates a possible solution. Hence, scientific or technological advancement can be achieved even if the project's objectives are not met."[42]

B.9.1.2 IRS directives (USA)

"Discovering information ... **does not require that the taxpayer succeed** in developing a new or improved business component." [43]

42 Source: Excerpts from CRA Eligibility of Work for SR&ED Investment Tax Credits Policy Paper Dec. 19, 2012

43 Regulations to S.41(3)(ii)

B.9.2 Putting it all together – The Project Template

RDBASE.NET International SR&ED template

		Recommended documentation	GOAL: prove to Government (CRA, IRS, patent office)
I	**OBJECTIVE BEYOND STANDARD PRACTICE**		
i)	**State of Existing technology**	State benchmarking methods & sources	Limits of information available to someone "skilled in the art."
ii)	**Objective(s)**	Top 5 measureable "Objectives"	Quantifiable Objectives beyond known limits
II	**TECHNOLOGICAL UNCERTAINTIES**	Top 5 "Variables" for experimentation	Formulate "test matrix" to test hypotheses
III	**EXPERIMENTAL ACTIVITY**	Defined by tax year*	
i)	**Experimentation method**	Number of alternatives tested & how?	Justify sample sizes
ii)	**Results**	Correlate to "Objectives"	Provide basis for Conclusions
iii)	**Conclusions**	Correlate to "Variables"	"New knowledge" illustrates "Technological Advancement"

RDBASE.NET template for claiming tax credits internationally

I PROJECT OBJECTIVE BEYOND STANDARD PRACTICE:

GOAL is to prove to Government (CRA, IRS, etc.) :

i) State of Existing technology: Benchmarking methods & sources

Technology limits of "readily available" information to someone "skilled in the art."

		Number (#) of	
i	Internet / Google Searches		internet sites
ii	Articles		articles
iii	Patent searches		patents
iv	Competitive methods		products / processes
v	In-house technologies		products / processes
vi	Potential components		products
vii	Queries to experts		responses
viii	Other		

ii) Objective(s)

Quantifiable Objectives beyond known limits

		Performance benchmarks (top 5)*	
		Benchmark 1	Benchmark 2
i	Existing benchmark		
ii	Units of measure		
iii	Performance objective		
iv	*Result (III below)**		

II TECHNOLOGICAL UNCERTAINTIES

Using "science" to formulate hypotheses & experiments

	Variables for experimentation (top 5)**	
	Variable 1	Variable 2
Name of variable		

III EXPERIMENTAL ACTIVITY

*Defined by tax year**

i) Experimentation method

Justify sample sizes via "variables"

		Number of		
i	Analysis / simulation		alternatives	*Quickest*
ii	Process trials		runs / samples	*Longer*
iii	Prototypes		samples	*Longest*
	protoype revisions		revisions	

ii) Analysis

i	Results		* vs. Objectives I	*Identify the unexpected*
ii	Conclusions		** on Variables II	*Attempt understand "why?"*
iii	Documentation		Experiments/Analysis	*Proof experiments & costs*

iii) Direct Costs

i	Wages		Hours / Employee	* *PROJECTS span multiple years but ACTIVITIES match tax years.*
ii	Contractors		Labour $ / Contractor	
iii	Materials		Consumed/transformed	

B.10 CRA SR&ED Guidance – the consolidated document

On December 19, 2012 the CRA released a consolidated document to replace all prior

- Interpretation Bulletins (IT's)
- Information Circulars (IC's) &
- Application Policy Papers (APP's)

related to SR&ED credits.

While the CRA claims that this change does not represent any new policies they do provide clarification on certain issues and in some cases remove ambiguities among former documents.

Perhaps the most significant "new" analysis is an attempt to correlate;

- The **CRA's 3 component eligibility** criteria to

- The **5 criteria** used by the **Tax Court of Canada**

Notable quote:

"The impossible is often the untried."

- J. Goodwin

Tax Court of Canada (TCC) – outline of the SR&ED process

In the landmark SR&ED tax case of Northwest Hydraulics the judge stated 5 questions which have become the basis for evaluating SR&ED projects:

1. Is there a technical risk or **uncertainty**?

2. Did the person claiming to be doing SRED formulate **hypotheses** specifically aimed at reducing or eliminating that technological uncertainty? This involves a **five stage process:**

   a. the observation of the subject matter of the problem;
   b. the formulation of a clear objective;
   c. the identification and articulation of the technological uncertainty;
   d. the formulation of an hypothesis or hypotheses designed to reduce or eliminate the uncertainty;
   e. the methodical and systematic testing of the hypotheses.

3. Did the procedures adopted accord with established and objective **principles of scientific method,** characterized by trained and systematic observation, measurement and experiment, and the formulation, testing and modification of hypotheses?

4. Did the process result in a **technological advance**, that is to say an advancement in the general understanding?

5. Although the Income Tax Act and the Regulations do not say so explicitly, it seems self-evident that a **detailed record** of the hypotheses, tests and results be kept, and that it be kept as the work progresses

The CRA has addressed these questions and attempted to

- correlate them with their own 3 step format
- as illustrated on page 4.

Role of the "expert witness"

As a background to his decision, the Federal court judge in the case of RIS Christie[44] provided an overview of the **role of the scientists** in determining SR&ED eligibility stating,

> "What constitutes scientific research for the purposes of the Act is either a **question of law** or a question of mixed law **and fact to be determined by the Tax Court of Canada, not expert witnesses**, as is too frequently assumed by counsel for both taxpayers and the Minister.
>
> An expert may assist the court in evaluating technical evidence and seek to persuade it that the research objective did or could not lead to a technological advancement. But, at the end of the day, the **expert's role is limited to providing the court with a set of prescription glasses through which technical information can be viewed** before being analyzed and weighed by the trial judge."

Notable quote:

"The only way to discover the limits of the possible is to go beyond them into the impossible."

- A.C. Clarke

[44] RIS Christie v. The Queen [1996] E.T.C. 537 (TCC), [1999] E.T.C. 2004 (FCC)

Defining the "Scientific method"

The classical definition in the Oxford English Dictionary states;

"The scientific method is a method of procedure that has characterized natural science since the 17th century, consisting in

- **systematic observation,**
- **measurement,**
- **experiment, and the**
- **formulation, testing, and modification of hypotheses.**"

A linearized, pragmatic scheme **list is offered below**."

WHAT INFORMATION IS REQUIRED	HOW TO PROVIDE INFO.
Scientific Method **Oxford Dictionary**	**RDBASE SR&ED project -** **5 Steps**
1. Define a question	**Step 1b):** Objectives > Standard Practice
2. Gather information and resources (observe)	**Step 1a):** Define Standard Practice (SP)
3. Form an explanatory hypothesis	**Step 2:** Correlate research to Uncertainties
4. Perform an experiment and collect data,	**Step 3a):** Work done "systematically"
5. Analyze the data	
6. Interpret the data and draw conclusions that serve as a starting point for new hypothesis	**Step 3b):** Clarifying "technological conclusions"
7. Publish results	Recommended but not required for SR&ED projects
8. Retest (frequently done by other scientists).	
Note: The iterative cycle inherent in this step-by-step methodology goes from point 3 to 6 back to 3 again	Provided via steps 2 & 3

A modern update from Wikipedia

"Scientific method refers to a;

- body of **techniques**
- for investigating phenomena,
- **acquiring new** knowledge, or
- **correcting** & integrating **previous knowledge**.

To be termed **scientific**, a method of inquiry must be based on

- gathering empirical and **measurable evidence**
- subject to specific principles of reasoning.

The **chart on the next page** then compares the SR&ED questions posed by each of:

- the Tax Court of Canada (TCC)
- Canada Revenue Agency (CRA) &
- The Scientific Method (RDBASE reporting structure)

SR&ED project eligibility – TCC vs. CRA requirements

WHAT INFORMATION IS REQUIRED		HOW TO PROVIDE INFO.	Author's Commentary:
Tax Court of Canada (TCC) **5 SR&ED eligibility Questions**	**CRA intepretation** **3 Criteria**	**RDBASE SR&ED project -** **5 Steps**	**HOW to meet all requirements**
1. Was there a scientific or a **technological uncertainty**– an uncertainty that could not be removed by **standard practice**?	**2.** Scientific or technological **uncertainty**	**Step 1a):** Define Standard Practice (SP) **Step 1b):** Objectives > Standard Practice & **Step 2:** Correlate research to uncertainties	The TCC question **contemplates the first 3 steps** of the RDBASE SR&ED project structure.
2. Did the effort involve formulating **hypotheses** specifically aimed at reducing or eliminating that **uncertainty**?	**3.** Scientific & technical **content**	**Step 2:** Correlate research to uncertainties	**Hypotheses** require **"variables"** for experimentation. These create the basis for the **"controlled experiments"** required by the tax court.
3. Was the adopted procedure consistent with the total discipline of the **scientific method**, including formulating, testing, and modifying the hypotheses?	**3.** Scientific & technical **content**	**Steps 1-5: Specifically 3a):** Work done "systematically"	The **"scientific method"** is an internationally accepted definition which the **Tax Court of Canada has adopted** despite **resistance** by the **CRA**. Arguably the **"scientific method"** contemplates **all 5 steps** of the RDBASE SR&ED project structure.
4. Did the process **result in** a scientific or a **technological advancement**?	**1.** Scientific or technological **advancement**	**Step 3b):** Clarifying "technological conclusions" = advancements	**"Technological advancement" is the "conclusion"** after **ALL 5 steps** to be performed. The **tax courts** (correctly) recognize this is a **"result"** but the **CRA** still requests this as the **first step** of the reporting process.
5. Was a **record of** the hypotheses tested and the **results** kept as the work progressed?	**3.** Scientific & technical **content**	**Step 2:** Correlate research to uncertainties **Step 3a):** Work done "systematically"	**Documentation of experimentation** is required by both the "scientific method" & the CRA's "content" criteria.

CRA DRAFT project examples

1301 Pump redesign

1302 Oil seed extraction process

1303 HVAC - How cost constraints affect a project

1304 Greenhouse management strategy - INELIGIBLE

1305 Glue development - Hypotheses formulation example

1306 Food development - INELIGIBLE TRIAL & ERROR

1307 Potato peeler - WHAT IF SCENARIOS

1308 Hockey stick design - SAMPLE SIZE

1309 Chemical formulation - DATA COLLECTION SCENARIOS

1310 Electronics – SR&ED vs. business portion of the project

1301 Pump redesign

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
Maximum operating temperature (Deg C)	110	250	Yes
PUMP COST ($)	500	500	No

The following details are excerpts from the CRA release on Sept 18, 2013 entitled;

"Draft examples to illustrate key concepts in the Eligibility of Work for SR&ED Investment Tax Credits Policy"

Example 1 – Illustrating concepts from paragraph 3, section 2.1.1 Eligibility of Work for SR&ED Investment Tax Credits Policy

In this paper the CRA states:

"2.1.1 Was there a scientific or a technological uncertainty—an uncertainty that could not be removed by standard practice?

Scientific or technological uncertainty means whether a given result or objective can be achieved or how to achieve it, is not known or determined on the basis of generally available scientific or technological knowledge or experience.

Specifically, it is uncertain if the goals can be achieved at all or what alternatives (for example,

- paths,
- routes,
- approaches,
- equipment configurations,
- system architectures, or
- circuit techniques)

will enable the goals to be met based on the existing technology base or level."

AUTHOR'S NOTE: SUGGESTED ADDITIONS WE HAVE USED CAPITAL LETTERS TO ADD:

- SUGGESTED CONTENT &
- RELATED COMMENTS.

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Internet searches	5 Articles	IDEALLY THE CLAIMANT WOULD OUTLINE ALL RESOURCES THEY EXAMINED BEFORE EMBARKING ON THE PROJECT. THE CURRENT DESCRIPTION DOES NOT ADDRESS THIS ISSUE.
Similar prior in-house technologies	1 products / processes	
Potential components	1 products	THE CLAIMANT APPEARS TO HAVE ONLY SPOKEN TO THE PUMP SUPPLIER. IN A REAL LIFE SITUATION THEY MAY ALSO CONTACT OTHER SUPPLIERS WHICH WOULD FURTHER DEFINE THE STANDARD PRACTICE.

1) CAUSE OF THE PROBLEM:

A chemical company is developing a new process for producing one of their chemical products. One of the components of the process is a series of pumps. However, the pumps started corroding after six months rather than after the expected life of 10 years.

They investigated by following their trouble-shooting guide and found that the failure was due to a leak in the seal on the shaft of the pump, which allowed corrosive liquid into the unit. They replaced the seals in all the pumps, but the pumps failed again after six months. Again, the pump supplier found that the cause of the failure was the same.

They investigated further and discovered that the temperature of the shaft after a prolonged period of operation exceeded the maximum recommended operating temperature of the seal material.

They also found that the failure of the seal was partly caused by the design of the seal on the shaft as well as the material used for the seal. Under prolonged operation, the seal failed and allowed the corrosive liquid into the unit.

2) LIMITS OF KNOWLEDGE ON MATERIALS TO CORRECT PROBLEM

Data on the behaviour and physical properties of the seal materials at much lower temperature ranges were available from the manufacturers. However, there was no information or data available on the corrosive behaviour of materials or their physical properties at the elevated temperatures in the environment that the pump is operating.

Field of Science/Technology:

Mechanical engineering (2.03.01)

Project Details:

Intended Results:	Improve existing processes
Work locations:	Commercial Facility
Key Employees:	Al Nobel (Chemical Engineering - P.Eng. (1989) / Research Associate)
Evidence types:	Progress reports, minutes of project meetings; Project planning documents

Scientific or Technological Advancement:

Uncertainty #1: CRA illustration of technological uncertainty

Once the cause of the problem was discovered, the supplier began an experimental development project to find out which of several redesigns of the seal and seal materials would be compatible for the operating environment of the pump.

AUTHORS NOTE: THE EXAMPLE LISTS SEAL DESIGNS AS ONE OF THE MAIN "VARIABLES" OF EXPERIMENTAION. IN REALITY THIS WOULD LIKELY ADDRESS MANY VARIABLES INCLUDING, SHAPES, ANGLES & THICKNESSES TO NAME A FEW.

The most significant underlying key variables are: seal materials, seal designs (shapes, thicknesses, angles) (unresolved)

Activity #1-1: Development (Fiscal Year 2013)

Methods of experimentation:

Method	Experimentation Performed
Analysis / simulation:	110 alternatives
Process trials:	45 runs / samples
Physical prototypes:	3 samples (with 44 revisions)

The supplier undertook a series of experiments to investigate the material behaviour and seal design.

Project Name:	Pump redesign	**Start Date:**	2013-01-01
Project Number:	1301	**Completion Date:**	2014-06-30

Results:

- Maximum operating temperature: 220 Deg C (78% of goal)

Conclusion:

According to the CRA,

"In this scenario, the pump supplier faces technological uncertainties (design of the seal and material behaviour at operating conditions) and undertook experimental development work to resolve them."

AUTHOR'S NOTE: THE EXAMPLE APPEARS TO IDENTIFY VARAIBLES OF EXPERIMENTATION FOR WHICH THE SOLUTION IS NOT "READILY AVAILABLE."

THIS LEAVES QUESTIONS AS TO WHEN THE ACTUAL PROJECT STARTED: AT THE START OF THE PROBLEM OR WHEN IT WAS DIAGNOSED AND THE REDESIGN WORK BEGAN.

Significant variables addressed: seal materials

Documentation:

- Offline Documents: CRA COULD ILLUSTRATE APPRORIATE DOCUMENTS

Key Criteria Summary

R&D Base demo

1301 - Pump redesign

Benchmarks: Internet searches: 5 Articles
Similar prior in-house technologies: 1 products /
Potential components: 1 products

Objectives: Maximum operating temperature: 250 Deg C
PUMP COST: 500 $

Uncertainty: 1 - CRA illustration of technological uncertainty

Key Variables: seal designs (shapes, thicknesses, angles), seal materials

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Development	Analysis / simulation: 110 alternatives Process trials: 45 runs / samples Physical prototypes: 3 samples ... prototype revisions: 44 revisions	Maximum operating temperature: 220 Deg C (78 %)	seal materials	0.00	0.00	0.00	2013

1302 Oil seed extraction process

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
Extraction temperature (Deg C)	80	50	Yes
COST OF MACHINE ($)	75000	75000	No
RECLAMATION EFFICIENCY (% recovery)	22	70	No
OIL PURITY (%)	95	98	No

The following details are excerpts from the CRA release on Sept 18, 2013 entitled;

"Draft examples to illustrate key concepts in the Eligibility of Work for SR&ED Investment Tax Credits Policy"

Example 2

This example shows that technological uncertainties may arise from limitations in current technology, and technological uncertainty exists when it is not known whether a given result or objective can be achieved or how to achieve it based on generally available scientific or technological knowledge or experience.

Business objectives:

There is a need to develop a low-temperature oil-extraction process, including separating protein-rich flour from seed coats, to produce a protein-rich product suitable for human consumption.

Technology objectives:

The specific technological problem is how to separate the seed coats from the protein flour at low temperature. It is difficult to physically separate seed coats and protein flour because they have very similar physical properties and the protein flour is firmly bonded to the seed coats.

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Internet searches	5 Articles	SHOULD DETAIL WHAT IF ANY INFORMATION WE FOUND ON THE LIMTS OF THE MACERATION PROCESS FOR THIS ENVIRONMENT.
Competitive products or processes	1 products	IF WE CONSIDERED ANY COMPETIVE METHODS THIS SHOULD BE EXPLAINED.
Similar prior in-house technologies	1 products / processes	WE CAN ASSUME THE TECHNOLOGY IS BASED ON PRIOR IN HOUSE DESIGNS BUT THIS IS UNCLEAR.

The current technology of extracting oil from oilseeds is based on a batch process, in which seeds are crushed, conditioned, and flaked.

The residue after removing the oil consists mainly of protein-rich flour and seed coats with some trapped oil. This residue (or meal) is then ground and the remaining trapped oil is extracted with a solvent. The solvent is recovered from both the meal and the extracted oil by toasting and distillation. The meal is generally sold as an animal feed product.

The main limitation of the current technology is that the meal is a mixture of the protein-rich flour and seed coats. Seed coats have no nutritional value, and are visually undesirable as a potential ingredient in foods for human consumption.

Also, the conditioning and flaking at 80-100°C harms the nutritional value of the oil and the flour.

Though there were several technologies available to separate solid particles with different physical properties, no effective low temperature technologies were available to separate solid particles with very similar physical properties where the particles themselves were bonded together.

One technology which had been tried at a small scale was ultrasonic maceration. However, since there was no publicly available information on the use of ultrasonic maceration for this particular type of oilseed, the operating parameters needed to test the technology were not in the public domain.

Field of Science/Technology:

The Field of Science has not been identified.

Project Details:

Intended Results:	Improve existing processes
Work locations:	Commercial Facility
Key Employees:	Isaac Newton (Mechanical engineering - M.Asc. (1974) / Research Manager)
Evidence types:	Progress reports, minutes of project meetings; Test protocols, test data, analysis of test results, conclusions; Photographs and videos; Records of trial runs

Scientific or Technological Advancement:

Uncertainty #1: Scientific & system uncertainty

The specific technological problem is how to separate the seed coats from the protein flour at low temperature.

One technology which had been tried at a small scale was ultrasonic maceration. However, since there was no publicly available information on the use of ultrasonic maceration for this particular type of oilseed, the operating parameters needed to test the technology were not in the public domain.

Also, it was not known whether the continuous process needed on a large scale, including the ultrasonic maceration and simultaneous solvent extraction, could be developed.

There was technological uncertainty in developing a continuous method to process oilseeds at low temperatures because no one knew whether the objective could be achieved and how to achieve it.

** AUTHORS NOTE: EACH OF THESE PARAMETERS WOULD LIKELY HAVE MANY VARIABLES. THESE WOUULD FORM THE BASES OF THE EXPERIMENTATION.

The most significant underlying key variables are: effects of ultrasonic maceration, key operating parameters ** - EXPAND, solvent extraction method **- EXPAND

Activity #1-1: Development (Fiscal Year 2013)

Methods of experimentation:

Method	Experimentation Performed
Analysis / simulation:	154 alternatives
	Examined over 150 simulations based on alternate component combinations
Process trials:	7 runs / samples
	Chose 7 combinations for further testing and determined limits of existing operating line
Physical prototypes:	1 samples (with 17 revisions)
	Built test scale prototype line including 17 revisions.

Results:

- Extraction temperature : 60 Deg C (66% of goal)

Conclusion:

According to the CRA,

> "There was technological uncertainty in developing a continuous method to process oilseeds at low temperatures because no one knew whether the objective could be achieved and how to achieve it."

IN THE AUTHOR'S OPINION THE IDEAL DESCRIPTION WOULD BE SPECIFIC AS TO WHAT WAS LEARNED IN RELATION TO THE "VARIABLES' OF EXPERIMENTATION.

Significant variables addressed: effects of ultrasonic maceration, key operating parameters ** - EXPAND, solvent extraction method **- EXPAND

Documentation:

- Offline Documents: COULD PROVIDE DOCUMENTATION EXAMPLES

1302 - Oil seed extraction process

Benchmarks: Internet searches: 5 Articles
Competitive products or processes: 1 products
Similar prior in-house technologies: 1 products /

Objectives: Extraction temperature : 50 Deg C
COST OF MACHINE: 75000 $
RECLAMATION EFFICIENCY: 70 % recovery
OIL PURITY: 98 %

Uncertainty: 1 - Scientific & system uncertainty

Key Variables: effects of ultrasonic maceration, key operating parameters ** - EXPAND, solvent extraction method **- EXPAND

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Development	Analysis / simulation: 154 alternatives Process trials: 7 runs / samples Physical prototypes: 1 samples ... prototype revisions: 17 revisions	Extraction temperature : 60 Deg C (66 %)	effects of ultrasonic maceration key operating parameters ** - EXPAND solvent extraction method **- EXPAND	0.00	0.00	0.00	2013

1303 HVAC - How cost constraints affect a project

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
Cost ($ / unit)	300	200	Yes
Minimum conversion temperature (Deg C)	35	20	Yes

Example 3 – Illustrating concepts from paragraph 5, section 2.1.1 Eligibility of Work for SR&ED Investment Tax Credits Policy

According to the CRA, This example shows that cost targets are not technological uncertainties, but a technological uncertainty may arise by trying technologically uncertain paths to solve a problem to meet the cost targets.

A company wants to develop an air recirculation system for energy-efficient homes that will permanently remove carbon monoxide. A key component of this system is a module in which carbon monoxide (CO) is converted to relatively harmless carbon dioxide (CO2) at room temperature.

Technology or Knowledge Base Level:

No benchmarks have been identified.
A process is available that uses a tin oxide and platinum catalyst to convert CO to CO2 at room temperature, and the company could develop a product based on this process. However, the high cost of using this process will make the selling price of the product out of reach for consumers.

There are other methods to convert carbon monoxide, but they are not effective at room temperature. A key requirement is that the module must operate at room temperature.

Field of Science/Technology:

Mechanical engineering (2.03.01)

Project Details:

Intended Results:	Improve existing processes
Work locations:	Research Facility
Key Employees:	Nick Tesla (Electrical technology - CET (2002) / Research Associate)
Evidence types:	None.

Scientific or Technological Advancement:

Uncertainty #1: Convert CO to CO2 at room temp

To achieve the project objective (a room-temperature carbon monoxide remover), the company has to develop an inexpensive process that operates effectively at room temperature.

The technological uncertainty relates to how to convert CO to CO2 at room temperature that does not use the costly process with tin oxide and platinum.

The most significant underlying key variables are: how to convert CO to CO2 at room temp

Activity #1-1: Development (Fiscal Year 2013)

Methods of experimentation:

Method	Experimentation Performed
Analysis / simulation:	25 alternatives
Process trials:	7 runs / samples

AUTHOR'S NOTE: THE EXAMPLE DID NOT PROVIDE ANY DETAILS OF EXPERIMENTATION.

Results:

- Cost: 180 $ / unit (120% of goal)
- Minimum conversion temperature: 23 Deg C (80% of goal)

Conclusion:

According to the CRA:

> "Although the cost target by itself is not a technological uncertainty, a technological uncertainty may arise from the need to avoid using a costly process, even though that process is known to work. The required cost target is also the motivation or reason for the company to undertake work to remove this uncertainty."

IN THE AUTHORS OPINION THIS ILLUSTRATES HOW

- THE QUANTIFIABLE BUSINESS OBJECTIVES (IN THIS CASE TO REDUCE COST WHILE MAINTAINING OTHER PERFORMANCE PARAMETERS)

- "STACK UP" TO CREATE "TECHNOLOGICAL UNCERTAINTY."

Significant variables addressed: how to convert CO to CO2 at room temp

1303 - HVAC - How cost contraints affect a project

Benchmarks: (none)

Objectives: Cost: 200 $ / unit
Minimum conversion temperature: 20 Deg C

Uncertainty: 1 - Convert CO to CO2 at room temp

Key Variables: how to convert CO to CO2 at room temp

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Development	Analysis / simulation: 25 alternatives	Cost: 180 $ / unit (120 %) Minimum conversion temperature: 23 Deg C (80 %)	how to convert CO to CO2 at room temp	0.00	0.00	0.00	2013

1304 Greenhouse management strategy - INELIGIBLE

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
YIELD / ACRE (KG)	100	120	No

After testing a newly developed plant variety, a greenhouse grower feels that there is a chance for commercial success and attempts to find the optimum conditions to maximize production.

Depending on the zone size that can be controlled in the greenhouse, anywhere from 2 to 10 acres is planted with the promising variety.

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Internet searches	1 Articles	
Patent searches	1 patents	
Competitive products or processes	1 products	
Similar prior in-house technologies	1 products / processes	
Potential components	1 products	
Queries to experts	1 responses	

AUTHOR'S NOTE:

THIS EXAMPLE IS BASED ON THE ASSUMPTION THE DEVELOPMENT OF GREENHOUSE MANAGEMENT STRATEGIES IS ALWAYS ROUTINE & THAT ALL WORK CAN BE RESOLVED THROUGH THE USE OF EXISTING MODELS.

IN THE AUTHOR'S OPINION THE CLAIMANT SHOULD BE:

- GIVEN THE OPPORTUNITY TO BENCHMARK THE AVAILABLE MANAGEMENT MODELS &
- IF THEY CAN PROVE THEY ARE ADVANCING THESE MODELS

THE WORK MIGHT BE ELIGIBLE.

Field of Science/Technology:

Plant breeding & plant protection (4.01.08)

Project Details:

Intended Results:	Improve existing processes
Work locations:	Commercial Facility
Key Employees:	Mark Seed (Biological Science - B.Sc. (1995) / Researcher)
Evidence types:	Progress reports, minutes of project meetings; Samples, prototypes, scrap or other artefacts; Project planning documents; Design of experiments; Records of trial runs

Scientific or Technological Advancement:

Uncertainty #1: Greenhouse optimization

Greenhouse growers are aware of optimization techniques for factors such as lighting, temperature, CO2 and humidity.

Also, developing and implementing management protocols for controlling nutrient levels, de-leafing, thinning, and other operational practices are familiar to them.

The most significant underlying key variables are: light, temperature, CO2, humidity, nutrient levels

Activity #1-1: Crop husbandry development (Fiscal Year 2013)

Methods of experimentation:

No experimentation methods have been recorded for this Activity.

The grower monitors the growth of the crop and, depending on its performance, makes adjustments to guide the crop to optimal production. These adjustments are often called the “development of cultural management strategies or crop husbandry strategies.”

However, greenhouse growers are aware of optimization techniques for factors such as lighting, temperature, CO2 and humidity. Also, developing and implementing management protocols for controlling nutrient levels, de-leafing, thinning, and other operational practices are familiar to them.

Results:

No results have been recorded for this Activity.

Conclusion:

According to the CRA,

"These well-known and practiced techniques are standard in this industry, as growers are reasonably certain that the techniques, data, and procedures, when applied in this case, would work.

So, although the grower may not be certain of the specific parameters, determining them using these approaches is part of the standard practice of this industry.

In this case, there is no scientific or technological uncertainty in determining the optimum conditions to maximize production of a new plant variety."

AS PREVIOULSY STATED, IN THE AUTHOR'S OPINION THE CLAIMANT SHOULD BE:

- GIVEN THE OPPORTUNITY TO BENCHMARK THE AVAILABLE MANAGEMENT MODELS &
- IF THEY CAN PROVE THEY ARE ADVANCING THESE MODELS

THE WORK MIGHT BE ELIGIBLE.

IF THE PARAMETERS CAN BE DETERMINED USING EXISTING PREDICTIVE ALGORITHMS THIS WOULD BE "ROUTINE" HOWEVER, IF THE ALGORITHMS ARE IMPROVED THIS COULD REPRESENT A TECHNOLOGICAL ADVANCEMENT.

THE DANGER OF SUCH EXAMPLE IS THAT ALL WORK IN AGRICULTURAL SCIENCE WILL NOW LIKELY BE DENIED.

Significant variables addressed: CO2, humidity, light, nutrient levels, temperature

Documentation:

- Offline Documents: SAMPLE DOCUMENTS COULD BE PROVIDED

1304 - Greenhouse management strategy - INELIGIBLE

Benchmarks: Internet searches: 1 Articles
Patent searches: 1 patents
Competitive products or processes: 1 products
Similar prior in-house technologies: 1 products /
Potential components: 1 products
Queries to experts: 1 responses

Objectives: YIELD / ACRE: 120 KG

Uncertainty: 1 - Greenhouse optimization

Key Variables: CO2, humidity, light, nutrient levels, temperature

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Crop husbandry	(none)	(none)	CO2 humidity light nutrient levels temperature	0.00	0.00	0.00	2013

1305 Glue development - Hypotheses formulation example

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
BOND STRENGTH (KG)	500	600	Yes
COST / LITRE ($)	30	30	Yes

The research and development (R&D) department of a company was asked to come up with a solution to improve the bond strength of their premier glue product to compete with another product.

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Internet searches	5 Articles	
Competitive products or processes	1 products	
Similar prior in-house technologies	5 products / processes	

The R&D chemist who was assigned to the project recently came across a published research paper whose authors had used an additive (acting as bonding agent) to increase the bonding strength of two chemicals that belong to the same class of materials as used in the company's premier glue product.

However, the conditions (temperature, pressure, humidity) under which the authors used the additive were quite different than those used by the company in manufacturing the glue. The chemist carried out further searches in both scientific and technical publications on the use of this additive but found nothing more.

There was no way of predicting whether the additive would work in enhancing the bond strength of the glue considering the conditions under which the glue was manufactured.

Field of Science/Technology:

Physical chemistry, polymer science & plastics (1.04.03)

Project Details:

Intended Results:	Improve existing processes
Work locations:	Lab
Key Employees:	Al Nobel (Chemical Engineering - P.Eng. (1989) / Research Associate)
Evidence types:	None.

Scientific or Technological Advancement:

Uncertainty #1: Additive effects & formulation

The chemist hypothesized that, based on the similarity of the chemical properties of the glue ingredients and the two chemicals used in the research paper, the use of the new bonding agent in the manufacture of the glue under the right conditions should increase the bond strength of the glue.

The most significant underlying key variables are: temperature, pressure, humidity, additive - amounts, timing (unresolved)

Activity #1-1: Development (Fiscal Year 2013)

Methods of experimentation:

Method	Experimentation Performed
Analysis / simulation:	25 alternatives
Process trials:	12 runs / samples

Results:

- BOND STRENGTH: 650 KG (150% of goal)
- COST / LITRE: 30 $ (100% of goal)

Conclusion:

According to the CRA

> "This example simply illustrates the concept of a hypothesis—an idea, consistent with known facts, that serves as a starting point for further investigation to prove or disprove that idea."

AUTHOR'S NOTE:

> THIS PROJECT PROVIDES AN EXCELLENT OPPORTUNITY FOR THE CRA TO PROVIDE AN EXAMPLE OF A COMPLETE PROJECT DESCRIPTION.
>
> THIS IN TURN COULD FURTHER ILUSTRATE THE "INTER-RELATIONSHIP" OF THE ELIGIBLITY CRITERIA.

Significant variables addressed: humidity, pressure, temperature

1305 - Glue development - Hypotheses formulation example

Benchmarks: Internet searches: 5 Articles
Competitive products or processes: 1 products
Similar prior in-house technologies: 5 products /

Objectives: BOND STRENGTH: 600 KG
COST / LITRE: 30 $

Uncertainty: 1 - Additive effects & formulation

Key Variables: additive - amounts, timing, humidity, pressure, temperature

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Development	Analysis / simulation: 25 alternatives	BOND STRENGTH: 650 KG (150 %) COST / LITRE: 30 $ (100	humidity pressure temperature	0.00	0.00	0.00	2013

1306 Food development - INELIGIBLE TRIAL & ERROR

Scientific or Technological Objectives:

No objectives have been identified.
Example 6 – Illustrating concepts from paragraph 7, section 2.1.3 Eligibility of Work for SR&ED Investment Tax Credits Policy

This example shows that when a series of tests are executed without any systematic plan and no attempt is made to analyze the results from each test, it is considered trial and error. Such work is not scientific research and experimental development (SR&ED).

A company that has been involved in preparing food products for several years wanted to develop a low-calorie pocket pizza product.

They proceeded by attempting to create the low-calorie pizza based on their knowledge of preparing standard pizza products.

Technology or Knowledge Base Level:

No benchmarks have been identified.

Field of Science/Technology:

Food and beverages (2.11.01)

Project Details:

Intended Results:	Improve existing materials, devices, or products
Work locations:	Commercial Facility
Key Employees:	Lou Pasteur (Chemistry - BSc. (1996) / Research Associate)
Evidence types:	None.

Scientific or Technological Advancement:

Uncertainty #1: Business vs. technological uncertainty

AUTHORS' NOTE:

IN THE EXAMPLE THE CLAIMANT DID NOT APPEAR TO QUANTIFY OR MEASURE ANY OF THESE VARIABLES DURING THE DEVELOPMENT PROCESS.

The most significant underlying key variables are:

ingredient selection, order of ingredients, size / shape of ingredients

Activity #1-1: Trial & error development process (Fiscal Year 2013)

Methods of experimentation:

Method	Experimentation Performed
Process trials:	4 runs / samples

In their first attempt, they used different amounts of sauce, reduced the amount of cheese, and replaced the regular pepperoni with low-fat turkey pepperoni, without changing the layer structure of the pizza. This attempt was considered a failure because the low-fat pepperoni burned during cooking.

The next series of attempts involved preparing and testing a different order of layering the ingredients. This attempt also failed because the large size of the pieces of pepperoni led to undercooking.

The third attempt reduced the size of the pepperoni pieces by half. This attempt was somewhat successful, but still not good enough.

The fourth attempt reduced the thickness of the low-fat pepperoni pieces. This fourth attempt was considered a success and the company proceeded to commercialize the product.

Results:

No results have been recorded for this Activity.

AUTHOR'S NOTE:

SINCE THE CLAIMANT DID NOT PROVIDE QUANTIFIABLE OBJECTIVES WE CANNOT QUANTIFY THE RESULTS OF THE WORK.

AS A RESULT IF BECOMES HARD TO ILLSUTRATE THE "EXTREMELY ACCURATE MEASUREMENTS" WHICH THE TAX COURT OF CANADA REQUIRES EVIDENCE OF.

Conclusion:

According to the CRA,

"The only lesson learned from each attempt was that it failed. There was no work at any stage to analyze the results from each trial and take corrective action based on the results.

In other words, there was no planned approach, including identifying a technological uncertainty, formulating a hypothesis to eliminate that uncertainty, testing the hypothesis, analyzing the results to draw conclusions, and carrying out more experimentation, if needed.

The work described in this example is trial and error."

IN THE AUTHOR'S VIEW THIS PROJECT COULD BE FURTHER DEVELOPED TO ILLUSTRATE:

1) A "WHAT IF" SCENARIO ON HOW THE WORK MIGHT BE ELIGIBLE &

2) THE TYPE OF DOCUMENTATION WHICH WOULD BE EXPECTED.

Significant variables addressed: ingredient selection, order of ingredients, size / shape of ingredients

1306 - Food development - INELIGIBLE TRIAL & ERROR

Benchmarks: (none) **Objectives:** (none)

Uncertainty: 1 - Business vs. technological uncertainty **Key Variables:** ingredient selection, order of ingredients, size / shape of ingredients

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Trial & error development process	Process trials: 4 runs / samples	(none)	ingredient selection order of ingredients size / shape of	0.00	0.00	0.00	2013

1307 Potato peeler - WHAT IF SCENARIOS

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
Dishwasher safe (# cycles)	1000	1200	Yes
COST ($/UNIT)	2	1.5	Yes
Profile roughness (Rp) (micro inches)	2	1	Yes
Area Roughness (Ra) (micro inches)	2	1.5	Yes

Example 7 – Illustrating concepts from paragraph 4, section 2.1.4 Eligibility of Work for SR&ED Investment Tax Credits Policy

According to the CRA:

> "The following example shows how creating new materials, devices, products, or processes, or improving existing ones, can be achieved with or without technological advancement"

Case 1

> The basic design of the potato peeler has not changed for more than 100 years. A company decided to develop a novel peeler by adding a phosphorescent substance to the plastic handle so that it would be easier to find in a dark kitchen drawer.

Case 2

> The same company wanted to develop a new potato peeler with the same blade but wanted to modify the handle to make it easier to use.
>
> The new handle would be larger, easier to grip, and less likely to slip in the hand of the user. This would be achieved by making it softer yet rigid enough to retain its shape, and its surface would have to be rough enough to prevent it from slipping in a wet hand. It would also have to be dishwasher safe.

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Competitive products or processes	5 products	
Similar prior in-house technologies	3 products / processes	
Potential components	12 products	EXAMINED 12 DIFFERENT PLASTICS

Field of Science/Technology:

Mechanical engineering (2.03.01)

Project Details:

Intended Results:	Improve existing processes
Work locations:	Commercial Facility
Key Employees:	Al Nobel (Chemical Engineering - P.Eng. (1989) / Research Associate)
Evidence types:	None.

Scientific or Technological Advancement:

Uncertainty #1: Technological uncertainty- Case 2

In developing the new handle, they encountered difficulties in the injection molding process.

The company found that the working temperature for the new polymer had to be much higher than what the current molding process was designed to operate at.

AUTHOR'S NOTE: AN IDEAL EXAMPLE WOULD FURTHER ILLUSTRATE THE VARIABLES OF UNCERTAINTY.

The most significant underlying key variables are: optimal polymer material, working temperature, adaption of injection molding process

Activity #1-1: Case 1 - INELIGIBLE (Fiscal Year 2013)

Methods of experimentation:

No experimentation methods have been recorded for this Activity.
There was no change to the shape of the handle or to the blade.

Adding the phosphorescent substance did not entail any change to the molding process and did not affect the physical properties of the handle or the performance of the peeler.

Results:

No results have been recorded for this Activity.

Conclusion:

While this was a new product, there was no technological advancement in creating this “glow-in-the-dark” peeler.

Activity #1-2: Case 2 - ELIGIBLE (Fiscal Year 2013)

Methods of experimentation:

Method	Experimentation Performed
Analysis / simulation:	47 alternatives
Process trials:	11 runs / samples
Physical prototypes:	1 samples (with 4 revisions)

The company found that their requirements could not be satisfied with any plastic that was available at the time. They decided to try to use a new polymer.

In developing the new handle, they encountered difficulties in the injection molding process. Using the new polymer in their existing molding process did not produce a handle with the desired physical properties.

The company found that the working temperature for the new polymer had to be much higher than what the current molding process was designed to operate at.

Eventually, a new injection molding process had to be developed that used the new polymer to produce the product that had the desired physical properties.

Results:

- Dishwasher safe: 1200 # cycles (100% of goal)
- COST: 1.3 $/UNIT (140% of goal)
- Profile roughness (Rp): 2 micro inches (no improvement)
- Area Roughness (Ra): 1.4 micro inches (120% of goal)

Conclusion:

According to the CRA;

"The acquired know-how to develop the new injection molding process represented a technological advancement for the company."

AUTHOR'S NOTE:

THE IDEAL DESCRIPTION COULD ILLSUTRATE:

- ADDITIONAL WORK ON THE DEVELOPMENT OF THE INJECTION MOLDING PROCESS &
- CLARIFYING WHAT WAS LEARNED REGARDING THE VARIABLES OF EXPERIMENTATION.

Significant variables addressed: adaption of injection molding process, optimal polymer material, working temperature

1307 - Potato peeler - WHAT IF SCENARIOS

Benchmarks: Competitive products or processes: 5 products
Similar prior in-house technologies: 3 products /
Potential components: 12 products

Objectives: Dishwasher safe: 1200 # cycles
COST: 1.5 $/UNIT
Profile roughness (Rp): 1 micro inches
Area Roughness (Ra): 1.5 micro inches

Uncertainty: 1 - Technological uncertainty- Case 2

Key Variables: adaption of injection molding process, optimal polymer material, working temperature

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Case 1 - INELIGIBLE	(none)	(none)	(none)	0.00	0.00	0.00	2013
2 - Case 2 - ELIGIBLE	Analysis / simulation: 47 alternatives Process trials: 11 runs / samples Physical prototypes: 1 samples ... prototype revisions: 4 revisions	Dishwasher safe: 1200 # cycles (100 %) COST: 1.3 $/UNIT (140 %) Profile roughness (Rp): 2 micro inches (0 %) Area Roughness (Ra): 1.4 micro inches (120 %)	adaption of injection molding process optimal polymer material working temperature	0.00	0.00	0.00	2013

1308 Hockey stick design - SAMPLE SIZE

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
TOLERANCE (mm)	0.3	0.3	Yes
PRODUCTION RATE (units / minute)	2	3.5	Yes
REJECT RATE (%)	2	1	Yes

Example 8 – Illustrating concepts from paragraph 2, section 2.2.1 Eligibility of Work for SR&ED Investment Tax Credits Policy

> The following example illustrates the concept that only the amount, size, extent, or duration of work that is necessary for and directly in support of the basic research, applied research, or experimental development work undertaken in Canada is eligible.

The company started a project involving experimental development work to integrate an advanced scanning and laser cutting technology to cut and rasp hockey sticks in a single machine.

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Internet searches	5 Articles	
Similar prior in-house technologies	1 products / processes	

A company produces field-hockey sticks in large numbers to supply the world market. The production stage of the sticks mainly consists of a machine that accepts pre-cut lengths of timber and produces the cut forms for further processing.

AUTHOR'S NOTE: THE CLAIMANT SHOULD DETAIL ALL SOURCES THEY USED TO DEFINE STANDARD PRACTICE.

Field of Science/Technology:

Mechanical engineering (2.03.01)

Project Details:

Intended Results:	Improve existing processes
Work locations:	Commercial Facility
Key Employees:	Al Nobel (Chemical Engineering - P.Eng. (1989) / Research Associate)
Evidence types:	None.

Scientific or Technological Advancement:

Uncertainty #1: Design

AUTHOR'S NOTE: THE CURRENT EXAMPLE IS UNCLEAR AS TO THE;

- VARIABLES OF UNCERTAINTY
- WHICH FORM THE BASIS OF THE EXPERIMENTATION.

The most significant underlying key variables are: TYPE OF SCAN (unresolved), LASER POSITION (unresolved)

Activity #1-1: Design - e

Methods of experimentation:

Method	Experimentation Performed
Process trials:	2000 runs / samples

Based on statistical analysis and their in-house knowledge of the existing machinery, the company determined that 500 sticks from the cutting and rasping machine would generate sufficient out-of-tolerance sticks to test and validate, with 95% confidence, that the development could be considered complete and successful.

The company, on receiving a large order, produced 2,000 sticks.

Results:

- TOLERANCE: 0.3 mm (100% of goal)
- PRODUCTION RATE: 4 units / minute (133% of goal)
- REJECT RATE: 2 % (no improvement)

Conclusion:

According to the CRA;

"In this case, the testing and data collection associated with cutting and rasping the first 500 sticks is commensurate with the needs and directly in support of the SR&ED work."

IN THE AUTHOR'S OPINION THIS PROVIDES THE OPPORTUNITY TO FURTHER ILLUSTRATE KEY ISSUES SUCH AS;

- ACCEPTABLE METHODS ON HOW TO DETERMINE SAMPLE SIZES &
- WHAT IF THE 500 PROTOTYPE STICKS WERE SOLD?

1308 - Hockey stick design - SAMPLE SIZE

Benchmarks: Internet searches: 5 Articles
Similar prior in-house technologies: 1 products /

Objectives: TOLERANCE: 0.3 mm
PRODUCTION RATE: 3.5 units / minute
REJECT RATE: 1 %

Uncertainty: 1 - Design

Key Variables: LASER POSITION, TYPE OF SCAN

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Design - eligible test size	Process trials: 2000 runs / samples	TOLERANCE: 0.3 mm (100 %) PRODUCTION RATE: 4 units / minute (133 %) REJECT RATE: 2 % (0 %)	(none)	0.00	0.00	0.00	2013

1309 Chemical formulation - DATA COLLECTION SCENARIOS

Scientific or Technological Objectives:

No objectives have been identified.

Example 9 – Illustrating concepts from paragraph 4, section 2.2.2 Eligibility of Work for SR&ED Investment Tax Credits Policy

This example shows that it is the purpose of the work, rather than the nature of the work, that distinguishes support work from excluded work.

Example

In a chemical plant, one of the daily duties of a lab technologist is to take samples from various points throughout the process, perform various analytical tests, and then enter the results into the plant's database.

This database is used by many facets of the organization to monitor, optimize, and control the process.

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Similar prior in-house technologies	1 products / processes	CLAIMANT IS USING THEIR EXISTING DATABASE(S)

IDEALLY THEY WOULD ALSO ILLUSTRATE ANY OTHER SEARCHES FOR INFORMATION WHICH MIGHT BE

- "READILY AVAILABLE" TO
- SOMEONE SKILLED IN THE ART.

FAILURE TO DETAIL THIS "DUE DILIGENCE" IS A MAJOR WEAKNESS IN UNSUCCESSFUL CLAIMS.

Field of Science/Technology:

Physical chemistry, polymer science & plastics (1.04.03)

Project Details:

Intended Results:	Improve existing processes
Work locations:	Lab
Key Employees:	Al Nobel (Chemical Engineering - P.Eng. (1989) / Research Associate)
Evidence types:	None.

Scientific or Technological Advancement:

Uncertainty #1: Technological Uncertainty

No description has been provided for this Uncertainty.

Activity #1-1: Case 1 -INELIGIBLE (Fiscal Year 2013)

Methods of experimentation:

No experimentation methods have been recorded for this Activity.

A research chemist for the company accesses the plant database and uses the data in a research project (assume that this is an SR&ED project).

Although the data collected and entered into the plant database is useful to (and used for) an SR&ED project, the data collection and testing performed by the lab technologist are done routinely and not specifically for the SR&ED work.

In this case, the daily data collection and testing are considered routine data collection and routine testing and cannot be claimed as part of the SR&ED project.

Results:

No results have been recorded for this Activity.

Conclusion:

According to the CRA,

"This example shows how the same type of work—collecting and analyzing samples in a commercial process—may or may not be SR&ED work depending on the purpose of the work being done."

AUTHOR'S NOTE: IN THIS CASE THE DATA WAS COLLECTED BEFORE THE TECHNOLOGICAL UNCERTAINTY WAS DEFINED.

Activity #1-2: Case 2 - ELIGIBLE (Fiscal Year 2013)

Methods of experimentation:

No experimentation methods have been recorded for this Activity.

A research chemist is carrying out an SR&ED project. Much of the data being used again comes from the plant database.

Here, however, the researcher also asks the lab technologist to collect specific samples and run specified tests over and above the work that the technologist routinely performs on a daily basis.

For this particular research work, the chemist uses both the data and the results from the daily work of the technologist, as well as the specific work he requested from the lab technologist.

Results:

No results have been recorded for this Activity.

Conclusion:

According to the CRA,

> "In the context of SR&ED, the data collection and testing that the technologist carries out specifically for the chemist's research project are directly in support of SR&ED. However, the data collection and testing the technologist performs on a daily basis, as in case 1, are routine data collection and routine testing and are excluded from the SR&ED project."

AUTHOR'S NOTE: IN THIS CASE THE DATA WAS COLLECTED AFTER THE TECHNOLOGICAL UNCERTAINTY WAS DEFINED.

1309 - Chemical formulation - DATA COLLECTION WHAT IF SCENARIOS

Benchmarks: Similar prior in-house technologies: 1 products / **Objectives:** (none)

Uncertainty: 1 - Technological Uncertainty **Key Variables:** (none)

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Case 1 -INELIGIBLE	(none)	(none)	(none)	0.00	0.00	0.00	2013
2 - Case 2 - ELIGIBLE	(none)	(none)	(none)	0.00	0.00	0.00	2013

1310 Electronics – SR&ED vs. business portion of the project

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
Component size (cm 2)	30	25	Yes

A company wanted to develop an improved electronic product by incorporating a specific component that would add a new functionality.

The company prepared a project plan including budget, created a new cost centre, and allocated staff to work on the project.

The company then proceeded with the technological feasibility study, preparing the technical specifications, designing, building the prototype, testing, and making the final incorporation of the component into the product before starting the commercial production, marketing, and sales.

In this case, the company project encompasses all the activities from initial idea to final product launch.

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Similar prior in-house technologies	1 products / processes	
Queries to experts	1 responses	

During development, a problem arose with the size of the new component in relation to the size of the existing product.

Knowledge of miniaturization in the field of microelectronics was required to fit the new component into the existing product. The company did not possess that knowledge. As a result, the company contracted out the miniaturization work.

Field of Science/Technology:

Electrical and electronic engineering (2.02.01)

Project Details:

Intended Results:	Improve existing materials, devices, or products
Work locations:	Research Facility
Key Employees:	Nick Tesla (Electrical technology - CET (2002) / Research Associate)
Evidence types:	None.

Scientific or Technological Advancement:

Uncertainty #1: miniaturization

No description has been provided for this Uncertainty.

Activity #1-1: Mininaturization design (Fiscal Year 2013)

Methods of experimentation:

Method	Experimentation Performed
Physical prototypes:	5 samples (with 28 revisions)

The contractor performed SR&ED work on behalf of the company.

The work succeeded in reducing the size of the specific component so that it would fit into the current product.

Once the specific component was successfully developed, it was incorporated into the existing product without any difficulty and the rest of the development was accomplished by standard practice.

AUTHOR'S NOTE:

AS WRITTEN IT WOULD APPEAR THAT THE WORK WAS ROUTINE FOR THE SUBCONTRACTOR. IN OTHER WORDS THERE IS NO EVIDENCE OF ANY HYPOTHESES OR EXPERIMENTS. AS A RESULT IT IS UNCLEAR WHY THIS WORK WOULD QUALIFY.

Results:

- Component size: 21 cm 2 (180% of goal)

Conclusion:

According to the CRA,

"In this example, the SR&ED project encompasses the work done to miniaturize the specific component, which is a subset of the overall company project."

AUTHOR'S NOTE: IDEALLY THE PROJECT DESCRIPTION WOULD GET DETAILS FROM THE SUBCONTRACTOR AS TO HOW THIS WORK WOULD QUALIFY.

IN THE CURRENT EXAMPLE IT IS POSSIBLE THAT THE SOLUTION WAS "ROUTINE" FOR THE SUBCONTRACTOR WHO IS A SPECIALIST IN ELECTRONICS.

THIS IS A WEAKNESS OF MANY SR&ED CLAIMS USING SUBCONTRACTORS SINCE THEY TYPICALLY REPORT RESULTS INSTEAD OF CONCLUSIONS. AN IDEAL CLAIM WOULD;

- INVOLVE THE SUBCONTRACTOR TO
- DEFINE THE RELEVANT PROJECT PARAMETERS
- AT AN EARLY STAGE OF THE PROJECT &
- KEEP RELATED DOCUMENTATION.

1310 - Electronics - defining SR&ED portion of total project

Benchmarks: Similar prior in-house technologies: 1 products / Queries to experts: 1 responses

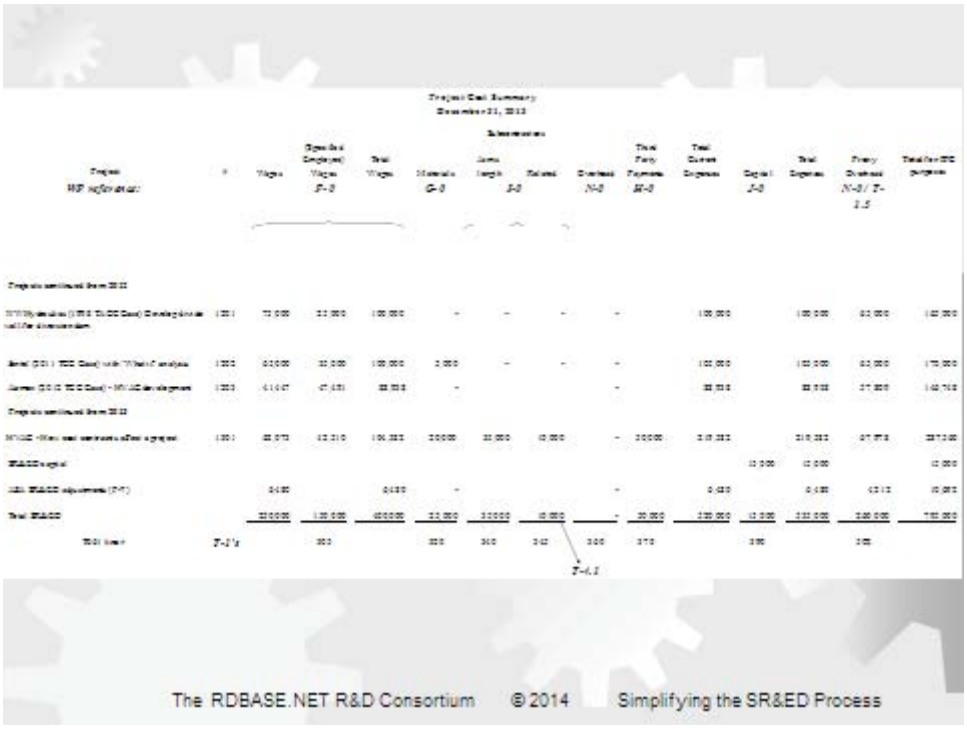
Objectives: Component size: 25 cm 2

Uncertainty: 1 - miniaturization

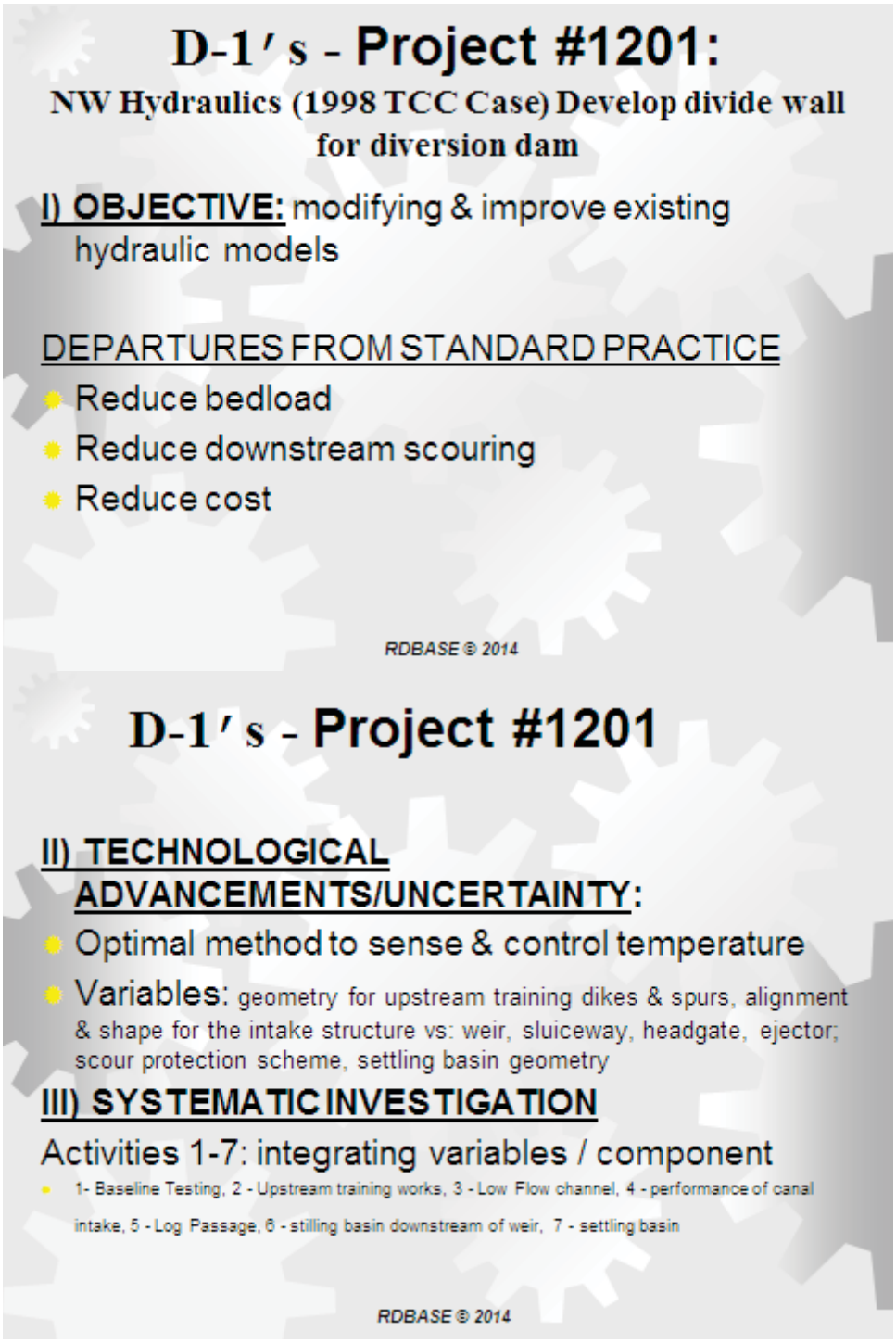
Key Variables: (none)

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Mininaturization design	Physical prototypes: 5 samples ... prototype revisions: 28 revisions	Component size: 21 cm 2 (180 %)	(none)	0.00	0.00	0.00	2013

D Sample Project descriptions and cost summary



D.1 NW Hydraulics (1998 TCC Case) Develop divide wall for diversion dam



Key Criteria Summary

R&D Base demo

1201 - NW Hydraulics (1998 TCC Case) Develop divide wall for diversion dam

Benchmarks:
Internet searches: 21 Articles
Patent searches: 5 patents
Competitive products or processes: 1 products
Similar prior in-house technologies: 3 products /

Objectives:
Decrease Bed load Deposition : 75 %
Reduce Downstream scouring : 99 %
Minimize Production cost: 25000 $per unit

Uncertainty: 1 - Geometry to address sediment & water levels

Key Variables: alignment & shape for the intake structure, geometry for upstream training dikes & spurs, scour protection scheme, settling basin geometry, weir, sluiceway, headgate, ejector

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Baseline Testing	Trials: 59 runs / samples	(none)	(none)	229.00	0.00	0.00	2013 CS
2 - Upstream training works	Analysis / simulation: 1 alternatives	(none)	(none)	689.00	9,600.00	7,100.00	2013 CS
3 - Low Flow channel	Trials: 175 runs / samples Physical prototypes: 14 samples	(none)	(none)	124.00	0.00	0.00	2013 CS
4 - performance of canal intake	Analysis / simulation: 2500 alternatives Trials: 160 runs / samples Physical prototypes: 5 samples	Decrease Bed load Deposition : 80 % (120 %)	(none)	637.00	0.00	0.00	2013 CS
5 - Log Passage	Trials: 7 runs / samples	(none)	(none)	258.00	0.00	14,100.00	2013 CS
6 - stilling basin downstream of weir	Trials: 875 runs / samples Physical prototypes: 4 samples	(none)	(none)	483.00	0.00	0.00	2013 CS
7 - settling basin	Trials: 58 runs / samples	Decrease Bed load Deposition : 75 % (100 %) Reduce Downstream scouring : 99 % (100 %) Minimize Production cost: 25000 $per unit (100 %)	(none)	280.00	0.00	3,460.00	2013 CS

Project Details:

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
Decrease Bed load Deposition (%)	50	75	Yes
Reduce Downstream scouring (%)	80	99	Yes
Minimize Production cost ($per unit)	3000	25000	Yes

[NOTE: THIS PROJECT DESCRIPTION IS REPRODUCED FROM FACTS OUTLINED IN THE TAX COURT OF CANADA Docket: 97-531-IT-G, Date: 1998/05/01]

[AUTHOR'S NOTE: IDEALLY THE TAXPAYER WOULD ATTEMPT TO QUANTIFY THE OBJECTIVES THEY ARE TRYING TO ACHIEVE. A QUANTIFIABLE OBJECTIVE HAS BEEN ADDED ABOVE, TO ILLUSTRATE.]

The problems were to maintain a low flow channel near the intake during the dry season, to exclude sediment from entering the intake and reduce downstream scouring (erosion of materials due to high velocity).

The concept of a divide wall is not new, but this is an entirely different application when the following are taken into account: it's a highly braided river, the shape of the intake works, the alignment and the length and the height of the wall in combination with the gates that were used. Also the development of methods for maintaining this low-flow channel for the intake in this highly sediment laden river is an advance.

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Internet searches	21 Articles	No solution found
Patent searches	5 patents	various methods did not meet the performance requirement
Competitive products or processes	1 products	the concept of a divide wall is not new , but this is an entirely different application
Similar prior in-house technologies	3 products / processes	from sediment specialists

The East Rapti river is 1,800 metres wide and carries large amounts of sediment. The channel is "braided", that is to say it consists of a number of channels. The bank of the river in subject to erosion and is highly unstable. Moreover, the slope is steep giving rise to unusually high velocity.

[NOTE: EACH CHARACTERISTIC TAKEN ALONE AND IN ISOLATION WOULD UNQUESTIONABLY HAVE PRESENTED DIFFICULTIES. CUMULATIVELY THEY MAGNIFIED EACH OTHER.]

Field of Science/Technology:

Civil Engineering (2.01.01)

Project Details:

Intended Results:	Develop new materials, devices, or products
Work locations:	Research Facility
Key Employees:	John Deer (Agriculture - Ph.D. (1981) / Researcher), Quebec Employee (Information Technology - PHD (1985) / Software Developer)
Evidence types:	Progress reports, minutes of project meetings; Test protocols, test data, analysis of test results, conclusions; Records of resources allocated to the project, time sheets; Samples, prototypes, scrap or other artefacts; Design, system architecture and source code; Project planning documents; Photographs and videos; Design of experiments

Scientific or Technological Advancement:

Uncertainty #1: Geometry to address sediment & water levels

How will the properties of the river affect the proposed dam? The unknown effect of heavy sediment movement and complicated structure combination (including weir, sluiceway, headgate, ejector, settling basin, fish ladder, log passage and river training works).

In the result three models were required:

(a) A model of the river; this required a distortion of the scale;

(b) an intake model; and

(c) a settling basin model.

For this purpose it is necessary to develop geometry for upstream training dikes and spurs, and an alignment for the intake structure.

The capacity of the sluice gate has to be increased and a flow divide wall has to be added. A downstream scour protection scheme has to be devised and a settling basin has to be modified to improve flushing.

The most significant underlying key variables are:

geometry for upstream training dikes & spurs (unresolved), alignment & shape for the intake structure (unresolved), weir, sluiceway, headgate, ejector (unresolved), scour protection scheme (unresolved), settling basin geometry (unresolved)

Activity #1-1: Baseline Testing (Fiscal Year 2013 CS)

Methods of experimentation:

Method	Experimentation Performed
Trials:	**59 runs / samples**

Baseline tests

- The baseline tests conducted before installation of the weir showed good simulation of a braided river.
- The high flow rates eroded the incised narrow channel system generated by low flows.

Results:

No results have been recorded for this Activity.

Conclusion:

[NOTE: THE CONCLUSIONS FOR THESE TESTS WOULD BE STATED HERE]

Activity #1-2: Upstream training works (Fiscal Year 2013 CS)

Methods of experimentation:

Method	Experimentation Performed
Analysis / simulation:	1 alternatives

Tests with the weir indicated that upstream left-side training works are needed to protect the guidebank immediately upstream from the weir from erosive attack, prevent erosion of the left bank (Chitwan Park), and to direct approach flow to the intake.

An upstream training scheme consisting of three open dyke elements plus T-spur dykes both upstream and downstream from the open dyke sections was developed.

Results:

No results have been recorded for this Activity.

Conclusion:

The training scheme provided the required protection, helped direct low flows to the intake, and allowed the area behind the dyke to be preserved as wetlands.

This system performed well, but the three spur configuration was also adequate. The final layout will be the decision of the project designers. A minimum of two spurs is recommended, if limited funding does not permit construction of the tested schemes.

Documentation:

- Offline Documents: Planning documents

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Activity #1-3: Low Flow channel (Fiscal Year 2013 CS)

Methods of experimentation:

Method	Experimentation Performed
Trials:	175 runs / samples
Physical prototypes:	14 samples

[AUTHOR'S NOTE: THE DESCRIPTIONS BELOW WERE PROVIDED IN THE CRA'S EXAMPLE. THE DATA ABOVE (# TRIALS/ALTERNATIVES) IS PROVIDED TO ILLUSTRATE SOME OF THE ADDITIONAL DETAILS THAT WOULD IDEALLY BE INCLUDED.]

Bars built up in the 400 m wide approach channel during floods that isolated the intake during low flows. A series of tests [HOW MANY?] were conducted using submerged inner guide banks to create a low flow channel. A 1 m high guidebank forming a channel 1/4 the width of the weir achieved acceptable results [NOTE: A DEFINITION OF ACCEPTABLE RESULTS WOULD BE BENEFICIAL]. Because the inner guide bank scheme concentrates flow and causes higher upstream water levels, a scheme using floodway gates was adopted for further study.

Results:

No results have been recorded for this Activity.

Conclusion:

A modified design using two 20 m wide gated floodways and one 20 m undersluice was effective in producing a low flow channel to the intake [NOTE: CITING MAX FLOW RATES WOULD HELP]. This was accomplished primarily with open floodway gates and a closed undersluice.

A larger radius right-side guidewall [NOTE: CITING HOW MUCH LARGER WOULD BE HELPFUL IN ADDING A DEGREE OF QUANTIFICATION TO THE TESTING] improves flow conditions when flow is guided by the right guidewall.

Activity #1-4: performance of canal intake (Fiscal Year 2013 CS)

Methods of experimentation:

Method	Experimentation Performed
Analysis / simulation:	2500 alternatives
Trials:	160 runs / samples
Physical prototypes:	5 samples

Results:

- Decrease Bed load Deposition : 80 % (120% of goal)

Conclusion:

Although both orientations were studied for bedload deposition, only the results of the 90 degree intake will be discussed herein. Flow conditions with the floodway and undersluice gates open 0.5 m resulted in considerable [NOTE: "CONSIDERABLE" IS A SUBJECTIVE TERM UNLESS DEFINED BY QUANTIFIABLE/MEASURABLE PARAMETERS] bedload entering the canal headworks area. Flows with the floodway gates open 1 m and the undersluice closed also resulted in considerable deposition in the headworks area.

The addition of a 40 m long divide wall that extended above the water surface effectively prevented bedload from entering the canal headworks area when tested for the 1 m floodway gate opening with the undersluice closed. When canal flow is also eliminated, prevention of bedload entering the headworks area is further enhanced. [NOTE: BY ADDING AN ENHANCEMENT FACTOR, IT WOULD HELP PROVIDE A MEASURABLE BENCHMARK INDICATIVE OF R&D]

Flushing tests conducted with a wide open undersluice indicated that flushing with the divide wall is much more effective than without the wall. [NOTE: AGAIN, BY QUANTIFYING THE DIFFERENCE, IT PROVIDES A QUANTIFIABLE CONTEXT TO THE WORK]

Activity #1-5: Log Passage (Fiscal Year 2013 CS)

Methods of experimentation:

Method	Experimentation Performed
Trials:	7 runs / samples

Log passage tests were conducted with the premise that log accumulation in the pocket area upstream from the undersluice should be minimized.

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This was accomplished to a large extent by closing the undersluice but operating the floodway. This operation resulted in log accumulation upstream from the floodway, but minimal accumulation in the pocket. Logs of 20 m size were capable of being flushed by completely opening the gates (floodway or undersluice). Larger logs of 30 m size frequently became jammed.

Several log diversion walls were tested to explore the potential for improving the effectiveness of diverting logs into the floodway. The best scheme involved a solid skimmer wall that allowed flow to pass underneath the wall and the logs were re-directed away from the pocket area. [NOTE: IDEALLY, THESE DIFFERENT LOG DIVERSION WALLS THAT WERE TESTED WOULD BE QUANTIFIED AND EXPLAINED]

Results:

No results have been recorded for this Activity.

Conclusion:

The elimination of all canal flow combined with no undersluice flow resulted in more favourable conditions for diverting logs from the pocket.

Activity #1-6: stilling basin downstream of weir (Fiscal Year 2013 CS)

Methods of experimentation:

Method	Experimentation Performed
Trials:	875 runs / samples
Physical prototypes:	4 samples

Four stilling basin designs were tested downstream of the weir: Types 3 and 4 at basin elevations of 224.7 and 226.7 m. The two higher basins produced downstream water levels that were much higher [NOTE: QUANTIFY "HIGHER"] than the tailwater level. This caused scouring conditions downstream as high velocities were generated by the drop in water level. The Type 3 basin at 224.7 m elevation was adopted for final design.

Results:

No results have been recorded for this Activity.

Conclusion:

The adopted basin was tested with and without stone accumulation in the stilling basin. The presence of stones caused some additional mounding of the water above the floor blocks for the higher flows and an exaggerated vertical eddy that tended to rotate stones back to the face of the spillway, where they may accelerate erosion of the concrete. Many of these stones, however, will wash out at the higher flows.

Activity #1-7: settling basin (Fiscal Year 2013 CS)

Methods of experimentation:

Method	Experimentation Performed
Trials:	58 runs / samples

Flushing with the four-channel scheme was unsuccessful because insufficient downstream channel capacity resulted in subcritical flow through much of the downstream section of the basin. This scheme would function adequately if more downstream capacity were provided.

Flushing with the single-channel scheme with the slope through the flushing ports continuing at the 1:100 basin slope was not satisfactory as a hydraulic jump formed in the basin. Elevation drops of 20, 30 and 45 cm through the ports were then tested. Supercritical flow through the ports, and thus effective flushing, was maintained for flow rates from 2 to 6 m3/s for the three tested drops.

Results:

- Decrease Bed load Deposition : 75 % (100% of goal)
- Reduce Downstream scouring : 99 % (100% of goal)
- Minimize Production cost: 25000 $per unit (100% of goal)

Conclusion:

Approach flow patterns to the settling basin appear satisfactory as the upstream transition adequately spreads the flow so that all basin segments are used effectively. There is slower moving flow along the diverging sidewall that would be improved by rounding the upstream corner of the transition. Deposition in the basin was fairly well distributed among the basin segments.

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D.2 Jentel (2011 TCC case) – plastics "What if" analysis

1202 - Jentel (2011 TCC case) - with "What if" analysis

Benchmarks:
Internet searches: 17 Articles
Competitive products or processes: 4 products
Similar prior in-house technologies: 2 products /
Potential components: 7 products

Objectives:
Max. Load : 120 kg
Manufacturing cost: 145 $ Cdn.
Assembly time: 10 minutes

Uncertainty: 1 - optimal combination of materials & forming processes

Key Variables: cooling rates, fastening optimization for load, melt temperature (ranges and times), mix time, types & order of reagent additions

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Design and Integrate stands	Trials: 1 runs / samples Physical prototypes: 1 samples	(none)	cooling rates	0.00	0.00	0.00	2012 CS
2 - Design & Form Bin	Analysis / simulation: 18 alternatives Trials: 180 runs / samples Physical prototypes: 2 samples Lines of code: 14 Lines of prototype code	(none)	(none)	1,000.00	14,500.00	0.00	2013 CS

Project Details:

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
Max. Load (kg)	80	120	No
Manufacturing cost ($ Cdn.)	156	145	No
Assembly time (minutes)	25	10	No

NOTE: THIS PROJECT IS BASED ON THE 2011 TAX COURT CASE OF JENTEL MANUFACTURING LTD., V. THE QUEEN, (2011 TCC 261)

THOUGH THE TAXPAYER LSOT THIS CASE WE HAVE;
- USED THE FACTS PROVIDED IN THE CASE &
- RECAST THEM TO "POTENTIAL ELIGIBILITY" BY ILLUSTRATING,
- “TECHNOLOGICAL ADVANCEMENT” INCLUDING,
- POTENTIAL “HYPOTHESES AND CONCLUSIONS” (AS REQUIRED BY THE COURTS).

A FULL DESCRIPTION OF THIS CASE IS PROVIDED IN OUR NEWSLETTER 2011-2 AT:
HTTP://WWW.MEUK.NET/NEWSLETTERS_AND_PUBLICATIONS.ASPX]

A FULL COPY OF THIS CASE HAS BEEN UPLOADED TO THE "DOCUMENTS" SECTION OF THIS PROJECT.

Ideally we would provide quantified objectives such as cost, strength, weight, tolerances, failure rates,... which "stack up" to require "experimentation" in areas beyond "standard practice" (such as);
1) different configurations on measured structural integrity,
2) effects of plastic melting process conditions,
3) additive reagents &/or
4) modifying extrusion/forming techniques on produced plastic physico-chemical characteristics

These in turn would allow us to identify other (binary - i.e. yes or no) objectives including replacing non-recyclable structural plastics, such as ABS, with recyclable ones, such as polypropylene.

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Internet searches	17 Articles	Found 7 articles on plastics forming issues + 10 articles on alternate fastening concepts relevant to this design
Competitive products or processes	4 products	Examined geometries and materials used on 4 competitive products. None provided over 100kg load performance.
Similar prior in-house technologies	2 products / processes	re-examined the causes of failure on 2 or our prior "shelf" product we are improving.
Potential components	7 products	Discussed fastening designs and alternatives with 7 plastic fastener designers & manufacturers. Contacted 3 plastic suppliers to get addtional performance details on their products and recommendations for processing.

AN ideal submission would provide specific evidence of known technology limits via: articles, competitive products, expert opinions, patent searches, prior in house failures, blogs, etc.

Field of Science/Technology:

Composites (including laminates, reinforced plastics, cermets, combined natural and synthetic fibre fabrics) (2.05.04)

Project Details:

Intended Results:	Improve existing processes, Improve existing materials, devices, or products
Work locations:	Commercial Facility
Key Employees:	Al Nobel (Chemical Engineering - P.Eng. (1989) / Research Associate), Nick Tesla (Electrical technology - CET (2002) / Research Associate)
Evidence types:	Design of experiments

Scientific or Technological Advancement:

Uncertainty #1: optimal combination of materials & forming processes

A "matrix" of variables (parameters) were identified for testing under different described conditions. HYPOTHESES = can we improve the existing predictive model for effects re: altered temperature of melt, mix time, order of reagent addition, type of reagents, rate of cooling, etc. influence on measured final plastic characteristics/parameters.

The most significant underlying key variables are:

melt temperature (ranges and times) (unresolved), mix time (unresolved), cooling rates, types & order of reagent additions (unresolved), fastening optimization for load (unresolved)

Activity #1-1: Design and Integrate stands (Fiscal Year 2012 CS)

This Activity is addressed in Fiscal Year 2012 CS.

Activity #1-2: Design & Form Bin (Fiscal Year 2013 CS)

Methods of experimentation:

Method	Experimentation Performed
Analysis / simulation:	18 alternatives
Trials:	180 runs / samples
Physical prototypes:	2 samples
Lines of code:	14 Lines of prototype code

Analysis/Simulations:examined how solid flow models to evaluate alternate methods under which plastic fluxing & molding processes could be optimized

Trials:tested 8 different plastics: PETG, PVC, acrylic, ABS, styrene, Lexan, HDPE & polyethylene.

Physical prototypes:Developed 2 prototypes using (ABS and HDPE), further testing was carried out using varying thicknesses of material to determine strength
characteristics.

NOTE: SEE THE WHAT IF MATRIX TO COMPARE ELIGIBLE S. INELIGIBLE ACTIVITIES:

Results:

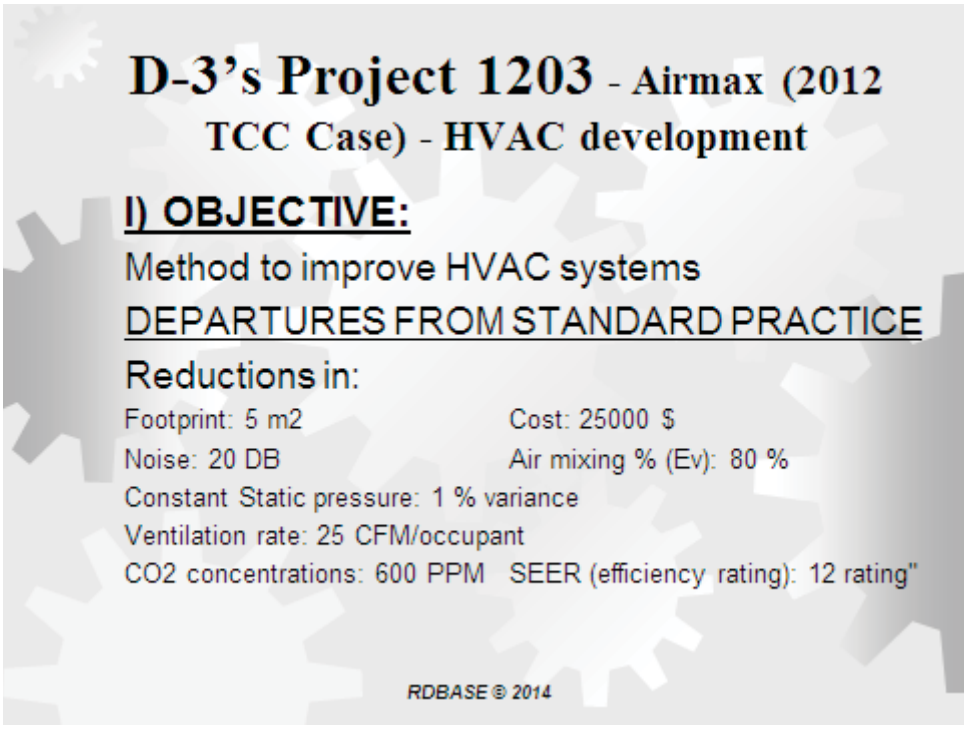
No results have been recorded for this Activity.

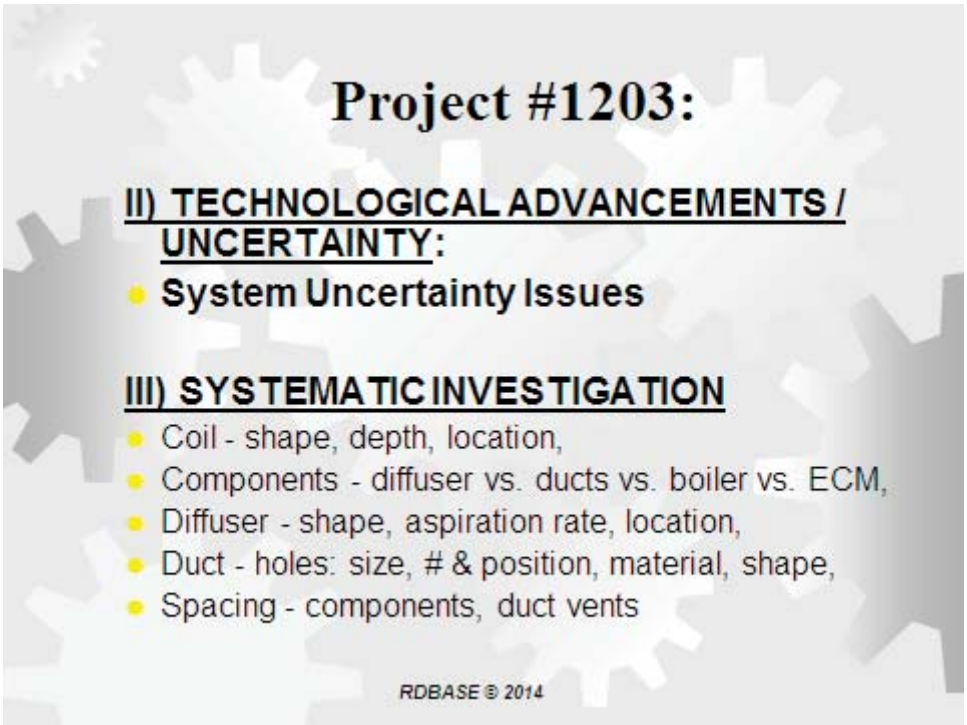
Conclusion:

Documentation:

- Uploaded to RDBASE.NET: Jentel project breakdown WHAT IF.xls (27KB)

D.3 Airmax (2012 TCC Case) – HVAC development





1203 - Airmax (2012 TCC Case) - HVAC development

Benchmarks:
Internet searches: 8 Articles
Patent searches: 14 patents
Competitive products or processes: 12 products
Similar prior in-house technologies: 3 products /
Potential components: 55 products
Queries to experts: 4 responses

Objectives:
Footprint: 5 m2
Cost: 25000 $
Noise: 20 DB
Constant Static pressure: 1 % variance
Ventilation rate: 25 CFM/occupant
Air mixing % (Ev): 80 %
CO2 concentrations: 600 PPM
SEER (efficiency rating): 12 rating

Uncertainty: 1 - component design & integration

Key Variables: Coil - shape, depth, location, Components - diffuser vs. ducts vs. boiler vs. ECM, Diffuser - shape, aspiration rate, location, Duct - holes:size, # & position, material, shape, Spacing - components, duct vents

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Diffuser (accepted by CRA)	Analysis / simulation: 100 alternatives Trials: 10 runs / samples Physical prototypes: 10 samples Lines of code: 50 Lines of prototype code	Noise: 40 DB (50 %) Air mixing % (Ev): 75 % (75 %)	Diffuser - shape, aspiration rate, location	1,250.00	0.00	0.00	2012 CS
2 - Duct (Challenged by CRA)	Analysis / simulation: 100 alternatives Trials: 12 runs / samples	Ventilation rate: 23 CFM/occupant (60 %) Noise: 32 DB (70 %) Air mixing % (Ev): 77 % (85 %)	Components - diffuser vs. ducts vs. boiler vs. ECM Duct - holes:size, # & position, material, shape Spacing - components, duct vents	1,000.00	0.00	0.00	2012 CS
3 - Furnace ECM x-n (challenged)	Analysis / simulation: 100 alternatives Trials: 50 runs / samples	Footprint: 7 m2 (86 %) Cost: 30000 $ (85 %) Noise: 25 DB (87 %) Constant Static pressure: 0.5 % variance (105 %) Ventilation rate: 28 CFM/occupant (160 %) Air mixing % (Ev): 86 % (130 %) CO2 concentrations: 800 PPM (0 %) SEER (efficiency rating): 12 rating (100 %)	Coil - shape, depth, location Components - diffuser vs. ducts vs. boiler vs. ECM Spacing - components, duct vents	1,408.00	37,000.00	20,000.00	2013 CS

Project Name:	Airmax (2012 TCC Case) - HVAC development	**Start Date:**	2012-02-01
Project Number:	1203	**Completion Date:**	2015-02-28

Project Details:

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
Footprint (m2)	20	5	Yes
Cost ($)	60000	25000	Yes
Noise (DB)	60	20	Yes
Constant Static pressure (% variance)	10	1	Yes
Ventilation rate (CFM/occupant)	20	25	Yes
Air mixing % (Ev) (%)	60	80	Yes
CO2 concentrations (PPM)	800	600	Yes
SEER (efficiency rating) (rating)	10	12	Yes

[NOTE: THIS PROJECT EXAMPLE IS REPRODUCED FROM DETAILS PROVIDED IN THE TAX COURT OF CANADA RULING ON AIRMAX TECHNOLOGIES, 2012 (TCC) 376. Copies of the judgment are available from the Tax Court of Canada website [www.tcc-cci.gc.ca].

SINCE THE MOTION WAS AN INFORMAL APPEAL THERE WAS ONLY SUMMARY EVIDENCE PROVIDED AT THE TRIAL.

AS A RESULT WE HAVE ADDED ADDITIONAL GUIDANCE & EXAMPLES OF POTENTIALLY ELIGIBLE WORK IN THE AIR DISTIBUTION INDUSTRY.

In addition to the claimants own cost & performance goals there may be additional objectives created by;

- ASHRAE or other industry standards eg. for air quality / ventilation rates

As illustrated in this example it is important to list all significant & QUANTIFIABLE objectives since they tend to "stack up" or combine to create the technological uncertainties.

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Internet searches	8 Articles	8 articles outlining design methods of similar systems were discovered but none met the stated objectives.
Patent searches	14 patents	14 different patents were examined regarding both component design & concepts to integrate entire systems.
Competitive products or processes	12 products	Concepts from 12 competitive systems were examined.
Similar prior in-house technologies	3 products / processes	
Potential components	55 products	
Queries to experts	4 responses	received 4 responses via HVAC industry blogs re. alternate part designs

DEPARTURES FROM STANDARD PRACTICE:

The design of this system was unique in the market insofar as it utilized higher than usual pressure in response to the problem of the narrower duct work used in narrow multi-storey townhouses.

It also contemplated using an unconventional heat source that also provided domestic hot water, unlike those more commonly used indirect-fired furnaces.

AUTHOR'S NOTE: IDEALLY THE CLAIMANT WOULD ATTEMPT TO OUTLINE ALL:

- "DUE DILIGENCE" PERFORMED IN ORDER TO

- BENCHMARK THE LEVEL OF TECHNOLOGY WHICH WOULD BE
- "READILY AVAILABLE TO SOMEONE SKILLED IN THE ART."

THE CRA AND COURTS REFER TO THIS AS "STANDARD PRACTICE" FOR THE INDUSTRY.

THERE IS NO MINIMUM REQUIRED LEVEL OTHER THAN IT IS "REASONABLE WITHIN THE BUSINESS CONTEXT OF THE FIRM."

Field of Science/Technology:

Thermodynamics (2.03.03)

Project Details:

Intended Results:	Improve existing processes
Work locations:	Commercial Facility
Key Employees:	Al Nobel (Chemical Engineering - P.Eng. (1989) / Research Associate), Nick Tesla (Electrical technology - CET (2002) / Research Associate)
Evidence types:	Project records, laboratory notebooks

Scientific or Technological Advancement:

Uncertainty #1: component design & integration

We have attempted to list examples of

- the top 5 variables of experimentation along with
- an outline of potential issues (or subvariables) to be investigated

In addition to those listed experimental development in this and similar HVAC areas may include contemplation of:

- manifold pressures vs. BTU inputs
- warm vs. cold air systems
- constant vs. variable air volumes

The most significant underlying key variables are:

Coil - shape, depth, location, Components - diffuser vs. ducts vs. boiler vs. ECM, Spacing - components, duct vents, Diffuser - shape, aspiration rate, location, Duct - holes:size, # & position, material, shape

Activity #1-1: Diffuser (accepted by CRA) (Fiscal Year 2012 CS)

This Activity is addressed in Fiscal Year 2012 CS.

Activity #1-2: Duct (Challenged by CRA) (Fiscal Year 2012 CS)

This Activity is addressed in Fiscal Year 2012 CS.

Activity #1-3: Furnace ECM x-n (challenged) (Fiscal Year 2013 CS)

Methods of experimentation:

Method	Experimentation Performed
Analysis / simulation:	100 alternatives
Trials:	50 runs / samples

In 2008, the appellant incurred expenses to bring a European-sourced boiler into conformity with North American standards.

The appellant also undertook testing of ECMs to ensure that they could be programmed at the speeds necessary to meet the design requirements set for the appellant's HVAC system while still meeting the manufacturer's safety specifications, which were required to be adhered to in order to ensure coverage under the manufacturer's warranty.

The ECMs used in the test were purchased from a Korean manufacturer, Essen Tech. The appellant worked with a consultant to develop new program settings for the control board. The evidence shows that the appellant had the right to use the intellectual property generated from the testing, along with Essen Tech.

NOTE: THE ABOVE DETAILS WERE PROVIDED TO THE TAX COURT. IDEALLY A CLAIMANT WOULD ILLUSTRATE ADDITIONAL DETAILS RELATED TO ANY INVESTIGATIONS OF THE VARIABLES OF UNCERTAINTY.

Results:

- Footprint: 7 m2 (86% of goal)
- Cost: 30000 $ (85% of goal)
- Noise: 25 DB (87% of goal)
- Constant Static pressure: 0.5 % variance (105% of goal)
- Ventilation rate: 28 CFM/occupant (160% of goal)
- Air mixing % (Ev): 86 % (130% of goal)
- CO2 concentrations: 800 PPM (no improvement)
- SEER (efficiency rating): 12 rating (100% of goal)

Conclusion:

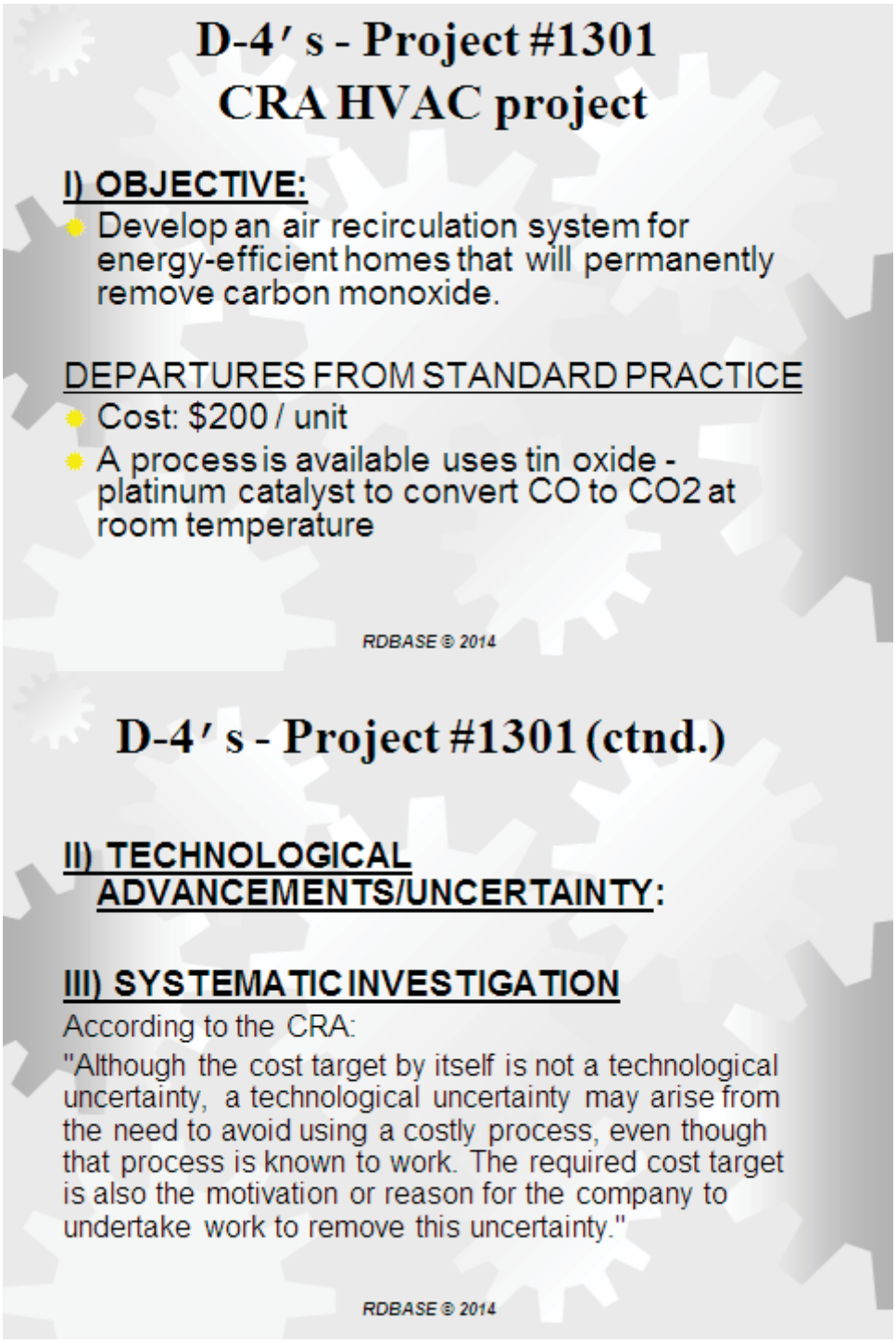
According to the judge,

"The evidence demonstrates that the appellant identified the problems with, and deficiencies of, existing HVAC systems.

In response, the appellant developed a testing site to conduct testing with respect to its diffusers, the integration of the boiler into its system, the programming of the ECM, and the relevant safety and operational standards. Experiments were run, the results were collected and modifications were made."

Significant variables addressed: Coil - shape, depth, location, Components - diffuser vs. ducts vs. boiler vs. ECM, Spacing - components, duct vents

D.4 CRA HVAC project



1301 - HVAC - How cost contraints affect a project

Benchmarks: Internet searches: 44

Objectives: Cost: 200 $ / unit
Minimum conversion temperature: 20 Deg C

Uncertainty: 1 - Convert CO to CO2 at room temp

Key Variables: how to convert CO to CO2 at room temp

Activity	Testing Methods	Results - % of Objective	Variables Concluded	Hours	Materials $	Subcontractor $	Fiscal Year
1 - Development	Analysis / simulation: 25 alternatives Trials: 7 runs / samples	Cost: 180 $ / unit (120 %) Minimum conversion temperature: 23 Deg C (80 %)	how to convert CO to CO2 at room temp	640.00	2,300.00	48,000.00	2013 CS

Project Details:

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
Cost ($ / unit)	300	200	Yes
Minimum conversion temperature (Deg C)	35	20	Yes

Example 3 – Illustrating concepts from paragraph 5, section 2.1.1 Eligibility of Work for SR&ED Investment Tax Credits Policy

According to the CRA, This example shows that cost targets are not technological uncertainties, but a technological uncertainty may arise by trying technologically uncertain paths to solve a problem to meet the cost targets.

A company wants to develop an air recirculation system for energy-efficient homes that will permanently remove carbon monoxide. A key component of this system is a module in which carbon monoxide (CO) is converted to relatively harmless carbon dioxide (CO2) at room temperature.

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Internet searches	44	Could not determine optimal matrix .

A process is available that uses a tin oxide and platinum catalyst to convert CO to CO2 at room temperature, and the company could develop a product based on this process. However, the high cost of using this process will make the selling price of the product out of reach for consumers.

There are other methods to convert carbon monoxide, but they are not effective at room temperature. A key requirement is that the module must operate at room temperature.

Field of Science/Technology:

Mechanical engineering (2.03.01)

Project Details:

Intended Results:	Improve existing processes
Work locations:	Research Facility
Key Employees:	Nick Tesla (Electrical technology - CET (2002) / Research Associate)
Evidence types:	Project records, laboratory notebooks; Design, system architecture and source code

Scientific or Technological Advancement:

Uncertainty #1: Convert CO to CO2 at room temp

To achieve the project objective (a room-temperature carbon monoxide remover), the company has to develop an inexpensive process that operates effectively at room temperature.

The technological uncertainty relates to how to convert CO to CO2 at room temperature that does not use the costly process with tin oxide and platinum.

The most significant underlying key variables are:

how to convert CO to CO2 at room temp

Activity #1-2: Development (Fiscal Year 2013 CS)

Methods of experimentation:

Method	Experimentation Performed
Analysis / simulation:	25 alternatives
Trials:	7 runs / samples

Results:

- Cost: 180 $ / unit (120% of goal)
- Minimum conversion temperature: 23 Deg C (80% of goal)

Conclusion:

According to the CRA:

"Although the cost target by itself is not a technological uncertainty, a technological uncertainty may arise from the need to avoid using a costly process, even though that process is known to work. The required cost target is also the motivation or reason for the company to undertake work to remove this uncertainty."

IN THE AUTHORS OPINION THIS ILLUSTRATES HOW

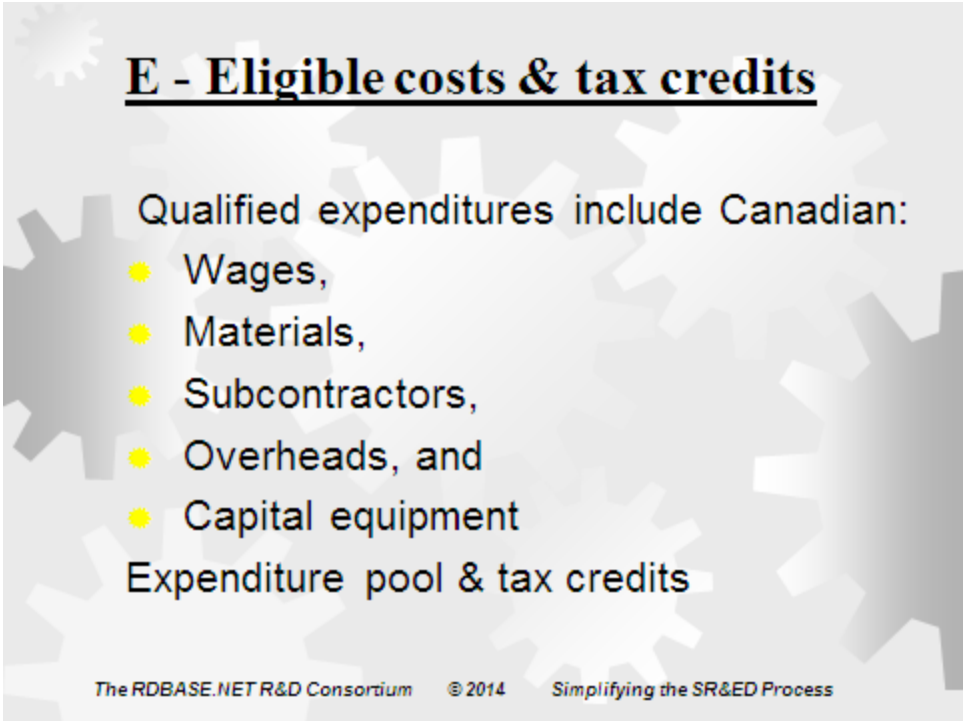
- THE QUANTIFIABLE BUSINESS OBJECTIVES (IN THIS CASE TO REDUCE COST WHILE MAINTING OTHER PERFORMANCE PARAMETERS)
- "STACK UP" TO CREATE "TECHNOLOGICAL UNCERTAINTY."

Significant variables addressed: how to convert CO to CO2 at room temp

Documentation:

- Uploaded to RDBASE.NET: RD Base license agreement 2014.pdf (16.4KB), Compounding test matrix example-2.pdf (260KB)

E Eligible costs & tax credit rates



E.1 Qualified SR&ED expenditures

Qualified SR&ED expenditures include Canadian:

- Wages,
- Materials,
- Subcontractors,
- Overhead and
- Capital equipment

to the extent that they are, "consumed through SR&ED performed in Canada."

Step 1a): Ensure proper definition of existing knowledge at the outset:

Northwest Hydraulics[45]

CRA position (all work SP)

> "Standard Practice refers to directly adapting a known engineering or technological practice to a new situation when there is a high degree of certainty that the known technology or practice will achieve the desired objective.
>
> The devices and processes developed by NHC in the course of the modelling work may have been "new" in the sense of a new location (i.e. a hydraulic structure that was not there before, or the implementation of a river improvement scheme),
>
> but all of the work described in the NHC project reports refers to **standard devices and processes**, which are routinely used in similar design situations all over the world."

Judge's analysis

> "Q. Could these designs have been implemented by resorting merely to textbooks?
>
> A. No, you wouldn't find any of that in a textbook. But there are design guides available and certainly there are **suggestions** there and these were used in the **initial design**. But not enough is available there to, I think, develop an effective design of this type.
>
> It is true that any one of the features of the final design may have been known - rubber weirs, radial gates and walls of different types were known. It was the innovative **combination and alignment** of these factors that makes this project unique."

Judge's ruling & rationale

> "The CRA's position, was essentially that the appellant, admittedly a **world leader** in the field of hydraulic model testing, **by its own excellence** sets the standard for what represents routine engineering or standard practice.
>
> With respect I think that this **sets an unrealistically high standard** - indeed a standard of perfection that would discourage scientific research in Canada.

Author's commentary:

The Northwest Case illustrates how CRA officials may deny claims on the basis the project

- appears to be "routine engineering"
- without providing support for their position but
- identification of "variables" for experimentation
- provide adequate evidence for the TCC

US / IRS directives – perhaps CRA can adopt?

In the United States the IRS[46] provides additional directives for determining "standard practice" within SR&ED claims.

> **Means of discovery**. In seeking to obtain knowledge that exceeds, expands, or refines the common knowledge of skilled professionals in a particular field of science or engineering, a taxpayer may employ existing technologies in a particular field and may rely on existing principles of science or engineering.
>
> **Patent safe harbor.** The issuance of a patent by the Patent and Trademark Office… is **conclusive evidence** that a taxpayer has obtained knowledge that exceeds, expands, or refines the common knowledge of skilled professionals. However, the issuance of such a patent is **not a precondition** for credit availability.

[45] Northwest Hydraulic Consultants Ltd., v The Queen, (Date: 1998/05/01 – TCC, Docket: 97-531(IT))
[46] Internal Revenue Service 26 CFR Parts 1 and 602 [TD 8930] RINs 1545-AV14 and 1545-A051

Rebuttable presumption. If a taxpayer demonstrates with credible evidence that:

- research activities were undertaken to obtain the information …
- would exceed…the common knowledge
- of skilled professionals in the particular field of science or engineering
- activities …satisfy the requirements.

The **Commissioner (IRS auditor) may overcome the presumption** [if he/she] **demonstrates** that

- the information was within the **common knowledge** of skilled professionals **or**
- the research **activities** were **not** undertaken **to obtain** the information described.

Step 1 b): Quantification of objectives vs. standard practice

Tax Court of Canada statements:

Sass Manufacturing[47]

"Systematic investigation connotes the **existence of controlled experiments and of highly accurate measurements** and involves the **testing of one's theories against empirical evidence**.

Northwest Hydraulics[48]

"The addition of these words ["including **incremental improvements** thereto"] in 1995 applicable to taxation years ending after December 2, 1992 appears to have been in response to a concern that the achievement or attempted achievement of slight improvements was not covered.

I should not have thought it was necessary to say so. Most scientific research involves **gradual, indeed infinitesimal, progress**. Spectacular breakthroughs are rare and make up a very small part of the results of SR&ED in Canada."

Notable quote:

"If GM had kept up with technology like the computer industry has, we would all be driving $25 cars that got 1000 MPG."

- Bill Gates

[47] Sass Manufacturing Limited v. M.N.R., 88 DTC 1363
[48] Northwest Hydraulic Consultants Ltd., v The Queen, (Date: 1998/05/01 – TCC, Docket: 97-531(IT))

Step 2: Correlate experiments to technological uncertainties (hypotheses):

Tax court definitions of "hypotheses"

Tax Court of Canada judges have made the following statements:

CW Agencies[49] :

> "The word **hypothesis** in this context is normally considered to mean a **provisional concept** which is not inconsistent with known facts and **serves as a starting point for further investigation by which it may be proved or disproved objectively**."

Maritime Ontario Freight Lines[50] ,

> "**A hypothesis** is a tentative assumption or explanation to an unknown problem and, as a rule, this **requirement is me**t by the existence of a **logical plan** devised to observe and resolve the hypothetical problem."

Northwest Hydraulics

> "I do not think that **conventional engineering** would be adequate to deal with the **variables** and the uncertainties that were inherent in the major disruption and diversion of the flow of the river resulting from the construction"[51]
>
> The technological uncertainty is something that exists in the mind of the specialist such as the appellant, who identifies and articulates it and applies its methods to remove that uncertainty."[52]

Additional definitions of "scientific hypotheses"

Webster's online dictionary

Hypothesis, n.; pl. Hypotheses:

> 1. A **supposition**; a proposition or principle which is supposed or taken for granted, in order to draw a conclusion or inference for proof of the point in question;
>
> 2. **(Natural Science)** A **tentative theory** or supposition provisionally adopted to explain certain facts, and **to guide** in the **investigation** of others; hence, frequently called a working hypothesis.

From Wikipedia, the free encyclopedia

Hypothesis:

> The term comes from the Greek, hypotithenai meaning "to put under" or "to suppose".
>
> A hypothesis (plural hypotheses) is a proposed explanation for a phenomenon.
>
> For a hypothesis to be a **scientific hypothesis, the scientific method** requires that one can test it.
>
> Scientists generally **base** scientific hypotheses on **previous observations** that cannot satisfactorily be explained with the available scientific theories.

[49] CW Agencies vs. MNR, Date: 2000/08/30, Docket: 98-1324(IT)G, (TCC)
[50] Maritime-Ontario Freight Lines Limited and Her Majesty the Queen (CITATION:2003 TCC 674) – informal procedure
[51] Ibid NW Hydraulics, Paragraph 22
[52] Ibid NW Hydraulics, Paragraph 82

Hypothesis development

Normally hypotheses have the form of a **mathematical model.**

A **working hypothesis** is a provisionally accepted hypothesis proposed for further research.

Author's commentary:

Evidence of hypotheses is the development of a "test matrix."

This would require the researcher to:

- Identify the **key variables** which he/she believes explain the performance
- **Benchmark** variables vs. existing models to predict their interaction
- **Rank** the variables in order of significance
- **Test** the variables to further understand shortfall of the existing models

If the **variables of a "test matrix"**

- can be identified this provides **objective evidence** of the technological advancement
- conversely, if they can't be identified it will be nearly impossible to illustrate the limits of standard practice models.

Notable quote:

"Life is trying things to see if they work."

- Ray Bradbury

Step 3a): Ensuring work was done "systematically"

Tax Court of Canada statements:

Sass Manufacturing[53]

"Systematic investigation connotes the **existence of controlled experiments and of highly accurate measurements** and involves the **testing of one's theories against empirical evidence**.

Scientific research must mean the **enterprise of explaining and predicting** and the gaining knowledge of whatever the subject matter of the hypothesis is.

This surely **would include repeatable experiments in** which the steps, the various changes made and the **results are carefully noted**."

Zeuter Developments[54]

"As stated in RIS-Christie, the only reliable method of **demonstrating** that scientific research was undertaken in a **systematic fashion** is to produce **documentary evidence**."

Rainbow Pipeline[55]

"What may appear routine and obvious after the event may not have been before the work was undertaken.

What distinguishes routine activity from the methods required by the definition of **SRED** …. is not solely the adherence to systematic routines, but the **adoption** of the **entire scientific method,** with a view to removing a technological uncertainty through the formulation and testing of innovative and untested hypotheses."

Step 3b): Clarifying the "technological conclusions / advancements"

Tax Court of Canada statements:

Rainbow Pipeline[56]

"Did the process result in a technological advance, that is to say an advancement in the general understanding?"

On this issue he commented,

"The **rejection after testing of an hypothesis is nonetheless an advance** in that it eliminates one hitherto untested hypothesis.

Much scientific research involves doing just that. **The fact that the initial objective is not achieved invalidates neither the hypothesis formed nor the methods used**. On the contrary it is possible that the very failure reinforces the measure of the technological uncertainty."

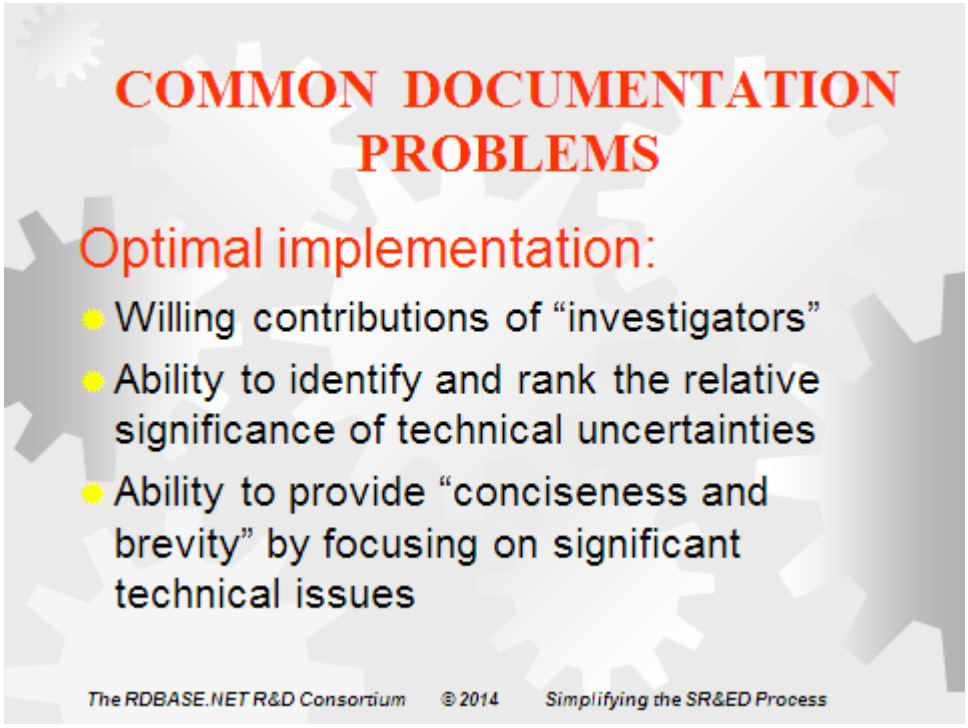
[53] Sass Manufacturing Limited v. M.N.R., 88 DTC 1363
[54] Zeuter Development Corporation v. The Queen, 2006 TCC 549, 2007 DTC 41, para 28
[55] Rainbow Pipeline Company Ltd., Date: 1999/09/15, Docket: 96-4369-IT-G I, (TCC)
[56] Rainbow Pipeline Company Ltd., Date: 1999/09/15, Docket: 96-4369-IT-G I, (TCC)

Notable quote:

“An idea that is not dangerous is unworthy of being called an idea at all.”

- Oscar Wilde

B.11 Common eligibility problems



B.11.1 Facts: Recent increase in CRA challenges to "Technological Advancement" (TA)

Recently the **CRA** has appeared to increase its scrutiny on SR&ED claimants based on one basic challenge **claiming that they:**

"Do not see the technological advancement."

B.11.2 Issue(s): TA has 3-5 major components – need to be specific

In the author's opinion this is like taking your car to the mechanical and claiming, "it doesn't work right." A (Properly trained) mechanic would likely start a conversation like:

Mechanic:"What happens when you turn the key in the ignition? Does it start?"
Client: "Sure it starts fine."
Mechanic:"Does the engine run?"
Client: "Sure it runs fine."
Mechanic:"What happens when you put the transmission in gear? Does it move?"
Client: "Sure it moves but it jerks and sometimes backfires."
Mechanic:"Okay. That will be $500 for not just telling me the problem in the first place!"

To many this situation seems almost foolish since most people would just tell the mechanic the specific problem in the first place. Ironically when it comes to explaining "technological advancement" some CRA officials appear to provide similar lack of detail in their feedback to SR&ED claimants.

In the author's opinion a more acceptable and useful answer would be to clarify **which of the 5 major components** were lacking in the clients project description.

The next four slides use the shapes of the R&D model to illustrate some common problems in identifying and documenting eligibility:

B.11.3 Failure to accurately define and leverage initial knowledge base

No square - Example starts,

"This product will be the first of its kind in the world ….."

While perhaps indicative of a **business advance**, we still **require a benchmark of/to similar products, technology or methods** to define a company's **knowledge base** & clarify:

- results are not readily apparent and
- a basis for related, technical hypotheses.

Recommendation

- The researcher's goal is to illustrate such **benchmarks** as the **starting point** of the investigation, **rather than the final solution**.

B.11.4 Failure to extend beyond your company's initial knowledge base

C

Common SR&ED documentation problems

- **Generally speaking, routine engineering** represents any **Activity** that is **NOT correlated with one, or more, technical uncertainties.**

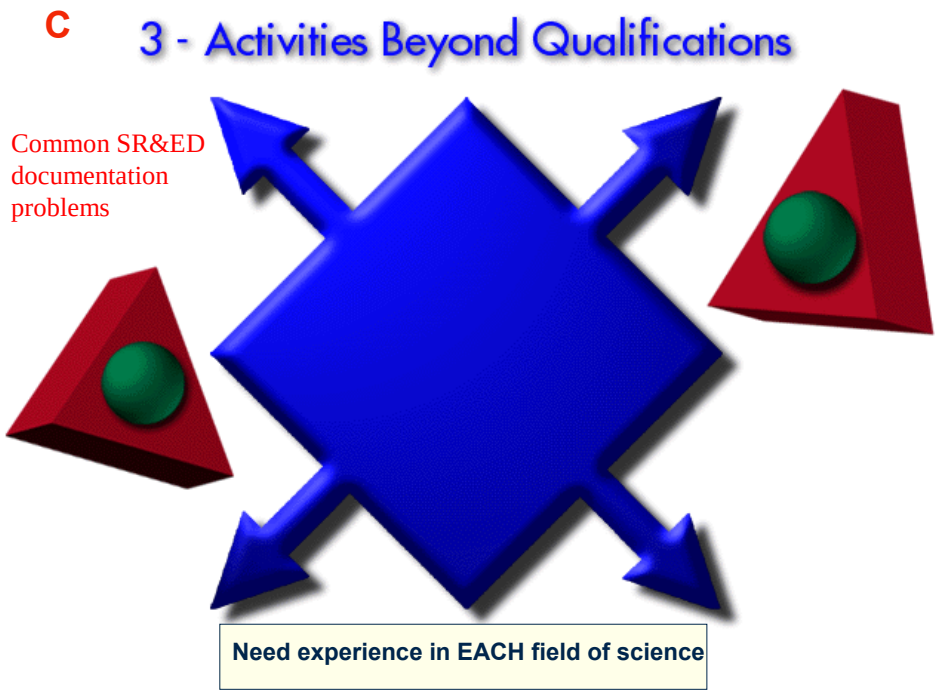
- Typically these activities are **within the standard practice knowledge base.**

Recommendations

- Perhaps one of the best illustrators of **technical uncertainty** is provided by a **comparison of results** to **initial expectations**.

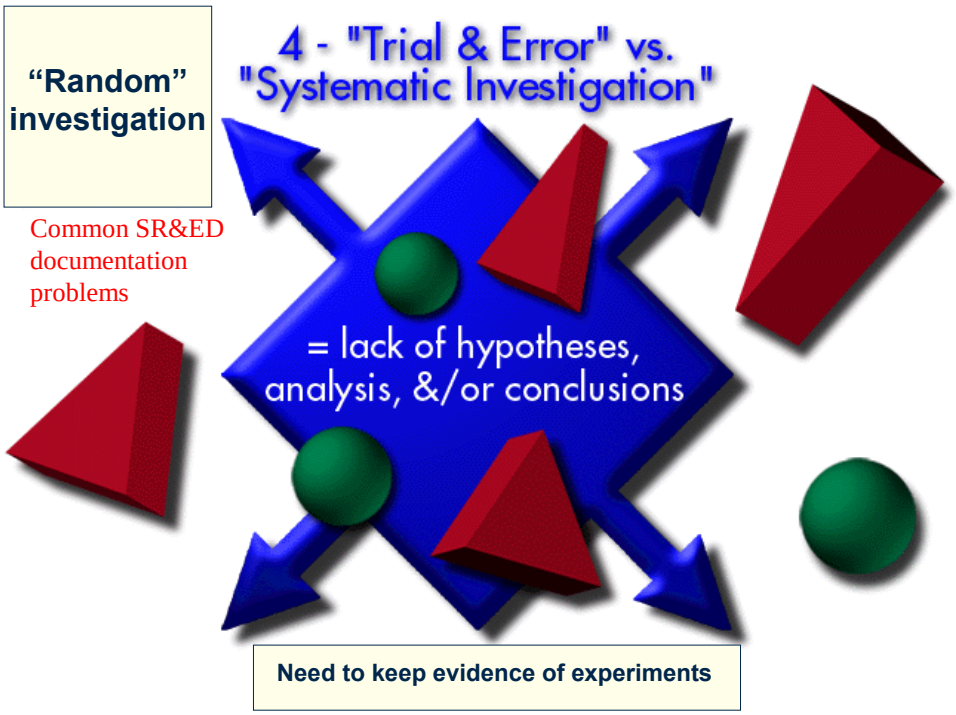
- Since the SR&ED program requires the correlation of **activities** to **uncertainties**, by definition, routine engineering activities will not be eligible unless they are directly related to resolution of the technological uncertainties.

B.11.5 Matching qualifications of research personnel & projects



- The requirement for technical content includes a requirement for qualified personnel.
  - Qualifications will vary according to the complexity of the project at hand. In some cases, work experience will be sufficient while in other settings an advanced degree would be appropriate.
  - As a general rule, **a Bachelors degree or equivalent** in an area of technology will indicate adequate, technical qualifications; however this is not a mandatory requirement.
- The individual conducting the experiment should have the **ability to:**
  - **identify technical uncertainties**,
  - formulate **technical hypotheses;** and
  - **derive related, technical conclusions** as a result of this work.

B.11.6 Systematic investigation vs. trial & error



Trial and error (ineligible)

- Examines potential solutions **without the ongoing evaluation of why** results occurred.

vs.

Systematic Investigation (eligible)

- Analysis of specific, **technical hypotheses and related conclusions**.

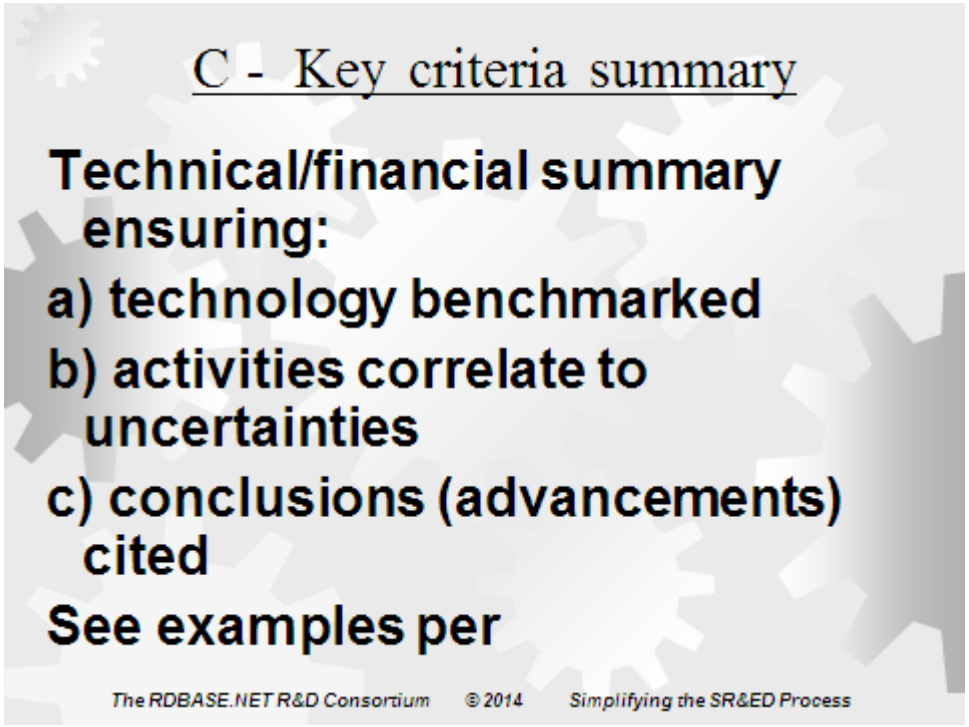
Recommendations

- There is nothing wrong with quick & dirty experiments as long as they are systematic and documented.

- We should pursue **explanations** for (product) failures, as well as successes.

In this way a **technical advancement** can be evidenced, even if the project itself becomes a business failure.

B.12 "Key Criteria summary" Methodology & Purpose



In the author's opinion the key components of an optimal project description are threefold:

1) to ensure that we've **defined the company's existing knowledge** on a topic at the outset.

2) to **correlate efforts made with** concise summaries of significant, **technical uncertainties**, and

3) to provide a basis to recognize significant **conclusions (i.e. technological advancements)**.

Goal 1: ensure proper definition of existing knowledge at the outset:

The "advancement" section of the grid again focuses not so much on "product" advancements but on the **methods to achieve such advancements** and the fact that they have been **benchmarked against existing standard practice.**

We find that we often use this basis of "advancement" to recommend renaming of the project away from "product" descriptions and towards "methodology" objectives. As indicated above, the "advancement" section is **not** the primary focus of the grid but only a double check to insure that:

1) Standard practice "knowledge" for this industry was defined (by at least 1 benchmark), &
2) That the solution was not a "routine" implementation of this "existing" knowledge.

If these two issues are evidenced, **no matter how small the incremental improvement maybe,** the grid can then correlation of research steps to technical uncertainties.

Goal 2: correlation of the research steps to specific, technical uncertainties:

Use of these grids then allows the reviewer to scan through the projects and identify those **research steps which clearly contemplate resolving the technical uncertainties and alternatives.**

This is what differentiates SR&ED work from "routine engineering."

The need for any further routine, supporting work can then be briefly mentioned but needs no further explanation. This support work will always be eligible to the extent that it was "commensurate with the needs and directly in support of [the eligible research[57]]."

Goal 3: Providing concise summaries of experimentation performed:

We have found that there are several advantages to having concise summaries of the "activity level" data.

- projects can accumulate separate uncertainties each with any unlimited number of research activities. Often **portions of the "business" project do not qualify** for SR&ED (i.e. not necessary to resolve the stated uncertainties).
- One of the key indicators of eligibility is the ability to provide a detail of the **number of experiments performed** and alternatives analyzed..
- It has been our experience that these grids provide an adequate degree of detail, particularly for someone already familiar with work in question, to skim the database and ensure that **all costs were required to resolve the state uncertainties**.

Summary of how to use these grids for submission:

As discussed above, I believe that the grids provide a simple overview of the "key variables of uncertainty" and therefore illustrate that the development work was:

a) **NOT "routine engineering"** (i.e. without any significant technological uncertainty) and instead was

b) **"systematic investigation"** into alternate solutions and their effects on other components in the system.

[57] ' Excerpt from the definition of "scientific research and experimental development" as defined in subsection 248(1) of the income Tax Act.

c DRAFT CRA SR&ED project examples Sept 18, 2013

On Sept 18, 2013 the Canada Revenue Agency (CRA) released a DRAFT document [58] containing;

- 10 specific project examples,
- each aiming to illustrate one or more specific issues.

They are requesting feedback by 18-Nov-2013.

In the author's view these examples:

- provide both insight but also ambiguity since
- project eligibility requires the "scientific method" be followed &
- ANY missing link could spell failure.

As a result the CRA begins the paper by qualifying that;

> "These examples are intended to illustrate specific concepts found in the Eligibility of Work for SR&ED Investment Tax Credits Policy. The field of work described is not an issue, nor whether the work is actually eligible."

Despite the qualification the examples then go on to illustrate how & why certain work may be eligible.

In the author's view the examples,

- while lacking certain key details,
- provide a basis to further develop complete SR&ED project descriptions.

Rewriting the projects

In the following pages we have

- Entered these DRAFT projects
- Into the COMPLETE T661 project reporting template
- To illustrate both
  - SR&ED indicators of eligibility &
  - Information that is lacking

Notable quote:

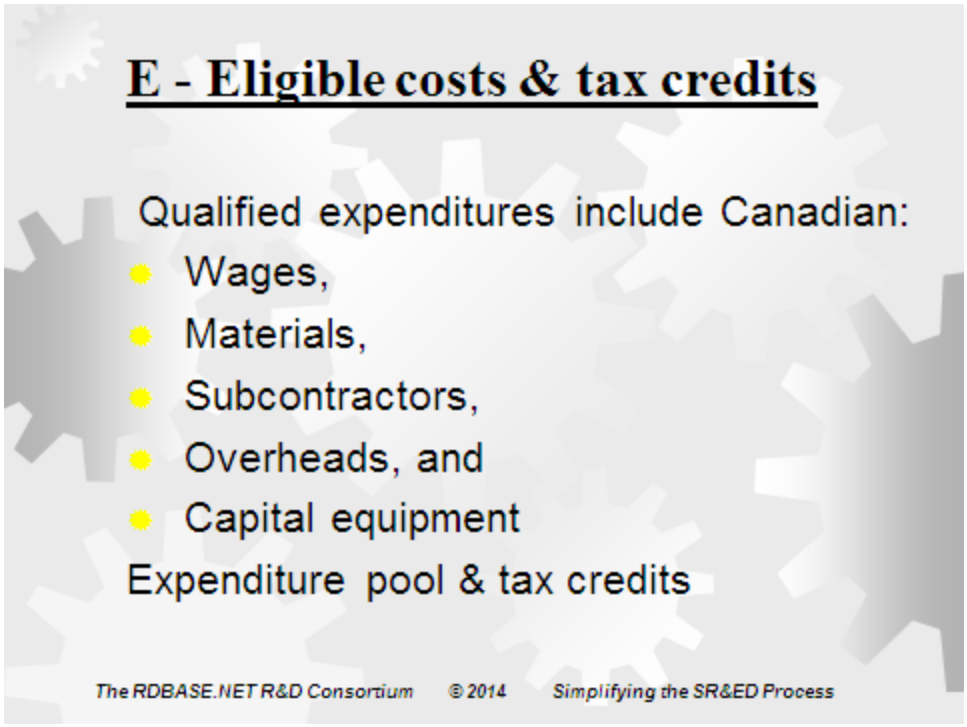
"The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency.

The second is that automation applied to an inefficient operation will magnify the inefficiency."

- Bill Gates

[58] Draft examples to illustrate key concepts in the Eligibility of Work for SR&ED Investment Tax Credits Policy

E Eligible costs & tax credit rates

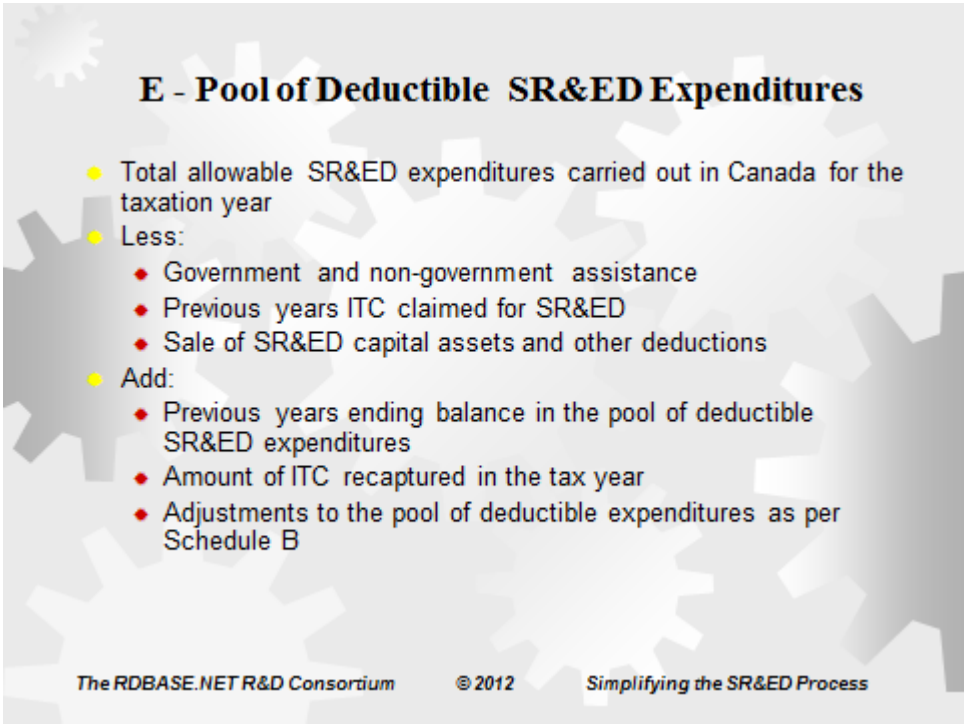


E.1 Qualified SR&ED expenditures

Qualified SR&ED expenditures include Canadian:

- Wages,
- Materials,
- Subcontractors,
- Overhead and
- Capital equipment

to the extent that they are, "consumed through SR&ED performed in Canada."

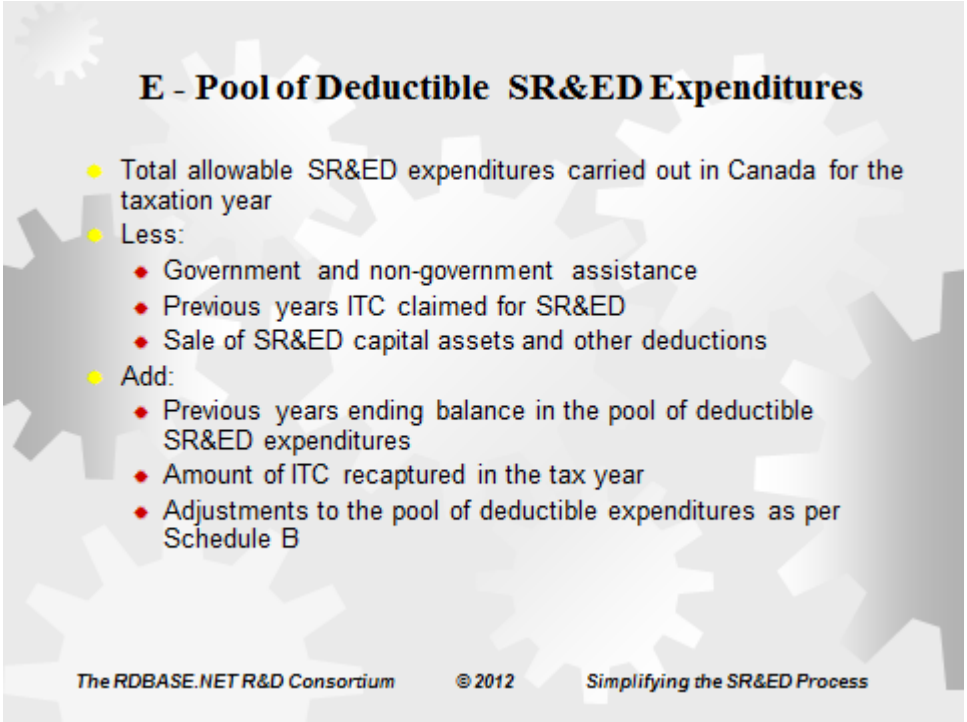


Generally speaking the SR&ED program's requirements for financial information include:

Report:	**Example:**
• **SR&ED Man hours/project /person**	***F***
• **Materials consumed/project**	***G***
• **Subcontractor Expenditures/project (Including Third-party/University Payments)**	***H and I***

The federal and many provincial governments of Canada provide tax incentives for scientific research and experimental development which creates one of the lowest net research costs in the world.[59] At the federal level, these tax incentives are generally comprised of two separate tax components: SR&ED Tax Deductions and SR&ED Tax Credits.

[59] Department of Finance, October 2007, Consultation Paper - Tax Incentives for Scientific Research and Experimental Development http://www.fin.gc.ca/activty/consult/sred_1e.html accessed August 24, 2008



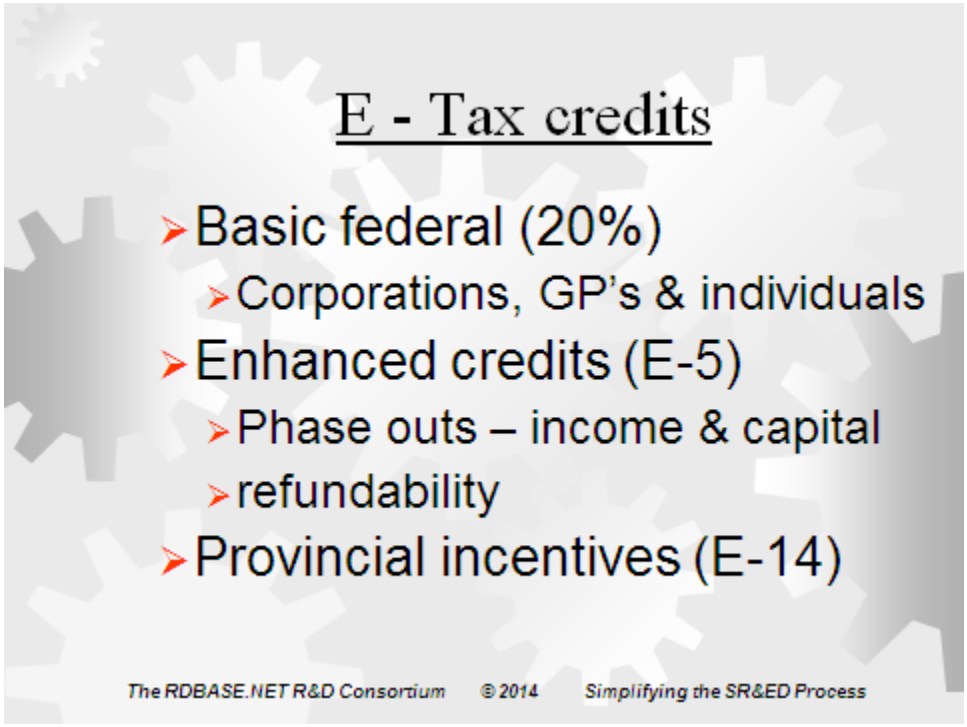
E.2 Tax Deductions – The SR&ED expenditure pool

Taxpayers are allowed to **fully deduct** eligible current and capital expenditures in respect of SR&ED incurred in the year. There are two key differences between these income tax deductions for eligible SR&ED expenditures and most other types of expenditures:

- SR&ED capital expenditures can be fully deducted in the year incurred – capital expenditures are normally deductible over time through the capital cost allowance system; and

- SR&ED current expenditures can be carried forward indefinitely – current expenditures are normally deductible only in the year incurred, and may create a non-capital loss which can generally be carried back three years or forward from seven to ten years. [see Expenditure pool carry forward mechanics on page T-1.3].

SR&ED expenditures that are not deducted in a year can be carried forward indefinitely. This is accomplished through the use of an SR&ED expenditure pool with an unlimited carry-forward period. SR&ED expenditures incurred in a year are added to the expenditure pool and can be deducted to the extent desired by the taxpayer. The pool balance remaining at the end of a year becomes the opening balance of the subsequent year.



E.3 Federal SR&ED tax credits

There are currently two rates of federal investment tax credit for SR&ED in Canada:

- a general rate of 20 per cent and
- an enhanced rate of 35 per cent for qualified CCPCs (Canadian-controlled private corporations)

Generally speaking,

- CCPCs have <=50% of their shares controlled by "public corporations" or "foreign parties"
- "qualified" CCPCs are those with
    - prior-year taxable income under $ 400,000 and
    - prior-year taxable capital employed in Canada under $10 million.

E - Investment Tax Credit Rates - CCPC

- 35% ITC rate on all qualified expenditures up to the expenditure limit
- 20% ITC rate on all qualified expenditures in excess of the expenditure limit

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E - Investment Tax Credit Rates

Individuals and Certain Trusts

- ITC rate - 20% on all qualified expenditures
- Refundable - 40% of both current and capital ITC

Corporations (other than a CCPC)

- ITC rate - 20% on all qualified expenditures
- No refund

All Other Taxpayers

- ITC rate - 20% on all qualified expenditures
- No refund

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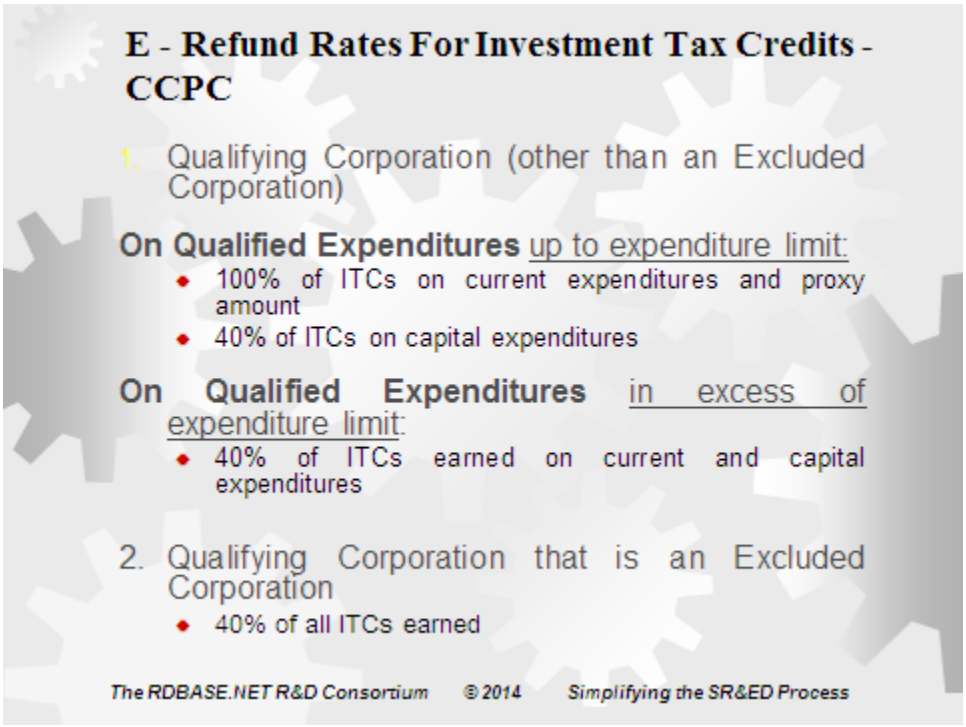
Federal SR&ED tax credit rates and rates of refundability (%)

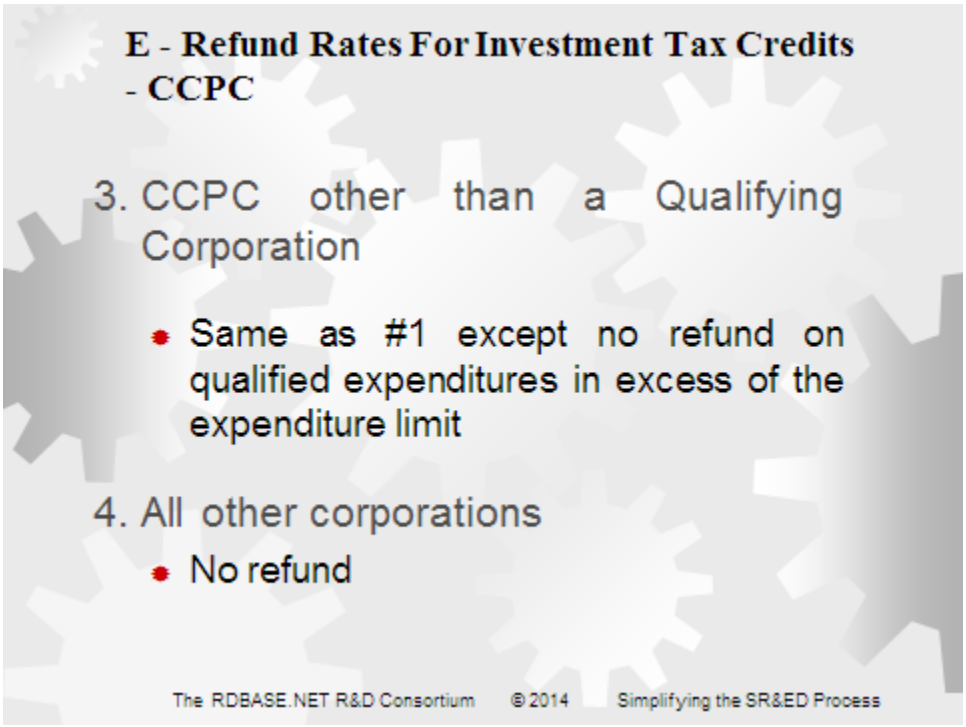
Business Type	Credit Rates	Refundability Rates	
		Current Expenditures	Capital Expenditures
Unincorporated Businesses	20	40	40
CCPCs with prior-year taxable income, - of $500,000 or less:			
Expenditures up to expenditure limit[1]	35	100	40
Expenditures over expenditure limit	20	40	40
- **between $500,000 and $800,000:**			
Expenditures up to expenditure limit[2]	35	100	40
Expenditures over expenditure limit	20	0	0
CCPCs with prior-year taxable capital employed in Canada between $10 million and $50 million:			
Expenditures up to expenditure limit[3]	35	100	40
Expenditures over expenditure limit	20	0	0
All Other Corporations			
Expenditures up to Dec 31, 2013[3]	20	0	0
Expenditures after Dec 31, 2013	15	0	0

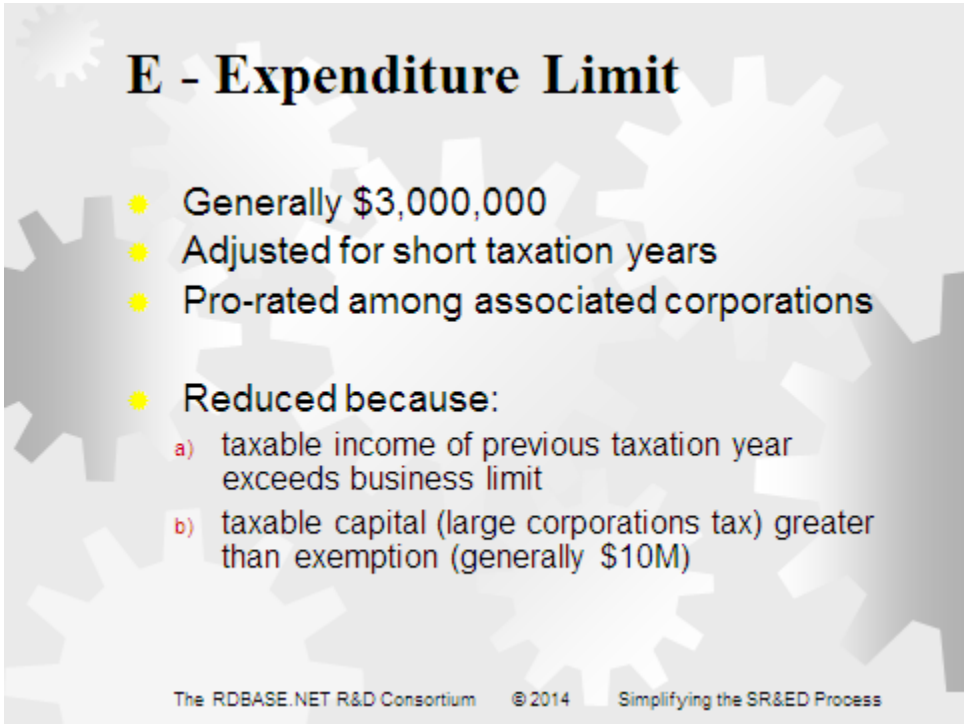
1. Expenditure limit is generally $3 million per annum for the "associated group of companies" (i.e. all companies under common control).
2. Expenditure limit for CCPCs is phased out for prior-year "group" taxable income between
   - $500,000 and $800,000 – see chart over page
3. Expenditure limit for CCPCs is phased out for prior-year taxable "group" capital employed in Canada between
   - $10 million and $50 million – see chart over page
4. ITC rate for large corporations reduced from 20% to 15% after 2013.

E.3.1 Mechanics to determining expenditure limits for enhanced credits

The specific mechanics of the current phase-out formula are provided in the *Income Tax Act*







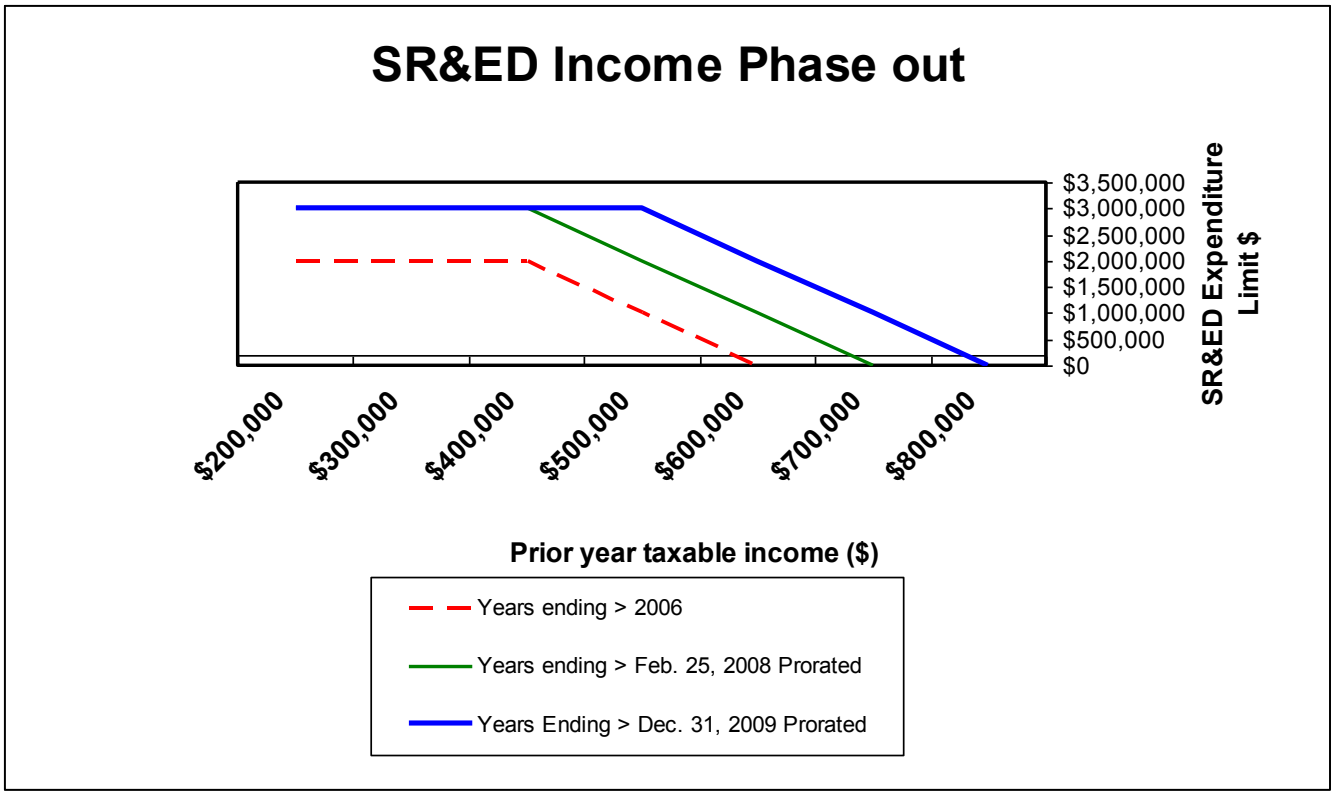
The amount of SR&ED expenditures that can earn tax credits at the enhanced rate is referred to as the expenditure limit. The expenditure limit is generally $3 million for CCPCs with prior-year taxable income of $500,000 or less. This expenditure limit is reduced on the basis of the following two criteria[60].

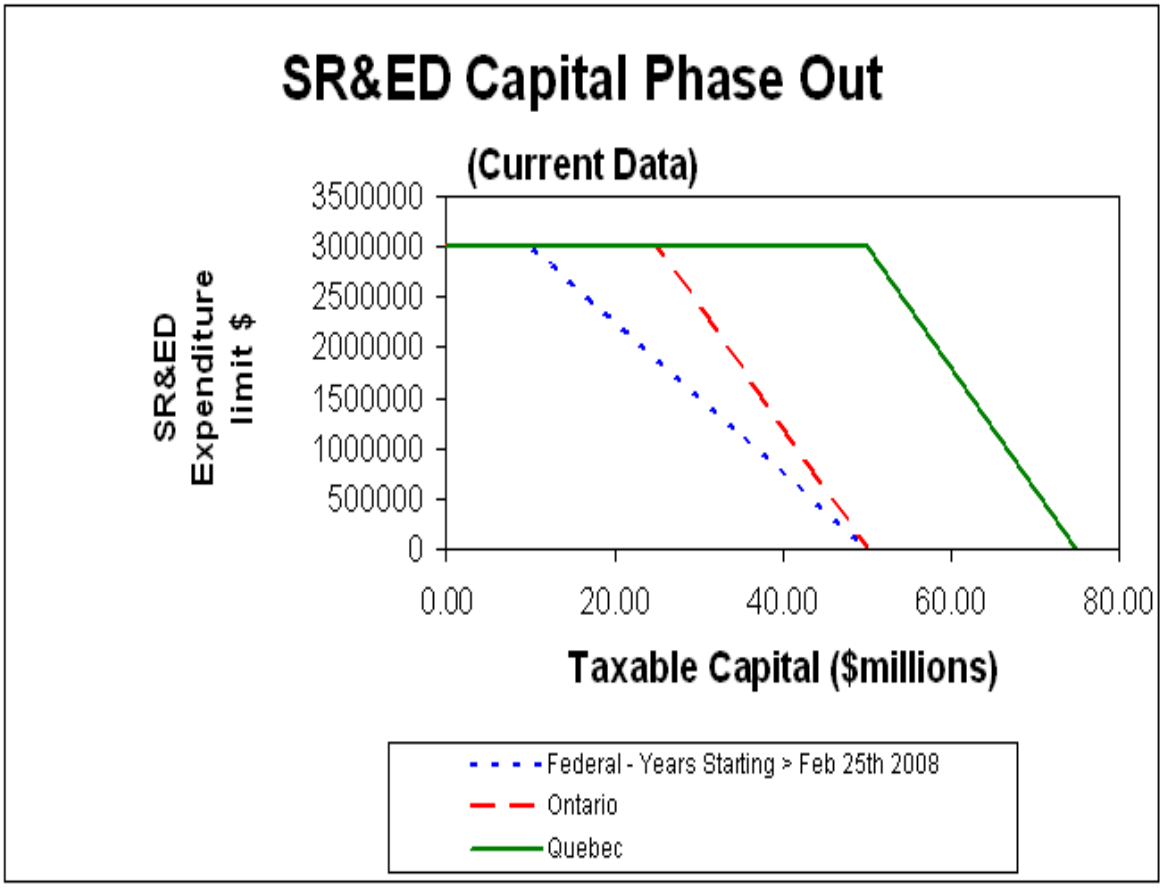
1. First, the expenditure limit is phased out for CCPCs with prior-year taxable income between $500,000 and $800,000.
    - For each dollar by which taxable income for the prior year exceeds $500,000,
    - the SR&ED expenditure limit for the year is reduced by $10.

2. In addition, the expenditure limit is phased out for CCPCs with prior-year taxable capital employed in Canada between $10 million and $50 million.
    - For every $10 by which taxable capital employed in Canada for the prior year exceeds $10 million,
    - the SR&ED expenditure limit for the year is reduced by $0.75 .

In a worst case scenario, the loss of this enhanced status could cost a company $700,000 annually in lost cash flows from the phase-out of the enhanced Federal Investment Tax credits. This loss becomes significantly higher in provinces where additional ITCs are provided to small businesses based on their eligibility for the enhanced Federal credits.

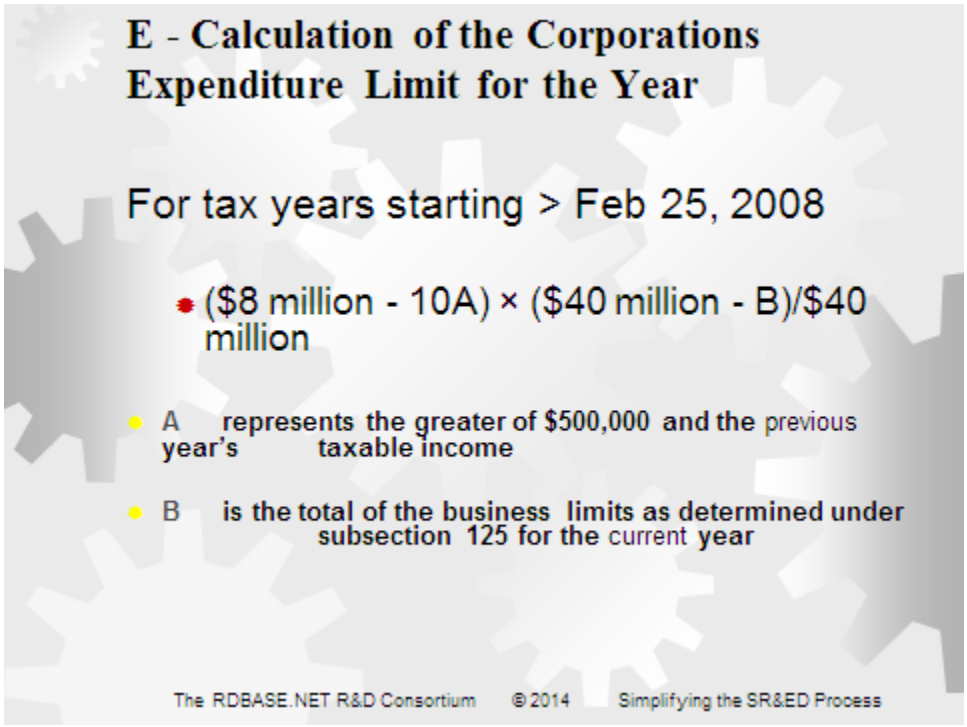
[60]ITA subsection 127(10.2)


SR&ED Income Phase out
$3,500,000
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
SR&ED Expenditure Limit $
$200,000
$300,000
$400,000
$500,000
$600,000
$700,000
$800,000
Prior year taxable income ($)
Years ending > 2006
Years ending > Feb. 25, 2008 Prorated
Years Ending > Dec. 31, 2009 Prorated


SR&ED Capital Phase Out
(Current Data)
SR&ED Expenditure limit $
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
0.00
20.00
40.00
60.00
80.00
Taxable Capital ($millions)
Federal - Years Starting > Feb 25th 2008
Ontario
Quebec

Mechanics of the phase-out formulas

E.3.2 2009+ expenditure limit phase-out increased to 500-800K



The proposed legislation[61] provides the following formula;
"…a particular corporation's **expenditure limit for the 2010 and subsequent taxations year** is the amount determined by the formula

($8 million - 10A) × ($40 million - B)/$40 million where

A is the greater of

(a) $500,000, and
(b) the amount that is
(i) …..the particular corporation's **taxable income** for its immediately **preceding taxation year** …

B is

(a) nil, if the following amount is less than or equal to $10 million:
(i) …the amount that is its taxable capital employed in Canada … for its immediately preceding taxation year" or
(b) in any other case, the lesser of $40 million and the **amount by which** the amount determined under subparagraph (a)(i) **[i.e taxable capital]… exceeds $10 million.**

[61] ITA proposed subsection 127(10.2)

E.4 Income – Expenditure limit phase out example

E - CCPC Investment Tax Credit on $3M of current expenditures – (assumes taxable capital in prior year was below $10M)

2009 Taxable income (Preceding Year)	2010 Expenditure Limit	2010 Current SR&ED Expenditures	2010 Refundable ITC	2010 Non-Refundable ITC
$400,000	$3,000,000	$3,000,000	$1,050,000	Nil
$550,000	$2,247,945	$3,000,000	$937,192	$150,411
$700,000	$ 747,945	$3,000,000	$261,781	$450,411
$800,000	Nil	$3,000,000	Nil	$600,000

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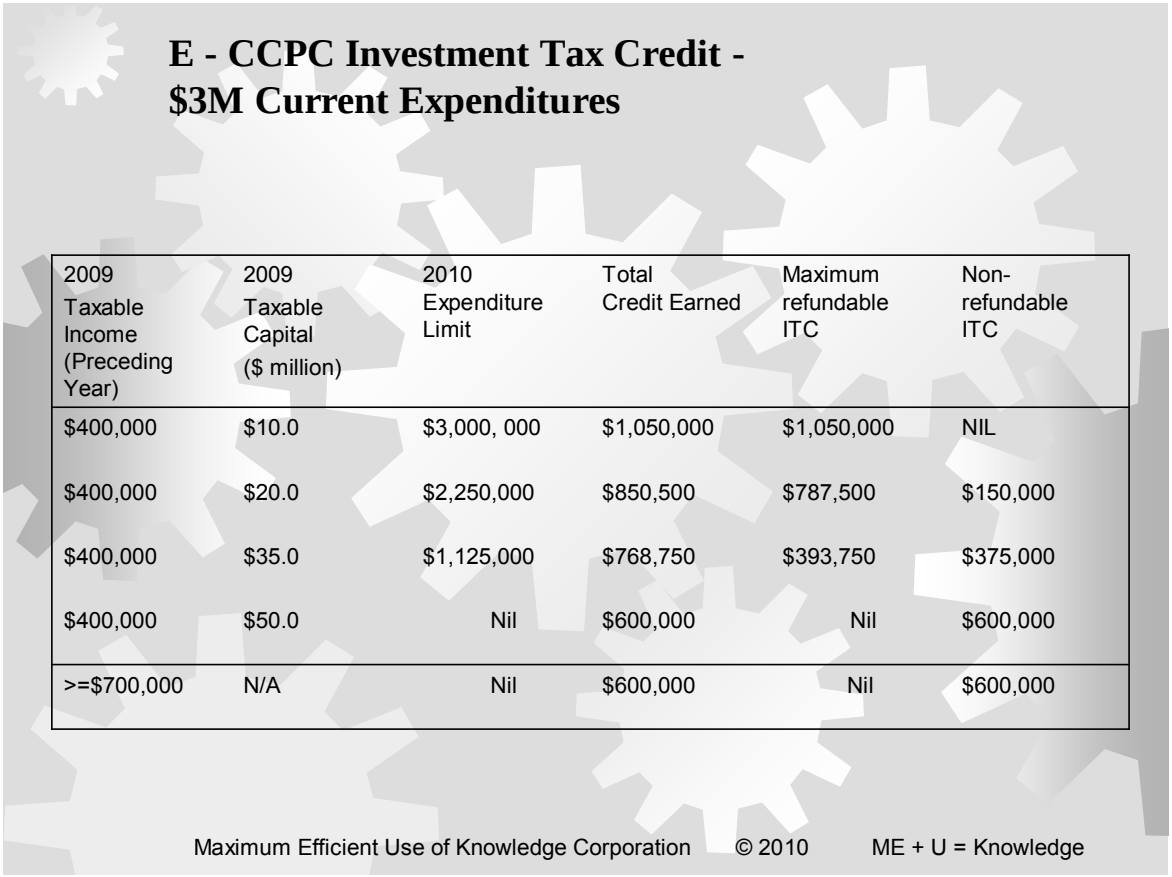
Example of related mechanics – for $3 million scenario above

The next 3 pages illustrate:

- how the tax form (Sch. 31)
- phases out the Expenditure limit and related ITCS
- using a threshold of $550,000 prior year taxable income &
- $10 million prior year taxable capital

E.5 Capital - Expenditure limit Phase out example



E - CCPC Investment Tax Credit - $3M Current Expenditures

2009 Taxable Income (Preceding Year)	2009 Taxable Capital ($ million)	2010 Expenditure Limit	Total Credit Earned	Maximum refundable ITC	Non-refundable ITC
$400,000	$10.0	$3,000, 000	$1,050,000	$1,050,000	NIL
$400,000	$20.0	$2,250,000	$850,500	$787,500	$150,000
$400,000	$35.0	$1,125,000	$768,750	$393,750	$375,000
$400,000	$50.0	Nil	$600,000	Nil	$600,000
>=$700,000	N/A	Nil	$600,000	Nil	$600,000

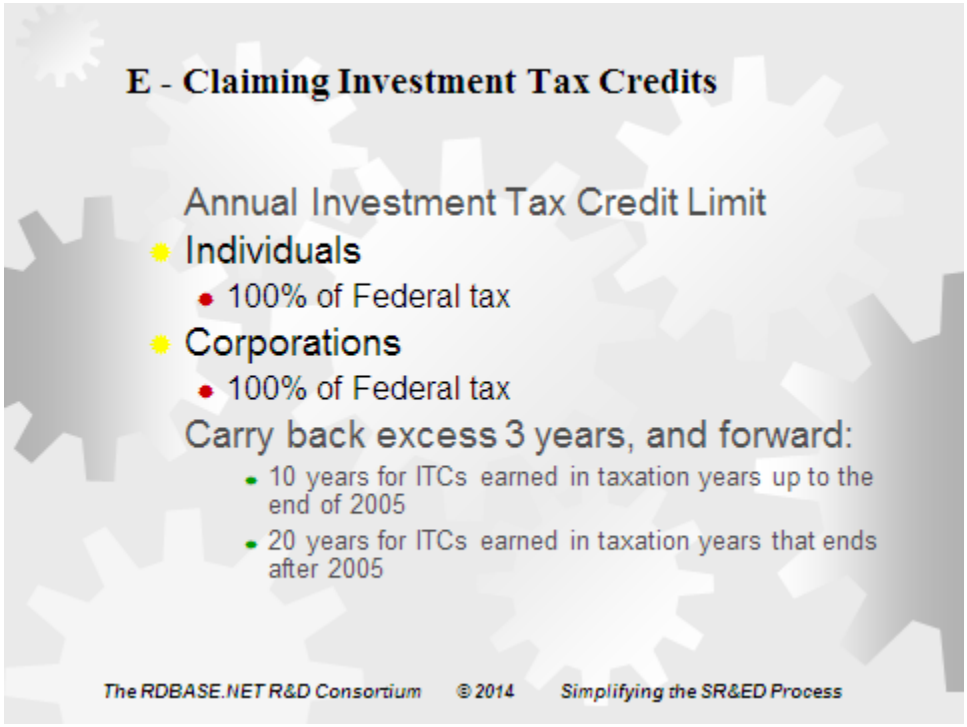
Maximum Efficient Use of Knowledge Corporation © 2010 ME + U = Knowledge

Example of related mechanics – for $3 million scenario above

The page above illustrates:

- how the tax form (Sch. 31)
- phases out the Expenditure limit and related ITCS
- using a threshold of $35 million prior year taxable capital &
- $500,000 prior year income.

It should be noted that the calculation is close (but not exactly equal to) that proposed in the legislation.



E.6 Methods of using SR&ED tax credits

Investment tax credits may be deducted from federal taxes otherwise payable. Prior to 2006 unused tax credits can be carried back three years (to the extent that they were not deductible in the year they were earned) or carried **forward 10 years.**

To increase the ability of these companies to use these balances the **2006 budget proposes** to extend the non-capital loss and ITC **carry-forward period to 20 years.**[62] This measure will apply to non-capital losses and **ITCs earned for SR&ED in taxation years that end after 2005**.

Corporations can also assign expected refunds of SR&ED tax credits to lenders as security for bridge financing for their operations. Such assignments, however, are not binding on the Crown.

[62] Notices of Ways and Means Motions March 2006 paragraph 28

E - Qualified Expenditures (for ITC)

Includes:

- amounts re: shared use equipment;
- SR&ED expenditures under s.37(1)(a) – current;
- SR&ED expenditures under s.37(1)(b)(i) – capital;

and

- prescribed proxy amount.

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E - Qualified Expenditures

Do not include:

- prescribed expenditures Reg. 2902 (see N's)
- payments to non-arm's-length person for SR&ED performed on behalf of the taxpayer
- payments to non-taxable suppliers (other than for SR&ED payments for expenditures such as material, capital assets)
- qualified expenditures that have been paid for by government or non-government assistance or compensated by contract payment

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E.6.1 Inclusion of SR&ED tax credits in current and future taxable income

Both federal and provincial SR&ED ITCs are subsequently included in the calculation of federal taxable income as well as that of each of the provinces, except for the provinces of Ontario and Quebec. The taxation of SR&ED investment tax credits from current expenditures is performed through the SR&ED expenditures pool. Provincial credits are taxed on an accrual basis however, federal credits are only taxed the year after their use.

To the extent that an investment tax credit deducted or refunded may reasonably be considered to relate to a shared use credit on capital equipment, it will reduce the capital cost[63] of the separate prescribed class of the property acquired.

The mechanics of this add back to the expenditure pool are illustrated on working paper T-1.3 of the case study. In this example the company had no prior year investment tax credits and therefore the pool has only been reduced by the current year provincial credits. In this case, the company has also elected to defer a large amount of the expenditure pool in order to avoid the creation of "non capital losses" for the purposes outlined above.

E.7 Administration of the SR&ED tax incentives – Federal vs. Provincial

The CRA is responsible for administering the SR&ED tax incentives provided by the federal government and, in accordance with the Tax Collection Agreements, the tax incentives for research and development provided by Manitoba, New Brunswick, Newfoundland and Nova Scotia.

Ontario and Quebec do not have agreements with the federal government for administering their provincial corporate income tax and, accordingly, administer their own research and development tax incentives.

A summary of the Federal and Provincial incentives is provided on the next page. Specific details with respect to additional Ontario and Quebec legislation have also been outlined in this section.

E.7.1 Overview of Federal & Provincial credits

Currently all but one province and two territories offer additional tax incentives to attract SR&ED work. The resulting effects on claimants can be illustrated by the following tables.

[63] under paragraph 13(7.1)(e)

Qualified CCPC*				
Provinces & Territories	Prov./Terr. Credit	Prov./Terr. Refundable? ***(Federal is refundable)***	Federal Credit Refundable (reduced by Prov./Terr. credit)	Combined
AB	10%	Yes	31.50%	41.50%
BC	10%	Yes	31.50%	41.50%
MB	20%	No	28.00%	48.00%
NB	15%	Yes	29.75%	44.75%
NL	15%	Yes	29.75%	44.75%
NS	15%	Yes	29.75%	44.75%
ON	**10%**	**Yes**		
ON	**4.5%**	**No**	**29.93%**	**44.43%**
PEI	0%	N/A	35.00%	35.00%
QC	20%	Yes	28.00%	48.00%
SK	15%	No	29.75%	44.75%
YK	15%	Yes	29.75%	44.75%
NWT	0%	N/A	35.00%	35.00%
NV	0%	N/A	35.00%	35.00%

Other companies (non Qualified CCPC)				
Provinces & Territories	Prov./Terr. Credit	Prov./Terr. Refundable? ***(Federal is non-refundable)***	Federal Credit Non-refundable (reduced by Prov./Terr. credit)	Combined
AB	10%	Yes	18%	28%
BC	10%	No	18%	28%
MB	20%	No	16%	36%
NB	15%	Yes	17%	32%
NL	15%	Yes	17%	32%
NS	15%	Yes	17%	32%
ON	**10%***	**Yes**		
ON	**4.5% ** **	**No**	**17.10%**	**31.60%**
PEI	0%	N/A	20%	20%
QC	10%	Yes	18%	28%
SK	15%	No	17%	32%
YK	15%	Yes	17%	32%
NWT	0%	N/A	20%	20%
NV	0%	N/A	20%	20%

Notes to the above tables:

1) The federal tax credit is reduced by the provincial tax credit receivable.
2) Ontario and Quebec offer additional SR&ED incentives, which are not covered within this table.

E.8 Lists of SR&ED schedules by province – see section Y at back or course:

For simplicity the current case study illustrates the interaction of the provincial incentives assuming that all costs were incurred in one province (Ontario) however, the mechanics of the calculations would similar for each of the other provinces (expect Quebec) as follows:

- Claim Qualified (Current & Capital) expenditures incurred in the province (T661 line #'s 557 + 558 - not reduced by the provincial ITCs themselves - see WP T-1.4)
- Deduct resulting government assistance to reduce the (T661 line #'s 430 (pool) & 534/536 (qualified expenses) - see WP T-1.3)
- Claim the related ITC via the province (see forms in section Y)

Province		**Form**
Quebec	a's	RD-222-V Deduction Respecting SR&ED
	b's	RD-1029.7-T Tax Credit for Salaries and Wages (R&D)
	c's	RD-1029.8.6-T Tax Credit for University Research Additional schedules available for pre-competitive research
BC		Schedule 666
MB		Schedule 380
NB		Schedule 360
NL		Schedule 301
NS		Schedule 340
ON		OITC - See case study (T-5-7's)
SK		Schedule 403
YK		Schedule 442
NWT		NONE
NV		NONE
PEI		NONE
AB		

SR&ED changes in March 29 ,2012 Federal budget

	Year change proposed to start (prorate)	2012 current	2013	2014 full effect
1)	Federal ITC rate (non-CCPC)	20	20	15
2)	Subcontractor costs (% eligible)	100	80	80
3)	Rate to calculate proxy (overhead)	65	60	55
4)	Capital equipment (% eligible)	100	100	0

E.9 NWMM – Federal Budget, March 29, 2012

Scientific Research and Experimental Development Program[64]

That,

(*a*) for taxation years that end after 2013, the reference to "20%" in paragraph (*a.1*) of the definition "investment tax credit" in subsection 127(9) of the Act be replaced with "15%", except that for taxation years that include January 1, 2014, it shall be read as a reference to the percentage that is the total of

(i) 20% multiplied by the proportion that the number of days that are in the taxation year and before 2014 is of the number of days in the taxation year, and

(ii) 15% multiplied by the proportion that the number of days that are in the taxation year and after 2013 is of the number of days in the taxation year;

(*b*) for taxation years that end after 2013, the reference to "15%" in subsection 127(10.1) of the Act be replaced with "20%", except that for taxation years that include January 1, 2014, it shall be read as a reference to the percentage that is the total of

(i) 15% multiplied by the proportion that the number of days that are in the taxation year and before 2014 is of the number of days in the taxation year, and

(ii) 20% multiplied by the proportion that the number of days that are in the taxation year and after 2013 is of the number of days in the taxation year;

[64] Federal Budget 2012 Notice of Ways & Means Motion http://www.budget.gc.ca/2012/plan/anx4-2-eng.html

(*c*) for expenditures incurred after 2012, subparagraph (*a*)(ii) of the definition “qualified expenditure” in subsection 127(9) of the Act be amended to include only 80% of an expenditure that

(i) would otherwise be included under that subparagraph,

(ii) is for scientific research and experimental development performed for or on behalf of the taxpayer by another person or partnership with whom the taxpayer deals at arm’s length, and

(iii) has been reduced to exclude any amount of a capital nature incurred by the other person or partnership in the performance of the scientific research and experimental development;

(*d*) the percentage at which the prescribed proxy amount, for a taxation year, referred to in paragraph

(e) of the definition “qualified expenditure” in subsection 127(9) of the Act is calculated be, for taxation years that end after 2012, the percentage that is the total of

(i) 65% multiplied by the proportion that the number of days that are in the taxation year and before 2013 is of the number of days in the taxation year,

(ii) 60% multiplied by the proportion that the number of days that are in the taxation year and in 2013 is of the number of days in the taxation year, and

(iii) 55% multiplied by the proportion that the number of days that are in the taxation year and after 2013 is of the number of days in the taxation year;

and

(*f*) for expenditures made by a taxpayer after 2013,

(i) section 37 of the Act be amended to exclude an expenditure in respect of the use or the right to use property that would, if it were acquired by the taxpayer, be capital property of the taxpayer,

(ii) paragraph 37(1)(*b*) of the Act be repealed,

(iii) subparagraphs (*a*)(i) and (iii) of the definition “qualified expenditure” in subsection 127(9) of the Act be repealed, and

(iv) section 127 of the Act be amended to exclude from the SR&ED qualified expenditure pool an expenditure in respect of the use or the right to use property that would, if it were acquired by the taxpayer, be capital property of the taxpayer.

F SR&ED Labour Cost Summary

F SR&ED Labour Cost Summary

#	Project		Wages	(Specified Employee) Wages	Total Wages	
1202	Jentel (2011 TCC Case) with "What if" analysis		$ 65,000	$ 35,000	$ 100,000	
1201	NW Hydraulics (1998 TACC Case) Develop divide wall for diversion dam		$ 75,000	$ 25,000	$ 100,000	***D-0***
1203	Airmax (2012 TCC Case) - HVAC development		$ 41,447	$ 47,491	$ 88,938	
1301	HVAC - How cost contraints affect a project	*	$ 62,073	$ 42,510	$ 104,582	
	ASA adjustment	***F-7***	$ 6,480	$ -	$ -	
			$ 250,000	**$ 107,491**	**$ 357,490**	

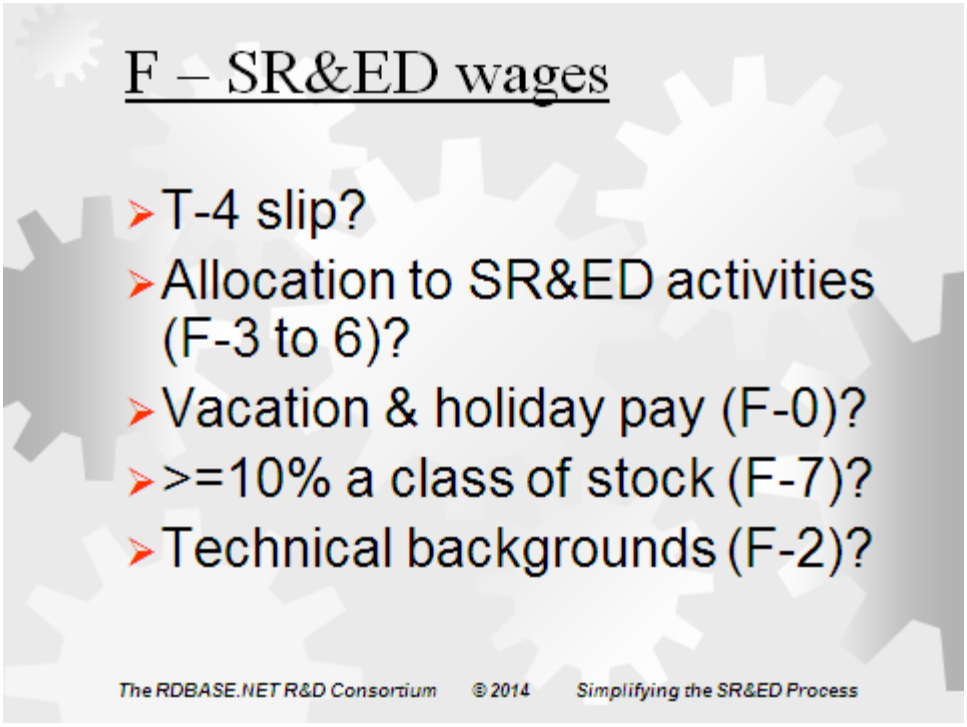
Notes:
The CRA requires timesheet documentation from the company's accounting records. Ideally the information would provide evidence of regular time accumulations with respect to eligible activities.

*** For EACH project**

Example - project 1101 allocation

Employee	Nature of Work	SR&ED Hours *from time system*	Hourly Wage **	SR&ED Labour Cost	
Specified employees:					
Issac Newton	Design	180	$ 48.00	$ 8,638	
Al Einstein	Engineering	521	$ 65.00	$ 33,872	
				$ 42,510	*
Other employees:					
Al Nobel	Prototyping	880	$ 36.00	$ 31,680	
Lou Pasteur	Materials testing	179	$ 27.00	$ 4,840	
Nick Tesla	Prototype testing	255	$ 33.50	$ 8,543	
Prototype line	Prototyping	126	$ 135.00	$ 17,010	
				$ 62,073	*

** The definition of "salary or wages" (ITA subsection 248(1)) includes vacation and holiday pay. Claimants should ensure that their wage allocations include these amounts.


F – SR&ED wages
T-4 slip?
Allocation to SR&ED activities (F-3 to 6)?
Vacation & holiday pay (F-0)?
>=10% a class of stock (F-7)?
Technical backgrounds (F-2)?
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F.1. Decision tree SR&ED labour issues

if YES	Question:	Issue:	Result(s)	ITA section	See WP
1	Does the employee receive a T4 slip?	employee vs. subcontractor status	treat as subcontractor payment	248(1)	***I-'s***
2	Can you allocate labour hours to specific SR&ED activities?	timesheet support	need to correlate man hours claimed with resolution of specific technical uncertainties	Regs. 2900(2)(b) & 2900(4)	***F-4***
3	Do cost allocations include estimates for vacation & holiday pay?	ITA definition of salary & wages	ensure labour cost base contemplates the full cost of R&D labour	248(1)	***F-3/ F-7***
4	Do you or a related person own >=10% of any class of stock?	specified employee status	limits on R&D labour & salary base for proxy calculation	37(9.1)	***F-6***
5	Are all amounts paid within 180 days after the fiscal year-end?	deferred inclusion	it deems the expense not to have been incurred in the year, but rather in the year it is paid. Note: deferred salary and wages are not included in proxy overhead calculation.	78(4)	***L-0***
6	Have you filed CRA Schedule 32 (aka form T661)?	claim for R&D wages	complete R&D wages portion of the claim	37(11)	***T-1's***

Summary Information for T661-Part 3 Staff Classification

	Employee	Highest Technical Designation	Major Discipline(s)	Practicing since	T661 Part 4 Class *
1	Al Einstein	PhD.	Physics	1938	A
2	Issac Newton	M.Asc.	Mechanical engineering	1974	A
3	Al Nobel	P.Eng.	Chemical Engineering	1989	A
4	Lou Pasteur	BSc.	Chemistry	1996	A
5	Nick Tesla	CET	Electrical technology	2002	B
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Note: List 20 most senior R&D employees only but have similar info. available for remaining personnel claimed during the year.

T-1.4

***** Definitions:

Class A	Scientists and engineers (B.Sc. Or equivalent)
Class B	Technologists and technicians (CET, etc.)
Class C	Non technical, administrative staff (CGA, etc.)
Class D	Other (e.g. prototype labor)

SR&ED Salary & Wage inclusions

		Specified employees*	Non-specified employee	ITA section
1	**R&D labour for the:**			
a)	R&D expenditure pool (for deduction), **&**			37(1)
b)	Qualified expenses (for ITC calculation)			127(9)
	Type of expense:			
	· salary & wages	**In**	**In**	(5-8)
	· bonuses or profit based remuneration	**Out**	**In**	37(9) & 5(1)
	· Expenses paid > 180 days	**Out**	**Out**	78(4)
	Maximum	**5 x [YMPE]**	**N/A**	37(9.1)
2	**Salary base for proxy amount (for ITC calculation)**			
	Type of expense:			
	· Income from employment	**In**	**In**	5
	· bonuses/profit based remuneration	**Out**	**Out**	5(1) & 37(9)
		Out	**Out**	6 & 7
	· Expenses paid > 180 days	**Out**	**Out**	78(4)
	Maximum	**2.5x [YMPE]**	**N/A**	Reg. 2900(7)

SR&ED wages - annual limits

				Specified	Non-specified
1	**SR&ED labour:**	**YMPE**		**employees***	
	2011	$ 48,300	$	241,500	No limit
	2012	$ 50,100	$	250,500	No limit
	2013	$ 51,100	$	255,500	No limit
2	**Salary base for proxy amount**				
	2011	$ 48,300	$	120,750	No limit
	2012	$ 50,100	$	125,250	No limit
	2013	$ 51,100	$	127,750	No limit

***Specified employees own >=10% any class of stock (or related to such shareholders).**

F.1 SR&ED labour hours and allocation methods

F.1.1 Requirement to keep reasonable" time records

For audit purposes, the CRA requires that the company keep a detailed account of SR&ED time allocations for each individual claimed. Generally, they request that this be performed either via regular time sheets and/or completion of activity costs templates on a regular (at least monthly) basis.

We recommend using a cost tracking methodology that is designed to ensure that all labour allocations for each employee as well as material and subcontractor payments can be correlated to specific uncertainties and their related activities.

As previously mentioned, the main criteria in determining whether any activity is eligible SR&ED is whether it was required in order to remove a technical uncertainty. These issues become more complicated if you choose to use the proxy" method of overhead allocation (described on the following pages and in section ***N***).

The chart on the following page provides a detailed breakdown of the CRA's positions and related *Income Tax Act* sections supporting treatment of various types of SR&ED labour.

F.1.2 CRA guidance - whether directly engaged in SR&ED[65]

Duty	Direct SR&ED	Eligible Overhead expenditures	Non-SR&ED expenditures
Experimentation and analysis	x		
Technical-support work (under paragraph 248(1)(d) of the definition of SR&ED	x		
Non-specialized employees: ■ operating a machine for the purposes of an experiment that requires the use of this machine ■ feeding raw materials into a machine To be eligible, the non-specialized employee's work must be supervised by staff with scientific or technological qualifications.	x		
Direct supervision of employees performing experimentation and analysis (directing the ongoing SR&ED work)	x		
Technological planning for ongoing SR&ED projects you claimed in the year, such as planning for: ■ assignment of technological personnel ■ job priorities ■ development of technological strategies ■ quality of material used	x		
Long-term planning for future SR&ED projects, for example: ■ planning for prototype vs. commercial scale ■ project selection		x	
Human-resource activities such as technological staffing		x	
SR&ED contract administration (technical input only)		x	
Technological training for ongoing SR&ED projects you claimed in the year		x	
Administrative training			x
Technological documentation for internal use	x		
Preparation of user manuals			x
Clerical and other administrative support (e.g., in personnel, accounting, maintenance, and purchasing) if the functions performed are non-technological and aid the ongoing SR&ED you claimed in the year, and if the salaries and wages of the employees providing the support are: ■ directly related and incremental to the prosecution of SR&ED ■ not directly related and not incremental to the prosecution of SR&ED		x	x
Other support (e.g., equipment maintenance or repairs) if the functions performed are non-technological and aid the ongoing SR&ED work you claimed in the year, and the salaries and wages of the employees providing the support are directly related and incremental to the prosecution of SR&ED		x	
Preparation of Form for SR&ED projects carried out in the current year		x	
Sales and marketing activities			x

Source: Canada Revenue Agency form T4088(E) Rev. 04 - Claiming Scientific Research and Experimental Development Guide to Form T661.

[65] Source: Canada Revenue Agency form T4088(E) Rev. 04 - Claiming Scientific Research and Experimental Development Guide to Form T661.

F.1.3 Specified Employees

Generally speaking, a specified employee includes any employee who owns 10 per cent or more of any class of stock of the Corporation, or any individual who is related to such an employee. In other words, this may include the president's son or daughter, where the president is a specified shareholder.

F.1.3.1 Implications for specified employees

Being deemed a specified employee results in certain restrictions on SR&ED labour inclusions and limits. The major effects are:

a) Limit on SR&ED wages

- The maximum amount of salaries and wages for a specified employee is limited to 500% of YMPE (yearly maximum pensionable earnings)[66].

b) Limit on SR&ED proxy amount

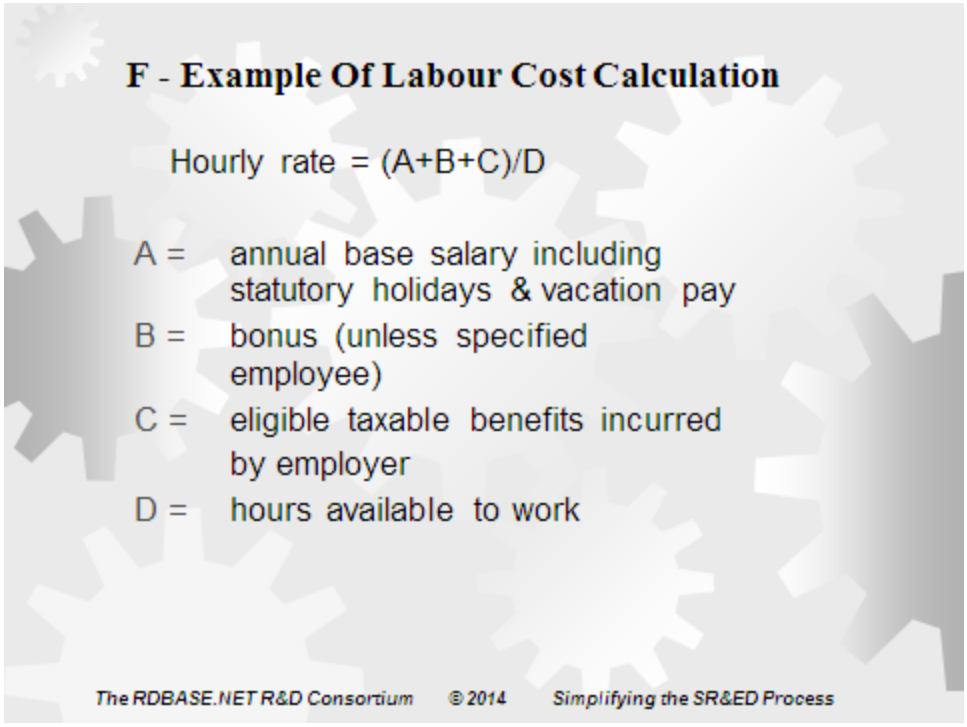
- The maximum amount of salaries and wages for a specified employee for calculation of the salary base used in the proxy allocation cannot exceed 250% of YMPE.

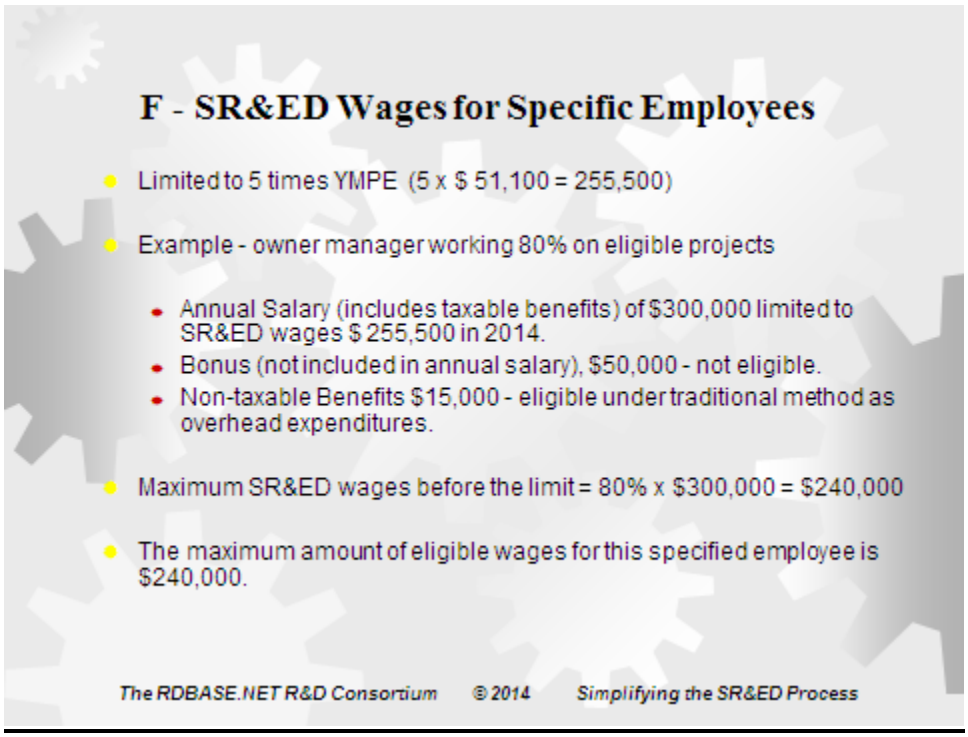
c) Exclusion of bonuses from SR&ED wages

- Bonuses or remuneration based on profits should not be included in the R&D hourly rate calculation or in the R&D expenditure pool[67].

The amount which may be claimed as SR&ED expenditures in respect of salary or wages incurred for a specified employee is the amount allocated among associated corporations. The amount may not exceed five times the year's maximum pensionable earnings (YMPE) for the calendar year in which the taxation year-ends.

[66] as defined in ITA Regulation 8500(1)
[67] as stated in ITA subsection 37(9) & Regulation 2900(9)





The YMPE is set annually under the Canada Pension Plan

- The YMPE's are: 2012=$50,100, 2013= $51,100 and 2014= $52,500. As a result,
- the **maximum salary or wages claimable for a specified employee** as SR&ED wages in a taxation year is:
  - **2012 = $250,500 2013 = $255,500 2014 = $262,500**

Form for allocation of SR&ED wages of specified employees

Form T-1174 – “Agreement among associated corporations to allocate salary wages of specified employees for SR&ED.” As the title of this form indicates it is used to ensure that the total claims made for:

- SR&ED salary and wages do not exceed 5 times, and
- proxy allocations do not exceed 2 1/2 times,

YMPE (yearly maximum pensionable earnings) for each of the specified employees.

F.2 Recommend details for SR&ED timesheet templates

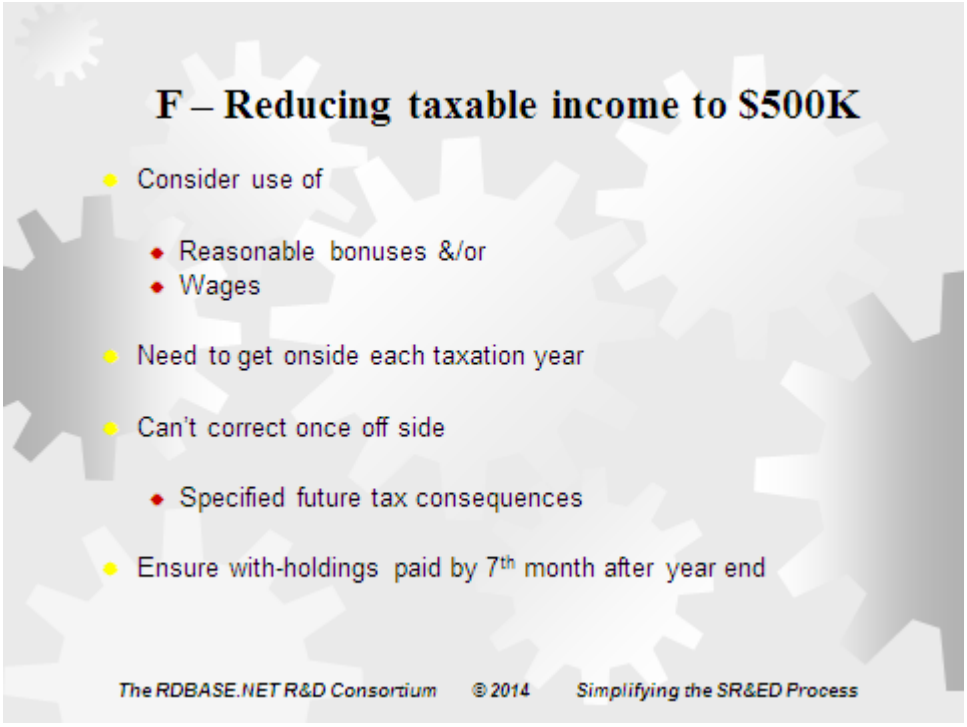
Project details	
#	Name

FISCAL YEAR ENDED:	

Employee Man-Hours & Cost Summary

Employee details			Linking work to SR&ED				SR&ED wages	
First Name	Last Name	Hours Worked	Type of work Drop down	Variables of research (If possible link work to "Variables" of uncertainty)	Comments	location of work	hourly $ rate	SR&ED $
			1) Design 2) Testing 3) Programming 4) Supervision	*OPTIONAL - Link to the variables in the project*	*OPTIONAL - should be completed by the more senior people if possible.*			
NEED TOTALS BY STATE / PROVINCE								$ -

F.3 SR&ED planning – keeping income <$500,000



The amount of SR&ED expenditures that can earn **"refundable" tax credits at the enhanced rate is referred to as the "expenditure limit**." The expenditure limit is generally $3 million for CCPC's with prior-year taxable income of $500,000 or less.

This **expenditure limit and refundability of the credits is reduced or "phased out"[68] for CCPC's with prior-year taxable income between $500,000 and $800,000**. In a "worst case" scenario, the loss of this enhanced status could cost a company over $1,000,000 annually in lost cash flows. As a result most CCPC's will "bonus" out year end profits to achieve these levels.

F.4 Reasonableness of Shareholder/Manager Remuneration[69]

At the 2001 Canadian Tax Foundation conference, the CRA discussed its long-standing policy on when shareholder /manager remuneration will be considered reasonable[70] (deductible) for tax purposes.

The CRA stated it, "**would not challenge the reasonableness of remuneration that was paid by a Canadian-controlled private corporation (CCPC) to an individual who is a shareholder of the**

[68] ITA subsection 127(10.2) - For each dollar by which taxable income for the prior year exceeds $300,000, the SR&ED expenditure limit for the year is reduced by $10.
[69] Income Tax - Technical News No. 30, May 21, 2004
[70] for purposes of section 67 of the Income Tax Act (the Act)

corporation, provided the individual is active in the business operations and resident in Canada."

The CRA clarified, that **this policy would NOT apply where, "the income used to pay the remuneration is not derived from the normal business operations of the CCPC**." This creates two levels of potential problems:

1) Eligible payments from the CCPC

Includes salary and wages only (no management fees, or payments to retirement plans)

2) Source of income for the CCPC

Includes active business income and certain "incidental" capital transactions (no investment or passive income)

Question 4

Can you give us some examples of situations that the CRA would consider to be beyond the intent of the policy?

Response 4

> Yes. **We would consider a situation in which a CCPC pays the remuneration out of the proceeds generated from a major a sale of business assets, including the sale of the entire business assets or those of a large division, to be beyond the intent of the policy.** This would encompass all sources of income triggered by the proceeds, including capital gains, recapture of capital cost allowance, and income arising from the disposition of eligible capital properties. **We would not generally be concerned with situations where there is a sale of some of the assets, which is incidental to the normal business operations.**
>
> Since the conference, the CRA has provided a number of **advance income tax rulings** on the issue. In one of the first rulings[71] the assets of a CCPC including fixed assets, working capital, and goodwill were sold generating taxable amounts - some related to goodwill[72].
>
> The CCPC had **six shareholders, three of whom were active** in the day-to-day management of the operations of the business prior to its sale. Subsequent to the sale, the corporation **declared a bonus payable to the three active shareholders.**
>
> In the ruling, it was stated that the purpose of the payment of the bonus was to remunerate the owner-managers for their contribution towards the successful management of the corporation. Based upon the facts at hand, **the CRA ruled the Act[73] would not apply to prohibit the corporation from deducting the amount of the bonus** in computing its business income for the applicable taxation year.

F.4.1 Author's commentary – tax advisors beware!

[71] Ruling 2004-0060191R3.
[72] Subsection 14(1) of the Act will tax amounts that are dispositions of eligible capital property (franchise rights goodwill)
[73] section 67 and paragraphs 18(1)(a) and 18(1)(e)

Being one of the first advance tax rulings on reasonableness of remuneration it provides some direction for treatment of "passive" income" however, in the author's opinion it still leaves tax planners in **doubt with respect to defining what might be deemed a "major" sale** of business assets and outlines **dangers of earning "non-active" income**.

In the author's opinion, this problem compounded by the fact that these **decisions are all based on CRA administrative procedures** (i.e. rather than any specific legislation).

Since the CRA has no authority to create legislation (only to follow it) this means that, **in the event of a disagreement, the taxpayer has NO recourse through the tax courts.**[74]

As a result, **until our "elected officials**" (or at least the tax courts) **provide legislation** (or precedence) on this issue, tax advisors will live with **considerable uncertainty**.

[74] Other than as a general appeal under section 67 which refers to "fair market values" and therefore may not provide "clear" relief.

G R&D materials consumed in experimentation

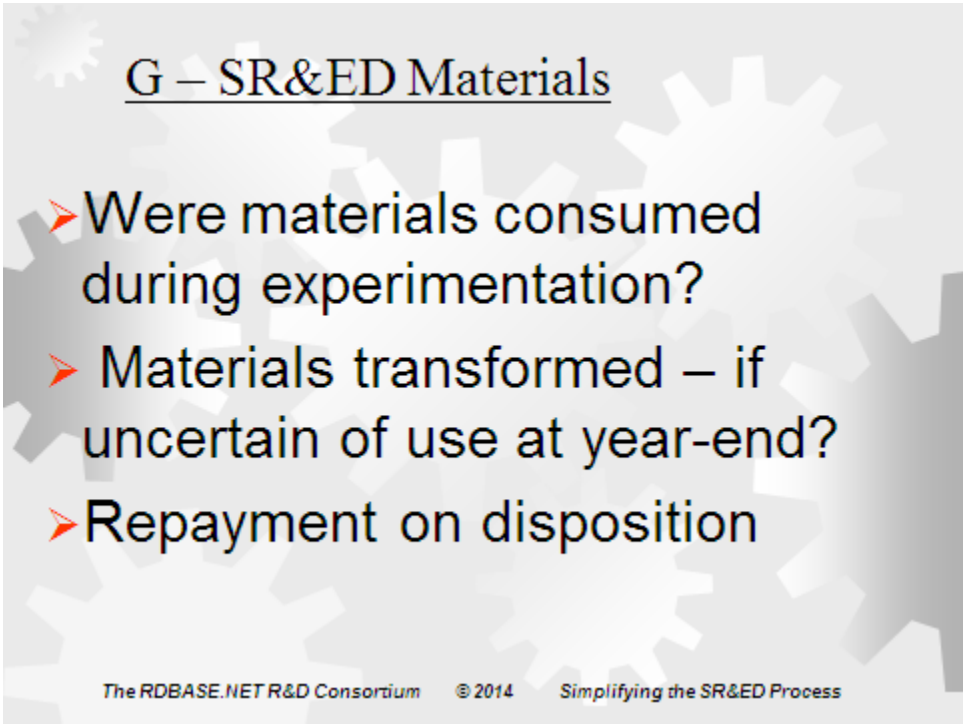
MEUK Corporation
G: R&D Materials Consumed in Experimentation

Project	Material	Gross $	Nature of work	% included in claim	Amount Claimed		Prototype Sold? (Y/N)
1,301	Thermocouples	10,000	prototype samples	100%	$ 10,000		N
	Fibre additives	5,000	testing flow variables	100%	$ 5,000		N
	Polypropylene	5,000	prototype samples	100%	$ 5,000		N
Total					$ 20,000	***D-0***	
1,202	Alpha test diskettes	5,000	prototype samples	100%	$ 5,000		N
Total					$ 5,000	***D-0***	

Decision Tree
SR&ED Materials Issues

	Question:	Issue:	if NO	Result(s)	ITA section	See WP
if YES						
1	Were any prior year prototypes or experimental production sold?	recapture of previously claimed ITC		NO repayment of previously claimed SR&ED ITC's at historic ITC rate	127(27)	***G-3***
2	Were materials "consumed" during any part of the experimentation process?	materials consumed = "used up"		Can NOT claim as materials "consumed" on T661 form	Reg. 2900(2)(a)	***G-2***
3	Were materials "transformed" during any part of the experimentation process?	materials transformed = "contained in prototypes"		NO claim for materials "transformed" on T661 form	Reg. 2900(2)(a)	***G-2***
4	Have you completed and filed form T661to claim expenses?	claim for R&D materials		include brief statements of R&D & cross reference to project descriptions	37(11)	***J-0 / T-1.3***

G.1 Materials consumed or transformed



G.1.1 Materials consumed

The phrase **materials consumed in the prosecution of SR&ED** basically means that you destroyed the material or rendered it virtually valueless as a result of the SR&ED.

The CRA provides the following example situations, in which they believe not all materials were consumed in the prosecution of SR&ED[75]:

- developing assets to sell (custom products);
- developing assets to use in the commercial operations of the performer (commercial assets); and
- developing a commercial-scale plant to use for SR&ED and commercial operations.

G.1.2 Cost of materials transformed into another product

The meaning of transformed was explained in the Supplementary information to the February 24, 1998 Budget:

> "The cost of materials used in SR&ED does not generally qualify for the SR&ED tax incentives unless it is consumed in the course of performing the SR&ED. At the outset of an SR&ED project, a taxpayer may not know whether materials used in a project will be consumed or will instead **be incorporated into a product that has some value either to the taxpayer or to another party."**

[75] Form T4088 – Guide to form T661

Previously, only if you used the **traditional method** of overhead allocation, could you **claim the costs of materials transformed** into another product[76]. This would typically include materials where there is a strong likelihood of the expenditure being consumed in SR&ED rather than commercial use.

Currently, if you use the **proxy method** of overhead allocation**, you can also now claim** expenditures for **materials transformed** in the prosecution of SR&ED[77].

[76] Amended paragraph 2900(2)(a) of the Regulations - costs incurred after February 23, 1998
[77] subclause 37(8)(a)(ii)(B)(V) of the Act provides for "cost of materials consumed or transformed" – drafted Feb. 27, 2004

G - ITC Recapture - subsequent sale

Situation

- Property was acquired in the year, or any of the previous
  - 10 taxation years that ended before 2006, or
  - 20 taxation years that ended after 2005,

  and claimed as Qualified Expenditure.
- After February 23, 1998, that property or property that includes that property is
  - Disposed of, or
  - Converted to commercial use.

Result

- Recapture of investment tax credit on property acquired - Increase Part I tax
- Reverse the deduction of ITC from SR&ED expenditure pool - Increase eligible expenditures

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G - ITC Recapture

Qualified Expenditure base for recapture is the lesser of:

- cost or portion of the cost of property and
- the actual or deemed proceeds of disposition of property or property that incorporates the real property if such property is not shared-use equipment and
- 25% of actual or deemed proceeds of disposition if property is first term shared-use equipment and
- 50% of actual or deemed proceeds of disposition if property is second term shared-use equipment

- ITC rate applied to recapture is the original ITC rate that applied when Qualified Expenditure was claimed
- Deemed proceeds = FMV of property at the time of a disposition to a non-arm's-length party or a conversion of the property to commercial use

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G.1.2.1 Subsequent sale of product or conversion to commercial use

In the event that the product containing the material is subsequently sold or converted to commercial use, there will be a SR&ED ITC pool reduction in the fiscal year of sale or conversion. There will not however be any reduction to the SR&ED expenditure pool, which is deductible for tax purposes.

The addition to Income Tax otherwise payable for the year is the lesser of two amounts[78]:

1) the original ITC claimed, and
2) the proceeds of disposition (if sold at arm's-length) or fair market value of the asset (if converted to commercial use) multiplied by the original ITC rate.

Example - SR&ED material treatment

	Cost	ITC rate	Federal Tax Credit
Material "transformed"	**$100**	**35%**	**$35**
Subsequent disposition	**Proceeds**		**Tax Credit Repayment**
1) Gain scenario	**$500**	**35%**	**$35**
2) Loss scenario	**$50**	**35%**	**$18**

Where the company converts the asset to commercial use or disposes of it to a non-arm's length party the proceeds are deemed to be fair market value. The CRA will generally accept a fair market value estimate of the property equal to its estimated UCC[79] for tax purposes if treated as machinery (Class 43 which yields a 30% declining balance rate of annual CCA[80]) or other appropriate type of asset.

The reduction to the SR&ED ITC pool will be made on Schedule T2S (32) as applicable (line number 440 per WP ***T-1.3***). Additional details with respect to the CRA's proposed treatment of dispositions of SR&ED materials and conversion to commercial use are provided in their Application Policy Papers (discussed further in section J of this case study).

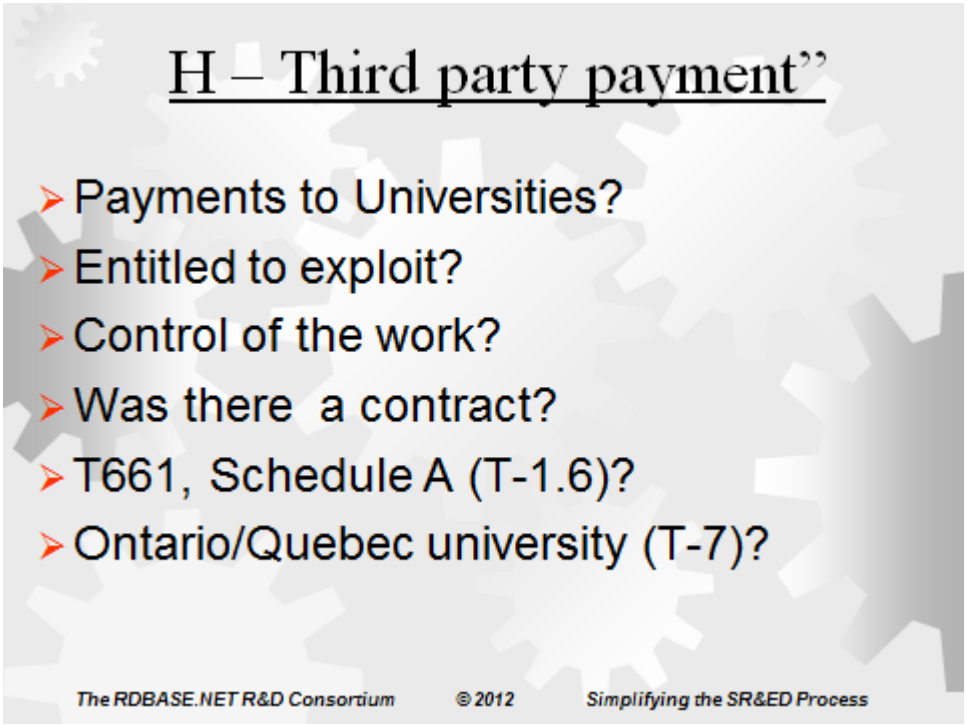
G.1.2.1.1 General recommendations regarding transformed materials

Generally, the author finds it easier to restrict SR&ED claims for materials to those which are intended to be consumed entirely in SR&ED. Reasons for this are simplicity and streamlining of the audit process however, where considerable amounts of material are transformed into potentially experimental production, this may indicate the benefits of evaluating a claim for these amounts.

[78] ITA paragraphs 127(27)(e & f)
[79] Undepreciated Capital Cost = Net book value for income tax purposes
[80] Capital costs allowance = depreciation rate for income tax purposes per ITA Regulations, Schedule II

H Third-party payments

Third-party	Gross $	Nature of work		Claim	
University of Toronto	50,000	variable speed drive research NSERC research chair	100%	50,000	***D-0 / T-1.7***
Total				$50,000	**T-7a**



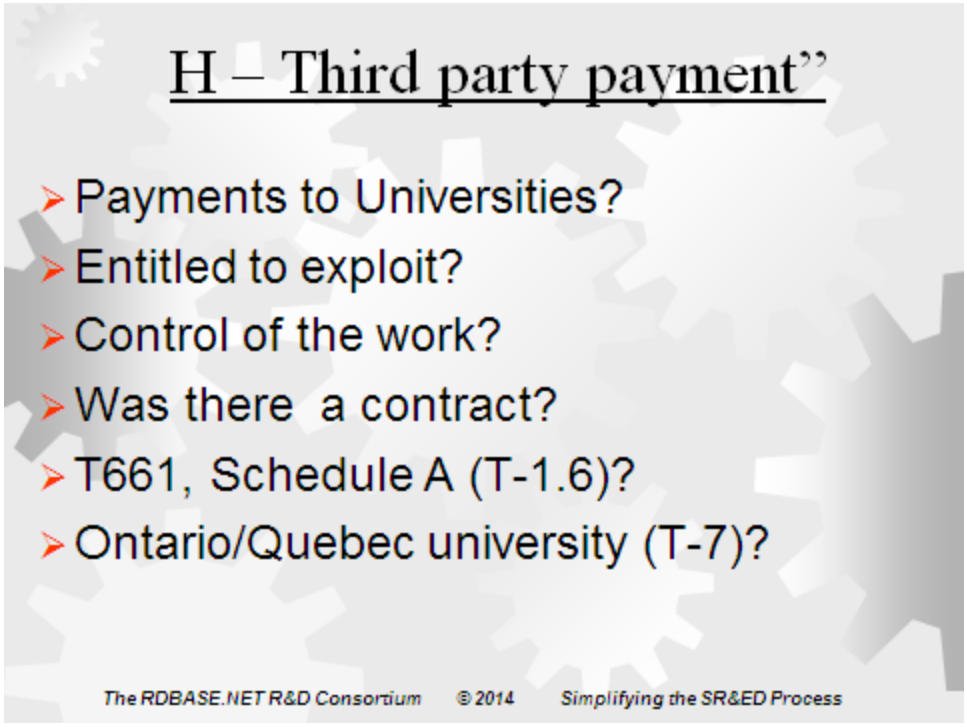
Decision tree

H.1 SR&ED Third-party payments - definition & related issues

→ **if NO**

	Question:	Issue:	Result(s)	ITA section	See WP
if YES					
1	Were any payments made to universities or government research institutions?	recognition of potential third party payments	third parties = universities or government research institutions	37(1)(a)(ii & iii)	***H-0***
2	Was the taxpayer entitled to preferentially exploit the results of any developments made?	required for SR&ED eligibility	No claim without entitlement	37(1)(a)(ii)	***H-2***
3	Did the "third party" control the direction & nature of the work?	whether third party vs. subcontractor payment	subcontractor payment if the third party not in charge of work *		***H-2***
4	Was there a contract governing the nature this work?	basis of information for form T661 Schedule A		N/A	
5	Have you completed and filed form T661, Schedule A to claim expenses?	claim for Third Party Payments	receive Federal tax credits - no further project write-ups required	37(11)	***H-0 / T-1.6***
6	Were any of these payments to Ontario or Quebec universities?	potential for additional provincial credits	file Ontario and Quebec SR&ED forms	N/A	***H-0***

* Note: this "control" issue is a CRA criteria which does not have any direct legislative support Additional details on their control opinions are provided in IC 86-4R.



H.2 Eligible payments - universities & public research institutions

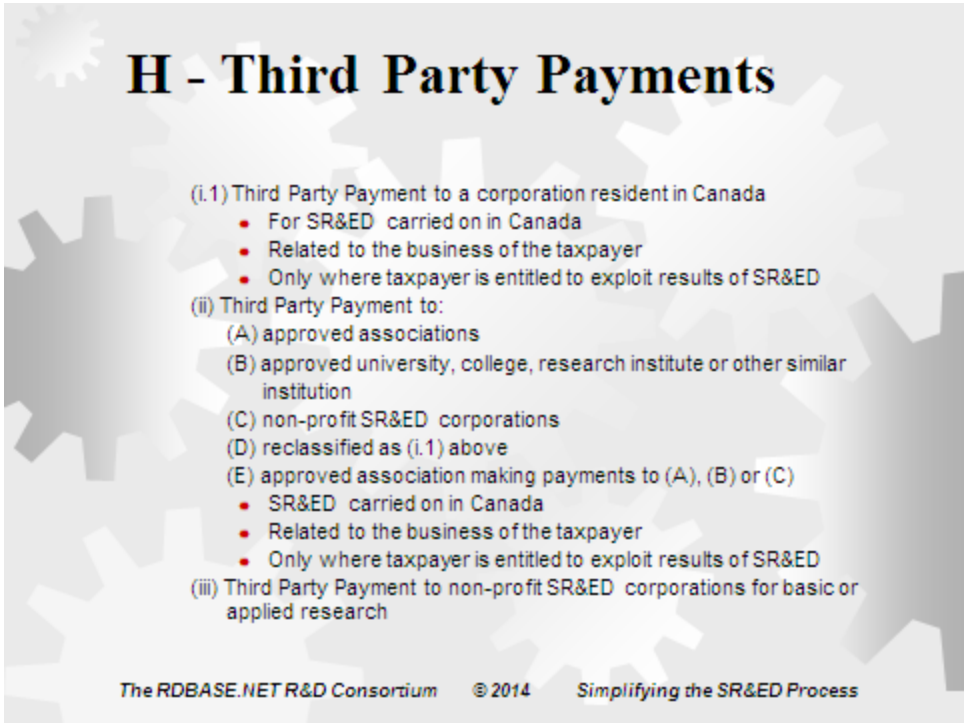
Qualifying SR&ED expenditures include payments made to the following organizations[81]:

(1) an approved university, college, research institute, or other similar institution;
(2) non-profit SR&ED corporations resident in Canada; and
(3) granting councils.

The amounts paid to these organizations are considered third-party payments for SR&ED but do not include payments made to subcontractors for SR&ED undertaken on your behalf which are reported on T661-Sch B.

The legislation requires that the SR&ED be related to your business and that you are entitled to exploit the results:[82] Generally speaking this would be the case in most industrial SR&ED contracts. Expenditures which do not meet these criteria might be seen in circumstances where straight donations or other contributions are made to public institutions without the corresponding requirement for any accountability on the research performed.

[81] ITA subparagraphs 37(1)(a)(ii & iii)
[82] ITA subparagraph 37(1)(a)(i.1)



H.2.1 Taxpayer does not control nature of third-party work

It should be noted that the CRA takes the position:

“When payments are made to these organizations, the payer does not control the overall direction of the SR&ED work unlike subcontract payments. These payments are reported on T661-Sch A.”

There does not appear to be any such requirement in the *Income Tax Act* legislation and therefore, in the author’s opinion, the interpretation of third-party payments” may be larger than the CRA currently provides for.

I R&D subcontractor expenditures

Meuk Corporation
R&D Subcontractor Expenditures

Project	Subcontractor	Gross $	Nature of work	% included in claim	Claim		Related Company? (Y/N)	
1,301	ABC Motor Engineers	35,000	co-design & fabrication of prototype motors	100%	$ 35,000		N	
1,301	MEUK testing labs	10,000	analysis of motor's performance requirements	100%	$ 10,000	*D-0*	Y	*I-3*
Project #1101 total					**$ 45,000**	*D-0*		

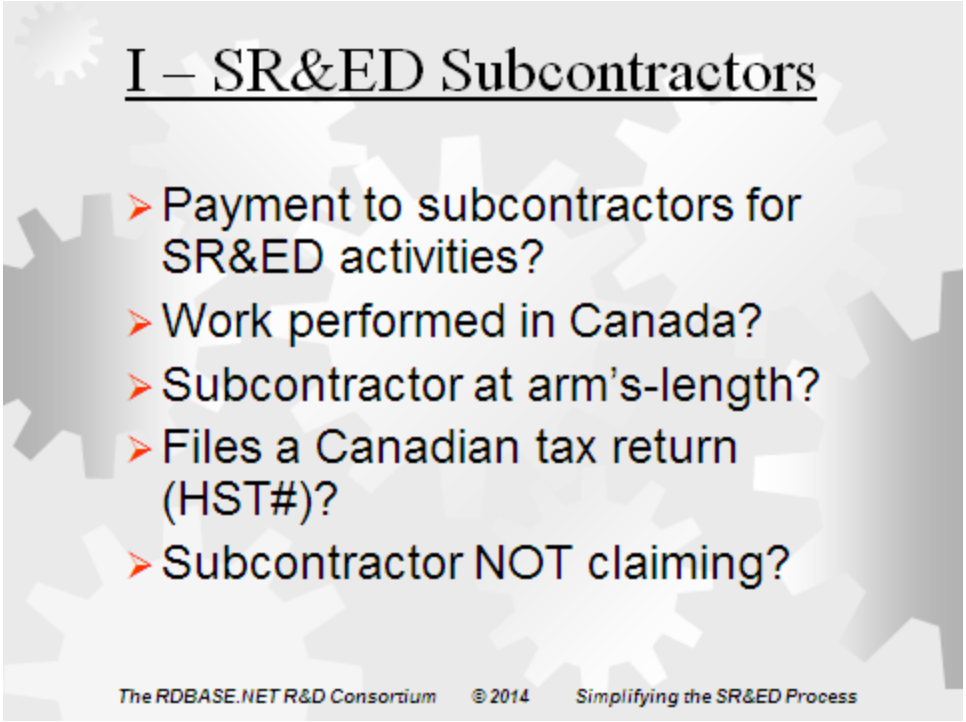
There were no subcontractors used on the remaining projects

Decision tree

I.1 SR&ED subcontractor issues

→ **if NO**

	Question:	Issue:	Result(s)	ITA section	See WP
if YES					
1	Was any payment made to subcontractors for SR&ED activities?	potential SR&ED subcontractor claim	no claim for SR&ED subcontractors	37(1)(a)(i.1)	***I-0***
2	Was this work performed in Canada?	foreign SR&ED	full deductions however no SR&ED tax credit for foreign expenses	37(2)	***M-0***
3	Do the Corporation and subcontractor deal at arms length?	non-arms length costs	File T661 Schedule B, Section C to claim expenses	37(11)	***T-1.9***
			Form T-1146 required to prevent any markup on non-arm's length costs	127(13-16)	***I-3 / T-4.1***
4	Does the subcontractor file a Canadian income tax return?	definition of a "taxable supplier"	no claim if performer not a "taxable supplier"	127(9)	***T-1.9 /M-1***
5	Have you confirmed that subcontractor is NOT planning to claim SR&ED credits on any of the work?	potential "doubled dip"	need subcontractor agreement -- only incremental costs can be claimed net of "contract payments"	127(18-22)	***I-2 & 3***
6	Have you completed and filed form T661, Schedule B, Section C to claim expenses?	claim for R&D subcontractors	File T661 Schedule B, Section C to claim expenses. Include 'statement of work'.	37(11)	***T-1.9***
			SIN# or BN# required for any contractors over $30,000	127(18-22)	



I.2 SR&ED performed on your company's behalf

Qualifying SR&ED contract payments are expenditures incurred for subcontractors carrying on SR&ED on the company's behalf, assuming that the company is entitled to exploit the results of the SR&ED.[83]

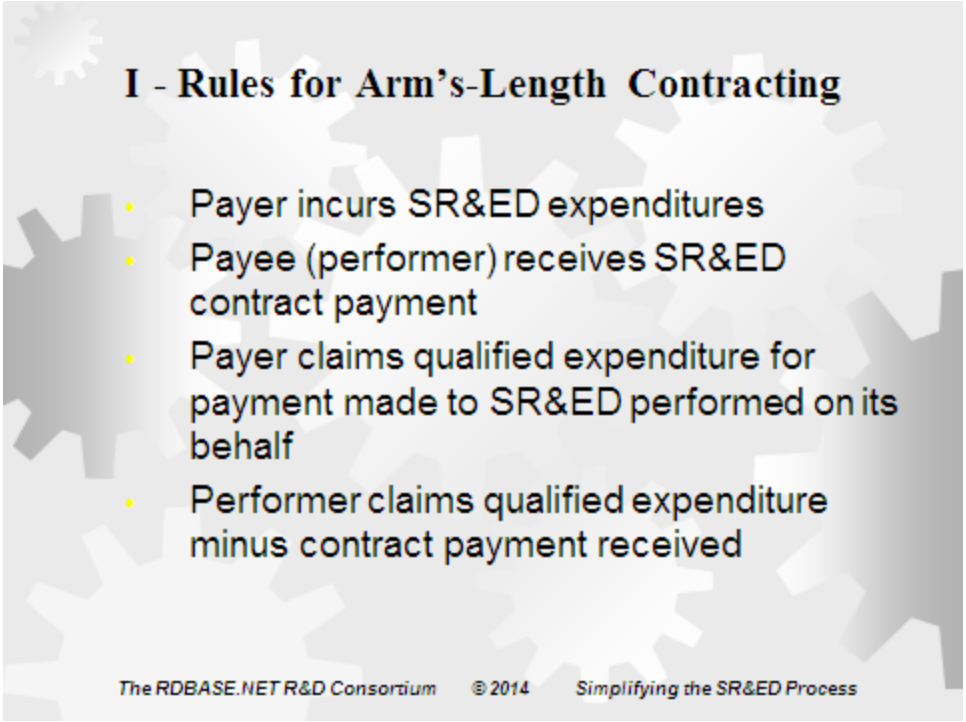
I.2.1 SR&ED payment must be related to a business

Canadian income tax legislation specifies that an expenditure of a current nature made by a taxpayer on SR&ED carried on in Canada, that is directly undertaken by or on behalf of the taxpayer, must also be related to a business" of the taxpayer.[84]

"related to a business" includes:

> "any SR&ED that may lead to, or facilitate, an extension of that business. For SR&ED to be related to a business carried on by a taxpayer, it is necessary to have some interconnection or link between the SR&ED activities and the taxpayer's business. This requirement will generally be satisfied when the results of the SR&ED, if successful, have a direct and beneficial application in the business that is carried on by the taxpayer."[85]

[83] ITA subparagraph 37(1)(a)(i)
[84] ITA Subparagraph 37(1)(a)(i)
[85] Paragraph 37(7)(d)



I.3 Definition and implication of being arm's-length"

The current version of Interpretation Bulletin IT-419, *Meaning of Arm's-Length*, expresses in general terms the criteria we consider when determining whether or not persons deal with each other at arm's-length.

I.3.1 No double dips on payments to other subcontractors

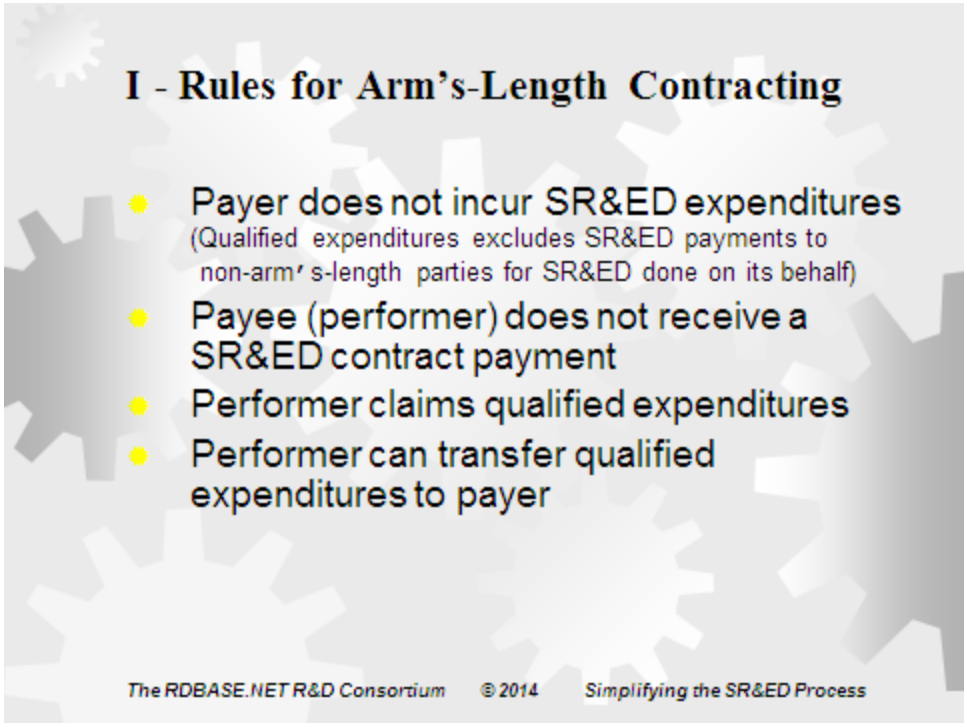
The SR&ED tax credit form[86] requires disclosure of the business BN# (corporations) or SIN # (for individuals) number of any taxable supplier being claimed as his SR&ED subcontractor to the extent that they were paid more than $30,000 during the taxation year. This information allows the CRA to ensure that:

- Significant payments were made to suppliers for work done in Canada and
- there is no double claiming of investment tax credits on the same work.

To the extent that a subcontractor has claimed SR&ED tax credits on any of the work performed, the company may be prevented from claiming tax credits. These types of arrangements generally require an agreement as to who owns the rights of the SR&ED and who will claim any related credits.

Where the company paying the fees owns the rights to the tax credits, the subcontractor will only be able to claim its actual, eligible expenses to the extent that they exceed contract payments" on the project. This issue is further illustrated in section ***K***.

[86] schedule 32 - B



Maintaining entitlement to credits via contracts:

To ensure that your company maintains its right to claim credits and work performed, we recommend the following wording be added to the contracts:

a) you perform in your behalf and /or
b) which you perform for others:

"In the event of any of the development activities performed (by/for) X Co., are eligible for Canadian SR&ED tax credits, X Co. reserves the right to claim these credits."

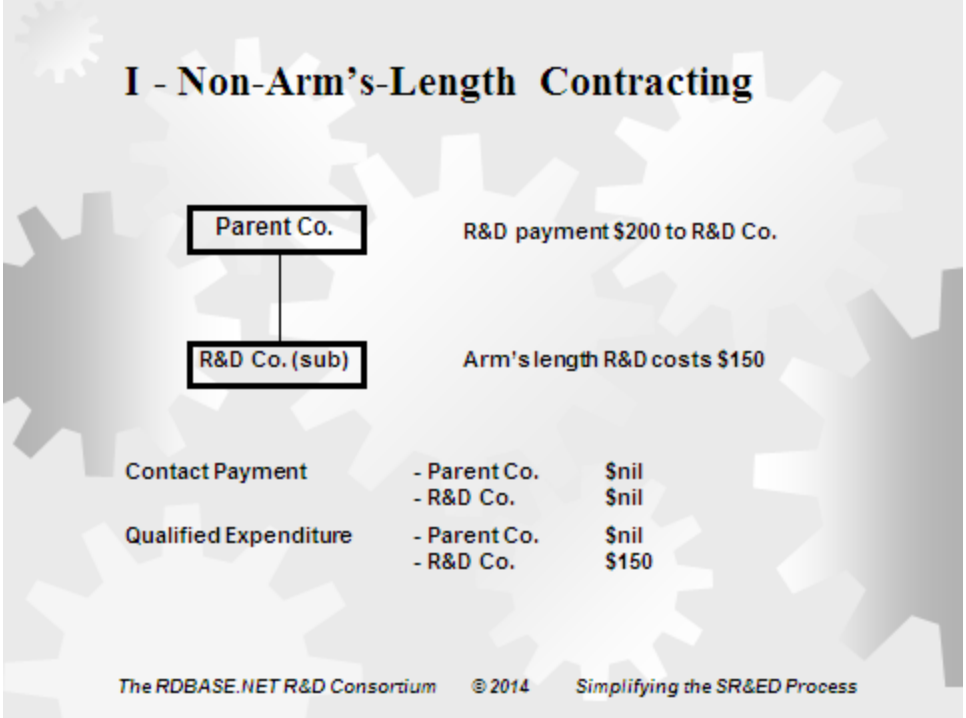
Note: You should also ensure that your company meets the eligibility criteria for claiming the SR&ED work per their Application Policy 94-04.

I.3.2 Non-arm's-length contract payments

The SR&ED claim requires that you distinguish between arm's-length contractors and non-arm's-length" contractors. In general terms, non-arm's-length" contractors are those who are controlled by the same person or related group of persons who control the corporation in question. These definitions are further detailed in Chapters C & Q of this service.

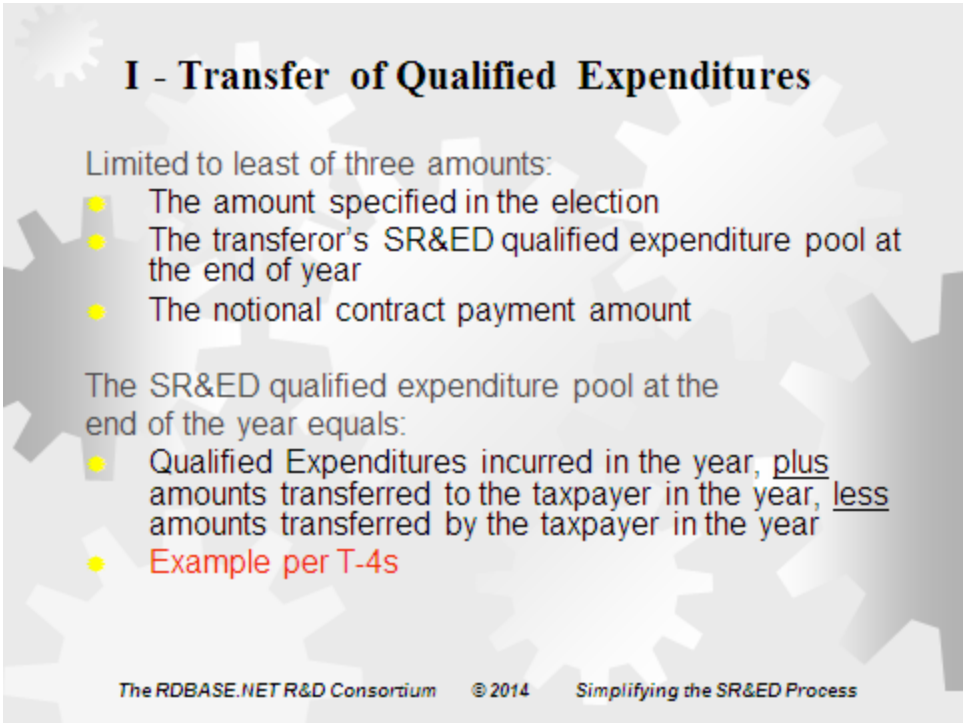
Effective for taxation years that begin after 1995, expenditures you incur for SR&ED performed on your behalf by a performer at a time when you and the performer do not deal with each other at arm's length are not "immediately" qualified expenditures for ITC purposes.[87] However, the performer can elect to transfer qualified expenditures to you up to a maximum of the qualified expenditures they actually incurred.[88]

[87] ITA paragraph 127(9)(f) in the definition of "qualified expenditures"
[88] form T1146 – ITA subsection 127(13)



The election must be done in prescribed form by both parties by filing a joint agreement on Form T1146 (Agreement to Transfer Qualified Expenditures Incurred in Respect of SR&ED Contracts). The amount that the performer can transfer for a taxation year is the least of the following amounts[89]:

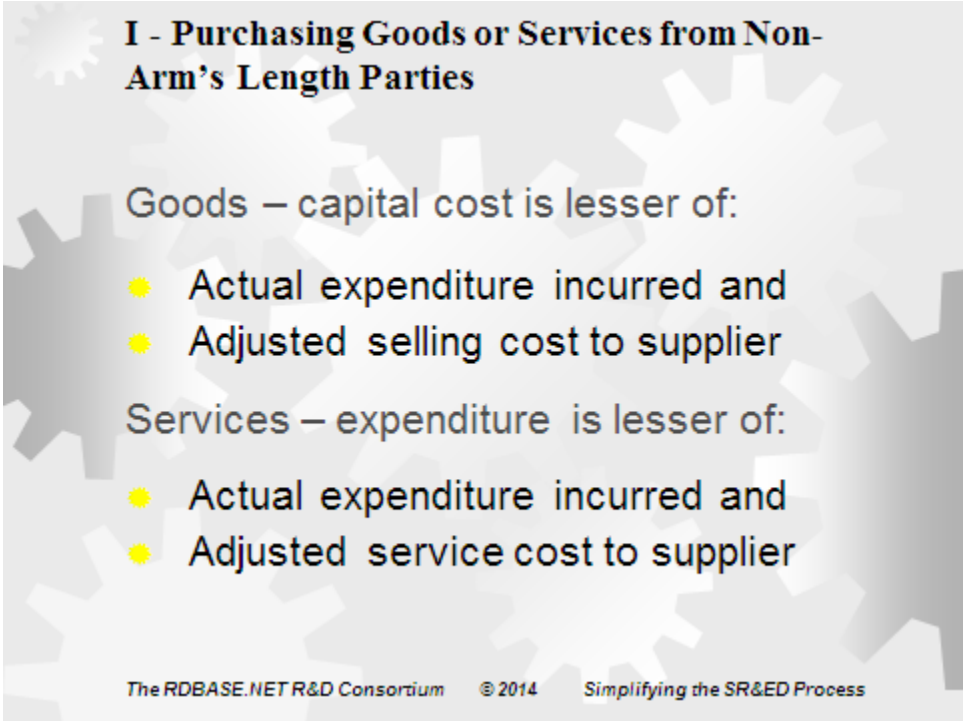
(1) The amount specified by the transferor (performer) and the transferee (you) in their agreement
(2) The transferor's SR&ED qualified expenditure pool at the end of the year
(3) The total of all amounts that would be contract payments if the two parties were dealing at arm's length (notional contract payments)



[89] ITA subsection 127(13) – Agreement to transfer qualified expenditures

I.3.3 Business carried on by a related corporation

Where a corporate taxpayer performs SR&ED that is related to a business actively carried on by another corporation that is related, the SR&ED is considered to be related to a business of the taxpayer. Thus, for example, if the taxpayer performing SR&ED is a wholly-owned subsidiary of another corporation, the subsidiary's SR&ED will be considered to be related to a business of the taxpayer if the SR&ED is related to a business carried on by the parent.[90]



I.4 Non-arm's-length SR&ED expenses: related tax forms and guides

T1145 - Agreement to allocate assistance for SR&ED expenditures between non-arm's length parties

T1146 - Agreement to Transfer Qualified Expenditures Incurred in Respect of SR&ED Contracts *

T1174 - Agreement among associated corporations to allocate salaries or wages of specified employees for SR&ED. *

See T-4's of this case study for examples of these forms

[90] ITA subsection 37(1.1) & Interpretation Bulletin 151R-4, paragraph 9

J SR&ED capital assets

J: Summary of Capital Expenditures

	Intended SR&ED use >=90%		Intended SR&ED use >=50%		Intended SR&ED use:	Estimated ITC
Asset:						
Testing device	$ 5,000.00		$ -		Testing of prototypes	$ 2,080
Hardware - CAD/CAM	$ 5,000.00		$ -		Design of prototypes	$ 2,080
Computers - R&D employees	$ 5,000.00		$ 10,000.00		R&D duties	$ 2,080
	$ 15,000.00	***D-0***	$ 10,000.00	*	***T-0***	$ 6,240

* 25 % of this amount will be included as a qualified expenditure for **shared use equipment (SUE)** in the **next two fiscal years (i.e. 2012 & 2013)** resulting in $ 2,500 being disclosed on schedule 32, line number 504 (see T-1.4) of next year's claim.

Potential Adjusting journal entry:

DR	SR&ED ITC recoverable	$ 6,240		***S-0***
CR	Equipment (appropriate classes)		$ 6,240	

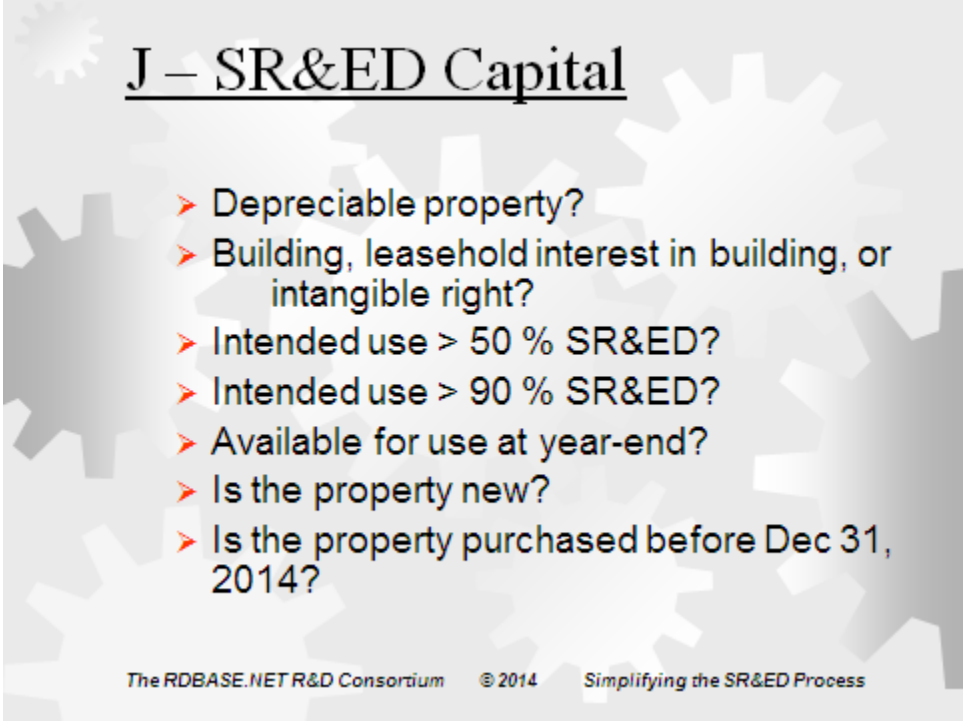
To disclose cost of capital assets in financial statements, net of ITC's.

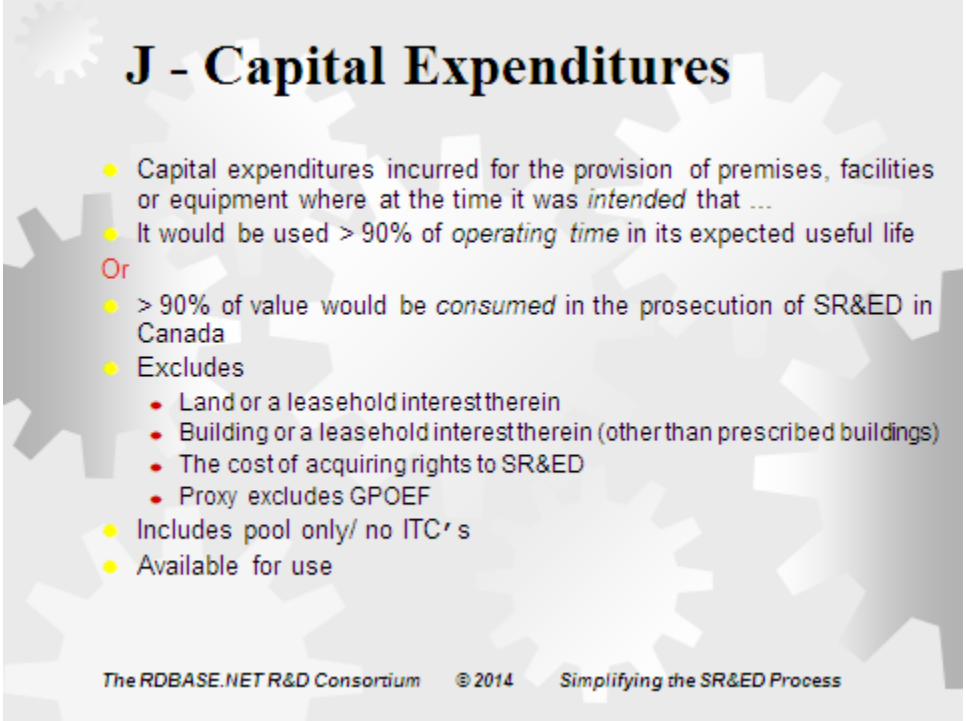
[Author's note: Ideally, the claim would include a brief description of each of the SR&ED assets above. This description should briefly outline how each was used during the current year as well as the intended future SR&ED use over its economic life.]

J.1 SR&ED Capital issues

		if NO			
	Question:	**Issue:**	**Result(s)**	**ITA section**	***See WP***
if YES					
1	Is the property "depreciable" property	land & other non-depreciable properties excluded	excluded from eligible SR&ED expenses and tax credits	37(1)(b)	
2	Is the property other than a "building", "leasehold interest in a building," or intangible "right" (e.g. a patent) arising from previous SR&ED?	"buildings" and intangible "rights" excluded (per ITA 37(8) & 37(4), respectively)	excluded from eligible SR&ED expenses and tax credits	37(1)(b)	
3	Is the asset intended to be used > 50 % of its economic life in Canadian SR&ED activities?	Intent - primarily SR&ED asset	excluded from eligible SR&ED expenses and tax credits	Regulation 2902(b)(i)	
4	Is the asset intended to be used > 90 % of its economic life in Canadian SR&ED activities?	Intent - ASA SR&ED asset	excluded from eligible SR&ED expenses but,	Regulation 2902(b)(i)	
			potential SR&ED credits on shared used equipment (SUE) over the next 24 months	127(11)	*J-0*
5	Is the property available for use at year-end?	availability of SR&ED ITC	SR&ED expenditures deemed not made until property is "available for use"	37(1.2)	
6	Is the property new?	no ITC's on "used equipment"	excluded from "qualified SR&ED expenses" used for calculating tax credits but still part of R&D expenditure pool	Regulation 2902(b)(iii)	
7	Have you completed and filed form T661 to claim expenses?	claim for R&D capital	Include brief statements of long term R&D intent at time of purchase & summary of shared use %'s	37(11)	*J-0 / T-1.3*
8	Have you subsequently disposed of the asset or converted it to commercial use?	repayment of ITC earned	Repayment based on current value of asset at historic ITC rate	127(27 to 35)	*J-4*

J.2 Requirement for intended use > 90% or >50% in SR&ED





J.2.1 Eligible SR&ED capital expenditures (>90% SR&ED intent)

A SR&ED capital expenditure is an expenditure made to acquire a depreciable property which you intended to use or consume (ASA) all or substantially all" (=>90%)[91] of its economic life in the "prosecution of SR&ED in Canada.

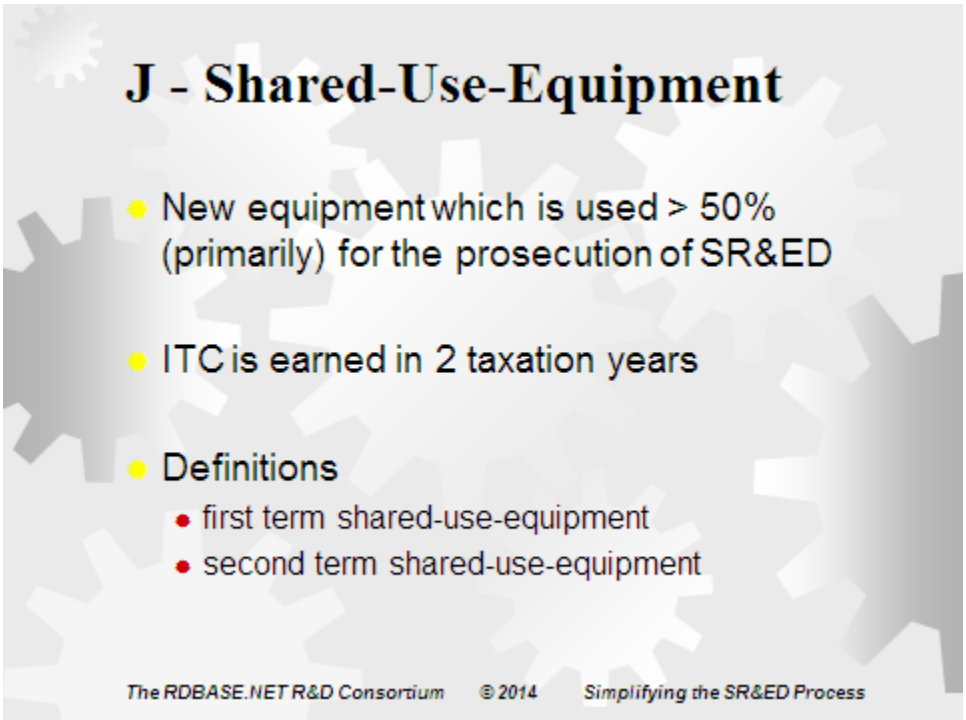
You determine a property's eligibility based on its long term SR&ED intent at the time you make the expenditure. An ideal R&D accounting system will provide some level of post-purchase R&D usage evidence to substantiate the percentage of time you use the asset for SR&ED.

Where the assets are in a dedicated SR&ED environment this intent will be relatively easy to substantiate. Where the assets are used in other environments, examples of reasonable evidence might include correlations to the R&D labour claims of the equipment users, direct machine logs or any other reasonable documentation method.

J.2.1.1 Full tax deduction in year of purchase

You may claim in your R&D expenditure pool and as a qualifying expenditure for ITC purposes any capital expenditures (purchased new) for SR&ED carried on in Canada and related to a business of yours. In effect, this allows a full write-off of the cost of the asset in the year of acquisition or any future year at the choice of the taxpayer.[92]

J.2.2 Shared-use equipment (SUE)- (>50% SR&ED intent)



Assets purchased new and used primarily (>50%)[93] but not all or substantially all for the prosecution of SR&ED qualify for partial credits.

[91] Interpretation bulletin 151R-4 paragraph 29 – ASA > 90%
[92] ITA paragraph 37(1)(b)
[93] CRA form T4088 – Guide to form T661 – line 504 – primarily >50%

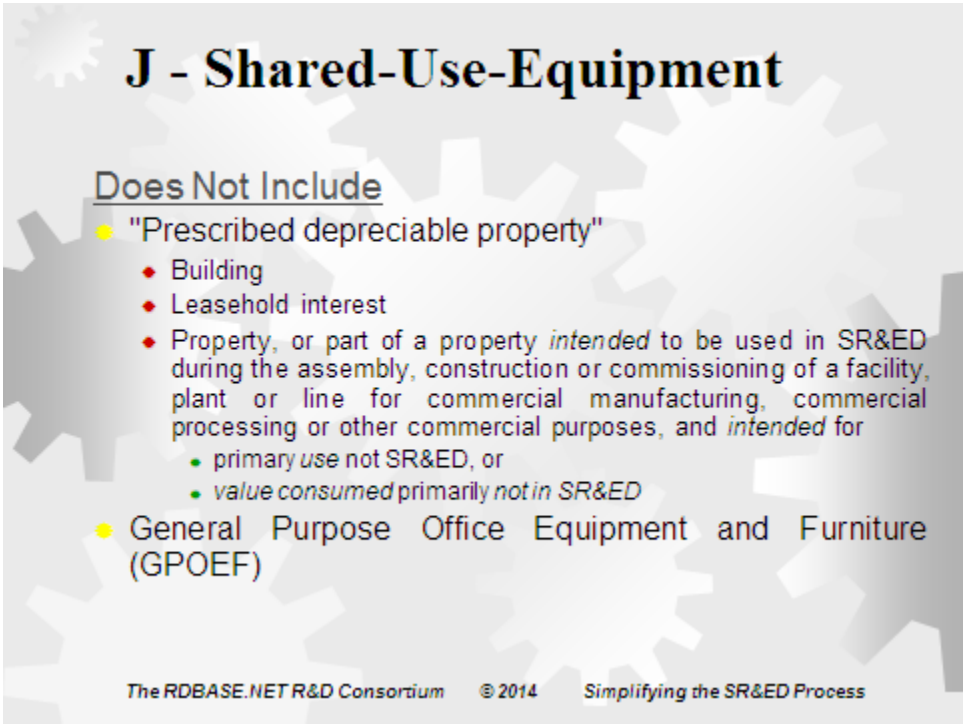
The cost of the asset does not form part of the R&D expenditure pool and one-half of the expenditure qualifies as an expenditure for ITC purposes. One-half of the credit is earned at the end of the first taxation year of acquiring the asset and the other half of the credit is earned after the second taxation year.

Since the cost of the asset is not included in the expenditure pool, CCA (capital cost allowance) is claimed under the regular rates and rules.

J.2.3 Summary of ASA vs. SUE SR&ED equipment rules

The following chart summarizes issues & related tax credit effects between ASA and SUE SR&ED equipment.

ASA equipment (>90%)	SUE (>50%)
▪ relates to equipment intended to be used in SR&ED throughout its useful life; ▪ included in subsection 37(1) expenditure pool and earns ITC; ▪ ITC is earned when you make the capital expenditure; ▪ you earn ITC on full cost; ▪ includes general purpose office equipment or furniture under the traditional method only; ▪ eligibility is based on intent.	▪ relates to equipment you use for SR&ED and some other purpose; ▪ only earns ITC – capital cost is included in CCA schedule in usual manner; ▪ you earn the partial ITC over time; ▪ you earn ITC on one-half of the cost; ▪ excludes general purpose office equipment or furniture under both the traditional and proxy methods; ▪ eligibility is based on actual use & intent.



Before we can perform any specific tax credit calculations, we need to determine the intended SR&ED use of the asset over its estimated economic life, which can result in three potential classes of assets:

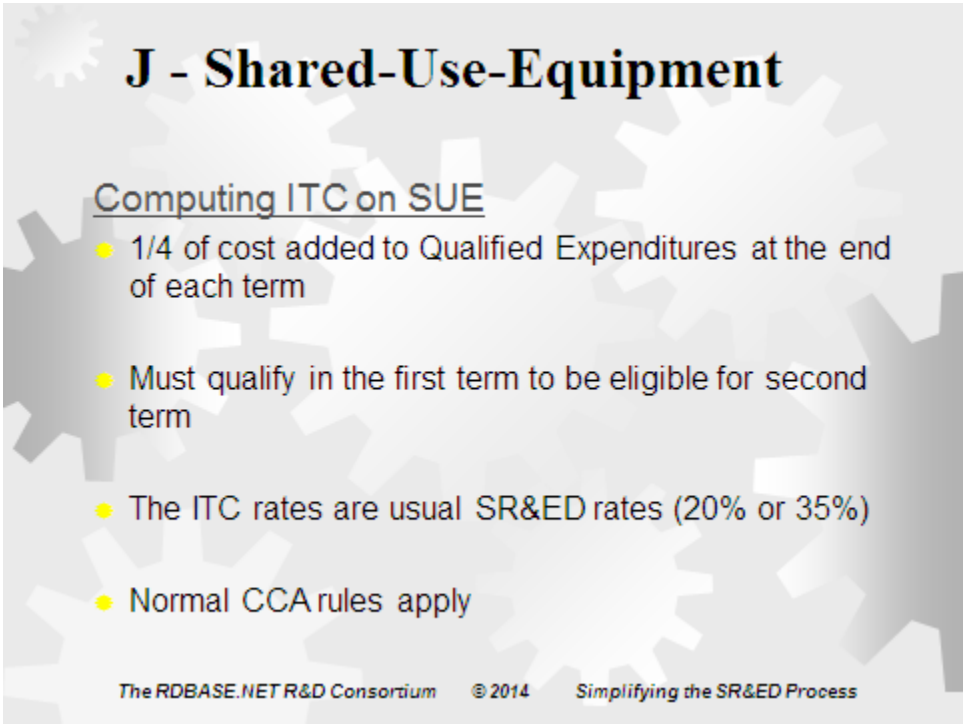
1) **> 90% SR&ED intent (ASA – All or substantially all)**
   If we can argue > 90% SR&ED intent we will earn the credit on the capital cost of the equipment in the year of acquisition OR,
   full credits on lease payments when paid.

2) **> 50 % but <90% SR&ED intent (Primarily)**
   If we can argue > 50 % but <90% SR&ED intent we will earn either: a deferred credit (over three years) on 50% of the lease payments or capital cost of the asset OR,
   the actual percentage of lease payments we can allocate to SR&ED if we use the traditional method of overhead allocation.

3) **> 0 % but < 50% SR&ED intent**
   If we can argue > 0 % but < 50% SR&ED intent we will only earn credits on the actual percentage of lease payments we can allocate to SR&ED. Furthermore these credits will only be earned if we use the traditional method of overhead allocation.

J.3 Subsequent dispositions/commercial use

Quite often the experimental prototypes may eventually be used in commercial production. In these cases a portion of the ITC earned may need to be repaid. The CRA confirms that the Undepreciated Capital Cost (UCC) for tax purposes can be used as an estimate of the Fair Market Value (FMV) of the asset. This repayment concept is clarified in an example recently released by the CRA:



J.4 Strategies in documenting long-term SR&ED intent

It should be noted that it is the CCRA who deems the terms, “ASA” and “primarily” to represent >90% or >50%, respectively. The income tax act does not specifically define these terms and therefore, taxpayers may wish to reconsider these amounts where this treatment can be supported. For example, if an employee spent 88% of her time in SR&ED during the year, the company might argue that the intent was for her computer to be an ASA SR&ED asset.

J.5 Subsequent dispositions/commercial use

Quite often the experimental prototypes may eventually be used in commercial production. In these cases a portion of the ITC earned may need to be repaid. The CCRA confirms that the Undepreciated Capital Cost (UCC) for tax purposes can be used as an estimate of the Fair Market Value (FMV) of the asset. This repayment concept is clarified in an example recently released by the CCRA:

J.5.1 Example - (change to commercial use) [94]

Corporation A gives a contract to Corporation B (arm's length) for the construction of equipment to meet unique performance criteria. The contract requires that Corporation B perform SR&ED on behalf of corporation A in the development of the equipment.
The total amount of the contract is $1,000,000. All of the work was completed at the end of year 1, at which point Corporation A started using the new equipment in its operations.

For purposes of claiming the allowable SR&ED expenditures, Corporation A identified the SR&ED and non-SR&ED and allocated the costs accordingly. The SR&ED portion of the contract was estimated at $800,000. The $200,000 not claimable is a cost relating to expenditures incurred on the commercial portion of the equipment. The CCRA's Research and Technology Advisor found the allocation to be reasonable.

Corporation A entered $800,000 on line 340 of form T661 as expenditures for arm's length SR&ED contract. When Corporation A starts using the equipment in its operations, there is a conversion to commercial use and the ITC recapture rules will apply.

The FMV of the equipment at the time of conversion to commercial use is $500,000. For the purpose of determining the FMV, the claimant has used the cost of producing a second unit if the technology had already existed.

For the purposes of the ITC recapture rules, using a prorated amount (see Note) as FMV would be acceptable as it is reasonable to apportion the FMV between the SR&ED costs and other costs. Since the ITC on the particular equipment was claimed using a 20% rate, the ITC recapture will be calculated as follows:

The recapture amount is the lesser of:

i) the ITC earned in respect of the particular property (the portion of the contract in respect of the SR&ED is part of the cost of acquiring the property)

$160,000 (i.e., $800,000 @ 20%) and

[94] CCRA Application Policy SR&ED 2000-04R2, June 18, 2002, Recapture of Investment Tax Credit – Example 7

ii) the amount determined by applying the percentage which was used in calculating the ITC on the property to the Fair Market Value of the property at the time of its conversion to commercial use

$80,000 (i.e. [$500,000 X 800,000/1,000,000] @ 20%)

The ITC recapture will be $80,000, the lesser of $80,000 and $160,000.

[Note: Any other reasonable apportionment of the FMV would be acceptable if it is based on the facts of the case, and is supportable] – see planning example!

J.5.2 Author's commentary and related tax planning

This example could be misleading since only the "materials" vs. "labor related" portions of the payments need to be repaid. The method illustrated is often referred to as the **"carve-out" method** since it "carves-out" the cost to redo the work and effectively allows only the incremental costs. **As a result an opportunity has been missed!** Consider the following additional CCRA pronouncements[95]:

SR&ED "Labour" costs not reduced

Labour costs incurred for an employee directly undertaking, supervising or supporting (traditional method), or for an employee directly engaged in (proxy method), the required experimental production, are allowable SR&ED expenditures. **No portion of such labour costs should be allocated to the commercial production**. This is the case whether the experimental production results from the operation of a pilot plant or a prototype, or it is produced in a commercial plant.

Sale of experimental production

The ITC recapture rules[96], will apply to recapture all or a portion of the ITC relating to the cost of materials transformed when experimental production is sold or converted to commercial use after February 23, 1998. Note that **these rules do not apply to recapture ITC in respect of SR&ED labour costs** and overhead expenditures incurred by the claimant to carry out the experimental production.

The **reduction of the costs** of the experimental production by the proceeds from the sale of experimental production, or the expenditure **carve-out approach** used in the past to estimate SR&ED expenditures relating to the experimental production, are **not methods founded in law.** These methods **should not be used** for estimating the costs of the experimental production.

J.5.3 Example - revisited & optimized

Based on the above analysis the author proposes that a more correct method would be to **have the contractor separately identify and invoice the "labour" vs. the "material or capital**" portions of the work. **Examples of potentially eligible "labour" component**s within the contractor's fee could be the costs **to assemble, test and replace** components. These could then be removed from the $800,000 base used for the "carve-out" in the previous example.

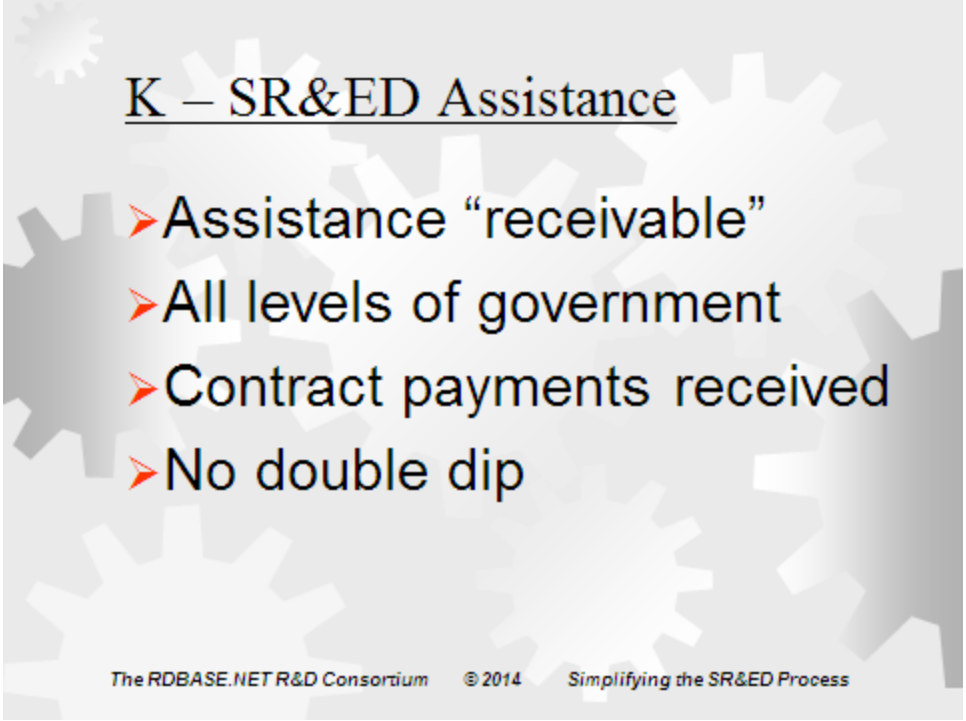
[95] CCRA Application Policy SR&ED 2002-02, July 17, 2002, Experimental Production - Allowable SR&ED Expenditures
[96] recapture rules in subsections 127(27) to (35) of the Income Tax Act

K Financial assistance/contract SR&ED

In order to streamline the examples, the **current case study makes the assumption** that all SR&ED costs were internally funded (i.e. **no assistance received**). The federal government considers any provincial credits to represent government assistance. The related interactions of these credits and related calculations have been disclosed per working paper ***T-0 & T-1.3***. As a result the full costs of SR&ED expenses incurred in Canada will be eligible for SR&ED credits.

In reality, this is often not the case and claims are therefore required to be reduced by the amounts of the related assistance. An overview and example of these rules and related tax planning opportunities is provided in this section.

K.1 Financial assistance receivable for SR&ED



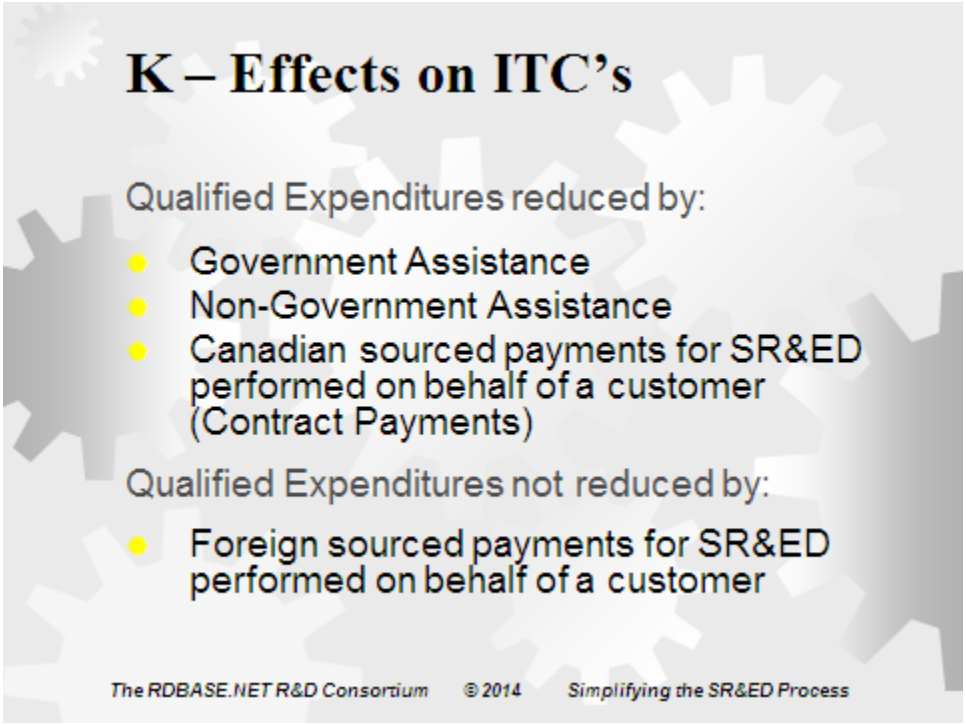
K.1.1 Rules for reducing eligible and qualified SR&ED expenditures

K.1.1.1 Assistance receivable

The tax legislation applies to reduce qualified expenditures of a taxpayer (including a partnership) by any government assistance, non-government assistance, or contract payments received or receivable directly by you.

It applies when,

"on or before the filing-due date for a taxation year … the taxpayer has received, is entitled to receive, or can reasonably expect to receive … assistance that can reasonably be considered in respect of SR&ED.[97]"



K.1.1.2 Government assistance

Government and non-government assistance for SR&ED reduces the company's qualified expenditures for ITC purposes.

Government assistance includes grants, subsidies and deductions from tax, investment allowances, or any other form of assistance, excluding the federal ITC. This also includes provincial SR&ED tax credits as outlined above (see ***T-0 & T-1.3***).

K.1.1.3 Non-government assistance/contract payments

Non-government assistance or contract payments for SR&ED reduce the company's qualified expenditures for ITC purposes only to the extent that[98]:

1. it is from a taxable supplier (i.e. another taxable Canadian company)[99],
2. the supplier intends to claim SR&ED tax credits, and
3. the taxpayer and that person are dealing at arm's-length.

Issues relating to payments received from non-arm's-length parties for SR&ED on their behalf are discussed in section ***I***.

---

[97] Subsection 127(18)
[98] Subsection 127(9) - definition of "contract payment"
[99] as opposed to a foreign controlled Corporation

To the extent that payments are received in the contract for SR&ED from foreign parties, these receipts will not reduce eligible or qualified SR&ED expenses.

K.1.1.3.1 Summary of issues and related disclosures when receiving contract payments

To the extent that a contractor receives payments **from another Canadian taxpayer** we must ensure that there is no double dip of SR&ED claims on these expenses. To accomplish this the SR&ED tax credit form[100] requires disclosure of the business or GST number of any taxable supplier being claimed as an SR&ED subcontractor, to the extent that they were paid more than $30,000 during the taxation year. This information allows the CRA to ensure that:

- significant payments were made to suppliers for work done in Canada and
- there is no double claiming of investment tax credits on the same work.

Where the company paying the fees owns the rights to the tax credits, the subcontractor will only be able to claim its actual, eligible expenses to the extent that they exceed the SR&ED related contract payments" received on the project.

To the extent that payments are received for the SR&ED from Canadian taxpayers who do **not** intend to claim SR&ED credits, the payments will not be treated as contract payments, provided the performer meets the requirements mentioned in section I.3.1. This underlines the importance of communicating on this issue with any Canadian customers who you have performed SR&ED for during the year.

It should also be noted that only "SR&ED related"[101] payments are treated as subcontractor payments. Therefore if part of any such payment can be attributed to non-SR&ED (e.g. marketing) efforts, these amounts will not meet the definition of a "contract payment" and therefore will not reduce that qualified SR&ED expenditures.

K.1.2 Tax planning example – contract payments or government assistance

	Cost	SR&ED?	Gov't $	Eligible SR&ED
Project 701	$10,000	No	$20,000	-
Project 702	**$20,000**	**Yes**	**$10,000**	**$10,000**
Project 703	$10,000	Yes	$20,000	-
	$40,000		$50,000	$10,000

In the example shown above, if the projects were not separately disclosed, there would be no cost overruns and therefore no eligible SR&ED amount. This example illustrates some of the potential benefits available from "properly" negotiating the wording of SR&ED contracts at the outset of the work.

[100] Schedule 32 - B
[101] Subsection 127(9) - definition of "contract payment"

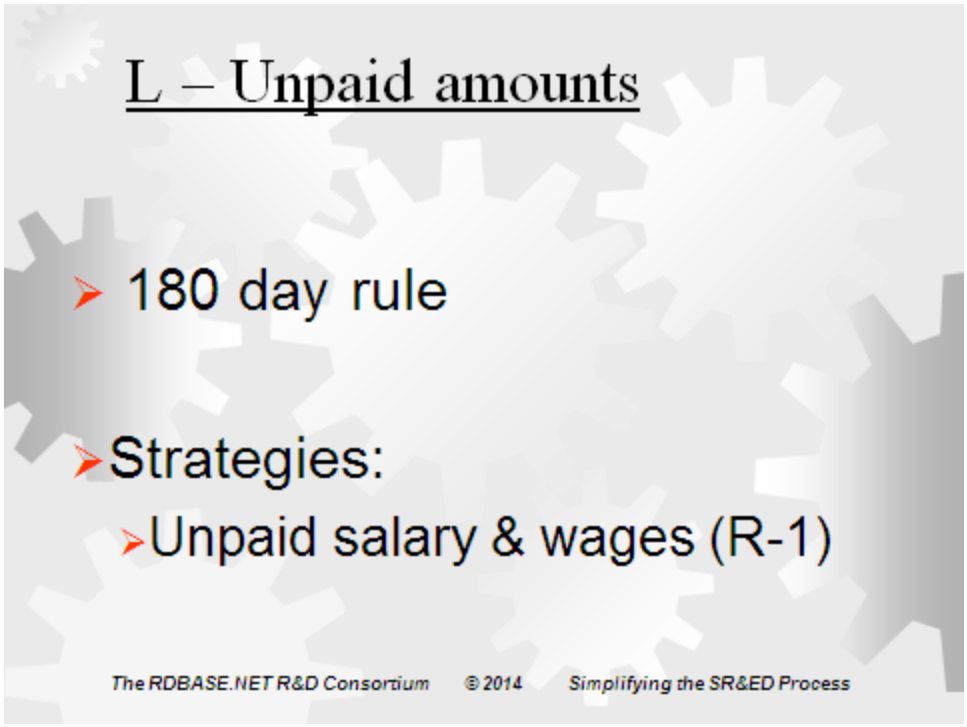
Ensuring ability to claim via contract

To ensure that your company maintains its right to claim credits and work performed, we recommend the following wording be added to the contracts:

a) you perform in your behalf and/or
b) which you perform for others:

"In the event of any of the development activities performed are eligible for Canadian SR&ED tax credits, X Co. reserves the right to claim these credits."

L Unpaid & prepaid amounts



The **current case study makes the assumption** that all SR&ED costs were paid within 180 days of year-end (i.e. **no unpaid amounts**). As a result, the full costs of these SR&ED expenses incurred in Canada will be eligible for SR&ED credits in the year in which they are incurred.

Often, there are amounts which remain unpaid and which will become eligible for tax credits in the year in which they are actually paid.

L.1.1.1 Unpaid salaries, wages, and other remuneration

Where accrued salaries, wages, and other remuneration remain unpaid 180 days after the end of the year in which you incurred the expense, the income tax legislation deems the expense,

> "not to have been incurred in the year, but rather in the year the amount is paid."[102]

Section ***R*** provides further examples of how the legislation surrounding **"unpaid amounts" can be used as a tax planning vehicle for cash strapped R&D companies** to maximize their investment tax credit claims.

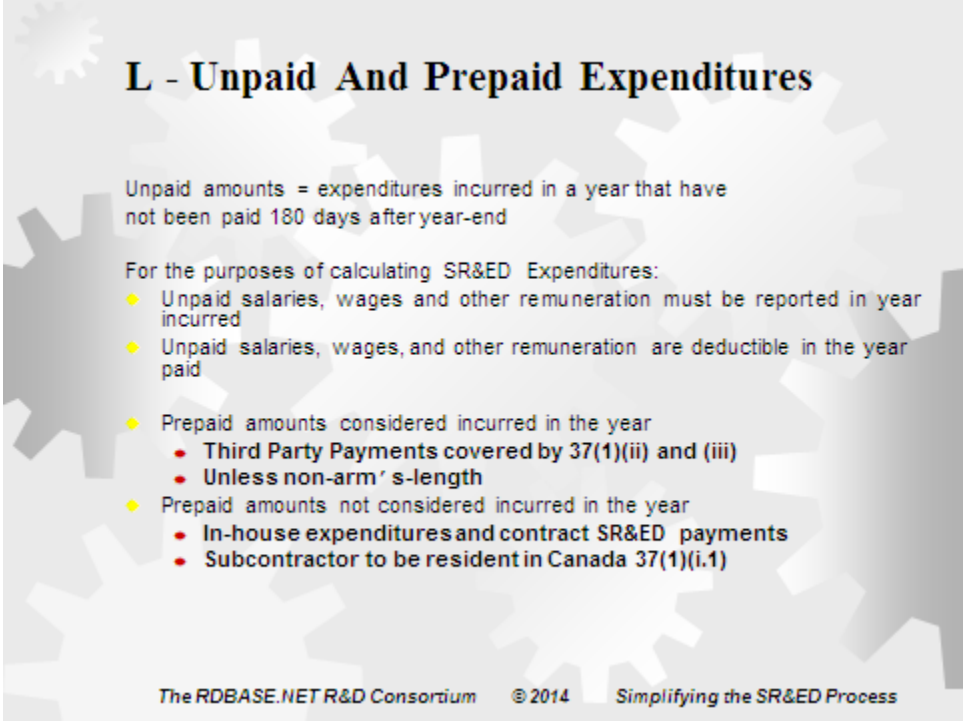
Note: If you are using the proxy method to determine overhead, unpaid salaries and wages are not included in that calculation.

[102] Subsection 78(4)

Prepaid amounts:

With the **exception of payment to universities and public research institutes**[103] SR&ED expenses are only claimable in the year they are incurred so prepaid expenses would need to be claimed in the year the amount was:

- consumed or transformed (for a material expense) or
- incurred (for a subcontractor expense).



[103] Prepayment for Third Party payments eligible per 37(1)(i.1)

M Foreign SR&ED expenses

The **current case study makes the assumption** that **all SR&ED** costs were **incurred within Canada** (i.e. **no foreign expenses**). As a result, the full costs of these SR&ED expenses incurred in Canada will be eligible for SR&ED credits.

Basically, to be eligible SR&ED expenditures the Canadian SR&ED legislation requires that eligible activities be **performed in Canada** by a **taxable supplier,** which includes,

> "a non-resident person...by which the amount was payable…in the course of carrying on business in Canada through a permanent establishment."[104]

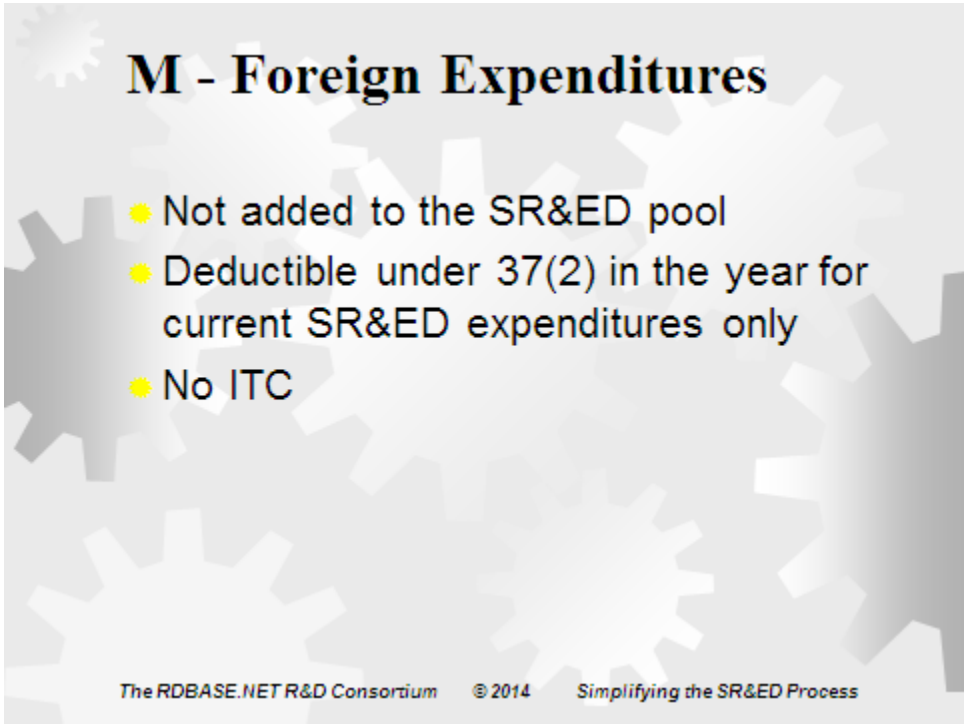
Often, performers will hire foreign contractors to assist with SR&ED work. In the author's experience, the eligibility of these payments for SR&ED tax credits is a source of major confusion among taxpayers. Generally speaking, the amounts are included to the extent that income tax withholdings have been taken.

M.1 SR&ED wages outside Canada – eligible up to 10% - if no foreign taxes paid

Currently to be eligible SR&ED expenditures the Canadian SR&ED legislation requires that eligible activities be performed in Canada by a taxable supplier.

Based on the results of various tax cases , the CRA had taken the position that it will deny SR&ED credits eligibility on "salary and wages" of Canadian employees while abroad . This position had been softened by various administrative relief provisions but in the author's opinion remained a source of confusion for claimants & CRA staff alike.

[104] taxable supplier defined per ITA subsection 127(9)



One of the most compelling arguments to support the eligibility of SR&ED credits on salary and wages of Canadian employees while abroad is the fact that the Canadian employee remains taxable on his or her salary and wages regardless of where these duties are performed.

As a result, in most if not all cases, the CRA earns substantially greater tax revenues from the personal taxes of the individual employee than it pays out to the SR&ED performers (i.e. the employers) on these wages.

The 2008 budget legislation now proposes,

"The amount of a taxpayer's expenditure

(i) for **salary or wages paid to an employee who was resident in Canada** at the time the expense was incurred,

(ii) in **respect of SR&ED** that
(A) was **carried on outside Canada**,
(B) was directly undertaken by the taxpayer,
(C) related to a business of the taxpayer, and
(D) was **solely in support of SR&ED carried on in Canada by the taxpayer; and**

(b)"...**10 per cent of the total of all expenditures**, made by the taxpayer in the year, ... for salary or wages paid to an employee in respect of SR&ED that was **carried on in Canada**"

Furthermore the legislation requires that the,

"**salary or wages is not subject** to an income or profits **tax imposed,** because of the employee's presence or activity in a country other than Canada, by the government of that **other country**."[105]

There is an additional formula to **pro-rate this allocation for periods before Feb. 25, 2008.**

Author's commentary:

This legislation appears to positively address a significant issue of uncertainty which affected a majority of claimants. As a result it will likely have a **significant positive effect** on simplifying both the claim and audit processes.

M.1.1 Becoming a taxable supplier

Basically, for a subcontractor to be a taxable supplier they must file a Canadian income tax return.

File a Canadian tax return

- If the subcontractor claims that they conducted work through a permanent establishment they could file a Canadian tax return and pay tax on its net, Canadian source income.

Effects:

SR&ED performer

- If the SR&ED subcontractor is a taxable supplier and performed the work in Canada, the payor would be eligible for SR&ED expenses.

Non-resident

- Would file a Canadian tax return and pay tax on its net, Canadian source income. This would most likely earn the subcontractor an equivalent foreign tax credit when filing returns in its country of residence.

Net result: If properly structured, this could represent a transaction which is tax neutral to the subcontractor, however, the payor would now be entitled to an investment tax credit on these payments.

[105] Proposed ITA 37(9)(b)

N Overhead - traditional Vs. proxy election

Decision tree

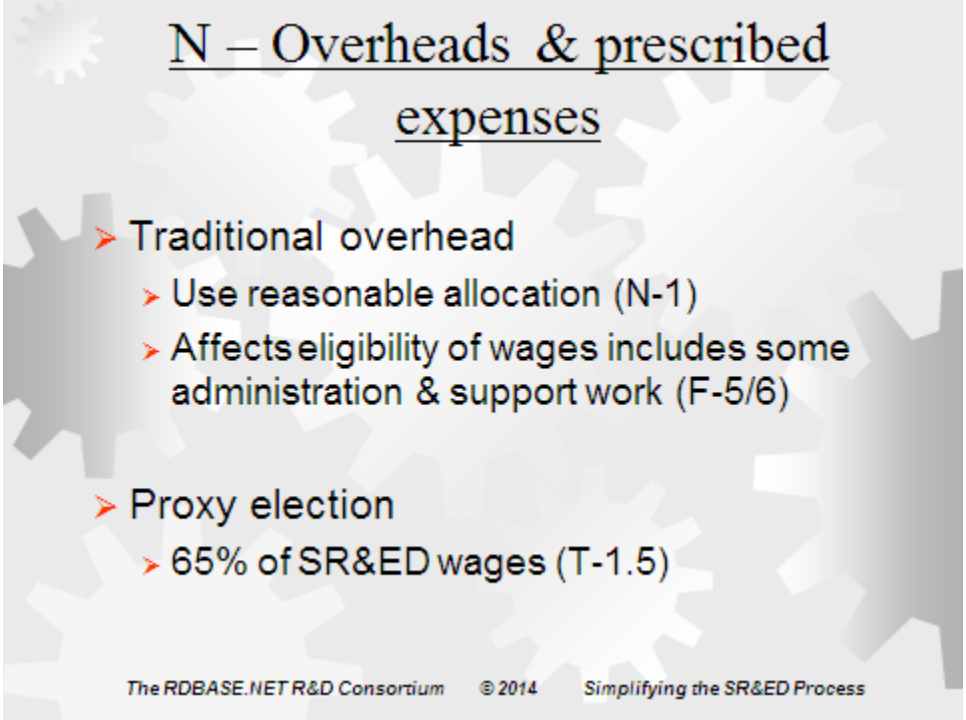
N.1.1 SR&ED overhead allocation issues

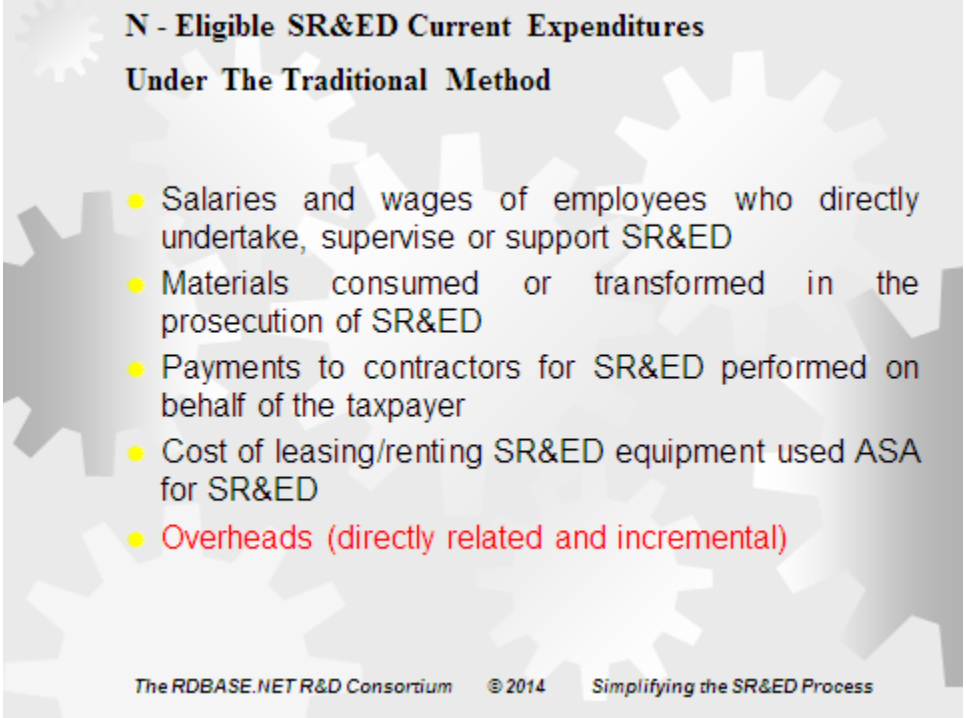
→

if NO

	Question:	Issue:	Result(s)	ITA section	See WP
if YES					
1	Can we provide a reasonable basis to allocate SR&ED overheads?	option for proxy method of overhead allocation	use proxy election: no claims for leased assets <50% or any other overheads	37(1), Regulations 2900(6) & 2902	***N-2***
2	Does traditional overhead amount exceed proxy allocation?	selection of traditional vs. proxy method	use proxy election	Regulations 2900 (4-10)	***N-2***
3	Have you completed and filed form T661to claim SR&ED overhead expenses - not to exceed overhead limit	impact of selecting traditional method	traditional overhead expenses form part of eligible SR&ED expenditure pool as well as qualified expenditures for ITC.	37(11)	***T-0***
			overhead allocations should include reasonable amounts for administration	Regulation 2900(2)	***N-2***

N.2 Overhead allocation options and "prescribed" (ineligible) expenses





N - Eligible Current SR&ED Expenditures

Under The Proxy Method

- **Salaries and wages of employees** directly engaged in SR&ED
- **Materials consumed or transformed in the prosecution of SR&ED**
- **Payments to contractors for SR&ED performed on behalf of the taxpayer**
- **Cost of leasing SR&ED equipment (not general purpose office equipment and furniture GPOEF) used all or substantially all (at least 90%) for SR&ED**
- **50% of cost of leasing equipment (not GPOEF) used at least 50% for SR&ED**

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N - Prescribed Proxy Amount (PPA)

- Proxy election is optional
- Proxy election is annual
- Subsection 37(10)
  - election must be filed with first filing of the T661, before deadline
  - cannot amend later
- Notional amount for overheads
- For calculation of ITC only
- Not treated as a SR&ED expenditure
- Actual overheads deducted as business expense

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N - Prescribed Proxy Amount

- 65% of salary base: salaries and wages of employees directly engaged in SR&ED

Reduced to

- 60% for 2014 &
- 55% for 2014+

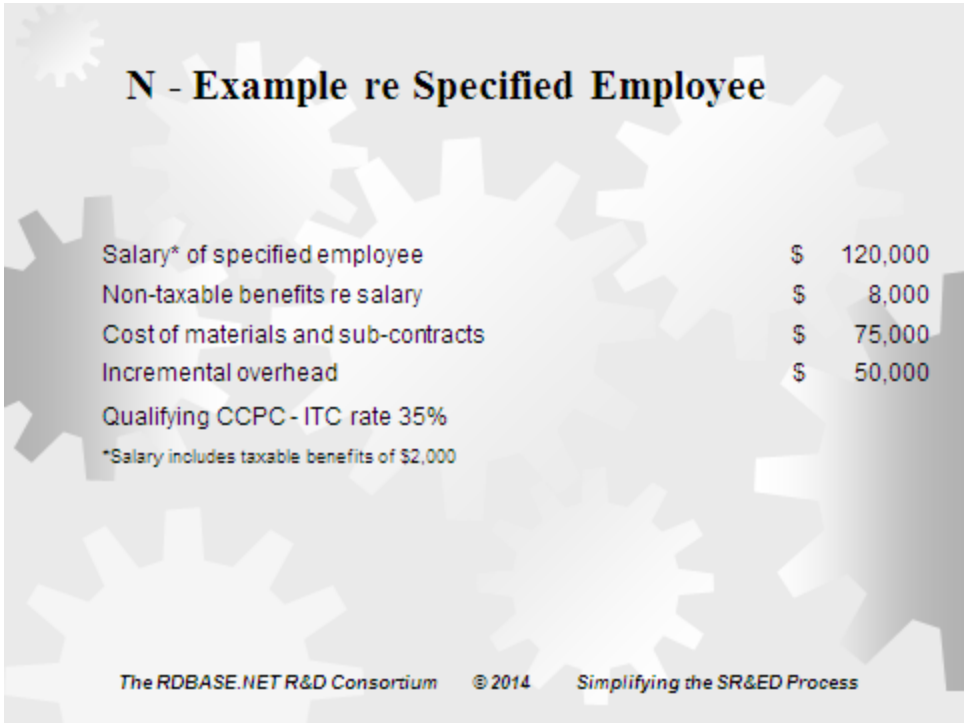
Salary base:

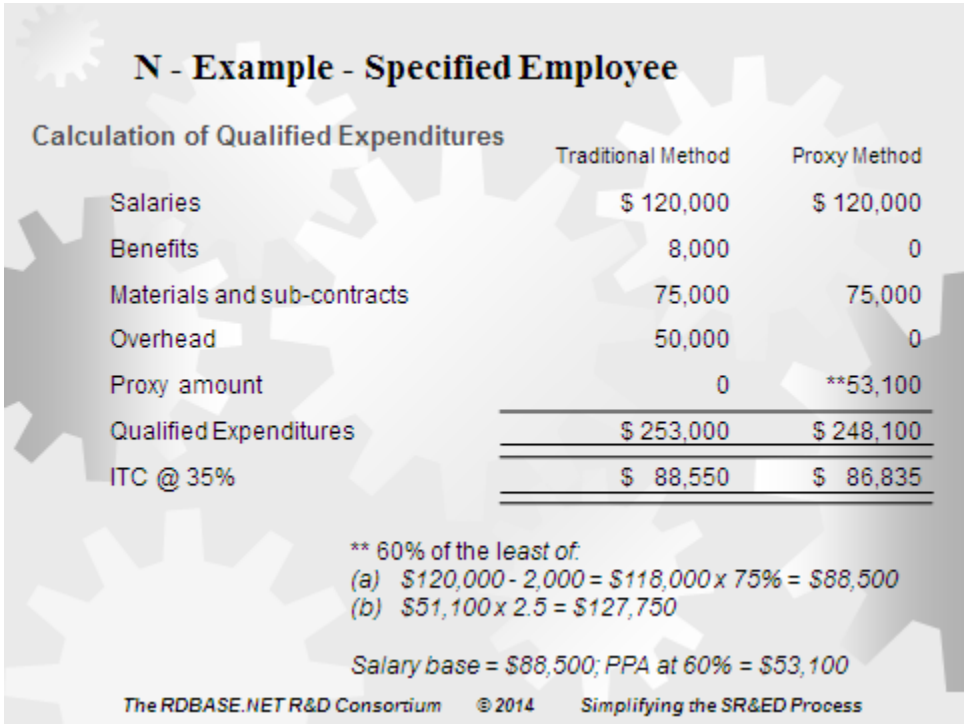
- excludes taxable benefits under s.6 or s.7
- excludes bonuses or remuneration based on profits
- excludes deemed payments under s.78(4)

N - Specified Employee

- In calculating the proxy amount, the salary of a Specified Employee is limited to the least of:
  - SR&ED portion of salary and wages
  - 2.5 times yearly maximum pensionable earnings

  and
  - 75% of total salary and wages
- Cap applies to the sum of salaries and wages received from an associated group of companies





N.3 Differences between proxy election & traditional overhead treatments

Traditional overheads:

- Amounts form part of SR&ED expenditure pool & qualified expenditures for ITC purposes.

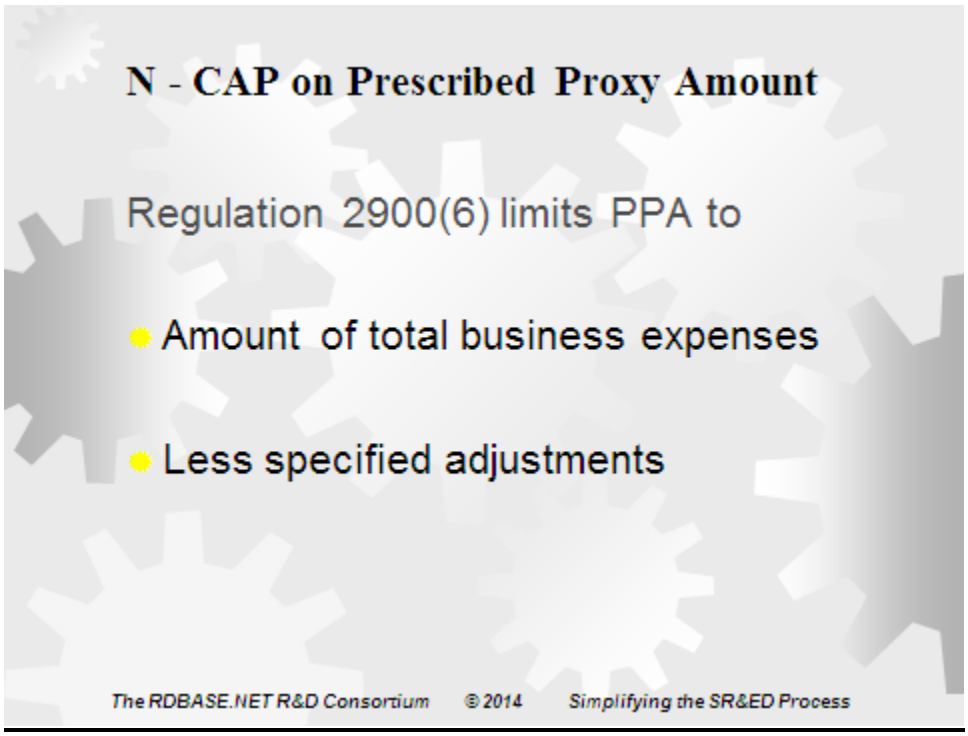
- This election will also allow companies to claim furniture and other office equipment that would not be allowed under the proxy method.

A comparison between the effects of these two methods has been provided below & on working paper ***N-0***.

N.3.1 Excerpt from CRA form T4088(E) Rev. 04 – Guide to form T661

N.3.2 Treatment of expenses under the proxy and traditional methods

Expenditure	Traditional method	Proxy method
Direct SR&ED salaries or wages	▪ eligible for ITC ▪ deductible 37(1)(*a*) (see line 300)	▪ eligible for ITC and base for proxy amount (see line 502) ▪ deductible 37(1)(*a*) (see line 300)
▪ Overhead expenditures directly related to SR&ED	▪ eligible for ITC ▪ deductible 37(1)(*a*)	▪ not specifically identified ▪ covered in prescribed proxy amount (see examples below)—PPA is eligible for ITC. ▪ deductible as regular business expenses only—not deductible under 37(1)(*a*)
Other expenditures claimed separately: ▪ materials consumed or transformed in performing SR&ED ▪ lease costs of SR&ED equipment ▪ expenditures for SR&ED directly undertaken on your behalf ▪ third-party payments	▪ eligible for ITC ▪ deductible 37(1)(*a*)	▪ eligible for ITC ▪ deductible 37(1)(*a*)
The **proxy amount covers** overhead expenditures such as: ▪ office supplies ▪ general purpose office equipment ▪ heat, water, electricity, and telephones ▪ support staff salaries or wages ▪ travel and training ▪ property taxes ▪ maintenance and upkeep of SR&ED premises, facilities or equipment ▪ any other eligible expenditures directly related to the prosecution of SR&ED that you would not have incurred if the SR&ED had not occurred		



Summary of proxy inclusions:

Amounts included in the proxy amount:

Generally speaking, the proxy amount represents an allocation for administrative activities above (i.e. clerical support, accounting, SR&ED contract administration, purchasing, training or maintenance) as outlined.

Amounts NOT included in the proxy or traditional overhead amount:

Costs "prescribed" (ineligible) by Regulation 2902:

- Legal and audit
- Interest and bank charges
- Meals and entertainment
- Management bonus
- Amortization
- Administrative Salary
- Interest and share transfer fees
- Advertising or selling expense
- Conference or convention fees
- Due or fee for membership in a scientific or technical society or organization
- Fine or penalty charge

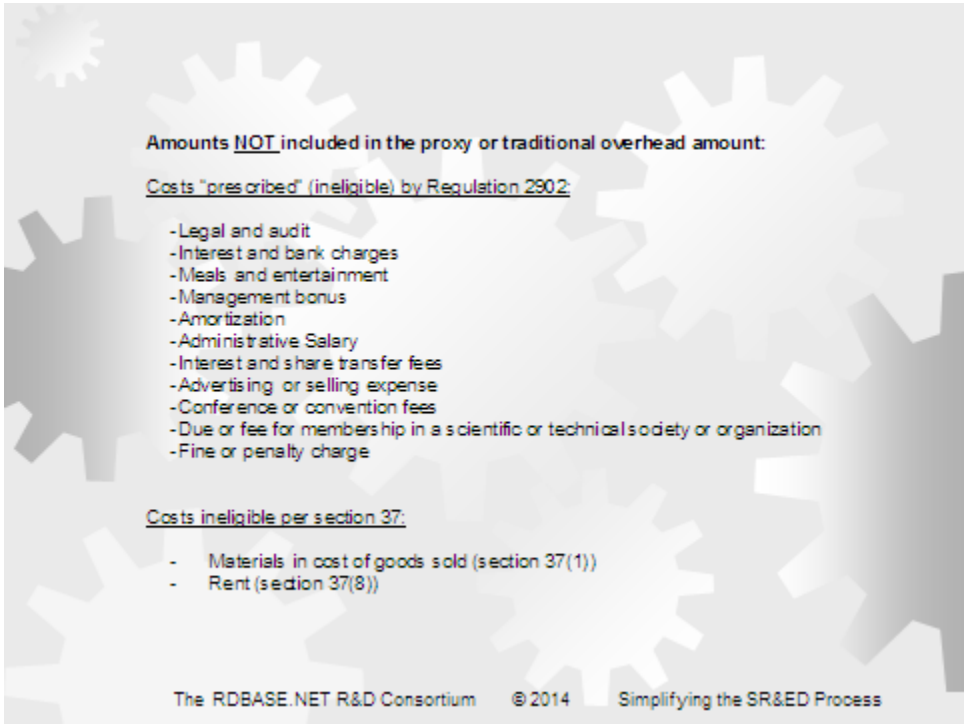
Costs ineligible per section 37:

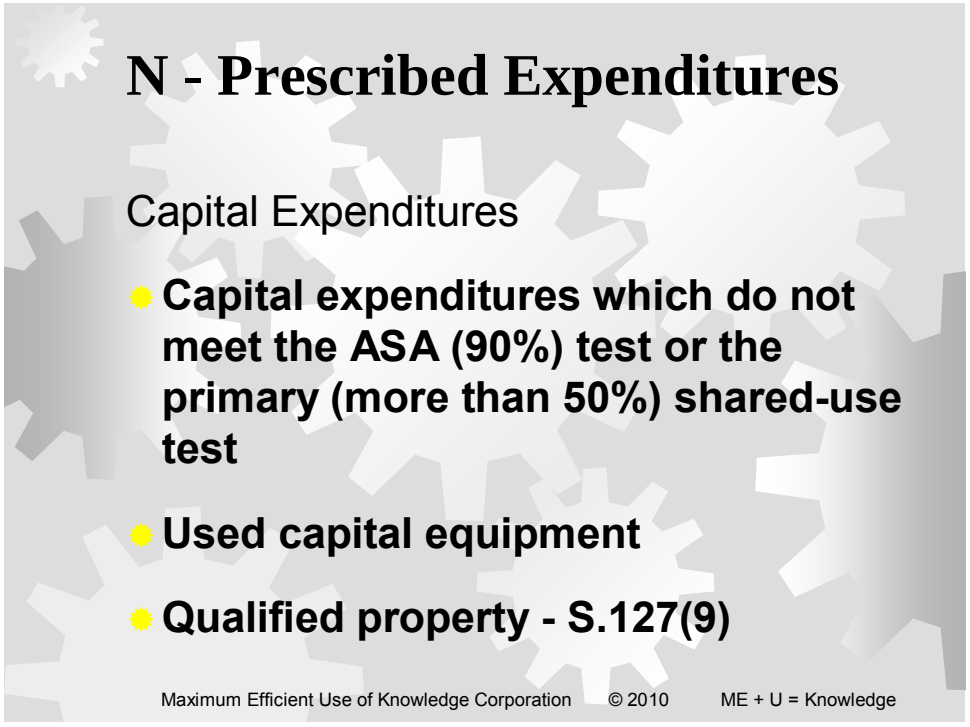
- Materials in cost of goods sold (section 37(1))
- Rent (section 37(8))

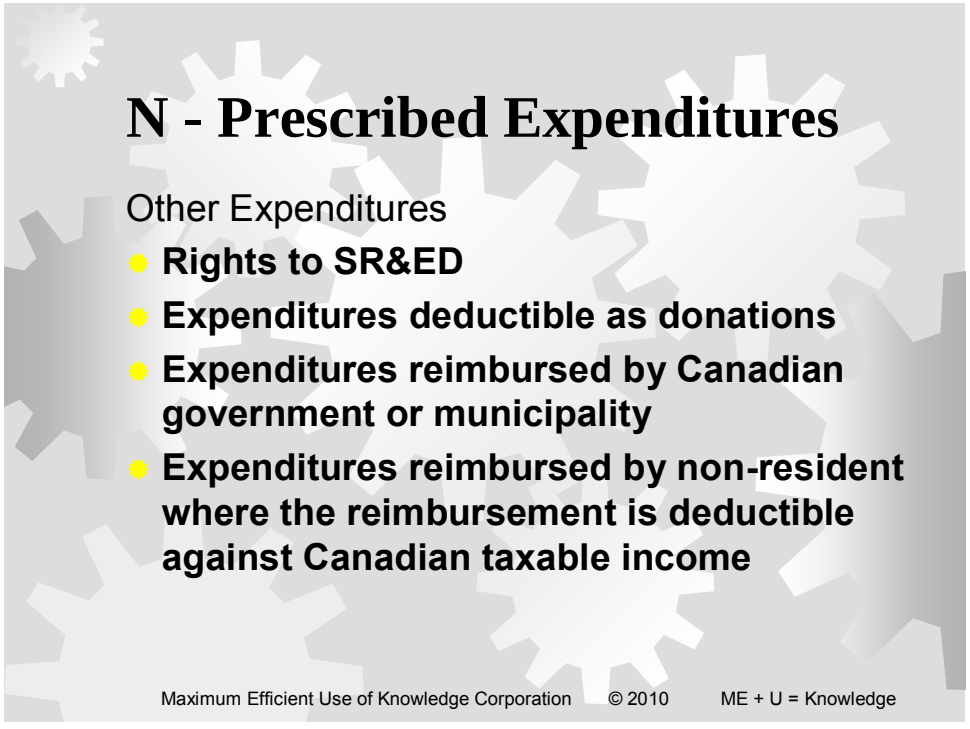
- Sales wages and expenses (non-SR&ED)
- Land or buildings (section 37(4))
- Rights to existing SR&ED (section 37(4))
- Foreign labour (section 37(2))

Recommendations for optimal allocations:

In the author's opinion, the requirement to continually link eligible activities to technical uncertainties underlines the importance of documenting the relevant support activities throughout the research process, rather than at year-end, via judgmental allocations.







N.4 Issue: timing of tax on proxy amount

N.4.1 Tax mechanics of issue: received vs. receivable

Several tax programs defer taxation of the "proxy portion" of the Ontario Innovation Tax Credit (OITC) and the new Ontario research and development tax credit (ORDTC) until the subsequent taxation year.

What the program and CRA are doing is reducing the current year's government assistance for the amount of assistance earned on the **Prescribed Proxy Amount (PPA)** and treating it as income the following year by making the adjustment on schedule 1.

In other word the **government assistance on the PPA is being treated as taxable only when actually received.**

N.4.1.1 CRA – APP 2000-3

The CRA has gone further in SR&ED Application Policy Paper SR&ED 2000-03 to state the following:

> "In determining the amount of assistance in the pool of deductible SR&ED expenditures the amount of provincial or territorial tax credits which relates to the PPA is not considered to be assistance that reduces the SR&ED allowable expenditures under paragraph 37(1)(d).
>
> As the PPA is not an expenditure under paragraphs 37(1)(a) or subparagraph (b)(i), but is a notional amount which is used in lieu of the actual overhead expenditures in the calculation of the ITC, the PPA is not added to the SR&ED expenditure pool.
>
> Consequently, the portion of the provincial or territorial tax credits which relates to the PPA should be included in income under section 9 or paragraph 12(1)(x) of the Act ..."

N.4.2 Legislative support for deferral

N.4.2.1 Income Tax Act

The amount is taxable under paragraph 12(1)(x) of the *Income Tax Act*. When reading this section and comparing it to the definition of government assistance under 127(9) there is a strikingly similar set of words:

> "… grant, subsidy, forgivable loan, **deduction from tax**, investment allowance, or any other form …" that is "… from a government, municipality, or other public authority…"

Therefore, government assistance is always taxable, but what about the timing of when it is taxable?

The amount taxable under 37(1)(d) as a reduction to expenditures is to be reported on the basis of

> "… at the taxpayer's filing-due date for the year, the taxpayer has received, is entitled to receive, or can reasonably be expected to receive,"

the government assistance on the expenditures. Therefore, the amount is included in income as it is earned, as it is based on the amount receivable.

However, the wording of 12(1)(x) states that

"… any particular **amount received** by the taxpayer in the year, in the course of earning income from a business or property, …"

The net result being that **government assistance on the PPA is only taxable when actually received.**

N.5 Results & filing implications / planning

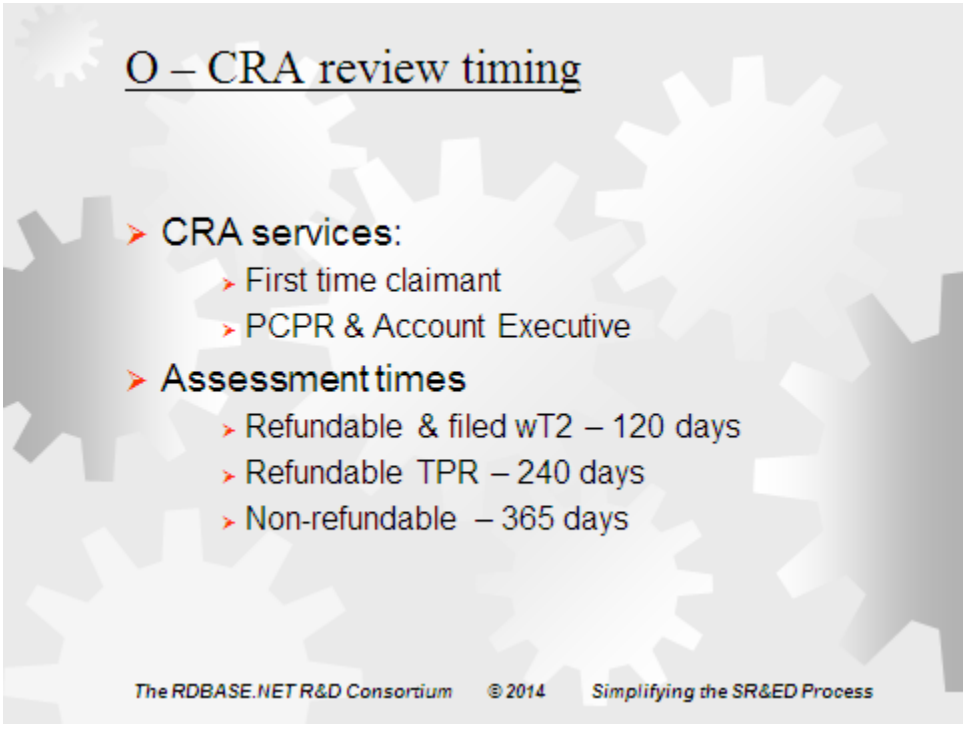
As previously stated, the government assistance on the PPA is only taxable when actually received. Note that the CRA and the **tax software will assume this amount is actually received the following year.** While this may not be the case (especially those that file their SR&ED claim close to the 18 month deadline)

Example:

- For a 2008 claimed filed in 2009
- the amount may not be received until fiscal 2010 or even 2011 and
- the company would be entitled to defer recognition of the proxy related ITC until this time!.

This could be a major advantage to a firm who had exceeded income limits to the extent it faced a partial phase out its enhanced Investment Tax Credits (ITC's).

o SR&ED – CRA assessment times & services



O.1 Some of the services available to SR&ED claimants

First-time claimant service - puts new claimants in contact with an SR&ED representative who can provide the information, tools, and assistance needed to complete an SR&ED claim.

Preclaim project review service - gives clients a preliminary opinion about the eligibility of a project.

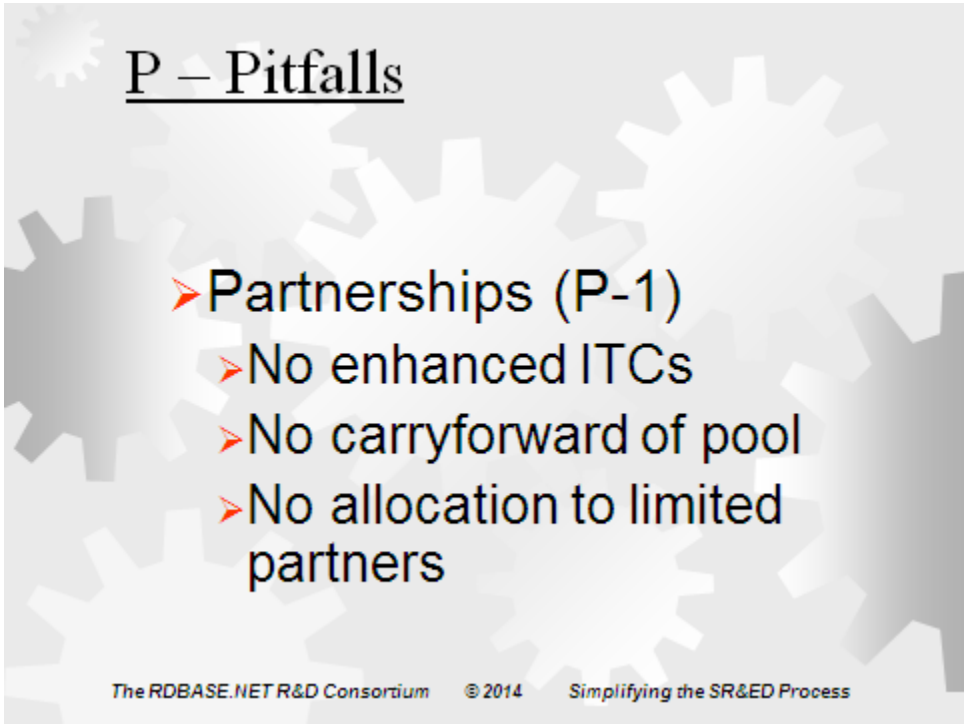
Account executive service - gives clients continuity and one-stop SR&ED information by assigning a designated contact person who can answer questions and give guidance on the SR&ED program.

O.2 Service standards – time for CRA to assess a claim

One of the goals of the SR&ED program is to process claims in a timely, consistent, and predictable way. To support timely processing, the CRA has established service standards and has succeeded in meeting these standards.

- **Current-year refundable claims** (applies to Canadian-controlled private corporations) will be processed within **120 days**, 90% of the time.
- **Client-requested adjustments** of refundable claims will be processed within **240 days**, 90% of the time.
- **Non-refundable claims** will be processed within **365 days**, 90% of the time.

P SR&ED tax pitfalls to avoid



P.1 Use of partnerships for SR&ED

P.1.1.1 Allocation of Investment Tax Credits must follow income allocations

The legislation provides for the allocation of the amount that may reasonably be considered to be a partner's share of the amount of investment tax credit of the partnership to a taxpayer that is a partner at the end of the fiscal period of the partnership. An allocation of investment tax credits is generally considered to be the partner's reasonable share of the investment tax credits if it is made in the same proportion in which the partners have agreed to share any income or loss[106].

P.1.1.2 No carry forward of the SR&ED expenditure pool

In calculating a partner's share of the income or loss of a partnership for a taxation year the legislation[107] requires that the partnership income for the year be calculated as if the amounts available in its pool of deductible SR&ED expenditures were deducted by the partnership. Consequently, a partnership is unable to carry forward SR&ED expenditures for deduction in a subsequent year.

P.1.1.3 No enhanced or refundable credits

As discussed in Section E, eligibility for enhanced and refundable credits is restricted to qualified corporations.

[106] As required per ITA subsection 127(8.1)
[107] under ITA paragraph 96(1)(*e*.1)

P.1.1.4 All allocations to limited partners denied

In addition, in calculating the share of a partnership loss that is deductible by a "specified member" of the partnership for a taxation year, any loss allocation must be reduced by any amounts deducted through the R&D expenditures pool[108] in calculating the partnership income[109] from that source or sources in a particular place. For this purpose, the term "specified member" of a partnership is a "limited partner" [110] at any time in the period or year.

The legislation does however, provide that the amount by which certain of the partnership investment tax credits exceeds the total of the amounts determined to be a limited partner's share of those investment tax credits can be reallocated to partners who were members of the partnership throughout its fiscal period and who were not limited partners during that fiscal period[111]. The amount that may be reallocated to a particular partner that was not a limited partner is the portion that is reasonable in the circumstances considering the partner's investment in the partnership, including debt obligations of the partnership.

To be considered actively engaged in the activities of a partnership, the CRA states, "a partner would normally be expected to contribute time, labour and attention to the business of the partnership to a sufficient extent that such contributions would be a determinant in the successful operation of the business."[112]

P.2 Partnerships - re-establishing entitlements to enhanced ITCs

Unlike corporations, partnerships are not provided with an ability to earn enhanced investment tax credits. This was illustrated in the **case of Allcolour Chemicals Ltd**.[113] where:
two companies, which would have each been eligible for enhanced credits, were denied this incentive because, they performed the work within a partnership.

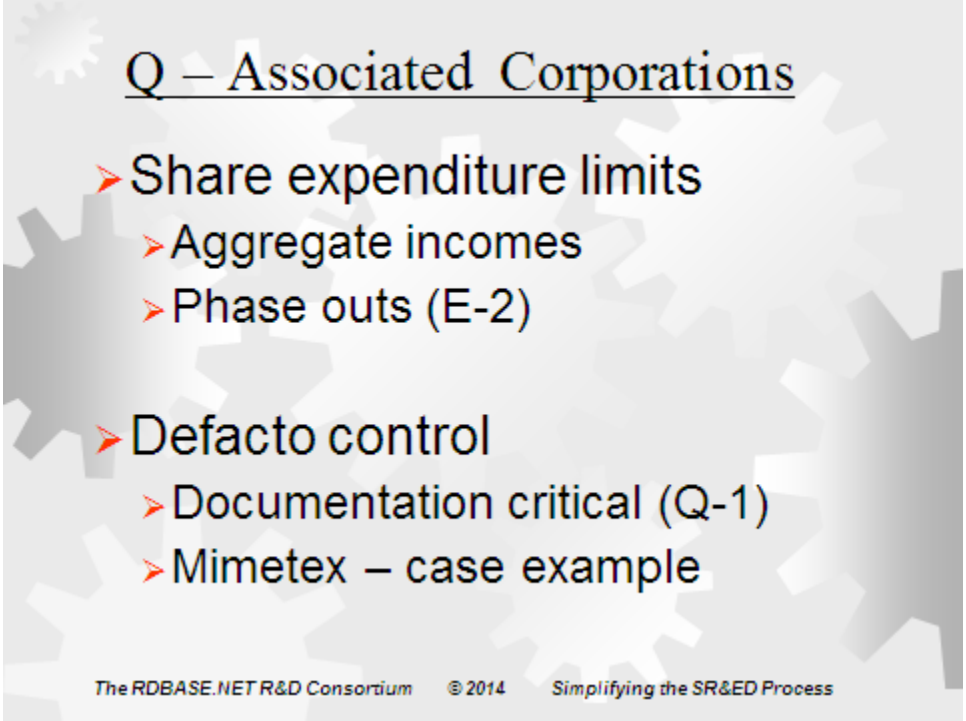
In general, three distinct legal requirements of a joint venture (as above) that required of a partnership are:

1) a joint legal interest in the properties in question,
2) a right to mutual control and management, and
3) a limitation of the objective to a limited timeframe or number of undertakings.

In the authors' opinion, if the transaction had been structured as a joint venture rather than a formal partnership these same costs may have been eligible for enhanced tax credits. Companies in position to form a potential partnership or joint venture should seek legal advice, while keeping in mind SR&ED tax implications.

[108] SR&ED expenditure pool as defined under section 37
[109] per ITA paragraph 96(1)(*g*)
[110] as defined in ITA subsection 96(2.4)
[111] as provided under ITA subsection 127(8.3)
[112] Interpretation Bulletin 151-R5, paragraph 95
[113] See Case of Allcolour Chemical Ltd. v. R [1993] 2 C.T.C 3050, D.T.C. 1194 (TCC)

Q Associated corporations must share SR&ED expenditure limits



The *Income Tax Act* generally deems that, where a shareholder owns greater than 50% of the fair market value of the capital shares of a company it will be deemed to control it. If a person owns more than one company in this fashion the companies will be associated for taxation purposes. This association umbrella can be extended wherever related persons each control corporations and there is 25% cross-ownership of shares in either direction.

Since associated companies are required to share the various business[114] and expenditure[115] limits for reduced taxes and enhanced SR&ED incentives respectively, the legislation also allows rents received by an associated company to be deemed active rather than passive income. An example of the effects of association on the SR&ED expenditure limits is illustrated in Parts 8 & 9 of Federal Tax Schedule 31 (see working papers T-2.1).

Q.1.1 Additional guidelines & factors to consider in evaluating defacto control

The CRA states that, "de facto control consists of all forms other than de jure control, by which a person may exercise control over a corporation." and provides the following examples:

Major factors:

1) The ability to change the Board of Directors or reverse its decisions,

2) Making alternative decisions concerning the actions of the corporation in the short, medium or long term,

[114] Business limit defined per ITA subsection 125(3)
[115] SR&ED Expenditure limit defined per ITA subsection 127(10.2)

3) The ability to directly or indirectly terminate the corporation or its business, or

4) The ability to appropriate its profits and property.

Additional general factors:

a) The percentage ownership of voting shares in relation to the holdings of other shareholders,

b) Ownership of a large debt or retractable preferred shares,

c) Shareholder agreements including the holding of a casting vote,

d) Commercial or contractual relationships of the corporation, for example, economic dependence on a single customer or supplier,

e) Possession of a unique expertise that is required to operate the business, and

f) The influence that a family member who is a shareholder, creditor, supplier, etc. may have over another family member who is a shareholder of the corporation.

Q.1.2 Implications to corporate structure

This example illustrates that there are considerable pitfalls and potential opportunities to structuring ventures with foreign shareholders, public companies and other companies in a manner that maintains CCPC status and eligibility for enhanced tax credits. Some of the related opportunities are discussed further in the next section.

Q.2 Mimetex Pharmaceuticals Inc. vs. The Queen[116]

Facts:

During the year in question, Mimetix (a foreign corporation) owned 50 common shares in the capital stock of the appellant, and two Canadian residents, who were also directors, owned 25 common shares each.

There were three directors elected to the Board, one a U.S. resident and the other two Canadians.

Q.2.1 Issue(s): "de facto" control

Both parties agreed that no one had "de jure" (voting) control over the appellant. The issue is rather whether the appellant was controlled in fact, directly or indirectly in any manner whatever, by a non-resident. In other words, it has to be determined whether the non-resident corporation Mimetix Inc. ("Mimetix"), which owned 50 per cent of the voting shares of the appellant in 1996, exercised "de facto" control over the Canadian company.

The CRA's council pointed out that;

- The two Canadian directors, who, according to the appellant's argument, were supposed to control the appellant, in fact knew almost nothing about the appellant (for example one did not know at the time of his examination for discovery how many employees were working for the appellant, who had signing authority for the appellant, etc.).

[116] (TCC) Docket: 1999-4847-IT-G Date: 2001/11/08

- Mimetix had financial control over the appellant and had a controlling influence over the appellant's affairs. This is best illustrated, in his view, by the fact that a Canadian director of the appellant, had to leave following a conflict with another U.S. doctor, who was not a shareholder, director or officer of the appellant, but was hired by the U.S. director on his own decision, without any resolution of the board of directors.

Relevant legislation and analysis:

De facto control within the meaning of subsection 256(5.1) of the Act which reads as follows:

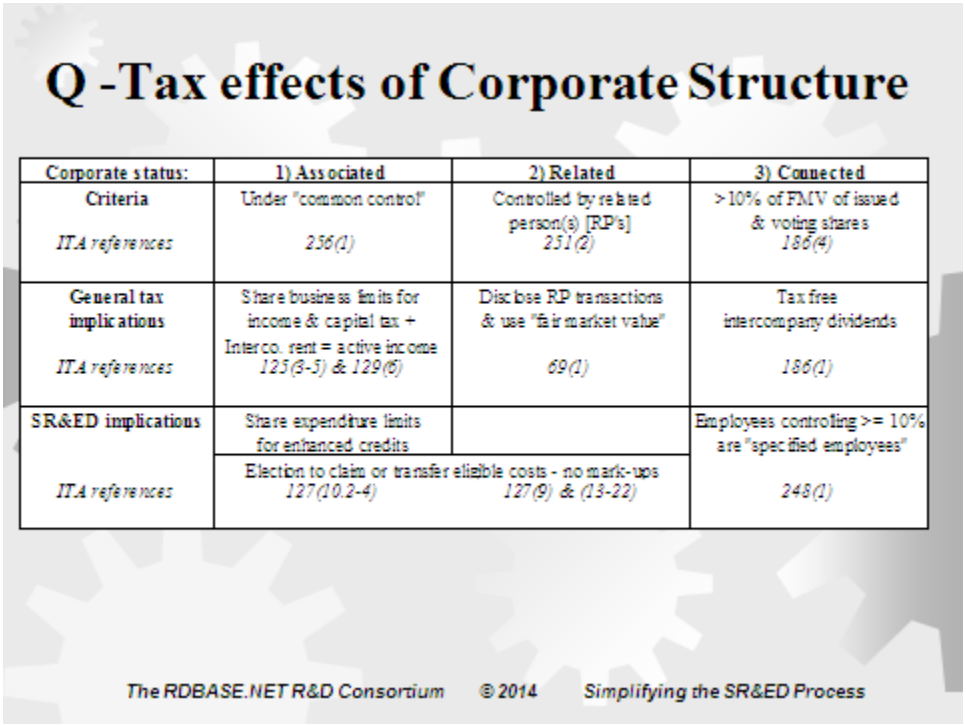
> "Control in fact. …, a corporation shall be considered to be so controlled by another corporation, person or group of persons (in this subsection referred to as the "controller") at any time where, at that time, **the controller has any direct or indirect influence that, if exercised, would result in control in fact of the corporation, except** that, where the corporation and the controller are dealing with each other at arm's length and
>
> the influence is derived from a franchise, license, lease, distribution, supply or management agreement or other similar agreement or arrangement, the main purpose of which is to govern the relationship between the corporation and the controller regarding the manner in which a business carried on by the corporation is to be conducted.."

Ruling and rationale:
Based on the facts provided, the judge concluded that,

> **"Indeed the evidence discloses that the only director that exercised such control and supervision was the non-resident director…<u>without</u> the approval of the board of directors."**

Implications and author's commentary
In the author's opinion this case underlines the importance of clearly considering "de facto" control issues whenever there are foreign shareholders or directors of a Qualified Canadian Controlled Private Corporation.

Q.3 Organizing corporate ownership and structures to optimise credits



Q.3.1 1) "Associated" corporations

The Income Tax Act generally deems that, where a shareholder owns greater than 50% of the fair market value of the capital shares of a company it will be deemed to control it.[117] If a person owns more than one company in this fashion the companies will be "associated" for taxation purposes. This "association" umbrella can be extended wherever "related persons"[118] each control corporations and there is 25% cross-ownership of shares in either direction[119].

Control of a corporation generally exists by reason of the ability to elect a majority of the directors of the corporation - *dejure* control. The concept of control also includes what is often referred to as *de facto* control. An example of *defacto* control might be a situation where a person held 49 per cent of the voting control of a corporation but held enough "other influence" so that the shareholder could force the corporation to act in accordance with his or her wishes.

"Whether a person can be said to be in actual control of a corporation, notwithstanding that he does not legally control more than 50 per cent of its voting shares, will depend in each case on all of the circumstances."[120]

In the authors' experience, and as illustrated in the previous case analysis of CDD-Rem, misunderstandings of the association and control "rules" and implications are common.

Since "associated" companies are required to share the various business[121] and expenditure[122] limits, for reduced taxes and enhanced SR&ED incentives respectively,

[117] Definition of control per ITA subparagraph 256(1.2)(c)(i)
[118] Related persons defined per ITA subsection 251(2) – includes parents, in-laws & siblings
[119] Definition of "Associated corporations" per ITA paragraphs 256(1)(c to e)
[120] Department of Finance technical notes to subsection 256(5.1)

the legislation also allows rents received by an associated company to be deemed "active" rather than passive income.

As a result, many readers will be familiar with the classic "creditor proofing" organizational structure in which a parent, "holding company," owns the land and building of the "operating companies."

Q.3.2 2) "Related" corporations

Determination of whether corporations and subcontractors are dealing at "arm's length," requires an examination of the inter-relationship of several different terms within the income tax act:

Arms length:

> "Related persons shall be deemed not to deal with each other at arms length"[123]

Related persons include:

> "Individuals connected by blood relationship, marriage or adoption …. and any two corporations [controlled by related persons]"[124]

Blood relationship,

> "the child or other descendants … or brother or sister .. or, if one is married to the other or to a person who is so connected by the blood relationship to the other…" [125]

In more simple terms the term blood relationship generally includes parents, grandparents, brothers, sisters and in-laws however; it does not specifically include cousins, nieces and nephews.

Q.3.2.1 Non-Arm's Length (related party) Contract Payments

The SR&ED claim requires that you distinguish between "arm's length" contractors and "non-arm's length" contractors. In general terms, "non-arm's length" contractors are those who are controlled by the same "person" or "related group of persons" as described above.

Effective for taxation years that begin after 1995, expenditures you incur for SR&ED performed on your behalf by a performer at a time when you and the performer do not deal with each other at arm's length are not "immediately" qualified expenditures for ITC purposes.[126] However, the performer can elect to claim or transfer the actual qualified expenditures incurred.[127] This prevents the company from unfairly marking up the costs on "non-arm's length" transactions.

---

[121] Business limit defined per ITA subsection 125(3)
[122] SR&ED Expenditure limit defined per ITA subsection 127(10.2)
[123] as defined in ITA subsection 251(1)
[124] as defined in ITA paragraphs 251(2)(a) & (c)
[125] as defined in ITA subsection 251(6)
[126] ITA paragraph 127(9)(f) in the definition of "qualified expenditures"
[127] form T1146 – ITA subsection 127(13)

Q.3.3 3) "Connected" corporations

Typically, corporations will be, "connected," when one owns >10% of the fair market value of the shares in another. [128] This will result in an ability pay inter-company dividends in a tax-free manner.[129]

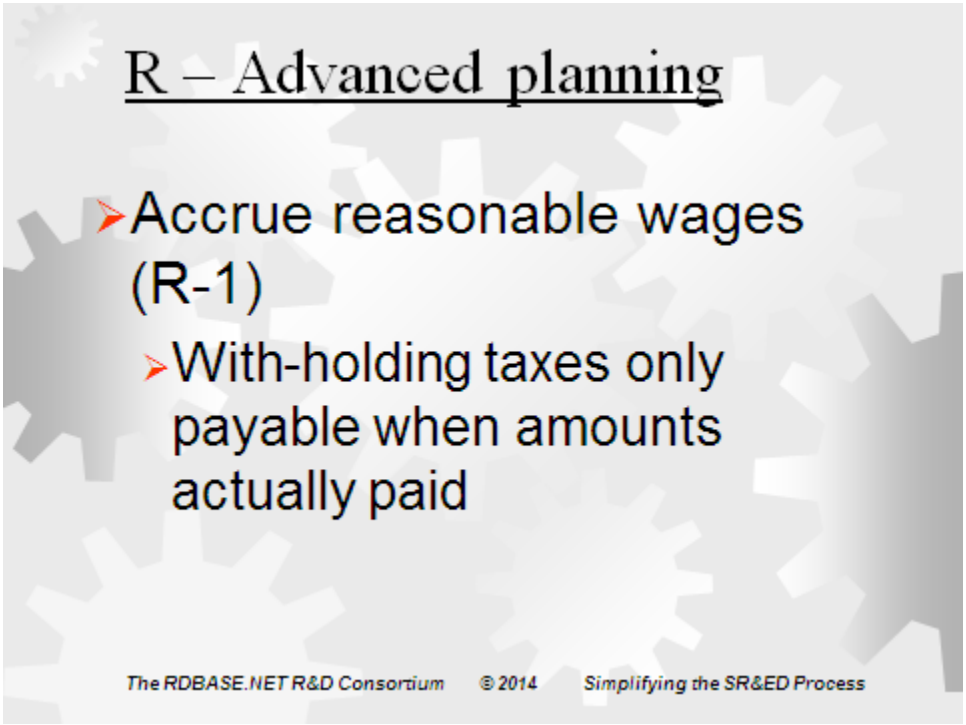
Though there are no other, significant, SR&ED tax implications resulting from corporations having "connected" status, further analysis of such "entities" may uncover the existence of "specified employees."

Generally, this is any employee who (directly or indirectly) owns 10% or more of any class of stock of the company. Further analysis of the "specified employee" rules and implications are outlined in the, "SR&ED strategies – eligible wages," section of this newsletter.

Q.3.3.1 Summary and implications

In our experience, advance contemplation of these simple relationships is an important step in developing the "perfect" structure for your organization.

[128] as defined in ITA subsection 186(4)
[129] exclusion from Part IV tax per ITA section 186



R Advanced SR&ED tax planning issues

R.1 Accruing reasonable R&D wages when cash strapped

Cash strapped companies may wish to accrue reasonable salary & wages to employees working for no remuneration.

Sample facts

A business owner performs eligible SR&ED work on his company's behalf but does not have the funds available to pay himself a reasonable salary for the work performed. The business owner estimates that his normal salary for this work would have been $100,000.

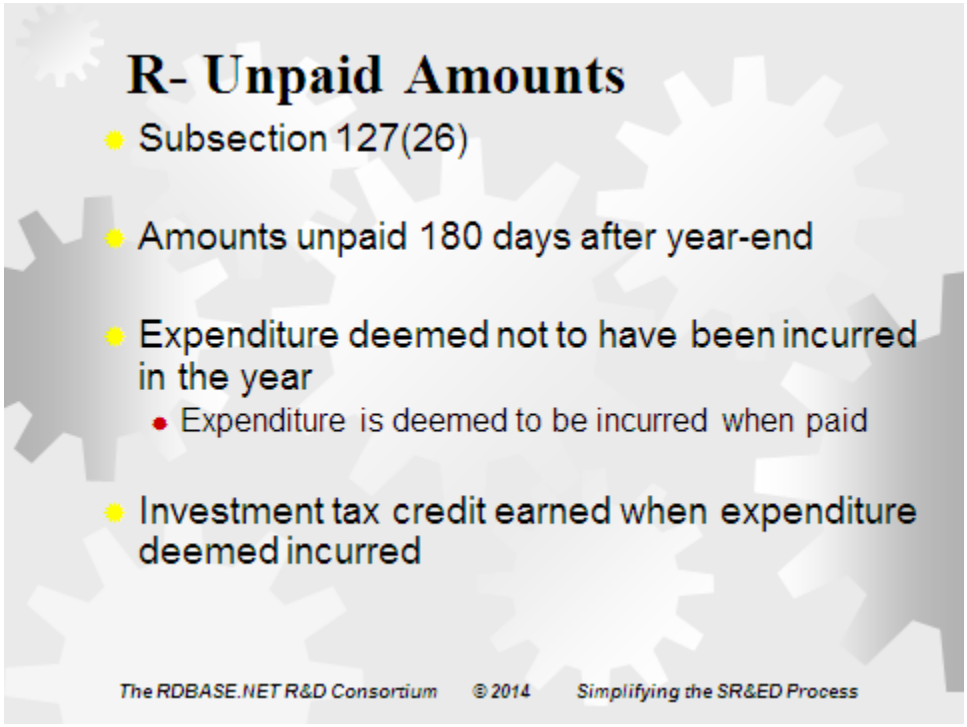
SR&ED claim = Accrual of reasonable subcontractor fees in year performed

The taxpayer must assert that subcontractor costs have been **incurred** in the year due to the nature of the work. It is important that the taxpayer claims this work during the year in question to avoid missing the 18 month filing deadline[130] for SR&ED costs. In this case we would try to accrue reasonable, non-arm's-length salary costs (i.e. $100,000) related to the current year's work.

Effect of this position

There is a provision in the SR&ED legislation, which (temporarily) denies an investment tax credit for any costs, which remained unpaid within 180 days of year-end[131]. These costs will be audited in the current year and a conclusion will be made on their reasonableness however, investment tax credits will be paid on these amounts only in the years in which they are actually paid.

[130] ITA subsection 37(11) requires any SR&ED claims to be filed in prescribed form within 18 months of year-end
[131] ITA subsection 78(4) denies ITCs on amounts until taxation year in which paid



Furthermore, if this transaction is properly structured, **employees will not have to pay tax on wages until they are received.** [132]

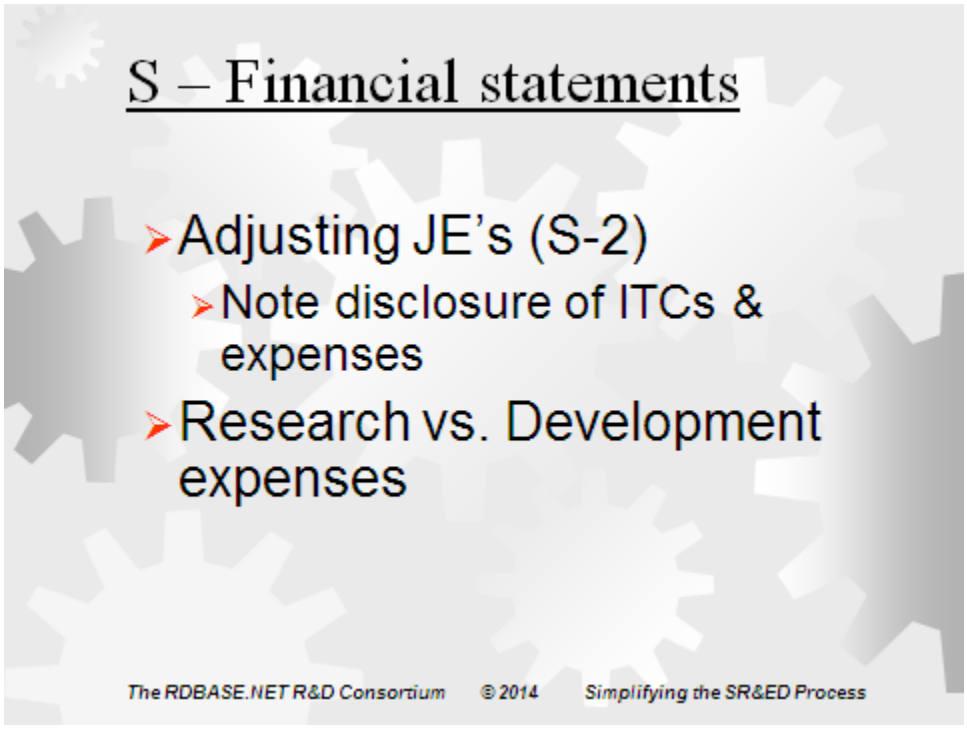
Note: It is important to structure payments to specified shareholders as salaries rather than bonuses, for them to be eligible for SR&ED credits. Also, accrued wages are not included when calculating proxy overhead.

Notable Quote:

"When all think alike, then no one is thinking."
- Walter Lipmann

[132] ITA subsection 5(1) only taxes employees on income "received" during the year

S Financial statement considerations



A.1 Overview of Canadian financial statement requirements when claiming SR&ED tax credits

This section overview issues for preparers of financial statements to follow Canadian generally accepted accounting principles or GAAP". Where appropriate we have attempted to provide cross-references to sections of the *CICA*[133] *Handbook*, which outlines these guidelines. Note: different rules may apply if the company is reporting under U.S. GAAP or IFRS.

S.1.1 Notes regarding SR&ED adjusting journal entries

In order for the financial statements to meet the criteria for Canadian GAAP (Generally Accepted Accounting Principles) at year-end, adjusting entries may be required.

S.2 Sample financial statement adjusting journal entry

A note to the financial statements[134] should indicate the amount recognized for SR&ED investment tax credits in the current year and reduce the related research (current) or development (capital) expenses.

Please also note that generally accepted accounting principles (GAAP) require that the research (as well as development) expenses be separately disclosed in the financial statements. An appropriate adjusting entry would be:

[133] Canadian Institute of Chartered Accountants
[134] *CICA Handbook* section 3450

AJE #	WP Ref.					
1	T-0	DR	Investment Tax Credit recoverable	current CRA	235,795	
		DR	Investment Tax Credit recoverable	current Ontario	88,600	
		DR	Investment Tax Credit recoverable	non-current CRA	3,024	
		DR	Investment Tax Credit recoverable	non-current CRA	35,775	
		CR	Capital assets (computer hardware)			6,240
		CR	Tax Provision			356,954
					363,194	363,194
			To recognize research and development related ITC's			

CICA Handbook section 3450 recommends that a note to the financial statements indicate the amount recognized for SR&ED investment tax credits in the current year and reduce the related research (current) or development (capital) expenses.

Potential note disclosure: Note X – Research & Development

Research and development costs incurred during the year and charged to expense amounted to $ 780,000 (prior year $XXX,XXX) and have been reduced by related investment tax credits of $ 356,954 (prior year $ XXX,XXX). The cost accumulations follow the definition of scientific research and experimental development as provided in the Income Tax Act. No development costs were deferred in the current year.

Notable quote:

"There is no reason anyone would want a computer in their home."
- Ken Olson, president, chairman and founder of Digital Equipment Corp., 1977

S.3 Research vs. development costs:

There are several specific journal entries recommended by *CICA Handbook*[135] regarding research expenses regarding disclosure of research vs. development expenses.

- Research costs are a period expense, which means that they are expensed in the year in which they occur.

- Development costs can also be period expenses, however, when these costs meet all of the following GAAP (Generally Accepted Accounting Principles) criteria, **development costs are always capitalized and amortized** over the expected earning stream of the product or process:

  (1) The product is clearly defined and the costs attributable to it can be identified
  (2) The technical feasibility of the product has been established
  (3) Management has indicated an intention to produce and market the products being developed
  (4) Management has been able to identify a market for the products being developed
  (5) Management has indicated that adequate financial resources are expected to be available to complete products being developed.

In the **current case study we have assumed that one or more of these criteria were NOT met at the fiscal year-end**. If they had been met, we would be required to estimate the expected earnings stream of the process and amortize these costs over the respective earnings period.

Generally accepted accounting principles (GAAP) typically require that costs be matched to their expected earnings streams. With respect to research expenses, the criteria to be used in determining the respective "earnings streams" are specifically outlined (CICA Handbook section 3450.21).

When, at year end, the "research asset" created meets all five of the following criteria all research costs **MUST BE** capitalized as "development costs" and amortized over their expected revenue streams.

Capital tax implications of the above treatment:

Federal capital taxes will impose a 0.225% tax on any “taxable capital” of the corporation in excess of $10 million. In many provinces (including Ontario) the definition of “taxable capital” provides for a deduction of amounts (such as SR&ED expenses) which are deducted for tax purposes but capitalized in the financial statements. Unfortunately, the Federal capital tax calculation (Federal Tax Schedule 33) provides no similar deduction for “development costs” from the calculation of taxable capital.

Implications to management and financial statement preparers:

As a result of the capital tax “problem” management is motivated to argue that perhaps one or more of the criteria were not present. Given the judgements involved as to whether “markets are clearly defined” or “management’s intentions are clear” many companies (and their auditors) feel justified in expensing these **balances in all cases**!

[135] Canadian Institute of Chartered Accountants handbook - section 3805

In the author's opinion, the results of this scenario are;

1. Most public companies financial statements have potential "GAAP" deviations by failing to capitalize these development costs.
2. As a result of this "general tendency" or "standard practice" for public companies, it has been my experience that most bankers **(including those specialized in technology lending!)** do not understand the entire concept of development costs. If presented with these costs on the financial statements they often ask for any explanation of the entire concept rather than merely the composition of the account!

Implications of the current scenario on shareholders:

As an investor in a technology based company, the principal value of the investment is likely attributable to the technologies developed to date rather than the value of tangible assets (i.e. furniture and computer equipment) disclosed on the financial statements. If the statements indicate that expenses were research rather than development the financial statement user may be mislead into assuming that work to date was not "successful" when in fact it was. They may in turn, perhaps justifiably, sue management and the auditor of the company for misrepresentation in cases where they sold the stock without the benefit of this knowledge.

As a result, in the author's opinion**, the entire capital market for investing in technology based companies in Canada is inefficient**: in other words, investors are required to seek additional information on the company's products and processes since this information is NOT being disclosed in the financial statements (as originally intended under GAAP).

Solution(s) to this problem:

1) A simple "legislative" solution to this problem would be to allow a deduction for development costs (particularly to the extent that any were eligible SR&ED) for the purposes of calculating taxable capital for Federal purposes. This may alleviate what I see to be a significant "generic" problem in accounting for technology based companies.

2) In the author's opinion, the larger problem of teaching users of the financial statement to understand the true value of the "development cost" balances will take significantly more time and effort but is worth the "pain."

S.4 Identifying and valuing development costs

S.4.1 Development vs. research expenses

Canadian "generally accepted accounting principles" (GAAP) require that costs be matched to their expected earnings streams.

With respect to "research" expenses, there are several criteria to be used in determining the respective "earnings streams" of the resultant products or processes.

When, at year end, the "research asset" created meets all five of the following criteria all research costs MUST BE capitalized as "development costs" and amortized over their expected revenue streams.

(a) the **product** is clearly **defined and the costs** attributable to it can be identified;

(b) the **technical feasibility** of the product has been established;

(c) management has indicated an **intention to produce** and market the products resulting from each project;

(d) management has been able to **identify a market** for the products resulting;

(e) management has indicated that **adequate financial resources** are expected to be available to complete the project.

S.4.2 Implications to financial statement readers:

As an investor in a technology based company, the principal value of the investment is likely attributable to the technologies developed to date rather than the value of tangible assets (i.e. furniture and computer equipment) disclosed on the financial statements.

If the statements indicate that expenses were research rather than development the financial statement user may be mislead into assuming that work to date was not "successful" when in fact it was.

They may in turn, perhaps justifiably, sue management and the auditor of the company for misrepresentation in cases where they sold the stock without the benefit of this knowledge.

As a result, in the author's opinion, the entire **capital market** for investing in **technology based companies** in Canada is **inefficient**: in other words,

- investors are required to seek additional information on the company's products and processes since,

- this information is NOT being disclosed in the financial statements (as originally intended under GAAP).

S.4.2.1 Example of Development cost disclosure in Financial statements (F/S's)

In particular the **preparers of the SR&ED claims** are in an excellent position to provide further **guidance** to management on **which projects** in question have met the **"technical feasibility"** criteria and therefore should be considered for disclosure as "development costs" in the financial statements.

An example of how a company might then capitalize and amortize development costs is provided in the following schedule (next page).

S.4.2.2 Step 1: Determining if technology capitalization criteria met

Universal Research Corporation
Identification of development vs. research costs for financial statement disclosure
for the fiscal year ended December 31, 2009

					Capitalization criteria per CICA handbook section 3450.21 *					
Project #:	Name:	start	end	Net costs to date @ Dec. 31, 2009:	1) product defined & costs identified	2) technical feasibility established at year end	3) mgmt. intent to market the product	4) future market clearly defined	5) adequate resources exist to bring to market	Devel. Cost (Y / N)?
901	Widget development	Jan-08	Jun-10	$315,582	Y	Y	Y	Y	Y	Y
902	Widget improvement	Jan-09	Aug-10	$24,131	Y	Y	Y	Y	Y	Y

Notes:
* - MUST capitalize & amortize costs if ALL 5 "development cost" capitalization criteria have been met at year end.
This is performed EACH taxation year. In this example, project 901 had met the criteria for both the 2008 and 2009 taxation years

S.4.2.3 Step 2: F/S disclosure of technology "development costs"

Project / product	Amount	Total Cost	Year	ITC on expenses*	Total capitalized cost*	Amortization start	Amortization rate**	Amortization Accumulated Amortz'n2009	NBV 2009
901 Widget development	$66,000	$66,000	2008	$27,390	$38,610	2008	20.00%	$7,722	
	$512,000	$578,000	2009	$212,480	$404,130	2009	20.00%	$80,826	$315,582
902 Widget improvement	$55,000	$55,000	2009	$22,825	$32,175	2009	25.00%	$8,044	$24,131
Totals	$633,000	$699,000		$262,695	$474,915			$96,592	$339,713

Notes:
* The capitalized costs should be net of related grants &/or SR&ED investment tax credits on this research
** Amortization rate - straight line over estimated economic life of the technology (5 years) with NO half year provision

S.4.3 Results & implications to F/S users:

In the case above the company would have:

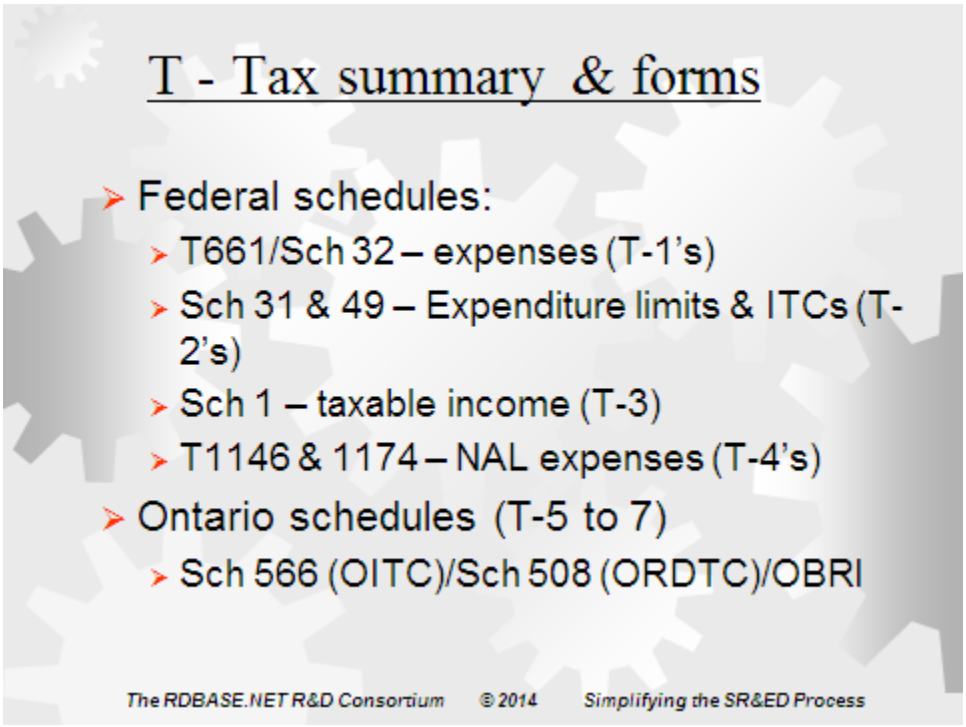
- the net book value (NBV) of these development costs
- disclosed on the balance sheet (i.e. as an asset)
- rather than in the "retained earnings" of the company.

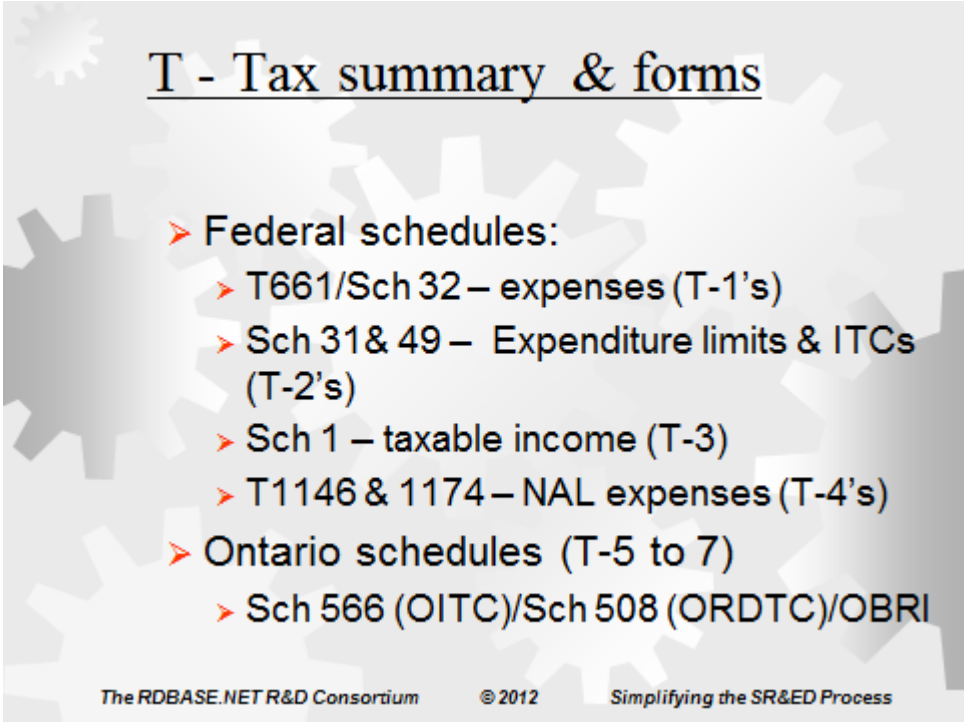
In the author's view this will allow users to ask questions such as:

- Does the world need this widget (i.e. demand)?
- What advantage does this technology represent in the marketplace &
- How much is it worth?

T Tax Summary & Completed tax forms – cross-referenced to supporting schedules

Tax credit overview





T.1 Federal forms: T661 (Schedule 32) identification of SR&ED expenses

T.2 Schedule 31- Calculation of investment tax credits

T.3 Form T2S(1): Reconciliation of financial statement & daxable incomes

T.4 Non-arm's-length transfer forms

T.5 Sch. 566 Ontario innovation tax credit (OITC)

T.6 Sch. 508 Ontario Research & Development Tax Credit (ORDTC)

Tax Credit Overview

				Expense type				
I	**Eligible Expenses: for deduction**			**Current**	**Capital**	**Total**		**Notes**
								T-0.1
	Labour			400,000				
	Materials	***D-0***		25,000				
	Subcontractors - Arm's length			35,000				
	- Non-arm's length			10,000				
	Traditional Overhead			-				
	Third-party Payments			50,000				
				520,000	***T-3***			I-A
	ASA R&D Capital	***D-0***			15,000			I-B
	Eligible (deductible) R&D Expenses					535,000		
II	**Qualified Expenses: for calcuation of ITC's**							
	Add							
	Proxy (overhead allocation) if elected	***T-1.8***		240,001	-			
	Qualified expenditures transferred (T1146)	***T-4.1***		10,000				
	Shared Use Equipment Allocation (SUE)			-	-			
	Less							
	non-arms letnth contracts			(10,000)				
	non eligibel subcontractor fees (20%)			(17,000)				
	Used equipment & other prescribed expenses			-	-			
	Qualified Expenditures for SR&ED ITC			743,000	15,000	758,000		II-A
	Credits:			**Current**	**Capital**	**Total**	% refundable	
III	Ontario Innovation Tax Credit (OITC)							
	Current Expenditures (10%)			74,300	-		100%	III-A
	Capital expenses - ASA SR&ED (4%)			-	600		100%	III-A
	Total Ontario Innovation Tax Credit (OITC)					74,900		
	Ontario R&D Tax Credit (ORDTC) (4.5%)			30,740		30,740	0%	
	Ontario Business Research Institute Credit (OBRI)						→	***to T-1.3***
	Ontario University Payments (20%)	***T-7***		8,000	-	8,000	100%	
	Qualified Expenditures for Federal SR&ED ITC			629,961	14,400	644,361		III-A
IV	Federal Investment Tax Credit Earned (35%)							
	Current Expenditures (35%)	***T-2.2***		220,486	-		100%	III-B
	Capital expenses - ASA SR&ED (35%)			-	5,040		40%	III-B
	Total Federal Investment Tax Credit			220,486	5,040	225,526	*	
	Expected Investment Tax Credit refunds		CRA	220,486	2,016	222,502		
			Ont.	82,300	600	82,900		
	Investment Tax Credit carryforward		CRA		3,024	3,024		
		T-2.2	Ont.	30,740		30,740		
	Total Investment Tax Credits earned			333,526	5,640	339,166	50,875	
					S-1	***J-0 / S-1***		
V	**After tax cost of I.T.C**							
	ITC's earned = eventual taxable income			339,166				
	Tax Effect - Federal taxes @ 13.1%			(44,431)				
	Provincial taxes @ 5.5%			(18,654)				
	Net Taxes Saved			276,081				V

(See accompanying notes ***T-0.1*** to this Tax Credit Overview)

Corporate Taxpayer Summary

Corporate information

Corporation's name . . . . . MEUK Corporation

Taxation Year . . . . . 2013-01-01 to 2013-12-31

Jurisdiction . . . . . Ontario

BC	AB	SK	MB	ON	QC	NB	NS	NO	PE	NL	XO	YT	NT	NU	OC
☐	☐	☐	☐	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Corporation is associated . . . . . N

Corporation is related . . . . . N

Number of associated corporations . . .

Type of corporation . . . . . Canadian-Controlled Private Corporation

Total amount due (refund) federal and provincial* . . . . . -305,402

* The amounts displayed on lines "Total amount due (refund) federal and provincial" are all listed in the help. Press F1 to consult the context-sensative help.

Summary of federal information

Net income	1
Taxable income	1
Donations	
Calculation of income from an active business carried on in Canada	1
Dividends paid	
Dividends paid – Regular	
Dividends paid – Eligible	
Balance of the low rate income pool at the end of the previous year	
Balance of the low rate income pool at the end of the year	
Balance of the general rate income pool at the end of the previous year	
Balance of the general rate income pool at the end of the year	
Part I tax (base amount)	

Credits against part I tax		Summary of tax		Refunds/credits	
Small business deduction		Part I		ITC refund	222,502
M&P deduction		Part IV		Dividends refund	
Foreign tax credit		Part III.1		Instalments	
Investment tax credits		Other*		Surtax credit	
Abatement/Other*		Provincial or territorial tax		Other*	82,900

Balance due/refund (–) -305,402

* The amounts displayed on lines "Other" are all listed in the Help. Press F1 to consult the context-sensitive help.

Summary of federal carryforward/carryback information

Carryforward balances

Investment tax credits	3,024
Current year's balance of SR&ED expenditures (T661)	17,860

Summary of provincial information – provincial income tax payable

	Ontario	Québec (CO-17)	Alberta (AT1)
Net income	1		
Taxable income	1		
% Allocation	100.00		
Attributed taxable income	1		
Tax payable before deduction*			
Deductions and credits			
Net tax payable			
Attributed taxable capital	N/A		N/A
Capital tax payable**	N/A		N/A
Total tax payable***			
Instalments and refundable credits	82,900		
Balance due/Refund (-)	-82,900		
Logging tax payable (COZ-1179)			
Tax payable	N/A		N/A

* For Québec, this includes special taxes.

** For Québec, this includes compensation tax and registration fee.

*** For Ontario, this includes the corporate minimum tax, the Crown royalties' additional tax, the transitional tax debit, the recaptured research and development tax credit and the special additional tax debit on life insurance corporations. The Balance due/Refund is included in the federal Balance due/refund.

Summary of provincial carryforward amounts

Other carryforward amounts

Ontario

Ontario research and development tax credit – Schedule 508	30,740

Summary – taxable capital

Federal

Corporate name	Taxable capital used to calculate the business limit reduction (T2, line 415)	Taxable capital used to calculate the SR&ED expenditure limit for a CCPC (Schedules 31 and 49)	Taxable capital used to calculate line 233 of the T2 return	Taxable capital used to calculate line 234 of the T2 return
MEUK Corporation				
Total				

Québec

Corporate name	Paid-up capital used to calculate the Québec business limit reduction (CO-771 and CO-771.1.3)	Paid-up capital used to calculate the tax credit for investment (CO-1029.8.36.IN)	Paid-up capital used to calculate the 1 million deduction (CO-1137.A and CO-1137.E)
Total			

Ontario

Corporate name	Specified capital used to calculate the expenditure limit – Ontario innovation tax credit (Schedule 566)
MEUK Corporation	
Total	

Other provinces

Corporate name	Capital used to calculate the Newfoundland and Labrador capital deduction on financial institutions (Schedule 306)	Taxable capital used to calculate the Nova Scotia capital deduction on large corporations (Schedule 343)
Total		

Canada Revenue Agency | Agence du revenu du Canada

Code 1301

SCIENTIFIC RESEARCH AND EXPERIMENTAL DEVELOPMENT (SR&ED) EXPENDITURES CLAIM

Use this form:

- to provide technical information on your SR&ED projects;
- to calculate your SR&ED expenditures; and
- to calculate your qualified SR&ED expenditures for investment tax credits (ITC).

To claim an ITC, use either:

- Schedule T2SCH31, *Investment Tax Credit – Corporations*, or
- Form T2038(IND), *Investment Tax Credit (Individuals)*.

The information requested in this form and documents supporting your expenditures are prescribed information.

Your SR&ED claim must be filed within 12 months of the filing due date of your income tax return.

To help you fill out this form, use the T4088, *Guide to Form T661*, which is available on our Web site: **www.cra.gc.ca/sred**.

Part 1 – General information

010 Name of claimant

MEUK Corporation

Enter one of the following:

99999 9998 RC0001
Business number (BN)

Social insurance number (SIN)

Tax year
From: 2013-01-01 (Year Month Day)
To: 2013-12-31 (Year Month Day)

050 Total number of projects you are claiming this tax year: 4

100 Contact person for the financial information	**105** Telephone number/extension	**110** Fax number
A-0 David Sabina	(905) 631-5600	(905) 631-0698
115 Contact person for the technical information	**120** Telephone number/extension	**125** Fax number
A-0 Albert Einstein	(905) 631-5600	(905) 631-0698

151 If this claim is filed for a partnership, was Form T5013 filed? . . . . . 1 ☐ Yes 2 ☐ No

If you answered **no** to line 151, complete lines 153, 156 and 157.

153 Names of the partners	**156** %	**157** BN or SIN
1		
2		
3		
4		
5		

Part 2 - Project information

CRA internal form identifier 060
Code 1301

Complete a separate Part 2 for each project claimed this year.

Section A - Project identification

200 Project title (and identification code if applicable)

See schedule

Part 2 - Project information (continued)

Please see D-1.1 - D-1.2 for full Project Description

Project number **1**

CRA internal form identifier 060
Code 1301

Complete a separate Part 2 for each project claimed this year.

Section A – Project identification

200 Project title (and identification code if applicable)

1201 - NW Hydraulics (1998 TCC Case) Develop divide wall for

202 Project start date	**204** Completion or expected completion date	**206** Field of science or technology code (See guide for list of codes)
2012-09 (Year Month)	2014-09 (Year Month)	2.01.01 Civil engineering

Project claim history

208 1 [X] Continuation of a previously claimed project **210** 1 [ ] First claim for the project

218 Was any of the work done jointly or in collaboration with other businesses? . . . . . 1 [ ] Yes 2 [X] No

If you answered **yes** to line 218, complete lines 220 and 221.

220 Names of the businesses	**221** BN
1	

Section B – Project descriptions

242 What scientific or technological uncertainties did you attempt to overcome – uncertainties that could not be removed using standard practice? (*Maximum 50 lines*)

Objectives: Decrease Bed load Deposition : Current performance is 50 %, goal is 75 %
Reduce Downstream scouring : Current performance is 80 %, goal is 99 %
Minimize Production cost: Current performance is 3000 $per unit, goal is 25000 $per unit.
[NOTE: THIS PROJECT DESCRIPTION IS REPRODUCED FROM FACTS OUTLINED IN THE TAX COURT OF CANADA Docket: 97-531-IT-G, Date: 1998/05/01]
[AUTHOR'S NOTE: IDEALLY THE TAXPAYER WOULD ATTEMPT TO QUANTIFY THE OBJECTIVES THEY ARE TRYING TO ACHIEVE. A QUANTIFIABLE OBJECTIVE HAS BEEN ADDED ABOVE, TO ILLUSTRATE.]
The problems were to maintain a low flow channel near the intake during the dry season, to exclude sediment from entering the intake and reduce downstream scouring (erosion of materials due to high velocity).
The concept of a divide wall is not new, but this is an entirely different application when the following are taken into account: it's a highly braided river, the shape of the intake works, the alignment and the length and the height of the wall in combination with the gates that were used. Also the development of methods for maintaining this low-flow channel for the intake in this highly sediment laden river is an advance.
Internet searches: 21 Articles -- No solution found
Patent searches: 5 patents -- various methods did not meet the performance requirement
Competitive products or processes: 1 products -- the concept of a divide wall is not new , but this is an entirely different application
Similar prior in-house technologies: 3 products / processes -- from sediment specialists
The East Rapti river is 1,800 metres wide and carries large amounts of sediment. The channel is "braided", that is to say it consists of a number of channels. The bank of the river in subject to erosion and is highly unstable. Moreover, the slope is steep giving rise to unusually high velocity.
[NOTE: EACH CHARACTERISTIC TAKEN ALONE AND IN ISOLATION WOULD UNQUESTIONABLY HAVE PRESENTED DIFFICULTIES. CUMULATIVELY THEY MAGNIFIED EACH OTHER.]
Uncertainty #1: Geometry to address sediment & water levels
How will the properties of the river affect the proposed dam? The unknown effect of heavy sediment movement and complicated structure combination (including weir, sluiceway, headgate, ejector, settling basin, fish ladder,

242 What scientific or technological uncertainties did you attempt to overcome – uncertainties that could not be removed using standard practice? (*Maximum 50 lines*)

38. log passage and river training works).
39. In the result three models were required:
40. (a) A model of the river; this required a distortion of the scale;
41. (b) an intake model; and
42. (c) a settling basin model.
43. For this purpose it is necessary to develop geometry for upstream training
44. dikes and spurs, and an alignment for the intake structure.
45. The capacity of the sluice gate has to be increased and a flow divide wall
46. has to be added. A downstream scour protection scheme has to be devised and
47. a settling basin has to be modified to improve flushing.
48. Key variables: geometry for upstream training dikes & spurs, alignment &
49. shape for the intake structure, weir, sluiceway, headgate, ejector, scour
50. protection scheme, settling basin geometry

244 What work did you perform **in the tax year** to overcome the scientific or technological uncertainties described in Line 242? (Summarize the systematic investigation or search) (*Maximum 100 lines*)

1. Activity: Baseline Testing
2. Methods of experimentation:Trials:119 alternatives
3. Baseline tests
4. - The baseline tests conducted before installation of the weir showed good
5. simulation of a braided river.
6. - The high flow rates eroded the incised narrow channel system generated by
7. low flows.
8. Activity: Upstream training works
9. Methods of experimentation:Analysis / simulation:2 runs / samples
10. Tests with the weir indicated that upstream left-side training works are
11. needed to protect the guidebank immediately upstream from the weir from
12. erosive attack, prevent erosion of the left bank (Chitwan Park), and to
13. direct approach flow to the intake.
14. An upstream training scheme consisting of three open dyke elements plus T-
15. spur dykes both upstream and downstream from the open dyke sections was
16. developed.
17. Activity: Low Flow channel
18. Methods of experimentation:Trials:175 alternatives, Physical prototypes:14
19. samples
20. [AUTHOR'S NOTE: THE DESCRIPTIONS BELOW WERE PROVIDED IN THE CRA'S EXAMPLE.
21. THE DATA ABOVE (# TRIALS/ALTERNATIVES) IS PROVIDED TO ILLUSTRATE SOME OF THE
22. ADDITIONAL DETAILS THAT WOULD IDEALLY BE INCLUDED.]
23. Bars built up in the 400 m wide approach channel during floods that isolated
24. the intake during low flows. A series of tests [HOW MANY?] were conducted
25. using submerged inner guide banks to create a low flow channel. A 1 m high
26. guidebank forming a channel 1/4 the width of the weir achieved acceptable
27. results [NOTE: A DEFINITION OF ACCEPTABLE RESULTS WOULD BE BENEFICIAL].
28. Because the inner guide bank scheme concentrates flow and causes higher
29. upstream water levels, a scheme using floodway gates was adopted for further
30. study.
31. Activity: performance of canal intake
32. Methods of experimentation:Analysis / simulation:2500 runs / samples,
33. Trials:170 alternatives, Physical prototypes:5 samples
34. Activity: Log Passage
35. Methods of experimentation:Trials:7 alternatives
36. Log passage tests were conducted with the premise that log accumulation in
37. the pocket area upstream from the undersluice should be minimized.
38. This was accomplished to a large extent by closing the undersluice but
39. operating the floodway. This operation resulted in log accumulation upstream
40. from the floodway, but minimal accumulation in the pocket. Logs of 20 m size
41. were capable of being flushed by completely opening the gates (floodway or
42. undersluice). Larger logs of 30 m size frequently became jammed.

244 What work did you perform **in the tax year** to overcome the scientific or technological uncertainties described in Line 242? (Summarize the systematic investigation or search) (*Maximum 100 lines*)

Several log diversion walls were tested to explore the potential for improving the effectiveness of diverting logs into the floodway. The best scheme involved a solid skimmer wall that allowed flow to pass underneath the wall and the logs were re-directed away from the pocket area. [NOTE: IDEALLY, THESE DIFFERENT LOG DIVERSION WALLS THAT WERE TESTED WOULD BE QUANTIFIED AND EXPLAINED]

Activity: stilling basin downstream of weir

Methods of experimentation:Trials:875 alternatives, Physical prototypes:4 samples

Four stilling basin designs were tested downstream of the weir: Types 3 and 4 at basin elevations of 224.7 and 226.7 m. The two higher basins produced downstream water levels that were much higher [NOTE: QUANTIFY "HIGHER"] than the tailwater level. This caused scouring conditions downstream as high velocities were generated by the drop in water level. The Type 3 basin at 224.7 m elevation was adopted for final design.

Activity: settling basin

Methods of experimentation:Trials:58 alternatives

Flushing with the four-channel scheme was unsuccessful because insufficient downstream channel capacity resulted in subcritical flow through much of the downstream section of the basin. This scheme would function adequately if more downstream capacity were provided.

Flushing with the single-channel scheme with the slope through the flushing ports continuing at the 1:100 basin slope was not satisfactory as a hydraulic jump formed in the basin. Elevation drops of 20, 30 and 45 cm through the ports were then tested. Supercritical flow through the ports, and thus effective flushing, was maintained for flow rates from 2 to 6 m3/s for the three tested drops.

246 What scientific or technological advancements did you achieve as a result of the work described in Line 244? (*Maximum 50 lines*)

Activity: Baseline Testing

Conclusion: [NOTE: THE CONCLUSIONS FOR THESE TESTS WOULD BE STATED HERE]

Activity: Upstream training works

Conclusion: The training scheme provided the required protection, helped direct low flows to the intake, and allowed the area behind the dyke to be preserved as wetlands.

This system performed well, but the three spur configuration was also adequate. The final layout will be the decision of the project designers. A minimum of two spurs is recommended, if limited funding does not permit construction of the tested schemes.

Activity: Low Flow channel

Conclusion: A modified design using two 20 m wide gated floodways and one 20 m undersluice was effective in producing a low flow channel to the intake [NOTE: CITING MAX FLOW RATES WOULD HELP]. This was accomplished primarily with open floodway gates and a closed undersluice.

A larger radius right-side guidewall [NOTE: CITING HOW MUCH LARGER WOULD BE HELPFUL IN ADDING A DEGREE OF QUANTIFICATION TO THE TESTING] improves flow conditions when flow is guided by the right guidewall.

Activity: performance of canal intake

Results:	Result	vs. Expectations
Decrease Bed load Deposition (%)	80	120%

Conclusion: Although both orientations were studied for bedload deposition, only the results of the 90 degree intake will be discussed herein. Flow conditions with the floodway and undersluice gates open 0.5 m resulted in considerable [NOTE: "CONSIDERABLE" IS A SUBJECTIVE TERM UNLESS DEFINED BY QUANTIFIABLE/MEASURABLE PARAMETERS] bedload entering the canal headworks area.

Flows with the floodway gates open 1 m and the undersluice closed also resulted in considerable deposition in the headworks area.

Please see D-2.1 - D-2.3 for full Project Description

29. The addition of a 40 m long divide wall that extended above the water surface
30. effectively prevented bedload from entering the canal headworks area when
31. tested for the 1 m floodway gate opening with the undersluice closed. When
32. canal flow is also eliminated, prevention of bedload entering the headworks
33. area is further enhanced. [NOTE: BY ADDING AN ENHANCEMENT FACTOR, IT WOULD
34. HELP PROVIDE A MEASURABLE BENCHMARK INDICATIVE OF R&D]
35. Flushing tests conducted with a wide open undersluice indicated that flushing
36. with the divide wall is much more effective than without the wall. [NOTE:
37. AGAIN, BY QUANTIFYING THE DIFFERENCE, IT PROVIDES A QUANTIFIABLE CONTEXT TO
38. THE WORK]
39. Activity: Log Passage
40. Conclusion: The elimination of all canal flow combined with no undersluice
41. flow resulted in more favourable conditions for diverting logs from the
42. pocket.
43. Activity: stilling basin downstream of weir
44. Conclusion: The adopted basin was tested with and without stone accumulation
45. in the stilling basin. The presence of stones caused some additional
46. mounding of the water above the floor blocks for the higher flows and an
47. exaggerated vertical eddy that tended to rotate stones back to the face of
48. the spillway, where they may accelerate erosion of the concrete. Many of
49. these stones, however, will wash out at the higher flows.
50. Activity: settling basin

Section C – Additional project information

Who prepared the responses for Section B?

253	1 [X] Employee directly involved in the project	**254** Name	John Deer	
255	1 [ ] Other employee of the company	**256** Name		
257	1 [ ] External consultant	**258** Name		**259** Firm

List the key individuals directly involved in the project and indicate their qualifications/experience.

260 Names	**261** Qualifications/experience and position title
1 John Deer	Agriculture - Ph.D. (1981) / Researcher
2 Quebec Employee	Information Technology - PHD (1985) / Software Developer
3	

265	Are you claiming any salary or wages for SR&ED performed outside Canada?	1 [ ] Yes	2 [X] No
266	Are you claiming expenditures for SR&ED carried out on behalf of another party?	1 [ ] Yes	2 [X] No
267	Are you claiming expenditures for SR&ED performed by people other than your employees?	1 [ ] Yes	2 [X] No

If you answered **yes** to line 267, complete lines 268 and 269.

268 Names of individuals or companies	**269** BN
1 Flowering Nurseries Ltd.(ON)-	
2 Genanalysis Ltd.(ON)-	
3 S&H Holdings(ON)-	

What evidence do you have to support your claim? (Check any that apply)
You do not need to submit these items with the claim. However, you are required to retain them in the event of a review.

270	1	[X]	Project planning documents	**276** 1 [X]	Progress reports, minutes of project meetings
271	1	[X]	Records of resources allocated to the project, time sheets	**277** 1 [X]	Test protocols, test data, analysis of test results, conclusions
272	1	[X]	Design of experiments	**278** 1 [X]	Photographs and videos
273	1	[ ]	Project records, laboratory notebooks	**279** 1 [X]	Samples, prototypes, scrap or other artefacts
274	1	[X]	Design, system architecture and source code	**280** 1 [ ]	Contracts
275	1	[ ]	Records of trial runs	**281** 1 [ ]	Others, specify **282** _____

Part 2 - Project information (continued)

Project number **2**

CRA internal form identifier 060
Code 1301

Complete a separate Part 2 for each project claimed this year.

Section A – Project identification

200 Project title (and identification code if applicable)

1202 - Jentel (2011 TCC case) - with "What if" analysis

202 Project start date	**204** Completion or expected completion date	**206** Field of science or technology code (See guide for list of codes)
2012-06 (Year Month)	2015-12 (Year Month)	2.05.04 Plastics, Rubber and Composites (including laminates

Project claim history

208 1 [X] Continuation of a previously claimed project **210** 1 [ ] First claim for the project

218 Was any of the work done jointly or in collaboration with other businesses? . . . . . 1 [ ] Yes 2 [X] No

If you answered **yes** to line 218, complete lines 220 and 221.

220 Names of the businesses	**221** BN
1	

Section B – Project descriptions

242 What scientific or technological uncertainties did you attempt to overcome – uncertainties that could not be removed using standard practice? (*Maximum 50 lines*)

1. Objectives: Max. Load : Current performance is 80 kg, goal is 120 kg
2. Manufacturing cost: Current performance is 156 $ Cdn., goal is 145 $ Cdn.
3. Assembly time: Current performance is 25 minutes, goal is 10 minutes.
4. NOTE: THIS PROJECT IS BASED ON THE 2011 TAX COURT CASE OF JENTEL
5. MANUFACTURING LTD., V. THE QUEEN, (2011 TCC 261)
6. THOUGH THE TAXPAYER LSOT THIS CASE WE HAVE;
7. - USED THE FACTS PROVIDED IN THE CASE &
8. - RECAST THEM TO "POTENTIAL ELIGIBILITY" BY ILLUSTRATING,
9. - TECHNOLOGICAL ADVANCEMENT INCLUDING,
10. - POTENTIAL HYPOTHESES AND CONCLUSIONS (AS REQUIRED BY THE COURTS).
11. A FULL DESCRIPTION OF THIS CASE IS PROVIDED IN OUR NEWSLETTER 2011-2 AT:
12. HTTP://WWW.MEUK.NET/NEWSLETTERS_AND_PUBLICATIONS.ASPX]
13. A FULL COPY OF THIS CASE HAS BEEN UPLOADED TO THE "DOCUMENTS" SECTION OF THIS
14. PROJECT.
15. Ideally we would provide quantified objectives such as cost, strength,
16. weight, tolerances, failure rates,... which "stack up" to require
17. "experimentation" in areas beyond "standard practice" (such as);
18. 1) different configurations on measured structural integrity,
19. 2) effects of plastic melting process conditions,
20. 3) additive reagents &/or
21. 4) modifying extrusion/forming techniques on produced plastic physico-
22. chemical characteristics
23. These in turn would allow us to identify other (binary - i.e. yes or no)
24. objectives including replacing non-recyclable structural plastics, such as
25. ABS, with recyclable ones, such as polypropylene.
26. Internet searches: 17 Articles -- Found 7 articles on plastics forming issues
27. + 10 articles on alternate fastening concepts relevant to this design
28. Competitive products or processes: 4 products -- Examined geometries and
29. materials used on 4 competitive products. None provided over 100kg load
30. performance.
31. Similar prior in-house technologies: 2 products / processes -- re-examined
32. the causes of failure on 2 or our prior "shelf" product we are improving.
33. Potential components: 7 products -- Discussed fastening designs and
34. alternatives with 7 plastic fastener designers & manufacturers. Contacted 3
35. plastic suppliers to get addtional performance details on their products and
36. recommendations for processing.
37. AN ideal submission would provide specific evidence of known technology

242 What scientific or technological uncertainties did you attempt to overcome – uncertainties that could not be removed using standard practice? (*Maximum 50 lines*)

Please see D-3.1 - D-3.3 for full Project Description

38. limits via: articles, competitive products, expert opinions, patent searches,
39. prior in house failures, blogs, etc.
40. Uncertainty #1: optimal combination of materials & forming processes
41. A "matrix" of variables (parameters) were identified for testing under
42. different described conditions. HYPOTHESES = can we improve the existing
43. predictive model for effects re: altered temperature of melt, mix time,
44. order of reagent addition, type of reagents, rate of cooling, etc. influence
45. on measured final plastic characteristics/parameters.
46. Key variables: melt temperature (ranges and times), mix time, cooling rates,
47. types & order of reagent additions, fastening optimization for load

244 What work did you perform **in the tax year** to overcome the scientific or technological uncertainties described in Line 242? (Summarize the systematic investigation or search) (*Maximum 100 lines*)

1. Activity: Design & Form Bin
2. Methods of experimentation:Analysis / simulation:18 runs / samples,
3. Trials:180 alternatives, Physical prototypes:2 samples, Lines of code:14
4. Lines of prototype code
5. Analysis/Simulations:examined how solid flow models to evaluate alternate
6. methods under which plastic fluxing & molding processes could be optimized
7. Trials:tested 8 different plastics: PETG, PVC, acrylic, ABS, styrene, Lexan,
8. HDPE & polyethylene.
9. Physical prototypes:Developed 2 prototypes using (ABS and HDPE), further
10. testing was carried out using varying thicknesses of material to determine
11. strength
12. characteristics.
13. NOTE: SEE THE WHAT IF MATRIX TO COMPARE ELIGIBLE S. INELIGIBLE ACTIVITIES:

246 What scientific or technological advancements did you achieve as a result of the work described in Line 244? (*Maximum 50 lines*)

1.
2.
3.
4.

Section C – Additional project information

Who prepared the responses for Section B?

253 1 [X] Employee directly involved in the project

254 Name: Al Nobel

255 1 [ ] Other employee of the company

256 Name:

257 1 [ ] External consultant

258 Name:

259 Firm:

List the key individuals directly involved in the project and indicate their qualifications/experience.

260 Names	**261** Qualifications/experience and position title
1 Al Nobel	Chemical Engineering - P.Eng. (1989) / Research Associate
2 Nick Tesla	Electrical technology - CET (2002) / Research Associate
3	

265 Are you claiming any salary or wages for SR&ED performed outside Canada? . . . . . 1 [ ] Yes 2 [X] No

266 Are you claiming expenditures for SR&ED carried out on behalf of another party? . . . . . 1 [ ] Yes 2 [X] No

267 Are you claiming expenditures for SR&ED performed by people other than your employees? . . . . . 1 [ ] Yes 2 [X] No

If you answered **yes** to line 267, complete lines 268 and 269.

268 Names of individuals or companies	269 BN
1	

What evidence do you have to support your claim? (Check any that apply)
You do not need to submit these items with the claim. However, you are required to retain them in the event of a review.

270 1 ☐ Project planning documents

271 1 ☐ Records of resources allocated to the project, time sheets

272 1 ☒ Design of experiments

273 1 ☐ Project records, laboratory notebooks

274 1 ☐ Design, system architecture and source code

275 1 ☐ Records of trial runs

276 1 ☐ Progress reports, minutes of project meetings

277 1 ☐ Test protocols, test data, analysis of test results, conclusions

278 1 ☐ Photographs and videos

279 1 ☐ Samples, prototypes, scrap or other artefacts

280 1 ☐ Contracts

281 1 ☐ Others, specify **282**

Part 2 - Project information (continued)

Project number **3**

CRA internal form identifier 060
Code 1301

Complete a separate Part 2 for each project claimed this year.

Section A – Project identification

200 Project title (and identification code if applicable)

1203 - Airmax (2012 TCC Case) - HVAC development

202 Project start date	**204** Completion or expected completion date	**206** Field of science or technology code (See guide for list of codes)
2012-02 (Year Month)	2015-02 (Year Month)	2.03.03 Thermodynamics

Project claim history

208 1 ☐ Continuation of a previously claimed project **210** 1 ☒ First claim for the project

218 Was any of the work done jointly or in collaboration with other businesses? . . . . . 1 ☐ Yes 2 ☒ No

If you answered **yes** to line 218, complete lines 220 and 221.

220 Names of the businesses	**221** BN
1	

Section B – Project descriptions

242 What scientific or technological uncertainties did you attempt to overcome – uncertainties that could not be removed using standard practice? (*Maximum 50 lines*)

1. Objectives: Footprint: Current performance is 20 m2, goal is 5 m2
2. Cost: Current performance is 60000 $, goal is 25000 $
3. Noise: Current performance is 60 DB, goal is 20 DB
4. Constant Static pressure: Current performance is 10 % variance, goal is 1 %
5. variance
6. Ventilation rate: Current performance is 20 CFM/occupant, goal is 25
7. CFM/occupant
8. Air mixing % (Ev): Current performance is 60 % , goal is 80 %
9. CO2 concentrations: Current performance is 800 PPM, goal is 600 PPM
10. SEER (efficiency rating): Current performance is 10 rating, goal is 12 rating.
11. [NOTE: THIS PROJECT EXAMPLE IS REPRODUCED FROM DETAILS PROVIDED IN THE TAX
12. COURT OF CANADA RULING ON AIRMAX TECHNOLOGIES, 2012 (TCC) 376. Copies of the
13. judgment are available from the Tax Court of Canada website [www.tcc-cci.gc.
14. ca].
15. SINCE THE MOTION WAS AN INFORMAL APPEAL THERE WAS ONLY SUMMARY EVIDENCE
16. PROVIDED AT THE TRIAL.
17. AS A RESULT WE HAVE ADDED ADDITIONAL GUIDANCE & EXAMPLES OF POTENTIALLY
18. ELIGIBLE WORK IN THE AIR DISTIBUTION INDUSTRY.
19. In addition to the claimants own cost & performance goals there may be
20. additional objectives created by;
21. - ASHRAE or other industry standards eg. for air quality / ventilation rates
22. As illustrated in this example it is important to list all significant &
23. QUANTIFIABLE objectives since they tend to "stack up" or combine to create
24. the technological uncertainties.
25. Internet searches: 8 Articles -- 8 articles outlining design methods of
26. similar systems were discovered but none met the stated objectives.
27. Patent searches: 14 patents -- 14 different patents were examined regarding
28. both component design & concepts to integrate entire systems.
29. Competitive products or processes: 12 products -- Concepts from 12
30. competitive systems were examined.
31. Similar prior in-house technologies: 3 products / processes
32. Potential components: 55 products
33. Queries to experts: 4 responses -- received 4 responses via HVAC industry
34. blogs re. alternate part designs
35. DEPARTURES FROM STANDARD PRACTICE:
36. The design of this system was unique in the market insofar as it utilized
37. higher than usual pressure in response to the problem of the narrower duct

242 What scientific or technological uncertainties did you attempt to overcome – uncertainties that could not be removed using standard practice? (*Maximum 50 lines*)

38. work used in narrow multi-storey townhouses.
39. It also contemplated using an unconventional heat source that also provided
40. domestic hot water, unlike those more commonly used indirect-fired furnaces.
41. AUTHOR'S NOTE: IDEALLY THE CLAIMANT WOULD ATTEMPT TO OUTLINE ALL:
42. - "DUE DILIGENCE" PERFORMED IN ORDER TO
43. - BENCHMARK THE LEVEL OF TECHNOLOGY WHICH WOULD BE
44. - "READILY AVAILABLE TO SOMEONE SKILLED IN THE ART."
45. THE CRA AND COURTS REFER TO THIS AS "STANDARD PRACTICE" FOR THE INDUSTRY.
46. THERE IS NO MINIMUM REQUIRED LEVEL OTHER THAN IT IS "REASONABLE WITHIN THE
47. BUSINESS CONTEXT OF THE FIRM."
48. Uncertainty #1: component design & integration
49. We have attempted to list examples of
50. - the top 5 variables of experimentation along with

244 What work did you perform **in the tax year** to overcome the scientific or technological uncertainties described in Line 242? (Summarize the systematic investigation or search) (*Maximum 100 lines*)

1. Activity: Furnace ECM x-n (challenged)
2. Methods of experimentation:Analysis / simulation:100 runs / samples,
3. Trials:50 alternatives
4. In 2008, the appellant incurred expenses to bring a European-sourced boiler
5. into conformity with North American standards.
6. The appellant also undertook testing of ECMs to ensure that they could be
7. programmed at the speeds necessary to meet the design requirements set for
8. the appellant s HVAC system while still meeting the manufacturer s safety
9. specifications, which were required to be adhered to in order to ensure
10. coverage under the manufacturer s warranty.
11. The ECMs used in the test were purchased from a Korean manufacturer, Essen
12. Tech. The appellant worked with a consultant to develop new program settings
13. for the control board. The evidence shows that the appellant had the right to
14. use the intellectual property generated from the testing, along with Essen
15. Tech.
16. NOTE: THE ABOVE DETAILS WERE PROVIDED TO THE TAX COURT. IDEALLY A CLAIMANT
17. WOULD ILLUSTRATE ADDITIONAL DETAILS RELATED TO ANY INVESTIGATIONS OF THE
18. VARIABLES OF UNCERTAINTY.

246 What scientific or technological advancements did you achieve as a result of the work described in Line 244? (*Maximum 50 lines*)

1. Activity: Furnace ECM x-n (challenged)

2.	Results:	Result	vs. Expectations
3.	Footprint (m2)	7	86%
4.	Cost ($)	30000	85%
5.	Noise (DB)	25	87%
6.	Constant Static pressure (% variance)	0.5	105%
7.	Ventilation rate (CFM/occupant)	28	160%
8.	Air mixing % (Ev) (%)	86	130%
9.	CO2 concentrations (PPM)	800	0%
10.	SEER (efficiency rating) (rating)	12	100%

11. Conclusion: According to the judge,
12. "The evidence demonstrates that the appellant identified the problems with,
13. and deficiencies of, existing HVAC systems.
14. In response, the appellant developed a testing site to conduct testing with
15. respect to its diffusers, the integration of the boiler into its system, the
16. programming of the ECM, and the relevant safety and operational standards.
17. Experiments were run, the results were collected and modifications were made.
18. "
19. Significant variables addressed: Coil - shape, depth, location, Components -
20. diffuser vs. ducts vs. boiler vs. ECM, Spacing - components, duct vents

Section C – Additional project information

Who prepared the responses for Section B?

253 1 [X] Employee directly involved in the project	**254** Name Al Nobel		
255 1 [ ] Other employee of the company	**256** Name		
257 1 [ ] External consultant	**258** Name	**259** Firm	

List the key individuals directly involved in the project and indicate their qualifications/experience.

260 Names	**261** Qualifications/experience and position title
1 Al Nobel	Chemical Engineering - P.Eng. (1989) / Research Associate
2 Nick Tesla	Electrical technology - CET (2002) / Research Associate
3	

265 Are you claiming any salary or wages for SR&ED performed outside Canada? . . . . . 1 [ ] Yes 2 [X] No

266 Are you claiming expenditures for SR&ED carried out on behalf of another party? . . . . . 1 [ ] Yes 2 [X] No

267 Are you claiming expenditures for SR&ED performed by people other than your employees? . . . . . 1 [ ] Yes 2 [X] No

If you answered **yes** to line 267, complete lines 268 and 269.

268 Names of individuals or companies	**269** BN
1 ABC Motor Engineers(ON)-	
2 3rd Party(ON)testing at University of Waterloo	

What evidence do you have to support your claim? (Check any that apply)
You do not need to submit these items with the claim. However, you are required to retain them in the event of a review.

270 1 [ ] Project planning documents

271 1 [ ] Records of resources allocated to the project, time sheets

272 1 [ ] Design of experiments

273 1 [ ] Project records, laboratory notebooks

274 1 [ ] Design, system architecture and source code

275 1 [ ] Records of trial runs

276 1 [ ] Progress reports, minutes of project meetings

277 1 [ ] Test protocols, test data, analysis of test results, conclusions

278 1 [ ] Photographs and videos

279 1 [ ] Samples, prototypes, scrap or other artefacts

280 1 [ ] Contracts

281 1 [ ] Others, specify **282**

Part 2 - Project information (continued)

Project number **4**

CRA internal form identifier 060
Code 1301

Complete a separate Part 2 for each project claimed this year.

Section A – Project identification

200 Project title (and identification code if applicable)

1301 - HVAC - How cost contraints affect a project

202 Project start date	**204** Completion or expected completion date	**206** Field of science or technology code (See guide for list of codes)
2013-03 (Year Month)	2014-12 (Year Month)	2.03.01 Mechanical engineering

Project claim history

208 1 [ ] Continuation of a previously claimed project **210** 1 [X] First claim for the project

218 Was any of the work done jointly or in collaboration with other businesses? . . . . . 1 [ ] Yes 2 [X] No

If you answered **yes** to line 218, complete lines 220 and 221.

220 Names of the businesses	**221** BN
1	

Section B – Project descriptions

242 What scientific or technological uncertainties did you attempt to overcome – uncertainties that could not be removed using standard practice? (*Maximum 50 lines*)

1. Objectives: Cost: Current performance is 300 $ / unit, goal is 200 $ / unit
2. Minimum conversion temperature: Current performance is 35 Deg C, goal is 20
3. Deg C.
4. Example 3 Illustrating concepts from paragraph 5, section 2.1.1 Eligibility
5. of Work for SR&ED
6. Investment Tax Credits Policy
7. According to the CRA, This example shows that cost targets are not
8. technological uncertainties, but a technological uncertainty may arise by
9. trying technologically uncertain paths to solve a problem to meet the cost
10. targets.
11. A company wants to develop an air recirculation system for energy-efficient
12. homes that will permanently remove carbon monoxide. A key component of this
13. system is a module in which carbon monoxide (CO) is converted to relatively
14. harmless carbon dioxide (CO2) at room temperature.
15. Internet searches: 44 -- Could not determine optimal matrix .
16. A process is available that uses a tin oxide and platinum catalyst to convert
17. CO to CO2 at room temperature, and the company could develop a product based
18. on this process. However, the high cost of using this process will make the
19. selling price of the product out of reach for consumers.
20. There are other methods to convert carbon monoxide, but they are not
21. effective at room temperature. A key requirement is that the module must
22. operate at room temperature.
23. Uncertainty #1: Convert CO to CO2 at room temp
24. To achieve the project objective (a room-temperature carbon monoxide
25. remover), the company has to develop an inexpensive process that operates
26. effectively at room temperature.
27. The technological uncertainty relates to how to convert CO to CO2 at room
28. temperature that does not use the costly process with tin oxide and platinum.
29. Key variable: how to convert CO to CO2 at room temp

244 What work did you perform **in the tax year** to overcome the scientific or technological uncertainties described in Line 242? (Summarize the systematic investigation or search) (*Maximum 100 lines*)

1. Activity: Development
2. Methods of experimentation:Analysis / simulation:25 runs / samples, Trials:7
3. alternatives
4.

246 What scientific or technological advancements did you achieve as a result of the work described in Line 244? (*Maximum 50 lines*)

1. Activity: Development
2. Results: Result vs. Expectations
3. Cost ($ / unit) 180 120%
4. Minimum conversion temperature (Deg C) 23 80%
5. Conclusion: According to the CRA:
6. "Although the cost target by itself is not a technological uncertainty, a
7. technological uncertainty may arise from the need to avoid using a costly
8. process, even though that process is known to work. The required cost target
9. is also the motivation or reason for the company to undertake work to remove
10. this uncertainty."
11. IN THE AUTHORS OPINION THIS ILLUSTRATES HOW
12. - THE QUANTIFIABLE BUSINESS OBJECTIVES (IN THIS CASE TO REDUCE COST WHILE
13. MAINTING OTHER PERFORMANCE PARAMETERS)
14. - "STACK UP" TO CREATE "TECHNOLOGICAL UNCERTAINTY."
15. Significant variables addressed: how to convert CO to CO2 at room temp

Section C – Additional project information

Who prepared the responses for Section B?

253 1 [X] Employee directly involved in the project

254 Name: Tesla, Nick

255 1 [ ] Other employee of the company

256 Name:

257 1 [ ] External consultant

258 Name:

259 Firm:

List the key individuals directly involved in the project and indicate their qualification s/experience.

260 Names	**261** Qualifications/experience and position title
1 Nick Tesla	Electrical technology - CET (2002) / Research Associate
2	
3	

265 Are you claiming any salary or wages for SR&ED performed outside Canada? . . . . . 1 [ ] Yes 2 [X] No

266 Are you claiming expenditures for SR&ED carried out on behalf of another party? . . . . . 1 [ ] Yes 2 [X] No

267 Are you claiming expenditures for SR&ED performed by people other than your employees? . . . . . 1 [ ] Yes 2 [X] No

If you answered **yes** to line 267, complete lines 268 and 269.

268 Names of individuals or companies	**269** BN
1 University of Toronto(ON)prototype design & test	

What evidence do you have to support your claim? (Check any that apply)
You do not need to submit these items with the claim. However, you are required to retain them in the event of a review.

270 1 [ ] Project planning documents

271 1 [ ] Records of resources allocated to the project, time sheets

272 1 [ ] Design of experiments

273 1 [X] Project records, laboratory notebooks

274 1 [X] Design, system architecture and source code

275 1 [ ] Records of trial runs

276 1 [ ] Progress reports, minutes of project meetings

277 1 [ ] Test protocols, test data, analysis of test results, conclusions

278 1 [ ] Photographs and videos

279 1 [ ] Samples, prototypes, scrap or other artefacts

280 1 [ ] Contracts

281 1 [ ] Others, specify **282**

T-1.2-4.3

Part 3 – Calculation of SR&ED expenditures

What did you spend on your SR&ED projects?

Section A – Select the method to calculate the SR&ED expenditures

I elect (choose) to use the following method to calculate my SR&ED expenditures and related investment tax credits (ITC) for this tax year.
I understand that my election is irrevocable (cannot be changed) for this tax year.

160 [X] I elect to use the proxy method
(Enter "0" on line 360. Complete Part 5 and you do not need to track any expenditure incurred for overhead)

162 [ ] I choose to use the traditional method
(Enter "0" on line 355. Complete line 360, and track any expenditure incurred for overhead)

Section B – Calculation of allowable SR&ED expenditures (to the nearest dollar)

• SR&ED portion of salary or wages of employees directly engaged in the SR&ED:			
a) Employees other than specified employees for work performed in Canada	300	+	250,000
b) Specified employees for work performed in Canada	305	+	150,000
Subtotal (add lines 300 and 305)	306	=	400,000
c) Employees other than specified employees for work performed outside Canada (subject to limitations – see guide)	307	+	
d) Specified employees for work performed outside Canada (subject to limitations – see guide)	309	+	
• Salary or wages identified on line 315 in prior years that were paid in this tax year	310	+	
• Salary or wages incurred in the year but not paid within 180 days of the tax year end	315		
• Cost of materials consumed in performing SR&ED	320	+	25,000
• Cost of materials transformed in performing SR&ED	325	+	
• Contract expenditures for SR&ED performed on your behalf:			
a) Arm's length contracts (see note 1)	340	+	35,000
b) Non-arm's length contracts (see note 1)	345	+	10,000
• Lease costs of equipment used before 2014:			
a) All or substantially all (90% of the time or more) for SR&ED	350	+	
b) Primarily (more than 50% of the time but less than 90%) for SR&ED. (Enter 50% of lease costs if you use the proxy method or enter "0" if you use the traditional method)	355	+	
• Overhead and other expenditures (enter "0" if you use the proxy method)	360	+	
• Third-party payments (see note 2) (complete Form T1263*)	370	+	50,000
Total current SR&ED expenditures (add lines 306 to 370; do not add line 315) (Corporations need to adjust line 118 of schedule T2SCH1)	380	=	520,000
• Capital expenditures for depreciable property available for use before 2014 (Do not include these capital expenditures on schedule T2SCH8)	390	+	15,000
Total allowable SR&ED expenditures (add lines 380 and 390)	400	=	535,000

D-0

T-6.1

Section C – Calculation of pool of deductible SR&ED expenditures (to the nearest dollar)

Amount from line 400	420		535,000
Deduct			
• provincial government assistance for expenditures included on line 400	429	–	T-1.4 127,340
• other government assistance for expenditures included on line 400	431	–	
• non-government assistance for expenditures included on line 400	432	–	
• SR&ED ITCs applied and/or refunded in the prior year (see guide)	435	–	200,000
• sale of SR&ED capital assets and other deductions	440	–	T-6.1
Subtotal (line 420 minus lines 429 to 440)	442	=	207,660
Add			
• repayments of government and non-government assistance that previously reduced the SR&ED expenditure pool	445	+	
• prior year's pool balance of deductible SR&ED expenditures (from line 470 of prior year T661)	450	+	
• SR&ED expenditure pool transfer from amalgamation or wind-up	452	+	
• amount of SR&ED ITC recaptured in the prior year	453	+	
Amount available for deduction (add lines 442 to 453) (enter positive amount only, include negative amount in income)	455	=	207,660
• Deduction claimed in the year (Corporations should enter this amount on line 411 of schedule T2SCH1)	460	–	189,800
Pool balance of deductible SR&ED expenditures to be carried forward to future years (line 455 minus 460)	470	=	17,860

T-3.1

* Form T1263, *Third-Party Payments for Scientific Research and Experimental Development (SR&ED)*

Note 1 – For contract expenditures made after 2013, no amounts for purchasing or leasing capital property can be included.

Note 2 – For third-party payments made after 2013, no amounts for purchasing or leasing capital property can be included.

Part 4 – Calculation of qualified SR&ED expenditures for investment tax credit (ITC) purposes

The resulting amount is used to calculate your refundable and/or non refundable ITC.

Enter the breakdown between current and capital expenditures (to the nearest dollar)

			Current Expenditures		Capital Expenditures
Total expenditures for SR&ED (from lines 380 and 390)	**492**		520,000	**496**	15,000
Add					SUM= 780 001
• payment of prior years' unpaid amounts (other than salary or wages)	**500**	+			T-5.1
• prescribed proxy amount (complete Part 5) (Enter "0" if you use the traditional method)	**502**	+	T-1.5 240,001		
• expenditures on shared-use equipment for property acquired before 2014			T-4.1	**504**	+
• qualified expenditures transferred to you (see note 3) (complete Form T1146**)	**508**	+	10,000	**510**	+
Subtotal (add lines 492 to 508, and add lines 496 to 510)	**511**	=	770,001	**512**	= 15,000
Deduct (see note 4)					T-1.3
• provincial government assistance	**513**	–	113,040	**514**	– 600
• other government assistance	**515**	–		**516**	–
• non-government assistance and contract payments	**517**	–		**518**	–
• current expenditures (other than salary or wages) not paid within 180 days of the tax year end	**520**	–			
• amounts paid in respect of an SR&ED contract to a person or partnership that is not a taxable supplier	**528**	–			
• 20% of expenditures included on lines 340 and 370 that were incurred after December 31, 2012	**529**	–	17,000		
• prescribed expenditures not allowed by regulations (see guide)	**530**	–		**532**	–
• other deductions (see guide)	**533**	–		**535**	–
• non-arm's length transactions					
– assistance allocated to you (complete Form T1145*)	**538**	–		**540**	–
– expenditures for non-arm's length SR&ED contracts (from line 345)	**541**	–	I-0 10,000		
– adjustments to purchases (limited to costs) of goods and services from non-arm's length suppliers (see guide)	**542**	–		**543**	–
– qualified expenditures you transferred (complete Form T1146**)	**544**	–		**546**	–
Subtotal (line 511 minus lines 513 to 544 and line 512 minus lines 514 to 546)	**557**	=	629,961	**558**	= 14,400
Qualified SR&ED expenditures (add lines 557 and 558)				**559**	= T-2.1 644,361
Add					
• repayments of assistance and contract payments made in the year				**560**	+
Total qualified SR&ED expenditures for ITC purposes (add lines 559 and 560)				**570**	= 644,361

* Form T1145, *Agreement to Allocate Assistance for SR&ED Between Persons Not Dealing at Arm's Length*

** Form T1146, *Agreement to Transfer Qualified Expenditures Incurred in Respect of SR&ED Contracts Between Persons Not Dealing at Arm's Length*

Note 3 – On line 510 (capital) – Only include expenditures made before 2014 by the transferor (performer). Complete the latest version of Form T1146.

Note 4 – On lines 514, 516, 518, 532, 535, 540, 543 and 546 – Only include amounts related to expenditures of a capital nature made before 2014.

Part 5 – Calculation of prescribed proxy amount (PPA)

A notional amount representing your overhead and other expenditures.

This part calculates the PPA to enter on line 502 in Part 4. Do not complete this part if you have chosen to use the traditional method in Part 3 (line 162).
You can only claim a PPA if you elected to use the proxy method for the year in Part 3 (line 160).

Special rules apply for specified employees. Calculate your salary base in Section A and the PPA in Section B.

Section A – Salary base

Salary or wages of employees other than specified employees (from lines 300 and 307)	**810**	+	250,000
Deduct			
Bonuses, remuneration based on profits, and taxable benefits that were included on line 810	**812**	–	
Subtotal (line 810 minus 812)	**814**	=	250,000

Salary or wages of specified employees

850	852	854	856	858	860
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Name of specified employee	Total salary or wages for the year (SR&ED and non-SR&ED) excluding bonuses, remuneration based on profits, and taxable benefits (to the nearest dollar)	% of time spent on SR&ED (maximum 75%)	Amount in column 2 multiplied by percentage in column 3	2,5 x A x B/365 A = Year's maximum pensionable earnings B = Number of days employed in tax year	Amount in column 4 or 5, whichever amount is less
1. Isaac Newton	90,240	61.835	55,800	127,750	55,800
2. Al Einstein	140,000	67.287	94,202	127,750	94,202
				(Enter total of column 6 on line 816)	150,002

	816	+	150,002
Salary base (total of lines 814 and 816)	**818**	=	400,002

F-7

Section B – Prescribed proxy amount (PPA)

Enter 65% of the salary base (line 818) less 5% of the salary base for the number of 2013 calendar days in the tax year, and less 10% of the salary base for number of days after 2013 in the tax year (use the formula in the guide-line 820)	**820**	=	240,001
Enter the amount from line 820 on line 502 in Part 4 unless the overall cap on PPA applies to you.			
(See the guide for explanation and example of the overall cap on PPA)			

T-1.4

Part 6 – Project costs

Information requested in this part must be provided for **all** SR&ED projects claimed in the year.
Expenditures should be recorded and allocated on a project basis.

750	752	754	756
Project title or identification code	Salary or wages in the tax year (Total of lines 306 to 309)	Cost of materials in the tax year (Total of lines 320 and 325)	Contract expenditures for SR&ED performed on your behalf in the tax year (Total of lines 340 and 345)
1. 1001 - Machinery - Improve Compounding Equipment	104,583	20,000	45,000
2. 1002 - Software (Database Methodology)	100,000	5,000	
3. 1101 - Chemicals - Optimize DA Catalyst Recipe	100,000		
4. 903 - Agriculture - Plant breeding	95,417		
Total	400,000	25,000	45,000

Part 7 – Additional information

Expenditures for SR&ED performed by you in Canada (line 400 minus lines 307, 309, 340, 345, and 370) **605** 440,000

From the total you entered on line 605, estimate the percentage of distribution of the sources of funds for SR&ED performed within your organization.

		Canadian (%)		Foreign (%)
Internal	**600**	100.000		
Parent companies, subsidiaries, and affiliated companies	**602**		**604**	
Federal grants (do not include funds or tax credits from SR&ED tax incentives)	**606**			
Federal contracts	**608**			
Provincial funding	**610**			
SR&ED contract work performed for other companies on their behalf	**612**		**614**	
Other funding (e.g., universities, foreign governments)	**616**		**618**	

For statistical purposes indicate whether the work you performed falls within the realm of Basic or Applied research (to advance scientific knowledge) or Experimental development (to achieve a technological advancement):

620 ☐ Basic or Applied research **622** ☒ Experimental development

Enter the number of SR&ED personnel in full-time equivalents (FTE):

Scientists and engineers	**632**	3
Technologists and technicians	**634**	1
Managers and administrators	**636**	
Other technical supporting staff	**638**	2

Part 8 – Claim checklist

To ensure your claim is complete, make sure you have:

1. used the current version of this form X
2. entered the method you have chosen for reporting your SR&ED expenditures in Section A of Part 3 X
3. completed Part 2 for each project X
4. filed a completed Schedule T2SCH31 or Form T2038(IND) to claim ITCs on your qualified SR&ED expenditures X
5. filed a completed Form T1145*, T1146**, T1174*** and/or T1263**** including any required attachments, if applicable X

To expedite the processing of your claim, make sure you have:

1. completed Form T2, *Corporation Income Tax Return* or Form T1, *Income Tax and Benefit Return* X
2. filed the appropriate provincial and/or territorial tax credit forms, if applicable X
3. retained documents to support the SR&ED work performed and SR&ED expenditures you claimed X
4. checked boxes 231 and 232 on page 2 of your T2 return to indicate attachment of Form T661 and Schedule T2SCH31 X

* Form T1145, *Agreement to Allocate Assistance for SR&ED Between Persons Not Dealing at Arm's Length*

** Form T1146, *Agreement to Transfer Qualified Expenditures Incurred in Respect of SR&ED Contracts Between Persons Not Dealing at Arm's Length*

*** Form T1174, *Agreement Between Associated Corporations to Allocate Salary or Wages of Specified Employees for Scientific Research and Experimental Development (SR&ED)*

**** Form T1263, *Third-Party Payments for Scientific Research and Experimental Development (SR&ED)*

Part 9 – Claim preparer information

Information requested in this part must be provided for each claim preparer that has accepted consideration to prepare or assist in the preparation of this SR&ED claim. Certification is required on lines 935, 970, and 975.

A $1000 penalty may be assessed if the information requested below about the claim preparer(s) and billing arrangement(s), is missing, incomplete, or inaccurate. Where a claim preparer has prepared or assisted in the preparation of this SR&ED form, the claimant and the claim preparer will be jointly and severally, or solidarily, liable for the penalty.

935 **Was a claim preparer engaged in any aspect of the preparation of this SR&ED claim?**

1. [X] Yes (complete the claim preparer information table and lines 970 and 975 below)
2. [ ] No (complete lines 970 and 975)

Claim preparer information table

940 Name of claim preparer (company or individual)	945 Business number	950 Billing arrangement code (see codes*)	955 Billing rate (percentage, hourly/daily rate or flat fee)	960 Other billing arrangement(s) (Maximum 10 words)	965 Total fee paid, payable, or expected to pay
1. ABC Consulting	111111111rc0001	1	15.00		51,070
2. XYZ Accounting	222222222rc0001	4	5,000.00		5,000
				Total	56,070

*** Billing arrangement codes**

Code	Type of billing arrangement
1	Contingency fee arrangement – where the fee is based on a percentage of the investment tax credit earned
2	Hourly rate
3	Daily rate
4	Flat fee arrangement (lump sum)
5	Other arrangements – describe the arrangement in box 960 in 10 words or less

970 I, Albert Einstein , certify that the information provided in this part is complete
Name of authorized signing officer of the corporation , or individual (print)
and accurate.

Signature

975 2014-09-18
Year Month Day

Part 10 – Certification

I certify that I have examined the information provided on this form and on the attachments and it is true, correct, and complete.

165 Albert Einstein
Name of authorized signing officer of the corporation, or individual

Signature

170 2014-09-18
Date

175 The Office of David Sabina, C.A.
Name of person/firm who completed this form

Canada Revenue Agency | Agence du revenu du Canada

THIRD-PARTY PAYMENTS FOR SCIENTIFIC RESEARCH AND EXPERIMENTAL DEVELOPMENT (SR&ED)

Complete this form for each third-party payment and attach it to Form T661.

For more information on third-party payments:

- See line 370 of Guide to Form T661, S*cientific Research and Experimental Development (SR&ED) Expenditures Claim*;
- Application Policy SR&ED 1996-04, *Payments to third parties for SR&ED*;
- Application Policy SR&ED 2001-01, *Research Chairs*;
- Interpretation Bulletin IT-151R5, *Scientific Research and Experimental Development Expenditures*;
- Consult our Web site: **www.cra.gc.ca/sred**.

Required Information

1. Identification

701 Name of the third party
University of Toronto

702 Address (Street number and name)

City	Province / Territory	Postal Code
Toronto		

704 Total amount paid in the year
$ 50,000

Provide a list of the research projects which relate to the third-party entity

706 Project title (and identification code if applicable)
1 1 - Improve Compounding Equipment

Check the appropriate box to indicate the type of entity:

711	Approved association	1 Yes		
712	Non-profit SR&ED corporation resident in Canada	1 Yes		
714	An approved university, college, research institute, or other similar institution	1 Yes	X	
716	Granting council	1 Yes		
718	Other corporation resident in Canada	1 Yes		
721	Are you dealing at arm's length with the recipient?	1 Yes	X	2 No

2. Nature of payment

Check the appropriate box to indicate the type of work:

The payment is for:

731	Experimental development	1 Yes	X
732	Applied research	1 Yes	
734	Basic research	1 Yes	

736 Briefly explain what the payment is for:
The payment related to work performed in conjunction with th
e National Research Council. The work examined limits of
sensor technologies for variable speed applications

738 Briefly explain how the SR&ED is related to a business that you carry on:
The company has recently expanded its development efforts in
to the sensor area in an effort to increase the capacity
of various proprietary machines

740 Briefly explain how you are entitled to exploit the results of the SR&ED:
The company is to be given preferential treatment of any discoveries
made by the University. This includes the ability to use any developments
for five years without payment of royalty or other fees.

T1263 E (08)

Part 11 – Investment tax credits on SR&ED expenditures

Current expenditures (line 350 from Part 8) or the expenditure limit (line 410 from Part 10), whichever is less*	420	629,961	x	35 %	=	220,486	G
Line 350 **minus** line 410 (if negative, enter "0")**	430		x	20 %	=		H
Line 410 **minus** line 350 (if negative, enter "0")		2,370,039	b				
Capital expenditures (line 360 from Part 8) or amount b above, whichever is less*	440	14,400	x	35 %	=	5,040	I
Line 360 **minus** amount b above (if negative, enter "0")**	450		x	20 %	=		J

T-1.4

Repayments (amount from line 370 in Part 8)

If a corporation makes a repayment of any government or non-government assistance, or contract payments that reduced the amount of qualified expenditures for ITC purposes, the amount of the repayment is eligible for a credit at the rate that would have applied to the repaid amount. Enter the amount of the repayment on the line that corresponds to the appropriate rate.**

460		x	35 %	=	c	
480		x	20 %	=	d	
Subtotal (amount c **plus** amount d)						K

Current-year SR&ED ITC (total of amounts G to K; enter on line 540 in Part 12) 225,526 L

* For corporations that are not CCPCs, enter "0" for amounts G and I.

** For tax years that end after 2013, the general SR&ED rate is reduced from 20% to 15%, except that, for 2014 tax years that start before 2014, the reduction is pro-rated based on the number of days in the tax year that are after 2013.

Part 12 – Current-year credit and account balances – ITC from SR&ED expenditures

ITC at the end of the previous tax year M

Deduct:

Credit deemed as a remittance of co-op corporations	510			
Credit expired	515			
Subtotal (line 510 **plus** line 515)				N
ITC at the beginning of the tax year (amount M **minus** amount N)	520			

Add:

Credit transferred on amalgamation or wind-up of subsidiary	530			
Total current-year credit (from amount L in Part 11)	540	225,526		
Credit allocated from a partnership	550			
Subtotal (total of lines 530 to 550)		225,526	225,526	O
Total credit available (line 520 **plus** amount O)			225,526	P

T-0

Deduct:

Credit deducted from Part I tax (enter at amount E in Part 30)	560			
Credit carried back to the previous year(s) (amount S from Part 13)			e	
Credit transferred to offset Part VII tax liability	580			
Subtotal (total of line 560, amount e, and line 580)				Q
Credit balance before refund (amount P **minus** amount Q)			225,526	R

Deduct:

Refund of credit claimed on SR&ED expenditures (from Part 14 or 15, whichever applies)	610	222,502
ITC closing balance on SR&ED (amount R **minus** line 610)	620	3,024

Canada Revenue Agency | Agence du revenu du Canada

Schedule 49

Agreement Among Associated Canadian-Controlled Private Corporations to Allocate the Expenditure Limit

- Use this schedule to allocate the annual expenditure limit among associated Canadian-controlled private corporations (CCPCs), (subsection 127(10.2) of the *Income Tax Act*), in order to calculate the investment tax credit eligible for the 35% rate on qualifying scientific research and experimental development expenditures.
- An associated CCPC that has more than one tax year ending in a calendar year is required to file an agreement for each tax year ending in that calendar year.

Column 1: Enter the legal name of each corporation in the associated group, including CCPCs and non-CCPCs. Do not include corporations deemed not to be associated under subsection 127(10.22) of the *Income Tax Act*.

Column 2: Provide the business number for each corporation in column 1 (if a corporation is not registered, enter "NR").

Column 3: Enter "1" for CCPC's or "2" for Non-CCPC's that applies for each corporation identified in columns 1 and 2.

Column 4: Enter the amount of the expenditure limit allocated to each corporation that has type of corporation code 1 in column 3. The rules for determining the expenditure limit that can be allocated (subsection 127(10.2) of the *Income Tax Act*) are explained below.

Allocating the expenditure limit

Date filed (do not use this area) . . . . . 025 — Year Month Day

Enter the calendar year to which the agreement applies . . . . . 050 — Year 2013

Is this an amended agreement for the above-noted calendar year that is intended to replace an agreement previously filed by any of the associated corporations listed below? . . . . . 075 — 1 Yes ☐ 2 No ☒

	1 Names of associated corporations 100	2 Business number of associated corporations 200	3 Type of corp. code 300	4 Expenditure limit allocated* $ 400
1	MEUK Corporation	99999 9998 RC0001	1	2,000,000

The expenditure limit (cannot be more than $3,000,000) **410** 2,000,000

The expenditure limit is calculated as follows

[($8,000,000 **minus** 10**A**) x (($40,000,000 **minus B**) **divided by** $40,000,000)], where

A = the greater of:
- $500,000; and
- the total of all taxable incomes (prior to any loss carry-backs applied) of all associated corporations identified in columns 1 and 2 for their last tax years** ending in the previous calendar year.

B = the total of all taxable capital employed in Canada of all associated corporations for their last tax year ending in the previous calendar year minus $10 million. If this amount is nil or negative, enter "0". If this amount is over $40 million, enter $40 million.

Amount A **425** 500,000 Amount B **495**

* Special rules apply if a CCPC has more than one tax year ending in a calendar year and is associated in more than one of those years with another CCPC that has a tax year ending in the same calendar year. In this case, the expenditure limit for the second (and subsequent) tax year(s) will be equal to the expenditure limit allocated for the first tax year ending in the calendar year.

** If any of the tax years referred to in A above are less than 51 weeks, gross up the taxable incomes for those tax years by the ratio that 365 is of the number of days in those tax years. Use these grossed up amounts when calculating the expenditure limit.

T2 SCH 49 E (13)

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Net Income (Loss) for Income Tax Purposes

SCHEDULE 1

Corporation's name	Business Number	Tax year end Year Month Day
MEUK Corporation	99999 9998 RC0001	2013-12-31

- The purpose of this schedule is to provide a reconciliation between the corporation's net income (loss) as reported on the financial statements and its net income (loss) for tax purposes. For more information, see the T2 *Corporation Income Tax Guide*.
- All legislative references are to the *Income Tax Act*.

Amount calculated on line 9999 from Schedule 125				1 A
Add:				
Scientific research expenditures deducted per financial statements	118	T-1.3 520,000		
Subtotal of additions		520,000 ▶		520,000
Other additions:				
Miscellaneous other additions:				
604				
Total	294			
Subtotal of other additions	199	▶		
Total additions	500	520,000 ▶		520,000 B
Amount A **plus** amount B				520,001
Deduct:		T-1.3		
SR&ED expenditures claimed in the year from Form T661 (line 460)	411	189,800		
Subtotal of deductions		189,800 ▶		189,800
Other deductions:				
Miscellaneous other deductions:				
700 SR&ED ITC's accrued vs. income on F/S (T-0 / S-0)	390	330,200		
704				
Total	394			
Subtotal of other deductions	499	330,200 ▶		330,200
Total deductions	510	520,000 ▶		520,000
Net income (loss) for income tax purposes – enter on line 300 of the T2 return				1

T2 SCH 1 E (12)

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Code 1001

AGREEMENT TO TRANSFER QUALIFIED EXPENDITURES INCURRED IN RESPECT OF SR&ED CONTRACTS BETWEEN PERSONS NOT DEALING AT ARM'S LENGTH

(See instructions at the end of the form)

AGREEMENT

The transferor and the transferee identified below hereby agree to transfer the amount of SR&ED qualified expenditures (per line 106 on page 2 of this Form) to the transferee. 010 $ 10,000

The breakdown of the transferred amount is:

Current expenditures 015 $ 10,000

Capital expenditures 020 $

Carry the transferred amounts on lines 015 and 020 above over to Form T661, lines 508 and 510 for the transferee, and to lines 544 and 546 of Form T661 for the transferor.

025 Is this an amended agreement? 1 ☐ Yes 2 ☐ No

AUTHORIZATION TO TRANSFER

The transferor and the transferee must file with Form T1146:

– certified copies of the resolutions of the Directors authorizing the agreement; or

– a Directors' resolution delegating authority to an authorized officer of each corporation signing this form.

The Directors' resolution will be in effect for all subsequent years until it is rescinded.

If two corporations are owned exclusively by one shareholder, a T1146 signed by authorized officers of each corporation will be accepted if a signed confirmation by the shareholder is filed with the form stating that he is the only shareholder of both corporations, and that he has authorized the transfer of the SR&ED qualified expenditure from one corporation to the other. A Directors' resolution will not be required.

030 Were copies of the resolutions/confirmation authorizing the transfer submitted in a previous year? 1 ☐ Yes 2 ☐ No

035 If you answered **yes** to line 030, in what tax year was it submitted? ____ (Year)

If you answered **no** to line 030:

- If you are filing a paper return, attach the required documents to Form T1146.
- If you are filing electronically, refer to the "Paper Documentation" section of RC4018, *Electronic Filers Manual*, for instructions on how to file paper documents in support of electronically filed forms.

040 Name of transferor (print)	045 Business number or social insurance number
MEUK Testing Labs Ltd.	
Address (head office if corporation)	050 Tax year-end: 2013 (Year) 12 (Month) 31 (Day)
055 Name of individual or authorized signing officer of the corporation: Dr. Einstein	060 Title
Signature of individual or authorized signing officer of the corporation	065 Date

070 Name of transferee (print)	075 Business number or social insurance number
MEUK Corporation	
Address (head office if corporation)	080 Tax year-end: 2013 (Year) 12 (Month) 31 (Date)
085 Name of individual or authorized signing officer of the corporation: Dr. Einstein	090 Title
Signature of individual or authorized signing officer of the corporation	095 Date

(Ce formulaire est disponible en français)
(Vous pouvez obtenir ce formulaire à **www.arc.gc.ca**)

Canada

Calculation of qualified SR&ED expenditures to be transferred for the tax year of the transferor

Transferor's SR&ED qualified expenditure pool at the end of the tax year, before subtracting the transferred amount			100 $ 10,000
If the transferor and the transferee were dealing at arm's length, the total amount that would be contract payments ("notional contract payments") for the peformance of SR&ED for, or on behalf of, the transferee (For a definition of contract payment see T4088, *Guide to Form T661* lines 340 and 345)			110 $ 10,000
Notional contract payments on line 110 that are not paid by the transferee within 180 days of the tax year-end of the transferor			112 $ –
Maximum notional contract payments that may be transferred (line 110 minus line 112)			114 $ = 10,000
Qualified expenditures **incurred and paid** by the transferor in the year for the portion of SR&ED performed at non-arm's length. (The expenditures must be paid by the performer on or before the day that is 180 days after the end of the tax year in which they are incurred. Do not include expenditures that are not paid within that time.)	$		
Amounts transferred to the transferor for expenditures attributable to the SR&ED (This would be the case where the transferor has subcontracted all or a portion of the SR&ED to a non-arm's length subcontractor and the subcontractor transferred its qualified expenditures attributable to the SR&ED to the transferor.)	+ $		
Total		= $	(A)
Total SR&ED qualified expenditures **incurred** in the year by the transferor before subtracting unpaid amounts (subtractions per subsections 127(26) and 78(4) of the *ITA*)	$		
Amount transferred to the transferor for expenditures attributable to the SR&ED	+ $		
Total		= $	(B)
Divide amount (A) by amount (B)		= $	(C)
Multiply amount on line 114 by amount (C)		= $	(D)

Enter amount (D) on line 102

Amount calculated in (D) above	102 $
Maximum amount that may be transferred: enter the amount from line 100 or 102, whichever is less	104 $

Amount specified for the transfer:

You may transfer an amount up to the amount on line 104. Carry this amount over to line 010 on page 1 of this form.	106 $

Instructions:

This form is to be used:

- by a taxpayer who performed the SR&ED work (the "transferor");
- to transfer qualified SR&ED expenditures incurred (of the transferor) in a particular tax year, for SR&ED contract work performed for or on behalf of another taxpayer (the "transferee") at a time when the two parties were not dealing at arm's length.

The amount transferred can only be added to the transferee's qualified expenditures **in the first tax year** that ends at or after the end of the particular tax year of the transferor.

The transferor and the transferee each have to file a copy of the agreement at the Tax Centre where they would normally file their return of income.

An agreement should be filed for each transfer of qualified expenditures.

The agreement must be filed:

- on or before the transferor's filing-due date for the particular tax year the SR&ED work was performed, or
- in the period within which the transferor may serve a notice of objection to an assessment for the particular tax year, or
- in the period within which the transferee may serve a notice of objection to an assessment for its first tax year that ends at or after the end of the transferor's particular tax year.

Reference: Income Tax Act subsections 127(13); 127(15) .

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AGREEMENT BETWEEN ASSOCIATED CORPORATIONS TO ALLOCATE SALARY OR WAGES OF SPECIFIED EMPLOYEES FOR SCIENTIFIC RESEARCH AND EXPERIMENTAL DEVELOPMENT (SR&ED)

- Use this form if you are part of a group of associated corporations allocating an amount in respect of salary or wages of a specified employee incurred for SR&ED purposes under subsection 37(9.2) of the *Income Tax Act (ITA)*. In certain cases, subsection 37(9.5) of the *ITA* may deem an individual or partnership to be an associated corporation.
- Under subsection 37(9.3) of the *ITA*, the amount which may be claimed as SR&ED expenditures in respect of salary or wages incurred for a specified employee is the amount allocated among associated corporations. The amount may not exceed five times the year's maximum pensionable earnings (YMPE) for the calendar year in which the tax year ends. The YMPE is set annually under the *Canada Pension Plan*. For example, the YMPE for 2008 is $44,900 and $43,700 for 2007. The maximum salary or wages claimable for a specified employee as SR&ED expenditures in tax year 2008 is $224,500 (5 × $44,900) and $218,500 (5 × $43,700) for 2007.
- If an individual is a specified employee of two or more associated corporations for less than 365 days in a tax year, the maximum amount is to be prorated to reflect the number of days in the tax year that the individual was a specified employee.
- Complete this form for each tax year to which you allocate salary or wages incurred for a specified employee and claim these amounts as SR&ED expenditures. Each associated corporation should file with its tax return, a completed copy of the form, and a certified copy of the resolution of the directors authorizing the agreement, or a Directors' resolution delegating authority to an authorized officer of each corporation signed by the designated authorized officers of each corporation. The Directors' resolution will be in effect for all subsequent years until it is rescinded.
- Where two corporations are owned exclusively by one shareholder, such a transfer signed by authorized officers of each corporation will be accepted provided that a signed confirmation by the shareholder is filed with form T1174 and states that he is the only shareholder of both corporations, and that he has authorized the transfer of the qualified expenditures from one corporation to the other corporation. A Directors' resolution will not be required.
- Attach additional schedules as needed if more than four associated corporations are involved in the allocation. Complete separate forms if there are more than two specified employees for whom you are making an allocation.
- A specified employee, in a particular year, includes an employee who does not deal at arm's length with the employer or who owns directly or indirectly, at any time during the year, 10% or more of the issued shares of any class of the capital stock of the employer or of any corporation related to the employer.

Were copies of the resolutions of the directors submitted in a prior year? Yes ☐ No ☐ If *no*, see 4th bullet above.

It is hereby agreed that salaries or wages for specified employees be allocated as follows for SR&ED expenditures for tax year 20 ___

Specified employee's name		Social insurance number (SIN)		
Associated corporation's name	Business number	Signature of authorized signing officer	SR&ED salary or wages incurred for specified employee	Allocation of the SR&ED salary or wages limit (5 × YMPE) for specified employee
			$	$
Total salary or wages of specified employee for all associated corporations			$	$

Specified employee's name		Social insurance number (SIN)		
Associated corporation's name	Business number	Signature of authorized signing officer	SR&ED salary or wages incurred for specified employee	Allocation of the SR&ED salary or wages limit (5 × YMPE) for specified employee
			$	$
Total salary or wages of specified employee for all associated corporations			$	$

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SCHEDULE 566

ONTARIO INNOVATION TAX CREDIT

Name of corporation	Business Number	Tax year-end Year Month Day
MEUK Corporation	99999 9998 RC0001	2013-12-31

- Use this schedule to claim an Ontario innovation tax credit (OITC). A qualifying corporation must:
  - have had a permanent establishment in Ontario during the tax year;
  - have carried on scientific research and experimental development (SR&ED) in Ontario during the tax year;
  - be eligible to claim a federal investment tax credit under section 127 of the federal *Income Tax Act* for its qualified expenditures; and
  - have filed Form T661, *Scientific Research and Experimental Development (SR&ED) Expenditures Claim*, in the tax year.
- The OITC is a 10% refundable tax credit based on the sum of the corporation's qualified expenditures incurred in Ontario and any eligible repayments.
- The OITC is available to a maximum annual expenditure limit of $3 million. Associated corporations must share in the $3 million expenditure limit.
- Effective January 1, 2010, qualifying corporations are eligible to claim the full OITC with a qualified expenditure limit of $3 million where their specified capital amount or their federal taxable income for the previous tax year is not more than $25 million and $500,000, respectively. If one of these amounts is more than the respective threshold, the $3 million limit is progressively reduced.
- Qualified expenditures include 100% of current expenditures and 40% of capital expenditures.
- A corporation can waive its eligibility for all or part of the OITC by completing Part 7 of this schedule.
- Expenditure limit, qualified expenditure, and eligible repayments are defined in subsections 96(3), 96(3.1), as well as 96(8) and 96(12) of the *Taxation Act*, 2007 (Ontario), respectively.
- File this schedule with your *T2 Corporation Income Tax Return*.

Part 1 – Eligibility

1. Did the corporation have a permanent establishment in Ontario at any time during the tax year?	100	1 Yes [X]	2 No [ ]
2. Was the corporation exempt from tax for the tax year under Part III of the *Taxation Act*, 2007 (Ontario)?	105	1 Yes [ ]	2 No [X]
3. Did the corporation carry on SR&ED in Ontario during the tax year?	110	1 Yes [X]	2 No [ ]
4. Is the corporation eligible to claim an investment tax credit under section 127 of the federal *Income Tax Act* on qualified expenditures made in the tax year?	115	1 Yes [X]	2 No [ ]
5. Did the corporation file Form T661 in the tax year?	120	1 Yes [X]	2 No [ ]

If you answered **yes** to question 2 or **no** to question 1, 3, 4, or 5, you are **not eligible** for the Ontario innovation tax credit.

Part 2 – SR&ED qualified expenditure pool

Ontario qualified expenditures of a current nature					200	T-1.4 743,001	A
Ontario qualified expenditures of a capital nature	205	T-1.4 15,000	x	40 %	= 210	6,000	B
SR&ED qualified expenditure pool * (amount A **plus** amount B)					215	749,001	C

* The SR&ED expenditure pool is not reduced for amounts considered to be specified contract payments. See Part 8 of this schedule.

Part 3 – Eligible repayments

Designated repayments made in the year of government or non-government assistance or contract payments relating to Ontario qualified expenditures of a current nature . . . . . **300** D

Designated repayments made in the year of government or non-government assistance or contract payments relating to Ontario qualified expenditures of a capital nature . . . . . **305** E

Designated repayments made in the year of government or non-government assistance or contract payments relating to Ontario qualified expenditures for first term or second term shared-use equipment . . . . . **310** x 25 % = **315** F

Subtotal (amount E **plus** amount F) x 0.4 = **320** G

Eligible repayments (amount D **plus** amount G) . . . . . **325** H

Part 4 – Expenditure limit

For a stand-alone corporation: $ 8,000,000

Taxable income for the previous tax year (before any loss carrybacks being applied) * . . . . . **400** I

Amount I or $ 500,000 , whichever is greater . . . . . 500,000 x 10 = 5,000,000 J

Excess ($ 8,000,000 **minus** amount J) ** (If your tax year starts before January 1, 2010, see the note below) . . . . . 3,000,000 K

Specified capital amount for the corporation for the previous tax year (line 500 in Part 5) . . . . **minus** $ 25,000,000 = **405** L**

$ 25,000,000 **minus** amount L . . . . . **410** 25,000,000 M**

(amount K x amount M)

Expenditure limit for the stand-alone corporation: 3,000,000 x 25,000,000 / 25,000,000 = ... **415** 3,000,000 N***

Note

If your tax year starts before January 1, 2010, complete the following calculation to determine the excess (amount K):

$$\text{Amount K} = \text{Amount BB} - \left[(\text{Amount BB} - \text{Amount AA}) \times \left(\frac{\text{Amount CC}}{\text{Amount DD}} \right) \right] \quad \frac{\text{Amount CC}}{365}$$

Amount K = BB – [(BB **minus** AA) x (CC **divided by** DD)] where,

AA = [$7,000,000 minus (10 x (line 400 or $400,000, whichever is more))];
BB = [$8,000,000 minus (10 x (line 400 or $500,000, whichever is more))];
CC = number of days in the tax year before January 1, 2010;
DD = number of days in the tax year.

* If any of the tax years referred to at line 400 is less than 51 weeks, **multiply** the taxable income by 365 and **divide** by the number of days in the tax year.

** If the result is negative, enter "0".

*** Amount N cannot be more than $ 3,000,000 .

Part 4 – Expenditure limit (continued)

For associated corporations: **$** 8,000,000

Total of all taxable incomes of the corporation and of its associated corporations (before any loss carrybacks being applied) for their last tax year ending in the previous calendar year * . . . . . **420** _____ O

Amount O or $ 500,000 , whichever is greater . . . . . _____ x 10 = _____ P

Excess ($ 8,000,000 **minus** amount P) ** (If your tax year starts before January 1, 2010, see the note below) . . . . . _____ Q

Specified capital amount of the corporation and of its associated corporations for their last tax year ending in the previous calendar year (line 505 in Part 5) . . . . . _____ **minus** $ 25,000,000 = **425** _____ R**

$ 25,000,000 **minus** amount R . . . . . **430** _____ S**

Expenditure limit for associated corporations: $\frac{\text{(amount Q x amount S)}}{25{,}000{,}000}$ = ... **435** _____ T

Expenditure limit for the corporation (amount allocated from column 3 in Part 6) . . . . . **440** _____ U***

Expenditure limit where the tax year of the stand-alone or associated corporation is less than 51 weeks:

Calculate the amount of the expenditure limit as follows:

Amount N or amount U, whichever applies _____ x $\frac{\text{number of days in the tax year}}{365}$ = ... **445** _____ V

Note
If your tax year starts before January 1, 2010, complete the following calculation to determine the excess (amount Q):

$$\text{Amount Q} = \text{Amount BB} - \left[(\text{Amount BB} - \text{Amount AA}) \times \left(\frac{\text{Amount CC}}{\text{Amount DD}} \right) \frac{}{365} \right]$$

Amount Q = BB – [(BB **minus** AA) x (CC **divided by** DD)] where,

AA = [$7,000,000 minus (10 x (line 420 or $400,000, whichever is more))];
BB = [$8,000,000 minus (10 x (line 420 or $500,000, whichever is more))];
CC = number of days in the tax year before January 1, 2010;
DD = number of days in the tax year.

* If any of the tax years referred to at line 420 is less than 51 weeks, **multiply** the taxable income by 365 and **divide** by the number of days in the tax year.

** If the result is negative, enter "0".

*** Amount U cannot be more than $ 3,000,000 .

Part 5 – Calculation of the specified capital amount

For stand-alone corporations (see notes below):

Specified capital amount for the previous tax year . . . . . **500** _____ W

For associated corporations (see notes below and subsection 96(4.1) of *Taxation Act, 2007* (Ontario)):

Specified capital amount for the corporation and each of its associated corporations for their last tax year ending in the previous calendar year (complete the table below) . . . . . **505** _____ X

	1 Names of associated corporations **510**	2 Business Number of associated corporations (enter "NR" if a corporation is not registered) **515**	3 Specified capital amount **520**
1.			
		Total specified capital amount	Y

Enter on line 505 the total specified capital amount in column 3 (amount Y).

Notes for stand-alone corporations and associated corporations

1. If the corporation is an insurance corporation or a credit union for a tax year, enter the amount of the corporation's taxable capital employed in Canada for the applicable tax year, from line 590, 690, or 790 of Schedule 35, *Taxable Capital Employed in Canada – Large Insurance Corporations*, or line 690 of Schedule 34, *Taxable Capital Employed in Canada – Financial Institutions*.

2. If the corporation is a financial institution, as defined in subsection 96(18) of the *Taxation Act, 2007* (Ontario), for a tax year, enter the amount of the corporation's adjusted taxable paid-up capital for the applicable tax year. If the applicable tax year ends before January 1, 2009, enter the sum of the amounts from lines 565 and 570 of *CT23 Corporations Tax and Annual Return* (Ontario). If the applicable tax year ends after December 31, 2008, enter the amount from line 250 of Schedule 514, *Ontario Capital Tax on Financial Institutions*.

3. For all other corporations, enter the amount of the corporation's taxable paid-up capital or its taxable capital for the applicable tax year. If the applicable tax year ends before January 1, 2009, enter the amount of taxable paid-up capital from line 470 of *CT23 Corporations Tax and Annual Return* (Ontario). If the applicable tax year ends after December 31, 2008, enter the amount of taxable capital from line 120 of Schedule 515, *Ontario Capital Tax on Other Than Financial Institutions*.

Part 6 – Agreement among associated corporations to allocate the expenditure limit

	1 Names of associated corporations 600	2 Business Number of associated corporations (enter "NR" if a corporation is not registered) 605	3A Maximum expenditure limit	3 Expenditure limit allocated *(allocate the amount of the expenditure limit from line 435 in Part 4 to each associated corporation) 610
1.				

Total expenditure limit Z

Enter on line 440 in Part 4 the expenditure limit allocated to the corporation in column 3.

* Special rules apply if the corporation has more than one tax year ending in a calendar year and is associated in more than one of those years with another corporation that has a tax year ending in the same calendar year. In this case, the expenditure limit of the corporation for the second (and later) tax year(s) will be equal to the expenditure limit allocated for the first tax year ending in the calendar year.

Part 7 – Calculation of the Ontario innovation tax credit

	Current Expenditures		Capital Expenditures			
SR&ED qualified expenditure pool (line 215 in Part 2)	743,001	+	6,000	=	749,001	AA
Add: Eligible repayments (line 325 in Part 3)		+		=		BB
Subtotal (amount AA **plus** amount BB)	743,001	+	6,000	= 700	749,001	CC
Expenditure limit (line 415, 440, or 445, whichever applies)					3,000,000	DD
Amount CC or amount DD, whichever is less	743,001	+	6,000	= 705	749,001	EE
Ontario innovation tax credit: (amount EE x 10 %)				= 710	74,900	FF

Are you waiving all or part of the OITC? 715 1 Yes ☐ 2 No ☒

If you answered **yes** at line 715, enter the amount of the tax credit waived on line 720.
If you answered **no** at line 715, enter "0" on line 720.

Deduct: Waiver of the tax credit 720 GG

Ontario innovation tax credit claimed (amount FF **minus** amount GG) 74,900 HH

Enter amount HH on line 468 on page 5 of Schedule 5, T*ax Calculation Supplementary – Corporations*.

Part 8 – Specified contract payments

- Specified contract payments, as defined in subsection 96(11) of the *Taxation Act, 2007* (Ontario), are contract payments received for the performance of SR&ED carried on in Ontario by a payor corporation that does not have a permanent establishment in Ontario and is not entitled to claim the OITC.
- According to subsection 96(9) of the **Taxation Act, 2007** (Ontario), the recipient does not have to deduct the specified contract payment from its SR&ED qualified expenditure pool.
- Specified contract payments include all amounts that are received, receivable, or reasonably expected to be received by the corporation.

Note
A corporation cannot claim SR&ED credits for contract payments received from another corporation that are not specified contract payments. These payments, if eligible, would be claimed by the corporation making the payments.

Provide details of specified contract payments received for which the OITC is being claimed:

	Name of corporation making the payment **800**	Address of the corporation making the payment **805**
1.		

	Is this an arm's length transaction? **810**	Gross amount of specified contract payment received **815**	Actual SR&ED expenditure relating to contract included in claim **820**
1.	1 Yes ☐ 2 No ☐		

Schedule A – Worksheet for eligible expenditures incurred by the corporation in Ontario for the current taxation year

This worksheet allows you to report the amount of eligible expenditures entered on Form T661, *Scientific Research and Experimental Development (SR&ED) Expenditures Claim* which represents eligible expenditures as defined in section 127 of the *Income Tax Act* (ITA) with regard to scientific research and experimental development (SR&ED) **carried on in Ontario and attributable to a permanent establishment in Ontario of a corporation**.

Data on the worksheet is calculated based on the amounts on Form 508, but will have to be adjusted according to the rules of Ontario, if applicable. This data will be used when calculating lines 200 and 205 of Section 2

Enter the breakdown between current and capital expenditures

		Current Expenditures		Capital Expenditures
Total eligible expenditures incurred by the corporation in Ontario in the tax year. (Schedule 508, line I and II of Schedule A)		733,001		15,000
Add				
Eligible expenditures transferred to the corporation by another corporation (Schedule 508, breakdown of line 110)	+	10,000	+	
Subtotal	=	743,001	=	15,000
Less				
Eligible expenditures the corporation transferred to another corporation (Schedule 508, breakdown of line 115)	–		–	
Government assistance, non-government assistance or a contract payment in respect of eligible expenditures	–		–	
Total eligible expenditures incurred by the corporation in Ontario in the tax year	=	743,001 *	=	15,000 **

* (enter amount at line 200 of Section 2)

** (enter amount at line 205 of Section 2)

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SCHEDULE 508

ONTARIO RESEARCH AND DEVELOPMENT TAX CREDIT

Name of corporation	Business Number	Tax year-end Year Month Day
MEUK Corporation	99999 9998 RC0001	2013-12-31

- Use this schedule to:
  - calculate an Ontario research and development tax credit (ORDTC);
  - claim an ORDTC earned in the tax year or carried forward from any of the 20 previous tax years that are a tax year ending after December 31, 2008, to reduce Ontario corporate income tax payable in the current tax year;
  - carry back an ORDTC to reduce Ontario corporate income tax payable in any of the three previous tax years, but not to a tax year that ends before January 1, 2009;
  - add an ORDTC that was allocated to the corporation by a partnership of which it was a member;
  - transfer an ORDTC after an amalgamation or windup; or
  - calculate a recapture of the ORDTC.
- The ORDTC is a 4.5% non-refundable tax credit on eligible expenditures incurred by a corporation in a tax year that ends after December 31, 2008.
- An eligible expenditure is an expenditure for a permanent establishment in Ontario of a corporation, that is a qualified expenditure for the purposes of section 127 of the federal *Income Tax Act* for scientific research and experimental development (SR&ED) carried on in Ontario.
- Only corporations that are not exempt from Ontario corporate income tax and none of whose income is exempt income can claim the ORDTC.
- Attach a completed copy of this schedule to the *T2 Corporation Income Tax Return.*

Part 1 – Ontario SR&ED expenditure pool

Total eligible expenditures incurred by the corporation in Ontario in the tax year	100	748,001	A	
Deduct: Government assistance, non-government assistance, or a contract payment for eligible expenditures	105	74,900	B	
Net eligible expenditures for the tax year (amount A **minus** amount B) (if negative, enter "0")		673,101	C	
Add: Eligible expenditures transferred to the corporation by another corporation	110	10,000	D	
Subtotal (amount C **plus** amount D)		683,101 ▶		683,101 E
Deduct: Eligible expenditures the corporation transferred to another corporation	115		F	
Ontario SR&ED expenditure pool (amount E **minus** amount F) (if negative, enter "0")	120	683,101	G	

Part 2 – Calculation of the current part of the ORDTC

Ontario SR&ED expenditure pool (amount G in Part 1)	683,101	x	4.50 %	=	200	30,740	H
ORDTC allocated to a corporation by a partnership of which it is a member (other than a specified member) for a fiscal period that ends in the corporation's tax year *					205		I
* If there is a disposal or change of use of eligible property, see Part 6							
Repayment made in the tax year of government or non-government assistance or a contract payment that reduced an eligible expenditure other than for first term or second term shared-use equipment	210	x	4.50 %	=	215		J
Repayment made in the tax year of government or non-government assistance or a contract payment that reduced an eligible expenditure for first term or second term shared-use equipment	220	x 1 / 4 =	x 4.50 %	=	225		K
Current part of the ORDTC (total of amounts H to K)					230	30,740	L

Part 3 – Calculation of ORDTC available for deduction and ORDTC balance

ORDTC balance at the end of the previous tax year . . . . . M

Deduct: ORDTC expired after 20 tax years . . . . . 300 N

ORDTC at the beginning of the tax year (amount M **minus** amount N) . . . . . 305 O

Add:

ORDTC transferred on amalgamation or windup . . . . . 310 P

Current part of ORDTC (amount L in Part 2) . . . . . 30,740 Q

Are you waiving all or part of the current part of the ORDTC? . . . . . 315 Yes 1 ☐ No 2 ☒ X

If you answered **yes** at line 315, enter the amount of the tax credit waived on line 320.

If you answered **no** at line 315, enter "0" on line 320.

Deduct: Waiver of the current part of the ORDTC . . . . . 320 R

Subtotal (amount Q **minus** amount R) 30,740 ▶ 30,740 S

ORDTC available for deduction (total of amounts O, P and S) . . . . . 30,740 ▶ 30,740 T

Deduct:

ORDTC claimed * (Enter amount U on line 416 of Schedule 5, *Tax Calculation Supplementary – Corporations*) . . . . . U

ORDTC carried back to a previous tax year (from Part 4) V

Subtotal (amount U **plus** amount V) ▶ W

ORDTC balance at the end of the tax year (amount T **minus** amount W) . . . . . 325 30,740 X

* This amount cannot be more than the lesser of the following amounts:
- ORDTC available for deduction (amount T); or
- Ontario corporate income tax payable before the ORDTC and the Ontario corporate minimum tax credit (amount from line E6 of Schedule 5).

Part 4 – Request for carryback of tax credit

	Year	Month	Day		
1st previous tax year	2012-12-31			Credit to be applied	901
2nd previous tax year	2003-12-31			Credit to be applied	902
3rd previous tax year	2002-12-31			Credit to be applied	903

Total (enter amount on line V in Part 3)

Part 5 – Analysis of tax credit available for carryforward by tax year of origin

You can complete this part to show all the credits from preceding tax years available for carryforward, by year of origin. This will help you determine the amount of credit that could expire in following years.

Tax year of origin (earliest tax year first) Year Month Day	Credit available
1985-12-31	
1986-12-31	
1987-12-31	
1988-12-31	
1989-12-31	
1990-12-31	
1991-12-31	
1992-12-31	
1993-12-31	
1994-12-31	

Tax year of origin (earliest tax year first) Year Month Day	Credit available
1995-12-31	
1996-12-31	
1997-12-31	
1998-12-31	
1999-12-31	
2000-12-31	
2001-12-31	
2002-12-31	
2003-12-31	
2012-12-31	
Current tax year 2013-12-31	30,740

Total (equals line 325 in Part 3) 30,740

The amount available from the 20th preceding tax year will expire after this year. When you file your return for the next year, you will enter the expired amount on line 300 of Schedule 508 for that year.

Part 6 – Calculation of a recapture of ORDTC

You will have a recapture of ORDTC in a tax year when you meet **all** of the following conditions:

- you acquired a particular property in the current year or in any of the 20 previous tax years if the ORDTC was earned in a tax year ending after 2008;
- you claimed the cost of the property as an eligible expenditure for the ORDTC;
- the cost of the property was included in computing your ORDTC or was subject to an agreement made under subsection 127(13) of the federal Act to transfer qualified expenditures and section 42 of the *Taxation Act, 2007* (Ontario) applied; and
- you disposed of the property or converted it to commercial use in a tax year ending after December 31, 2008. You also meet this condition if you disposed of or converted to commercial use a property which incorporates the particular property previously referred to.

Note: The recapture **does not apply** if you disposed of the property to a non-arm's length purchaser who intended to use it all or substantially all for SR&ED in Ontario. When the non-arm's length purchaser later sells or converts the property to commercial use, the recapture rules will apply to the purchaser based on the historical federal investment tax credit (ITC) rate * of the original user in Calculation 1 below.

You have to report the recapture on Schedule 5 for the year in which you disposed of the property or converted it to commercial use. If the corporation is a member of a partnership, report its share of the recapture.

If you have more than one disposition for calculations 1 and 2, complete the columns for each disposition for which a recapture applies, using the calculation formats below.

* Federal ITC in calculations 1 and 2 should be determined without reference to paragraph (e) of the definition **investment tax credit** in subsection 127(9) of the federal Act.

Calculation 1 – If you meet all of the above conditions

	Y Amount of federal ITC you originally calculated for the property you acquired, or the original user's federal ITC where you acquired the property from a non-arm's length party, as described in the note above **700**	Z Amount calculated using the federal ITC rate at the date of acquisition (or the original user's date of acquisition) on either the proceeds of disposition (if sold in an arm's length transaction) or the fair market value of the property (in any other case) **710**	AA Amount from column 700 or 710, whichever is less
1.			

Subtotal (enter amount BB, on line KK in Part 7) BB

Calculation 2 – If the corporation is deemed by subsection 42(1) of the *Taxation Act, 2007* (Ontario) to have transferred all or part of the eligible expenditure to another corporation as a consequence of an agreement described in subsection 127(13) of the federal Act complete Calculation 2. Otherwise, enter nil on line II.

	CC The rate percentage that the transferee used to determine its federal ITC for a qualified expenditure that was transferred under an agreement under subsection 127(13) of the federal Act **720**	DD The proceeds of disposition of the property if you dispose of it to a person at arm's length; or, in any other case, the fair market value of the property at conversion or disposition **730**	EE The amount, if any, already provided for in Calculation 1 (this allows for the situation where only part of the cost of a property is transferred for an agreement under subsection 127(13) of the federal Act) **740**
1.			

	FF Amount determined by the formula (CC x DD) – EE (using the columns above)	GG The federal ITC earned by the transferee for the qualified expenditure that was transferred **750**	HH Amount from column FF or GG, whichever is less
1.			

Subtotal (enter amount II on line LL below) _____ II

Calculation 3

As a member of a partnership, you will report your share of the ORDTC of the partnership after the ORDTC has been reduced by the amount of the recapture. If this is a positive amount, you will report it on line 205 in Part 2. However, if the partnership does not have enough ORDTC otherwise available to offset the recapture, then the amount by which reductions to the ORDTC exceeds additions (the excess) will be determined and reported on line JJ.

Corporate partner's share of the excess of ORDTC (enter amount JJ at line NN below) . . . . . **760** _____ JJ

Part 7 – Total recapture of ORDTC

Recaptured federal ITC for Calculation 1 (amount from line BB) . . . . . _____ KK

Recaptured federal ITC for Calculation 2 (amount from line II above) . . . . . _____ LL

Amount KK **plus** amount LL . . . . . _____ x 23.56 % = _____ MM

Add: Corporate partner's share of the excess of ORDTC for Calculation 3 (amount from line JJ above) . . . . . _____ NN

Recapture of ORDTC (amount MM **plus** amount NN) (enter amount OO on line 277 of Schedule 5) . . . . . _____ OO

Schedule A - Worksheet for eligible expenditures incurred by the corporation in Ontario for the current taxation year

This worksheet allows you to report the amount of eligible expenditures entered on Form T661, *Scientific Research and Experimental Development (SR&ED) Expenditures Claim* which represents eligible expenditures as defined in section 127 of the *Income Tax Act* (ITA) with regard to scientific research and experimental development (SR&ED) **carried on in Ontario and attributable to a permanent establishment in Ontario of a corporation**.

Data on the worksheet is calculated based on the amounts on Form T661, but will have to be adjusted according to the rules of Ontario, if applicable, in particular when the corporation has had a permanent establishment in more than one jurisdiction. This data will be used when calculating Schedule 508 and Schedule 566.

Enter the breakdown between current and capital expenditures

		Current Expenditures		Capital Expenditures	
Total expenditures for SR&ED		520,000		15,000	
Add					
• payment of prior years' unpaid expenses (other than salary or wages)	+				
• prescribed proxy amount (Enter "0" if you use the traditional method)	+	240,001			
• expenditures on shared-use equipment			+		
• other additions	+		+		
Subtotal	=	760,001	=	15,000	
Less					
• current expenditures (other than salary or wages) not paid within 180 days of the tax year end	–				
• amounts paid in respect of an SR&ED contract to a person or partnership that is not taxable supplier	–				
• 20% of contract expenditures for SR&ED performed on your behalf	–	17,000			
• prescribed expenditures not allowed by regulations	–		–		
• other deductions	–		–		
• non-arm's length transactions					
– expenditures for non-arm's length SR&ED contracts	–	10,000			
– purchases (limited to costs) of goods and services from non-arm's length suppliers	–		–		
Subtotal	=	733,001 I	=	15,000 II	
Total eligible expenditures incurred by the corporation in Ontario in the tax year (add amount I and II)			=	748,001 III	

Enter amount III on line 100 of Schedule 508.

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SCHEDULE 568

ONTARIO BUSINESS-RESEARCH INSTITUTE TAX CREDIT

Name of corporation	Business Number	Tax year-end Year Month Day
MEUK Corporation	99999 9998 RC0001	2013-12-31

- Use this schedule to claim the Ontario business-research institute tax credit (OBRITC) under section 97 of the *Taxation Act, 2007* (Ontario).
- The OBRITC is a 20% refundable tax credit based on qualified expenditures incurred in Ontario under an eligible contract with an eligible research institute (ERI).
- A list of eligible research institutes and the applicable ERI codes for eligible contracts can be found on our website. Go to **www.cra.gc.ca/ctao** and select "business-research institute tax credit".
- The criteria for a corporation to be eligible for the OBRITC include the eligibility requirements in Part 1 of this schedule.
- The annual qualified expenditure limit is $20 million. If a corporation is associated with other corporations at any time in the calendar year, the $20 million limit must be allocated among the associated corporations.
- Qualifying corporations are defined in subsection 97(3) of the *Taxation Act, 2007* (Ontario).
- For each eligible contract, you must complete a separate Schedule 569, *Ontario Business-Research Institute Tax Credit Contract Information*.
- Keep the eligible contract to support your claim. Do not submit the contract with the *T2 Corporation Income Tax Return*.
- To claim the OBRITC, include the following with the *T2 Corporation Income Tax Return*:
  – a completed copy of this schedule; and
  – a completed copy of Schedule 569 for each eligible contract.

Part 1 – Eligibility

1. Did the corporation, for the tax year, carry on business in Ontario through a permanent establishment in Ontario? . . . . . **100** 1 Yes [X] 2 No [ ]
2. Was the corporation exempt from tax for the tax year under Part III of the *Taxation Act, 2007* (Ontario)? . . . . . **105** 1 Yes [ ] 2 No [X]

If you answered **no** to question 1 or **yes** to question 2, the corporation is **not eligible** for the OBRITC.

Part 2 – Qualified expenditure limit for the tax year

Was the corporation associated at any time in the tax year with another corporation? . . . . . **200** 1 Yes [ ] 2 No [X]

If the corporation answered **no** at line 200, enter $20,000,000 on line 205. If the corporation answered **yes** at line 200, complete Part 3 and enter on line 205 the expenditure limit allocated to the corporation in column 310 in Part 3.

Qualified expenditure limit . . . . . **205** 20,000,000 A

If the tax year is 51 weeks or more, enter amount A on line 210.

If the tax year of the filing corporation is less than 51 weeks, complete the following proration calculation:

Amount A 20,000,000 x (days in the tax year) 365 / 365 = ... B

Qualified expenditure limit for the tax year (amount A or amount B, whichever applies) . . . . . **210** 20,000,000 C

Part 3 – Allocation of the $20 million expenditure limit between associated corporations

Use this part to allocate the $20 million expenditure limit to the filing corporation and all its associated corporations for each of their tax years ending in the calendar year. See subsection 38(4) of Ontario Regulation 37/09 for expenditure limit allocation rules for associated corporations. Attach additional schedules if you need more space.

	Name of all associated corporations, including the filing corporation (include the associated corporations that have a tax year that ends in the calendar year) **300**	Business Number (enter "NR" if corporation is not registered) **305**	Expenditure limit allocated **310**
1.			

Total expenditure limit (cannot exceed $20 million) **315** D

Enter the expenditure limit allocated to the corporation on line 205 in Part 2.

Part 4 – Calculation of the Ontario business-research institute tax credit

Total number of eligible contracts used to determine the OBRITC for this tax year **400** 1

Total qualified expenditures for all eligible contracts identified on line 400 for this tax year (total of amounts on line 310 in Part 3 of each **Schedule 569**) . . . . . **405** 40,000 E

Qualified expenditure limit for the tax year (amount C in Part 2) . . . . . 20,000,000 F

Qualified expenditures for the OBRITC for the tax year (amount E or F, whichever is less) **410** 40,000

Ontario business-research Institute tax credit (line 410 x 20 %) . . . . . 8,000 G

Enter amount G on line 470 of Schedule 5, *Tax Calculation Supplementary – Corporations*.

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SCHEDULE 569

ONTARIO BUSINESS-RESEARCH INSTITUTE TAX CREDIT CONTRACT INFORMATION

Name of corporation	Business Number	Tax year-end Year Month Day
MEUK Corporation	99999 9998 RC0001	2013-12-31

- Use this schedule to support your claim for the Ontario business-research institute tax credit (OBRITC), which is made on Schedule 568, *Ontario Business-Research Institute Tax Credit*. Complete a separate Schedule 569 for each eligible contract.
- The OBRITC is a 20% refundable tax credit based on qualified expenditures incurred in Ontario under an eligible contract with an eligible research institute (ERI). An ERI, for purposes of the OBRITC, is defined in subsection 97(27) of the *Taxation Act, 2007* (Ontario).
- A list of eligible research institutes and the applicable ERI codes for eligible contracts can be found on our web site. Go to **www.cra.gc.ca/ctao** and select "business-research institute tax credit".
- The eligibility requirements in Part 2 of this schedule must be met for the qualifying corporation to claim an OBRITC for this contract.
- Eligible contracts entered into before August 10, 2007 were subject to advanced ruling legislation. OBRITC claims relating to one of these contracts must have the corresponding Ontario Ministry of Revenue ruling reference number entered at line 130 in Part 1 of this schedule.
- Corporations can only claim the OBRITC for the number of days in the tax year that the corporation **was not** connected to the ERI. Connected corporations, for the purposes of the OBRITC, are defined in subsection 97(4) of the *Taxation Act*, 2007 (Ontario).
- Eligible contracts and qualified expenditures are defined in subsections 97(6) and 97(8), respectively, of the *Taxation Act, 2007* (Ontario).
- According to subsections 97(16) and (19) of the *Taxation Act, 2007* (Ontario), qualified expenditures must be reduced by contributions the corporation received, is entitled to receive or may reasonably expect to receive. Qualified expenditures include repayment of government assistance made by the corporation during the year. Contribution and government assistance are defined in subsection 97(27) of the *Taxation Act, 2007* (Ontario).

Part 1 – Contract details

100 Name of person to contact for more information: Albert Einstein

105 Telephone number including area code:

110 Name of the ERI on the contract: Variable Speed

115 ERI code: 116

120 Date of contract (Year Month Day): 2009-12-31

If the date on line 120 is before August 10, 2007, was the contract subject to an advanced ruling? . . . **125** 1 Yes ☐ 2 No ☐

For all contracts entered into before August 10, 2007, enter the Ontario Ministry of Revenue ruling reference number . . . . . **130** ☐ – ☐

Is the claim filed for an OBRITC earned through a partnership?* . . . . . **135** 1 Yes ☐ 2 No ☒

If the answer on line 135 is **yes**, are you a specified member? . . . . . **140** 1 Yes ☐ 2 No ☐

If the answer on line 135 is **yes**, what is the name of the partnership? **145**

Enter the corporation's percentage share of the income or loss of the partnership's fiscal period ending in the corporation's tax year . . . . . **150** 100.000 %

* When a corporate member of a partnership is claiming an amount for qualified expenditures incurred during the tax year under the eligible contract by the partnership, complete Schedule 569 as if the partnership were a corporation. Each corporate member, other than a specified member, should file a Schedule 569 as if it, instead of the partnership, had entered into the contract with the ERI and can claim the corporation's share of the partnership's qualified expenditures. Specified members of a partnership cannot claim an OBRITC. A definition of "specified member" can be found in subsection 248(1) of the federal *Income Tax Act*.

Part 2 – Eligibility

Contract:

1. Did the corporation enter into a contract with an ERI? . . . . . **200** 1 Yes [X] 2 No [ ]
2. Do the terms of the contract state that the ERI agrees to perform, in Ontario, scientific research and experimental development (SR&ED) related to the business carried on in Canada by the corporation? . . . . . **205** 1 Yes [X] 2 No [ ]
3. Was the corporation entitled to exploit the results of the SR&ED carried out under the contract? . . . . . **210** 1 Yes [X] 2 No [ ]

If you answered **no** to question 1, 2, or 3, the contract is **not** an **eligible** contract for the purposes of an OBRITC.

Expenditures:

4. Were the expenditures made by a payment of money by the corporation to the ERI or by a prescribed payment? . . . . . **215** 1 Yes [X] 2 No [ ]
5. Were the expenditures incurred in respect of SR&ED carried on in Ontario by the ERI? . . . . . **220** 1 Yes [X] 2 No [ ]
6. Are the expenditures identified in subparagraph 37(1)(a)(i), (i.1) or (ii) of the federal *Income Tax Act* and would they also qualify as qualified expenditures, as defined in subsection 127(9) of the federal Act, other than prescribed types of expenditures and certain salaries or wages? . . . . . **225** 1 Yes [X] 2 No [ ]
7. Were the expenditures incurred by the corporation for purposes of SR&ED related to the business carried on in Canada by the corporation? . . . . . **230** 1 Yes [X] 2 No [ ]

If you answered **no** to question 4, 5, 6, or 7, the expenditures are **not eligible** expenditures for the purposes of an OBRITC.

Part 3 – Qualified expenditures for this contract for the tax year

Qualified expenditures incurred in the tax year **300** 40,000

If the corporation answered **yes** at line 135 in Part 1, and **no** at line 140 in Part 1, determine the partnerships' share of qualified expenditures available to claim in the tax year:

Line 300 40,000 x percentage on line 150 in Part 1 100.000 % = _____ A

Number of days in this tax year that the corporation was **not** connected to the ERI identified on line 110 in Part 1 . . . . . **305** 365

Qualified expenditures for this contract for the tax year:

$$\frac{\text{(Line 300 or amount A, whichever applies) x line 305}}{\text{number of days in the tax year}} \quad \frac{14{,}600{,}000}{365} =$$

. . . . . **310** 40,000 B

Enter amount B on line 405 of **Schedule 568**, *Ontario Business-Research Institute Tax Credit*.

U Summary of SR&ED tax filing procedures

U.1 E-filing requirements & deadlines

To access the incentive for SR&ED carried out in Canada, you must complete Form T661, and schedule T2SCH31 (corporations) or Form T2038 (IND) (individuals), as applicable, and Efile them with your return of income. You have to file Form T661 whether or not you claim an ITC in the current year.

A claimant's reporting deadline is the day that is **12 months after the filing due date** of the return of income for the year. As a result:

- A corporation will have 18 months and
- (individuals have 17.5 months),

from the end of the tax year in which you incurred the expenditures to report them[136].

The T661 is to be filed with the tax return of the entity claiming the credit on or before the normal due date for that return. Generally, for a corporation, this would be 6 months after year-end, and of an individual, this would be April 30th or June 15th following the calendar year-end. There are provisions allowing a claim to be filed as late as 12 months after the normal due date of the tax return.[137]

The latest filing date for a corporation to file a complete claim would be 18 months after the fiscal year-end. For example:

Taxation year-ended December 31, 2007 = SR&ED filing deadline is June 30, 2009

The CRA has instructed all offices to reject any claims that are not filed within the time limits as complete claims. The complete claim checklist is included in the current version of the T661. It indicates that all information in the T661 Form is prescribed information and that if the prescribed information is not filed with your T2SCH31 or T2038(IND) within 12 months after the normal due date, your claim may be rejected. Where the deadline is missed or the claim is still incomplete when the deadline passes, no SR&ED expenditures can be deducted under s.37(1) and no investment tax credits are earned.

There are a number of court cases[138] that demonstrate that given the right fact pattern, it was possible to apply for judicial review whereby the Courts would ask the Minister to reconsider his decision.

136 Filing deadlines prescribed by Income Tax Act subsection 37(11)

137 Filing deadlines prescribed by ITA subsections 37(11) and 127(9) definition of qualified expenditures

138 In one case, a taxpayer appealed for a review of the special circumstances surrounding a late filed claim. The court established that the Minister did have the discretion under subsections 220(2.1) and subsection 220(3) to allow late filing of an SR&ED claim. Refer to Alex Parallel Computer Research Inc. 99 DTC 5283 FCTD.

More recently, two cases Dorothea Knitting Mills Ltd ("Dorothea") 2005 DTC 5177 FCTD and Sixgraph Informatique Ltee ("Sixgraph") 2005 DTC 5173 FCA dealt with late or deficient filing of SR&ED claims. In the case of Sixgraph, the T661 was filed five years late and in the case of Dorothea, the T661 was filed on time (within 18 month period), but the supporting technical project description was not filed until three months after the 18 month deadline. In both cases, the Minister refused to exercise his discretion under subsection 220(2.1). In both cases, the taxpayers sought judicial review of the Minister's decision.

In the case of Sixgraph, the taxpayer alleged that the Minister had not considered the fact that the CRA refused to provide the company with copies of the 1991-1993 Notices of Assessment and the fact that its books and records were seized by its creditors. The trial judge concluded that the Notices of Assessment were not essential in filing the 1995 SR&ED claim and that the books and records seizure had been lifted in the summer of 1996. The Federal Court of Appeal agreed with the trial judge and the taxpayer's appeal was dismissed.

However proposed amendments issued on November 17, 2005 would eliminate the application of subsection 220(2.1) of the ITA. More specifically, Section 220 of the ITA is amended by adding the following after subsection 220(2.1):

> (2.2) Exception – Subsection (2.1) does not apply in respect of a prescribed form, receipt or document, or prescribed information, that is filed with the Minister on or after the day specified, in respect of the form, receipt, document or information, in subsection 37(11) or paragraph (m) of the definition of investment tax credit in subsection 127(9).

The proposed legislation would be applicable in respect of a prescribed form, receipt and document, and prescribed information, filed with the Minister of National Revenue on or after November 17, 2005.

Note that the proposed legislation is contained in Bill C-33 and received first reading in the Senate as of June 18, 2007.

To access the incentive for SR&ED carried out in Canada, the taxpayer must satisfy all of the following basic requirements:

- carry on business in Canada in the year;
- perform SR&ED work which is related to a business of the taxpayer; and
- complete and file prescribed forms including prescribed information:
  - Form T661 (T2Schedule 032),
  - Technical project description containing information set out in Form T4088 guide
  - T2Schedule 031 for corporations or Form T2038(IND) for individuals for each taxation year
  - Relevant provincial forms
  - File on or before the filing deadline.

Filing Deadline – A Complete Claim

- File no later than 12 months after the taxpayer's filing due date ("18 month rule" for corporations)
- File a claim with all prescribed information completed by the deadline (All information on the T661 is prescribed information)
- Possibility to apply for relief under subsection 220(2.1) – Minister's discretion
- Given the right fact pattern - Possibility to seek judicial review if your request under subsection 220(2.1) is denied by the Minister.
- Draft legislation subsection 220(2.2) has removed the application of subsection 220(2.1) for SR&ED purposes

The tax summaries on the previous pages **(T-0 & T-0.1)** are designed to provide summary of all related tax implications. Eligibility for SR&ED tax credits requires that the claims be filed within 18 months from the year-end of the taxpayer.

U.2 Overview of CRA forms to claim tax credits

U.2.1 Mandatory forms – all SR&ED claims

In the case of Dorothea, the taxpayer filed the claim within the 18 month deadline but did not file the technical information until three months after the 18 month deadline. The Minister refused to exercise his discretion under subsection 220(2.1) of the ITA. However, the Federal Court granted the taxpayer's application for judicial review on the grounds that the Minister did not properly consider all the facts in question.

T2 SCH32 – [also referred to as form T661][139] Claim for Scientific Research and Experimental Development (SR&ED) Expenditures Carried on in Canada

T2SCH31 - Investment Tax Credit – Corporations (+ any provincial ITC schedules)

T2S(1): Reconciliation of Financial Statement & Taxable Incomes

U.2.2 Issue specific forms

T1145 - Agreement to Allocate Assistance for Scientific Research & Experimental Development Expenditures (SR&ED) Between Persons not dealing at arm's-length

T1146 - Agreement to Transfer Quantified Expenditures Incurred in Respect of Scientific Research and Experimental Development (SR&ED) Contracts

T1174 - Agreement Among Associated Corporations to Allocate Salaries or Wages of Specified Employees for Scientific Research and Experimental Development (SR&ED)...

T665 - Simplified claim for expenditures incurred in carrying on scientific research and experimental development (SR&ED) in Canada

U.2.3 How to speed up the processing of your claim

To ensure we can process your current year claim as quickly as possible:

- Use the latest version of Form T661;
- **keep all technical** and financial documents to support your claim;
- **Efile** the SR&ED claim
- **File at the tax centre** (filing your claim at your local tax services offices will delay the processing of your claim) if you are filing only the SR&ED claim;

U.2.4 Where to send SR&ED Claim returns if filing an amendment via paper copy- CRA SR&ED Tax Centres by region

The Canada Revenue Agency has six (6) tax centres in Canada responsible for processing T2 (for corporations) returns. In order to expedite your SR&ED claims both the corporate tax return & the SR&ED claim should be sent to the appropriate Tax Centre.

The CRA lists these Centres on its website at http://www.CRA-adrc.gc.ca/tax/business/

CORPORATIONS SERVED BY TAX SERVICES OFFICES IN:	**SEND YOUR RETURN TO THE FOLLOWING:**
British Columbia, Yukon Territory and Regina	Tax Centre Surrey BC V3T 5E1 1-888-738-7718

[139] Schedule 32 was formally known as form T661 - several CRA Information Circulars, Interpretation Bulletins and other forms are still in force even though they refer to the old form T661.

Alberta, Manitoba, Northwest Territories, London, Saskatoon, Thunder Bay and Windsor	Tax Centre Winnipeg MB R3C 3M2 1-800-724-0790
Toronto Centre, Toronto East, Toronto North, Toronto West, and Sudbury (Sudbury/Nickel Belt only[140])	Tax Services Office Sudbury ON P3A 5C1 1-800-998-7739
Laval, Montréal, Ottawa, Rouyn-Noranda, Sherbrooke and Sudbury (North-eastern Ontario only[141])	Tax Centre Shawinigan-Sud QC G9N 7S6 1-800-959-7405
Chicoutimi, Montérégie-Rive-Sud, Outaouais, Québec, Rimouski, and Trois-Rivières	Tax Centre Jonquière QC G7S 5J1 1-888-699-0735 (ext. 2000)
New Brunswick, Newfoundland and Labrador, Nova Scotia, Kingston, Waterloo, Peterborough and St. Catharines	Tax Centre St. John's NF A1B 3Z1 1-888-832-1728
Prince Edward Island, Belleville, Hamilton and Kitchener	Tax Centre Summerside PE C1N 6C6 1-877-427-1321

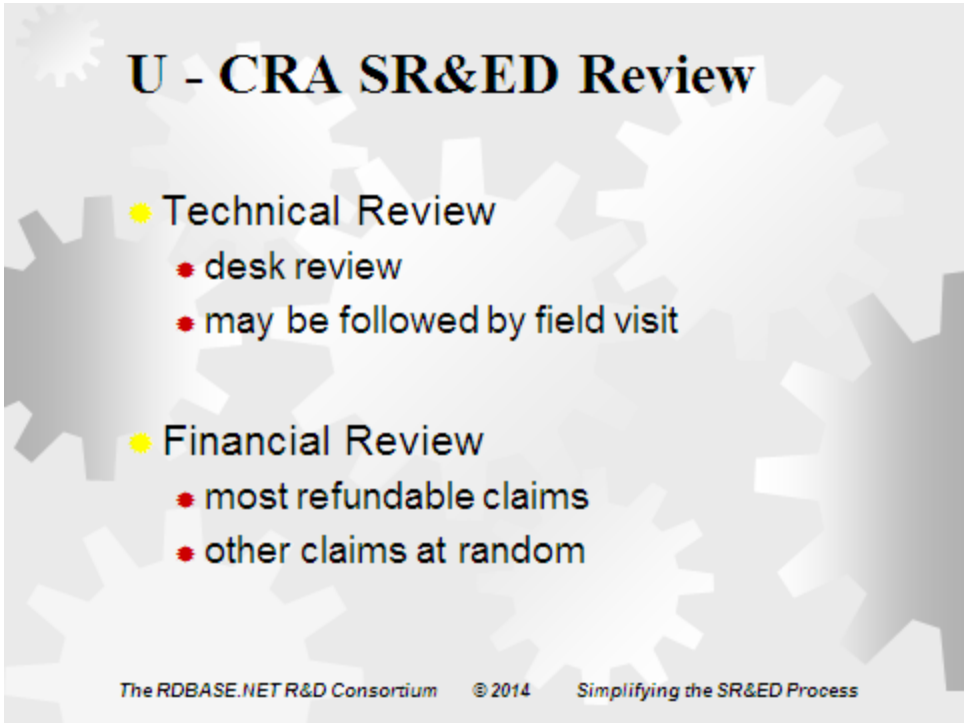
U.2.5 Summary of required provincial SR&ED tax forms:

Ontario forms for the Ontario Business research Institute (OBRI) tax credit, the Ontario Research & Development Tax Credit (ORDTC) and the Ontario Innovation Tax Credit (OITC) have been included in the service. These forms adhere to the provisions outlined in Chapter IV of this service.

Additional provincial forms are integrated in most corporate tax programs.

[140] Sudbury/Nickel Belt areas includes all postal codes beginning with P3A, P3B, P3C, P3E, P3G, P3L, P3N, P3P, P3Y, and all postal codes beginning with P0M and ending with 1A0, 1B0, 1A0, 1E0, 1H0, 1J0, 1K0, 1L0, 1M0, 1N0, 1P0, 1R0, 1S0, 1T0, 1V0, 1W0, 1Y0, 2C0, 2E0, 2M0, 2R0, 2S0, 2X0, 2Y0, 3A0, 3B0, 3C0, 3E0 and 3H0

[141] North-eastern Ontario includes all areas outside of Sudbury/Nickel Belt that are served by the Sudbury Tax Services Office.



U.3 CRA SR&ED Review

- **Technical Review**
  - Desk review
  - May be followed by field visit
- **Financial Review**
  - Most refundable claims
  - Other claims at random

Although some claims are assessed without a detailed review, many SR&ED claims are still reviewed by the CRA. The CRA has a two-step review process for SR&ED claims: the technical audit and the financial audit. A Research and Technology Advisor (RTA) or technical consultant will review the claim in a desk review and may forward the claim directly to the financial reviewer. Some files will have a field review to resolve any questions about the work or to visit a taxpayer that has not been seen for a few years.

The goal of the CRA is to complete the review process of refundable claimants within 120 days of receiving a complete claim, 90% of the time.

For non-refundable claims the goal is to advise the claimant within 120 days if the claim will be processed as filed or if a further review is required (technical and/or financial review). The goal is to complete the review within one year of receiving a complete claim, 90% of the time.

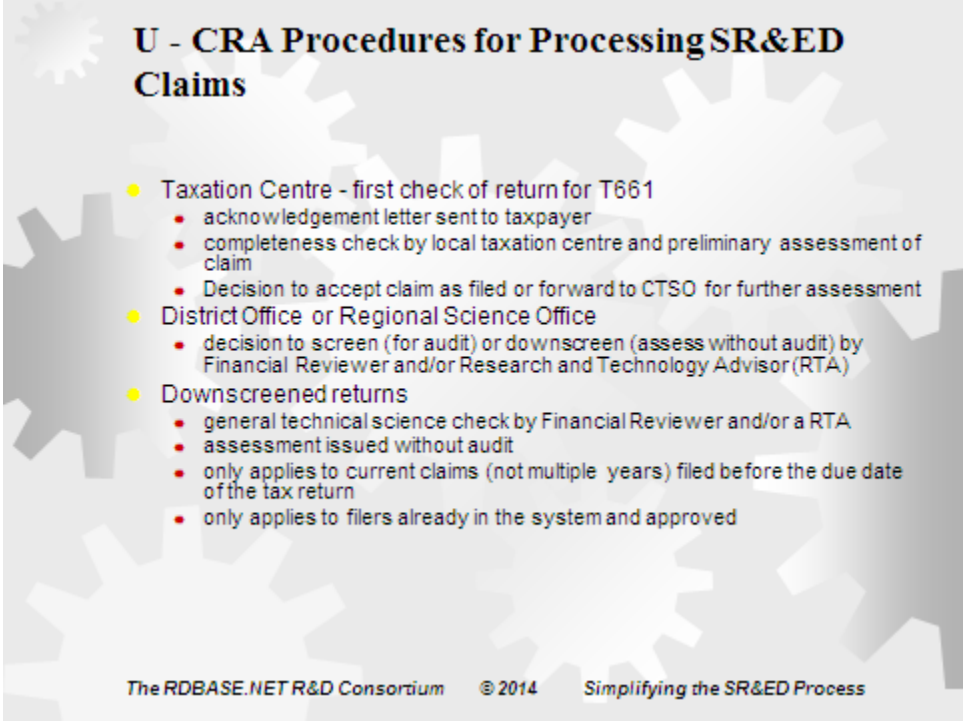
Through education and experience, taxpayers are submitting better claims. However, the CRA provided the following list of some common problems that still arise:

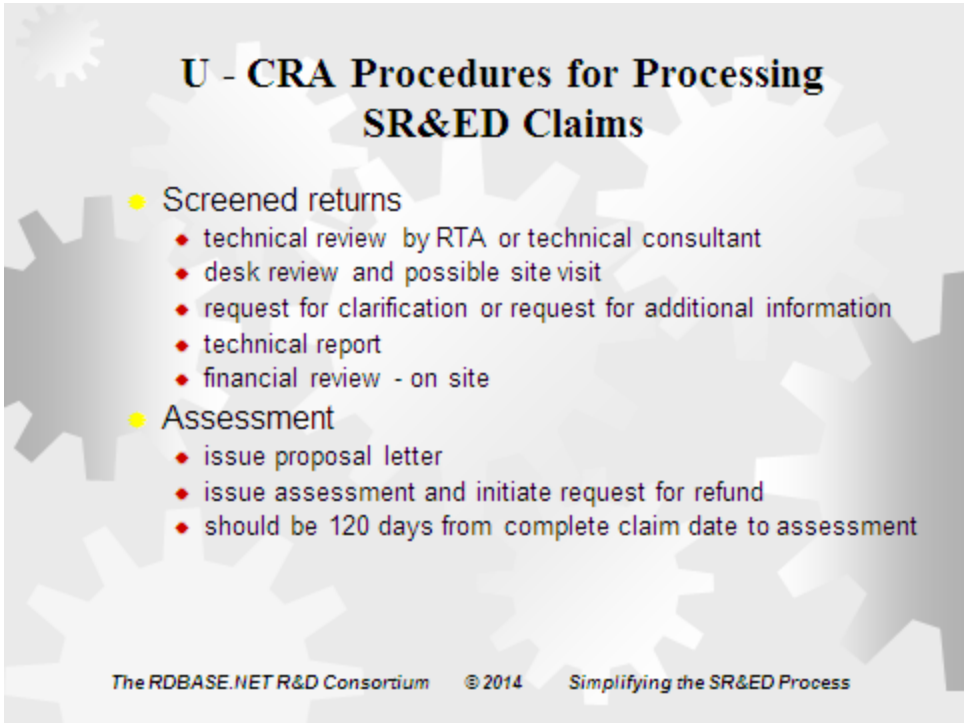
- Improper project description
- Proposals only

- Photocopied prior claim only
- Sales brochures only
- T661 costs exceed activities
- Foreign site
- Archaeology (staff/facilities gone)
- Project production/marketing
- Standard practice
- Routine testing, programming
- Routine development
- Feasibility studies
- Using new products
- Non-qualifying activities
- Production, marketing
- Mining, exploration
- Social sciences, management

While the Department's screening process will identify fundamental deficiencies in the technical information, detailed technical issues will probably not be encountered until the review is underway.

U.4 CRA procedures for processing SR&ED claims





Technical review

Once the completeness check has been performed by the local taxation centre, the claim is accepted as filed or forwarded to the district office or regional science office for further review. At the district office, a risk assessment is performed by a Financial Reviewer and/or a Research and Technology Advisor (RTA). The RTAs are senior scientists and technologists who have been hired by the CRA to administer this phase of the SR&ED program. In the past, the Department contracted with several outside consultants to assist with the backlog of claims. However, most claims are now handled by staff advisors unless there is specialized knowledge or expertise required. As the RTA has the responsibility to determine whether the claim represents qualifying SR&ED activities, it is important that he/she be qualified to undertake the technical review of the projects in the claim.

Taxpayers have the right to request the qualifications of the RTA or Consultant and should request a change if they do not believe that the person has the expertise necessary to property evaluate the claim.

Subsection 37(3) of the Act gives the Minister of Finance authority to obtain the advice of the Department of Industry, Science and Technology (Industry Canada), the National Research Council of Canada, the Defence Research Board or, any other agency or department of the Government of

Canada carrying on activities in the field of scientific research and experimental development as to whether any particular activity constitutes scientific research and experimental development. However, in practice these resources are rarely used.

As outlined in Guide to Conducting a Scientific Research and Experimental Development Review (2000-01-14), the technical review should occur in the following distinct phases:

1. Assemble, organize and analyze all information submitted with the SR&ED claim to ensure completeness and to become familiar with the circumstances of the work;
2. Determine the scope of the technical SR&ED review;
3. Request for information (if necessary);
4. Contract a technical consultant (if necessary) to resolve specific issues;

5. Site visit/interviews (if required);
6. Follow-up – additional request for information issued should new issues arise; and
7. Preparation of the SR&ED review report – the technical review is concluded with a technical report.

The taxpayer should be informed of the review plan before the work commences and should be informed of the progress throughout. Any technical issues should be resolved before the RTA concludes the review and issues the technical report.

If the taxpayer objects to the conclusions reached by the RTA, the appeal procedures are:

- Second review
- Written technical rebuttal
- Appeal to the Regional Technical Co-ordinator
- After assessment, formal appeal via Notice of Objection.

At the conclusion of the technical review, the files are forwarded to the financial reviewers.

Financial review

Once the eligible SR&ED projects are identified, the claim is reviewed by the Financial Reviewer. This review is to determine whether the costs charged to the project are eligible SR&ED expenditures (deductible) and qualified expenditures (for ITC purposes). The reviewer should apply the CRA's risk management guidelines in setting the scope of the financial review. He or she should set a dollar-materiality according to the size of the company and the size of the SR&ED claim. The company's prior history with the program may also be considered. Module 2 on eligibility outlines some of the advantages of an SR&ED management system, including facilitating the CRA's review of the claim.

The following issues frequently arise during financial audits:

– Documentation which links the costs to a particular project may be incomplete;
– Timesheets or time tracking methodology may be incomplete;
– Non-qualifying expenditures (Reg. 2902) may have been claimed;
– Foreign expenditures may have been claimed;
– Identification of employees who are directly engaged in SR&ED may be inconclusive;
– Government assistance may not have been deducted;
– Amounts claimed as overheads (traditional method) may not be incremental expenses and there may be disagreement over the method of allocating overheads to SR&ED; and
– Materials consumed may be viewed as supplies (supplies are not eligible under the proxy method).

The determination of eligible salaries under the proxy method has been of particular interest in recent years. Although the proxy method was intended to eliminate disputes around the allocation of overhead to SR&ED work, it is often raising significant issues as to the interpretation of "directly engaged".

The taxpayer is generally given a proposal letter setting out the results of the financial audit. The taxpayer has 30 days to respond with a written rebuttal. The taxpayer may request a second review, under the new policies outlined by the CRA. The file is completed when the assessment is issued. Further appeals may be initiated by filing a Notice of Objection.

U.5 Recent Request for Information (RFI) procedures

Request for information (RFI) procedures

Since approximately January 2013 the CRA has been sending “requests for information” (RFI’s) to a large % of claimants.

These RFI’s tend to include questions which can be divided into 3 categories:

- Standard questions asked nationally of all claimants
- Questions specific to a district office &
- Questions specific to an individual reviewer

Technical documentation

On your T661 Part 2, you indicated availability of contemporaneous information as captured in the table below.

Line Description	Project Number(s)
270 Project planning documents	1
271 Records of resources .. . , time sheets	1,2 & 3
272 Design of experiments	1,2 & 3
273 Project records, laboratory notebooks	1,2 & 3
274 Desiqn, system architecture ... code	
275 Records of trial runs	2 & 3
276 Progress reports, minutes ... meetings	
277 Test protocols, test data ... conclusions	1 & 3
278 Photographs and videos	
279 Samples, prototypes ... other artefacts	
280 Contracts	1,2 & 3
281 Others:	

Please send this information up to maximum of **five (5) letter-sized (8.5" x 11") pages for each project** claimed which you feel best demonstrates that the work meets the definition of SR&ED in Subsection 248(1) of the Income Tax Act.

In addition, if not included in the above sample, please send us copies of the **contemporaneous evidence** that:

• recorded your initial **due diligence** activities and that shows that available technology could not overcome the technological problem or obstacle that you faced;

• recorded **the plan** you subsequently devised to overcome the technological problem or obstacle;
•Preserved the **new technological knowledge** gained by the company.
.

SR&ED Wages & Contractor labour

For salaries, wages and contract labour, please provide:

- An organization chart with job descriptions/duties for each person claimed.
- **Details of activities** for each SR&ED Project claimed, including
- number of hours claimed **for each individual per activity, per month**.

Contractors

For each contractor, we require a copy of the contract(s) & statement(s) of work.

Author's comment (high significance)

New focus on "weekly" timesheet details

Perhaps the most notable item in the RFI questionnaires is consistent request for **timesheet** detail at a monthly**, weekly** or in some cases even a daily level.

These requests seem to be focused on small and large claimants alike.

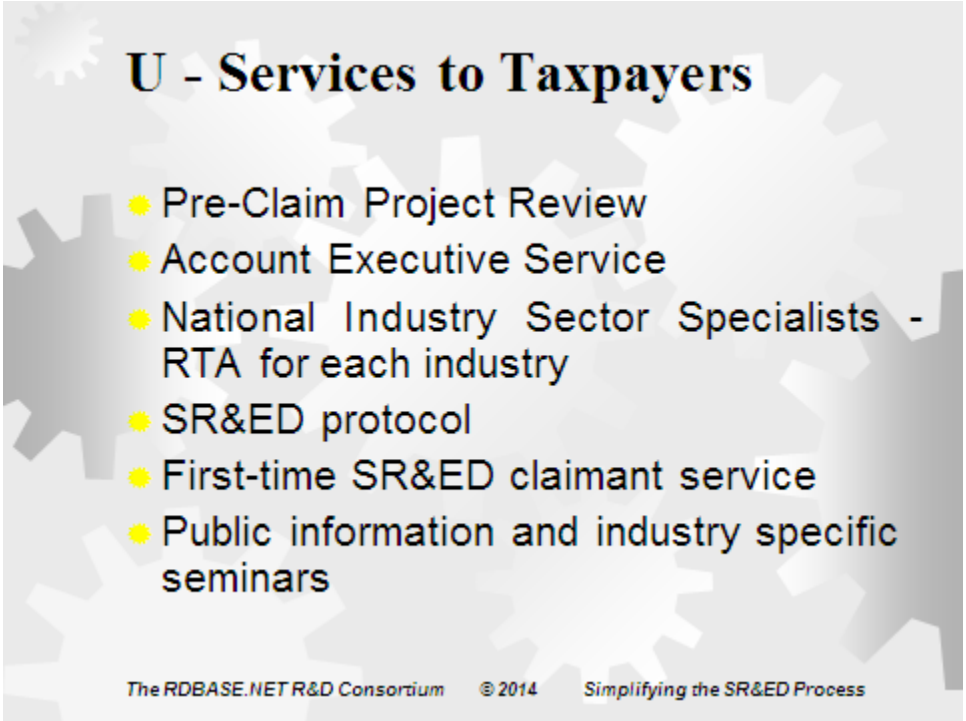
Since current CRA directions on how to prepare proper timesheet are vague as to what is actually required this is likely to become an issue of contention.

Ultimately each employee should be able to identify how his or her

- "design or testing" work was
- "necessary to resolve"
- one or more of the stated "uncertainties."

Having the development team agree on the key variables of experimentation allows this correlation to take place.

U.6 CRA services to taxpayers



Service standards – time for CRA to assess a claim

One of the goals of the SR&ED program is to process claims in a timely, consistent, and predictable way. To support timely processing, the CRA has established service standards and has succeeded in meeting these standards.

- Current-year refundable claims (applies to Canadian-controlled private corporations) will be processed within 120 days, 90% of the time.
- Client-requested adjustments of refundable claims will be processed within 240 days, 90% of the time.
- Non-refundable claims will be processed within 365 days, 90% of the time.

CRA has implemented several initiatives designed to improve the quality of service to taxpayers. Some of these are specific to the SR&ED program while others have broader application. The objective is to improve timeliness, certainty and consistency, all significant issues with taxpayers filing claims in recent years. These initiatives include:

- **Preclaim Project Review (PCPR)** offers advice on eligibility before claims are made. The objective is to give taxpayers greater up-front certainty about the eligibility of work and expenditures. This service is available before a project starts or while it is underway;
- **Account Executive Service** provides claimants with a designated contact person. This person provides continuity over a period of years, rather than one year at a time. This allows the RTA to better understand the company's field of research, manage the claim from concept through to the review of the work, and act as a resource for the company, providing follow-up as requested. The Account Executive can also coordinate other CRA resources as required.
- **National Technology Sector Specialists** – There are a few Industry specialists available to act as national resources on issues in a particular industry. Some of these people are CRA

employees; others have been seconded from industry.

- **SR&ED Protocol** – Large Case Files are often managed by an audit protocol or agreement between CRA and the taxpayer regarding the conduct of the audit. Both sides agree on timing, deadlines, access to resources, and scope of the audit. A similar arrangement can now be negotiated for the SR&ED review process. This may assist in moving towards a system-based review rather than the detailed project-by-project audit that is common today.
- **First-time SR&ED claimant service** provides information and assistance for companies new to the program. Upon request, one of the CRA's representatives can answer questions and explain the program to new claimants. New claimants can access the information, tools, and assistance needed to complete an SR&ED claim.
- **Public information and industry specific seminars** are held regularly throughout Canada. New claimants are invited to attend in order to obtain a better understanding of the program.

Each of these services can assist in developing a more cooperative relationship between the CRA and the taxpayer, improving the quality of the claims through education and enhancing the image of the SR&ED program.

The joint initiatives undertaken by CRA and Industry are a clear indication of the importance of the SR&ED program. Education of taxpayers, advisors and CRA staff will assist all stakeholders to ensure the continued existence of the incentives. The 2007 consultation process conducted by the CRA and the Department of Finance highlighted the need for improvements in administration of the program and resulted in a $10 million increase in CRA's budget. This money will be used to hire and train additional technical reviewers in the fall of 2008.

The Finance press release stated in part:

In undertaking these consultations, the Government's overriding objective is to increase the level of private sector R&D by implementing cost-effective improvements to the tax incentives and further streamlining the program's administration.

> "Our Government continues to look for new and innovative ways to improve the administration of the tax system and to reduce the burden on businesses," said Minister O'Connor. "Private sector R&D is crucial to the long-term growth and prosperity of our economy, and this broad-base consultation process will help us improve our existing programs."

U.7 SR&ED filing deadlines – do's & don'ts

Most claimants are aware that corporate claims for SR&ED tax credits include a requirement to file a, "SR&ED return with all prescribed information," within 18 months of its corporate year-end[142].

What many taxpayers seem unaware of is the fact that these returns can be efiled or filed through Canada Post up to the very last day of this filing deadline.

U.8 Canada Post filing procedures

[142] Filing deadline per ITA subsection 37(11)

U.8.1 Relevant legislation

The Income Tax Act states, "when anything other than a remittance is sent by **first class mail (or equivalent),** the item is **deemed received when the item was mailed."**[143]

U.8.2 Effects of weekends and holidays

Interpretation Act section 26 states "Where the time limited for the doing of a thing expires or falls on a holiday, the thing may be done on the day next following that is not a holiday."

Interpretation Act section 35 defines "Holiday"[144] to mean Sunday among other specified days during the year.

U.9 Related "Xpresspost" planning

Unfortunately if you just mail the envelope you will not have proof of filing. As a result the author proposes that taxpayers could take the following steps:

- Use the Canada Post, Xpresspost service
- Document the company name, year-end & "tax returns enclosed" on the Xpresspost slip
- Perhaps include an "enclosure letter" which could further list the enclosed documents
- Have the Canada Post agent stamp both their Xpresspost tracking slip as well as any additional "enclosure" letters you may include with respect to your "enclosed" documents.

U.10 Issue – proving "prescribed information" filed within 18 months!

While the recommended filing methods can be used to prove that the claim was filed "on time" it may not be enough to prevent the claim being denied due to "failure to submit prescribed information in prescribed form." In fact if any significant portion of the claim is missing the entire claim could be jeopardized!

In several cases taxpayers have maintained that all prescribed information was submitted and sadly there seems to be **little if any recourse to challenge the CRA's assertion that one or more pieces of information were missing.**

U.10.1 CRA – position – file within 15 months

Question:

> **When does an SR&ED claim need to be filed** in order for the CRA to review and **advise the claimant of any deficiencies** in the SR&ED claim?

CRA Response:

[143] paragraph 248(7)(a)

[144] "holiday" means any of the following days, namely, Sunday; New Year's Day; Good Friday; Easter Monday; Christmas Day; the birthday or the day fixed by proclamation for the celebration of the birthday of the reigning Sovereign; Victoria Day; Canada Day; the first Monday in September, designated Labour Day; Remembrance Day; …any day appointed by proclamation…

If an SR&ED claim is filed **within 90 days before the reporting deadline,** the CRA should have sufficient time to conduct a review to determine whether or not the claim meets the filing requirements and to advise the claimant of any deficiencies in the claim.[145]

U.10.1.1 Implications and author's commentary

In the author's view a prudent claimant would take strong measures to **ensure that claims are submitted within 15 months from any corporate year end despite the 18 month deadline** prescribed by the legislation

U.11 Budget 2013 – new reporting on SR&ED preparer fees

According to the Department of Finance,

"Budget 2013 introduces measures to provide the Canada Revenue Agency with new resources and administrative tools to better respond to **the minority of** SR&ED program **tax preparers and SR&ED performers** who participate in claims where the **risk of non-compliance** is perceived to be **high** and eligibility for the SR&ED program unlikely."

Requirements

In particular, in instances where one or more third parties have assisted with the preparation of a claim,

- the Business Number of each third party
- details about the billing arrangements including
- whether contingency fees were used &
- the amount of the fees payable.

In instances where no third party was involved, the claimant will be required to certify that no third party assisted in any aspect of the preparation of the SR&ED program claim.

Penalty for non- compliance

Budget 2013 proposes that a new penalty of

-$1,000 be imposed in respect of
- each SR&ED program claim for which
- information about SR&ED program
- tax preparers & billing arrangements is
- missing, incomplete or inaccurate.

The SR&ED program claimant and tax preparer will be jointly and severally liable for the penalty.

[145] CRA Application Policy SR&ED 2004-02, Filing Requirements for Claiming SR&ED Carried Out in Canada, Question 4, October 5, 2004

Timing of implementation

This measure will apply to SR&ED program claims filed on or after the **later of January 1, 2014** and the day of Royal Assent to the enacting legislation.

Author's comment: low significance

Due to the fact that certain journalist published articles which "falsely" claimed that:

- upwards of $1 billion / year

- is being paid to SR&ED consultants

the government has begun collecting information on these fees to confirm or deny whether these accusations have any merit.

These results will likely be used to determine:

- whether billings which are "contingent" on the success of the claim are in the interest of all parties &

- if any further regulation is thereby required.

Notable quote:

"Minds are like parachutes; they work best when open."

- T. Dewar

U.12 SR&ED – dispute resolution - appeals and objections

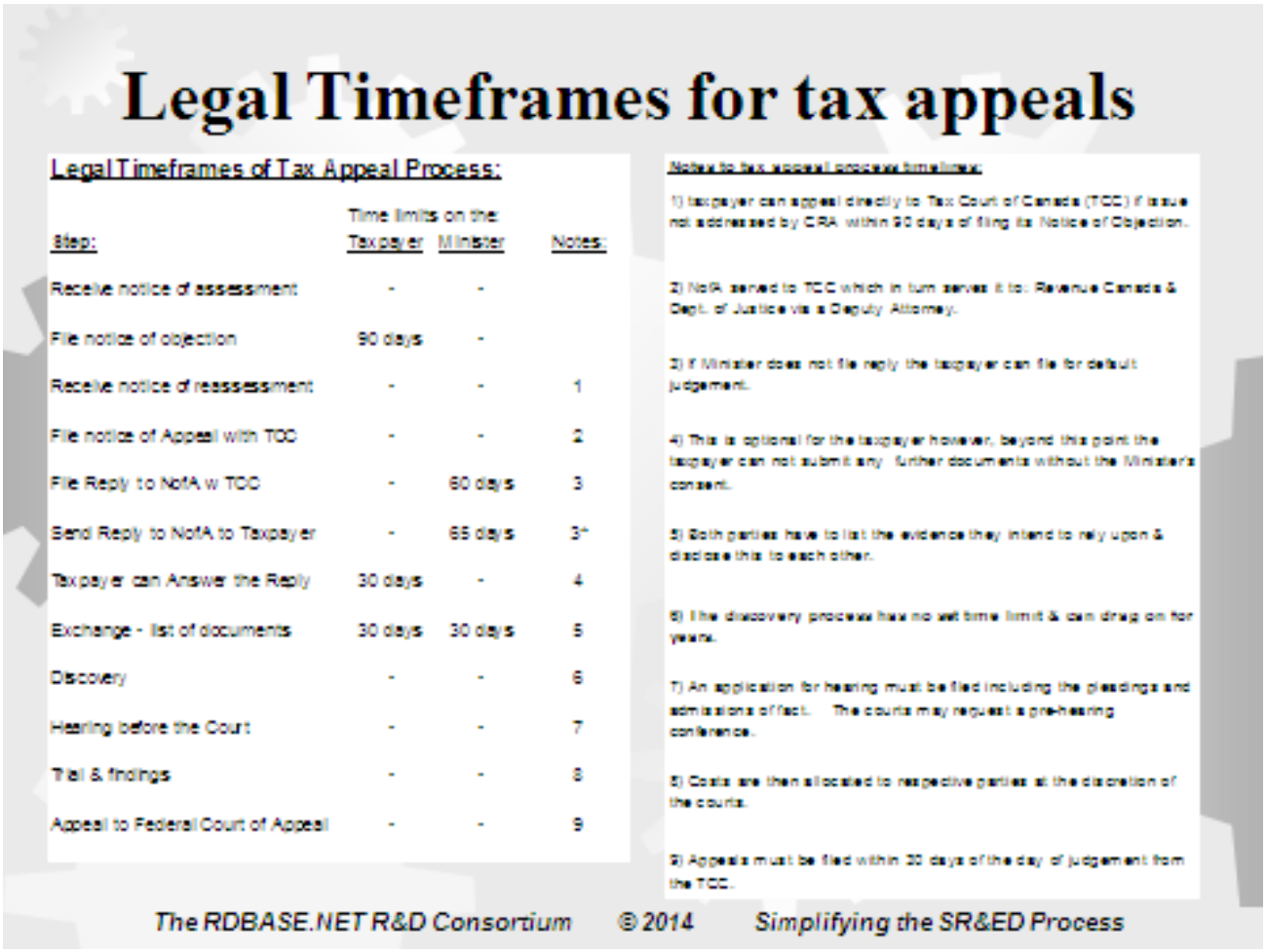
Author's commentary:

- Where the CRA reviewers have any proposed adjustments they will generally provide the claimant with an explanation letter providing the opportunity for feedback / negotiation within 30 days.
    - In the author's opinion this "30 day window" is the most effective time to negotiate issues of contention.

- The next step is to request a "second administrative review" with the CRA reviewer + a manager.
    - In the author's experience this process has mixed results and may be cancelled in the near future.

- The third step is a formal objection – which means the case still remains with CRA officials to decide.
    - In the author's experience the CRA officials are unlikely to reverse and of their prior decisions.

- The final stage is to appeal to the Tax Courts (TCC, Court of Appeal or Supreme Court)
    - A Crown Counsel will consider the legislation independently.
    - This may be the best chance for taxpayers to have the ITA legislation (vs. CRA guides) examined regarding positions taken.



U.13 Challenging the science officer's opinion

The legislation:

Subsection 93(3) of the Rules[146] reads as follows:

> "The Crown, when it is the party to be examined, shall select a knowledgeable officer, servant or employee, nominated by the Deputy Attorney General of Canada, to be examined on behalf of that party, **but if the examining party is not satisfied with that person, the examining party may apply to the Court to name some other person**."

This issue was examined in the case of Blue Wave Seafoods[147] in which the judge felt the claimant should have challenged the CRA officials credentials at the outset of the review (not after a negative opinion is rendered).

[146] Tax Court of Canada Rules (General Procedure)
[147] *Blue Wave Seafoods Incorporated and D'Eon Fisheries Limited and Her Majesty the Queen (TCC informal procedure – Docket: 2001-2140(IT)G)*

Problems:

Since the tax courts allow such refusals but the CRA typically does not, claimants may be forced to "threaten" litigation for equitable treatment on this issue.

Solutions - formal vs. informal appeal strategies:

Since the Tax Court of Canada general procedures typically

- take 2-3 years &
- cost > $50,000

it may be more efficient to consider an "informal appeal" strategy for a quick and economical resolution.

Typical dispute resolution steps & timelines

	Step	Parties	Expected timeframe
1	Negotiate with CRA reviewer	CRA & client	30 days
2	2nd admin. review	CRA & client	180 days
3	Objection	CRA & client	365 days
4	Tax Court of Canada		
	a) Appeal - Informal	CRA, Dept. of Justice client	6-9 months
	b) Appeal - General	CRA, Dept. of Justice client	2-3 years

Notable quote:

"The uncreative mind can spot wrong answers, but it takes a very creative mind to spot wrong questions."

- Anthony Jay

v Case Study Index

w Concluding remarks

It is my hope that this section has illustrated the high degree of influence that both Canadian taxpayers and Tax Courts have had as co-architects of the current SR&ED tax credit system.

Hopefully the section has illustrated that there will always be a requirement for professional judgment in determining the eligibility of both the technology and the related cost of development however, I believe that these issues can be administered fairly and objectively once all of the issues are clarified.

It is my strong assertion that the resultant SR&ED tax credit system illustrates previously unparalleled levels of co-operation and partnership between industry and government.

In my opinion, this is a positive shift from the government's traditional roles of regulation and taxation! The continual development of this system on both the federal and provincial levels is likely to keep Canada in the forefront of countries in which companies choose to perform SR&ED.

x SR&ED tax court cases (interpretative issues)

SR&ED cases regarding "technological eligibility"

TOPICAL AREA	APPELLANT	PRIMARY ISSUE	WIN - LOSE - DRAW?	RULING & RATIONALE	IMPLICATIONS: UNRESOLVED ISSUES AND OPPORTUNITIES	LONG-TERM SIGNIFICANCE
1) a) TECHNOLOGICAL ADVANCEMENT	Northwest Hydraulic	"system uncertainties" basis for	Win	4 of 5 projects eligible due to "system	Landmark case on technological eligibility	High
b)	Rainbow Pipeline	definition of "technological	Win	rejection of an hypothesis is an advance	Significant precedent definition of "TA"	High
2) a) BUSINESS VS. TECHNOLOGY TECHNOLOGY	CW Agencies	software development - business vs. technology?	Lose	3 strikes: no hypotheses, lack of records, 3rd party defense	Need to focus on technology	Moderate
b)	Nashen	software development - business vs. technology?	Draw	2 of 4 projects eligible - technology vs. business	bus. vs. tech. software - eg. Patents U.S. vs. Japan & Europe	Moderate
c)	Zeuter	Is transcribing "info" eligible SR&ED?	Lose	As per NW Hydraulics ruling	Need to verify "data collection" is "commensurate"	Moderate
3) a) SYSTEMATIC INVESTIGATION(SI)/	Hun-Medipharma	eligibility of analysis without	Win	SR&ED work can be "experimentation	"SI" envisions contemplation of	Moderate
b) TECHNICAL	RIS Christie	"lack of documentation"	Lose - round 1	ineligible - lack of any experimentation or analysis	Successful result &/or patent NOT proof of experimentation	Moderate
RECORDS			Win - round 2 appeal (FCA)	engineer died prior to trial - court sympathetic	courts may be sympathetic for CCPC's in extreme circumstances	Moderate
c)	R.J. Miller	lack of technical documentation	Lose	claimant must provide evidence	need evidence of experimentation	Low
d)	Blue wave Seafoods	challenging science officer's analysis	Lose	insufficient evidence to refute CRA recommendations	challenge auditor qualifications before opinion rendered	Moderate
e)	Maritime-Ontario Freight Lines	hardware & software adequacy of documentation	Lose	must illustrate methods utilized & results	need evidence of experimentation	Low

SR&ED cases regarding Financial issues

TOPICAL AREA			APPELLANT	PRIMARY ISSUE	WIN - LOSE - DRAW?	RULING & RATIONALE	IMPLICATIONS: UNRESOLVED ISSUES AND OPPORTUNITIES	LONG-TERM SIGNIFICANCE
1)	a)	WAGES	Alcatel	stock options - whether SR&ED "cost" incurred	Win - round 1	SR&ED "cost" is dilution of shareholder interest	Courts contemplate "costs" not in taxable income	High
					Draw - round 2	legislation to disallow > Nov. 14, 2005	2 year window to amend 2004 - 2005 taxation years	High
	b)		CDD-REM	payments to "specified employees"	Win - round 1	eligible based on "evidence"	courts allow reasonable estimate of costs incurred	Low
					Draw - round 2	Subsequent events: "non-arm's length"	post 1996 - only "salary & wages" allowed "NAL	
	c)		Synchrosat	allocating salary to only SR&ED activities	Lose	only SR&ED percentage claimable	need system to document employee experimenation time	Low
	d)		Ergorecherche	time allocation - SR&ED vs. non-SR&ED projects	Lose	"reasonable" basis for allocation required	could structure "non-SR&ED" done during unpaid time	Moderate
2)		MATERIALS	Consoltex	materials used in SR&ED then sold	Win - round 1	eligible if required for SR&ED	short-lived precedent to include "commercial materials"	Low
					Draw - round 2	Subsequent legislation repayment of ITC's on sale	Clarification: labour eligible - materials "sold" excluded	High
3)	a)	CAPITAL	Dew Engineering	building vs. "other structure"	Win	temporary lab not a "building" - no fixed foundation	courts take literal interpretation of "building"	Moderate
	b)		Aurora Marine	eligibility of Yacht expenses for SR&ED	Win	SR&ED eligible even if not otherwise tax deductible	courts took liberal interpretation of "SR&ED costs incurred"	Low
	c)		Waxman	whether cattle eligible SR&ED	Win	eligible if ASA (>90%) SR&ED intent	short-lived precedent to include "commercial materials"	Low
					Draw - round 2	Subsequent events: repayment of ITC's on sale	eligible if SR&ED intent - repayment if sold	High
4)	a)	ASSISTANCE/ GRANTS/	Com Dev Ltd.	government fees - "assistance" or	Win	fixed price contract not purchase of SR&ED	Structure SR&ED contracts-"taxpayer" to bear "risks"	High
	b)	SALE OF PRODUCT	Les Cultures	sale of experimental production	Win	subsequent sale irrelevant if SR&ED	clarifies SR&ED labour eligible despite subequent sale	High
5)		UNPAID AMOUNTS	Chartwell	eligibility of unpaid amounts / bad	Win / lose	need to claim costs during the year incurred	opportunity to claim unpaid wages (*unless forgiven)	High
6)	a)	FOREIGN EXPENSES	Data Kinetics Ltd.	foreign "mainframe" costs Canadian SR&ED?	Win	attributable to SR&ED if researcher "in Canada"	definition of "in Canada" issue of contention .	Moderate
					Draw - round 2	Subsequent events: only payments to "taxable suppliers"	subcontractor BN# now required to claim payment	High
	b)		LGL	data collection outside Canada SR&ED?	Lose	ineligible if physically outside Canada	courts took literal interpretation of "in Canada"	Moderate
					Draw - round 2	Subsequent events: eligible if within "EEZ"	marine work eligible to 200 nauts - still "unclear" travel abroad if >10%	Low
7)		"ASA"	Quantetics	"costs" or "revenues" basis for	Lose	SR&ED costs basis for eligibility	Preferential ITC's "sole purpose performers" gone 1992	Moderate
8)	a)	FILING EXTENSIONS	Datacalc	extension of 18 month filing	Lose	qualified expenditures - identified by filing	object under proper sections of ITA - see Alex Parallel	Low
	b)		Alex Parallel Computers	basis for extension of filing deadline	Win	CRA cannot restrict Minister's power to extend deadlines	extension for reasons other than CRA IC (illness/disasters)	High
					Draw - round 2	Legislation - Nov. 17, 2005 restriction of	must file within 18 months of year end - preferably 15	High
9)	a)	QUALIFIED CCPC STATUS	Mimetex	if US director with 50% of shares	Lose	actions of US director w/o consent of	consent from 1 of 2 Canadian directors solves problem	High
	b)		HSC Research	Factors in evaluating defacto	Win	separate directors - no control evidenced	Landmark case on definition of "defacto control"	High
	c)		Terra Remote	Is shareholder with < 50% ownership arm's length?	Win	Analysis of ITA 256 (control) & 251 (related persons)	Confusing "specified employee" (>10%) with "arm's length"	High
	d)		All Colour Chemicals	Can CCPC partners claim 35% refundable ITC's	Lose	ITA 127(8) for partnership "over-rides" 127(10.1) refunds	Qualified CCPC's should avoid using SR&ED partnerships	High
10)		ITC USE	Ainsworth Lumber	ordering of ITC use - refundable vs. non-refundable	Win	Act clarifies that taxpayer "may" deduct [credits] indicates that taxpayer elects order of refundable vs. non-refundable credits	right to order affairs to minimize taxes	Moderate